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E-Mentoring and Information Systems Effectiveness Models:
a useful nexus for evaluation in the small business context.

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Abstract

While information communications technology provides new opportunties for supporting mentoring, there is a need to explore how effectively these potential benefits are being realised.

The evaluation of the effectiveness of structured e-mentoring in the small business context is problematic because it is contingent upon a multitude of contextual factors and characterised by a range of research difficulties. A review of 31 effectiveness studies across the mentoring, e-mentoring and small business fields undertaken as part of this study provided a basis for systematically determining the nature of these research challenges. They included the heterogeneity and divergent pedagogical needs of individuals, the complexity of the mentoring phenomenon, measurement difficulties, the paradigm location of evaluation models, inherent problems with evaluation methodologies and data quality, and the almost contradictory imperatives to evaluate individualised outcomes while exploring commonalities and patterns in effectiveness.

To extend understanding and knowledge in the field of e-mentoring for small business, it will be necessary to develop empirically-based theories of effective e-mentoring systems.

As a means of contributing to the generation and refinement of theory, this study proposed a framework as a potential solution to some of the research challenges and contextual contingencies identified. The framework integrates the DeLone and McLean model of Information Systems Success (1992) which is based on the principle that Information Systems success is best evaluated by considering the dimensions of effectiveness - System quality, Information quality, Use, User satisfaction and Impact - together as a system rather than in isolation. The Rickard model extends this principle to structured e-mentoring, and adapts and redefines DeLone and McLean's Information Systems dimensions for the mentoring context.

The study investigated the framework as a means of consolidating and classifying the metrics used in the informing disciplinary areas, as a reference tool for designing qualitative and quantitative effectiveness measurement instruments, for selecting situationally-responsive research strategies, and most critically, for describing, classifying and interpreting variability in effectiveness outcomes. The framework was applied to evaluate the effectiveness of an Australian e-mentoring program targeted at self-employed professional contractors called Mentors Online. This examination of actual practice provided a basis for proposing a set of

determinants of e-mentoring effectiveness. This work in turn provided a basis for understanding how the potential benefits of structured e-mentoring are being realised.

Creating a nexus between structured e-mentoring effectiveness evaluation and DeLone and McLean's Information Systems success model was shown to provide a justified, sufficient and useful basis for evaluating structured e-mentoring effectiveness, and therefore a means of contributing to the body of international literature on e-mentoring effectiveness.

Student declaration - statement of originality

I, Kim Rickard, declare that the PhD thesis entitled "E-Mentoring and Information Systems Effectiveness Models: a useful nexus for evaluation in the small business context?" is no more than 100,000 words in length, exclusive of tables, figures, appendices, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.

Signed:

Kim Rickard
PhD candidate
October 2007

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E-Mentoring and Information Systems Effectiveness Models:

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Part I - Introduction to the research problem and purpose of study

Part I will introduce the research problem and purpose of the study, and consider the key definitional and research challenges inherited by the field of structured e-mentoring effectiveness evaluation from the informing disciplinary areas.

Chapter 1

Introduction and Literature Review

1 Introduction

1.1 Origin of project

In 2001, a Productivity Commission report documented the prevalence and growth of non-standard work arrangements in the Australian labour market (Waite & Will 2001). Among the Commission's findings were that 10 per cent of self-employed contractors were professionals, a high proportion relative to other occupational groupings. Publication of the Productivity Commission report followed the release of a document discussing the decline in training undertaken by those in non-standard work arrangements including the self-employed (Hall et al. 2000). At the same time, the Federal Government was funding the development of organisations' capacity to provide mentoring support to segments of the small business sector via a merit-based competitive grant scheme called the Small Business Enterprise Culture Program (SBECP).

From 2001 to 2007, the researcher undertaking this study has been employed by a professional association to develop and deliver a program of advice and support services to professionals operating in a self-employed capacity. The proportion of the Association's membership operating as self-employed contractors increased from around 2 to an estimated 7 per cent over the previous ten years. It was in this context that an e-mentoring program was developed to address the training needs of these professionals. The pilot e-mentoring program received SBECP funding of A$14,000 and was conducted in 2002. The program has subsequently been delivered annually. An evaluation of the program's effectiveness was undertaken as part of the requirements of the Government grant. This evaluation process raised issues around how claims of effectiveness ought to be substantiated indicating that further research in the area might be useful. This thesis reports on the exploration of structured e-mentoring effectiveness evaluation that followed.

1.2 Chapter overview

This chapter will define and problematise the construct of e-mentoring effectiveness and introduce the difficulties involved in evaluating the effectiveness of structured e-mentoring in the small business context. It will consider the general questions: (1) how does research in the related disciplinary areas of e-mentoring, mentoring and small business training inform structured e-mentoring effectiveness evaluation, and (2) how might our understanding of the

evaluation of the effectiveness of structured e-mentoring in the small business context be advanced by drawing on Information Systems (IS) effectiveness evaluation models?

The chapter will detail the study's objectives, provide an overview of how the research was conducted, list the research questions to be explored, detail the data collection methods in line with the research steps to be undertaken, and foreshadow the framework for the evaluation of structured e-mentoring proposed in this study. It will then discuss some of the major characteristics of each of the informing disciplinary areas, with a view to identifying some of the significant intersections between the informing literature. The chapter will conclude with an outline of the basis for drawing on IS effectiveness models in the e-mentoring context, in particular, DeLone and McLean's 1992 model of IS success (DeLone & McLean 1992).

1.3 Introduction
1.3.1 Online modes and their relationship to their originary counterparts

Information communications technology has significant implications for practice and evaluation in a range of learning and support contexts. In their discussion of the evaluation of e-learning, Hughes and Attwell state: "[The question is raised] ... whether evaluation of e-learning compared with traditional learning should be the real issue or is it evaluation of e-learning within itself" (2003). In referring to e-therapy practice, Childress says of psychotherapy interventions: "Both history and theoretical frameworks are missing from the practice of interactive text-based therapy, and it is currently unclear to what degree traditional therapeutic orientations and models can be translated into online, text-based communication" (2000). These comments raise important new issues for both practice and evaluation about the relationship between the originary or traditional mode and their "e-counterpart". The degree to which traditional models of mentoring practice and evaluation translate into the online delivery mode, as in the cases of e-learning and e-therapy, is similarly at issue in the emerging research area of e-mentoring effectiveness research. O'Neill (1998) highlights the issue in the field of e-mentoring when he suggests that e-mentoring relationships may "develop differently from their traditional counterparts, and serve different functions for the participants … to the point where mentoring and e-mentoring may deserve no comparison at all" (p.31).

Contrary to O'Neill's view, this thesis develops the position that research in the related disciplinary areas of mentoring and e-mentoring, and the research context of small business and entrepreneurial training, critically inform practice and the evaluation of the effectiveness of e-mentoring for self-employed professionals. While inextricably linked with practice, the emphasis of this study will be on how the parent disciplines inform evaluation research.

1.3.2 Defining e-mentoring

While various mentoring researchers in the late 1970s and early 1980s developed definitions of mentoring (Bolton 1980, Clawdon 1980, Hunt & Michael 1983, Klaus 1981 cited in Noe 1988), there is no shared definition of the mentoring construct across the fields in which it is practised and evaluated (Broadbridge 1999). This thesis adopts the definition of mentoring developed by Levinson et al. in 1978. The mentoring process is described by Levinson et al. (Levinson et al. cited in Boyle-Single and Single 2005) as follows:

> *Mentoring describes when knowledgeable, experienced persons (ie mentors) support the personal or professional development of newcomers or less knowledgeable persons (ie proteges)"* (p.302).

Assigned or formal mentoring relationships occur when a mentor is assigned to a mentee by a program provider or organisation (Noe 1988).

Electronic mentoring, known in abbreviated form as e-mentoring, is a term derived from the originary mode of mentoring and is used to describe mentoring which utilises computer-based electronic communications technology as the means of communication between mentors and mentees or proteges (hereinafter described in this thesis as mentees) and may involve the use of digital communications tools.

Using the definition of mentoring developed by Levison et al. (1978), Single and Muller (2001) define e-mentoring and structured e-mentoring as follows:

> *E-mentoring is a naturally occurring relationship or a paired relationship within a program that is established between a more senior individual (mentor) and a lesser skilled or experienced individual (protégé), primarily using electronic communications, and is intended to develop and grow the skills, knowledge, confidence, and cultural understanding of the lesser skilled individual to help him or her succeed* (p.108).

Structured e-mentoring normally involves email exchanges between mentees and mentors around discussion topics identified by the mentoring partners themselves and/or the host organisation which delivers regular emails to support the process (for further detail on the program structure involved in this study, refer to Section 6.3). Harris et al. (1996), O'Neill et al. (1996) and Single and Muller (2001) suggest that developing and maintaining mentoring relationships across email is difficult and can benefit from the use of structure or support. The combination of the use of electronic communication and this support alongside the mentoring process combine to create the practice of structured e-mentoring, the definition of which is set out by Single and Muller (2001) as follows:

> *Structured e-mentoring is e-mentoring that occurs within a formalized program environment, provides training and coaching to increase the likelihood of engagement in*

the e-mentoring process, evaluates the results of the program to determine the impact on the participants, and identifies improvements for future programs (p.108).

1.3.2.1 Refining the definition

In the context of this thesis, Single and Muller's definition of structured e-mentoring requires clarification. Firstly, the definition fails to separate the mentoring process from evaluation. When considering effectiveness, both matching and training are, in temporal terms, antecedents to effectiveness while evaluation is not. The statement that the evaluation of structured e-mentoring involves evaluating the results of the program to determine the impact on the participants, and/or identifies improvements for future programs is a definition of the evaluation process rather than of structured e-mentoring. While of course it is desirable that evaluation is part of any formalised program, it is not of itself part of the structured e-mentoring process nor of every formalised program environment. For this reason, evaluation is removed from the definition of structured e-mentoring for the purposes of this thesis.

Secondly, the definition implicitly rather than explicitly defines what constitutes a formalised program environment. For the purposes of this thesis, the refined definition states that the formalised program environment comprises matching and training, and extends the definition to provide for the provision of some form of program content to program participants.

Thirdly, the definition is not explicit about how the structure, content, mentee and mentor relate. To this end, the definition will be refined to state how the program structure, content, mentee and mentor interact in the structured e-mentoring process.

Fourthly, the definition will be amended to provide for assigned and self-selected mentors. In e-mentoring, as well as a program assigning mentors to mentees, technology provides for self-selection of mentors by mentees from a web-based database. Mentors can therefore be assigned to or self-selected by mentees. This amendment to the definition will make explicit the fact that in structured e-mentoring, the mentoring partnerships are not spontaneously initiated by the mentee and mentor themselves but may be assigned or self-selected.

Fifthly, the definition does not specify email as the form of electronic communications used in structured e-mentoring. For the purposes of this thesis, the definition will be amended to explicitly identify the use of email as the primary mode of communication between the mentoring parties.

The definition will therefore be extended and clarified by (a) removing the references to evaluation, (b) explicitly defining the formalised program environment, (c) specifying that mentors may be assigned to or selected by mentees, (d) relating the formalised program structure to the program content, mentee and mentor, and (e) specifying email as the form of electronic communications technology used to support the structured e-mentoring process as follows:

> *Structured e-mentoring is e-mentoring which occurs within a formalised program environment.*
>
> *The formalised program environment comprises email communication between mentee and mentor, pre-program training and matching (either assigned or self-selected), and provision of program content in some form to program participants.*
>
> *Structured e-mentoring is therefore defined as a partnership between a mentee and mentor using email as the primary mode of communication within a formalised program environment which provides matching, training and content around which mentoring participants engage.*

This refined definition of structured e-mentoring, in conjunction with Single and Muller's definition of e-mentoring, will be used in this thesis.

1.3.4 Defining and evaluating structured e-mentoring effectiveness

While the potential benefits of mentoring using computer-mediated communication are widely acknowledged as replicating the same benefits as mentoring (Single & Single 2006), as Murphy (2004) says in the introduction to her discussion of online asynchronous discussions: "there remains an imperative to determine whether or not these potential benefits are actually being realized". Evaluation is the means by which it is possible to explore whether or not, how, why and for whom, structured e-mentoring is effective, or in Murphy's terms, whether the benefits are being realised.

How then can effectiveness be measured or evaluated in the context of structured e-mentoring? There is no single measure to emerge from the literature across the parent disciplines which can be used as either a direct or surrogate measure for evaluating structured e-mentoring effectiveness. In fact, quite the opposite is true – there is extensive variability in approaches to evaluation – in the definition of the mentoring construct, the measures used to operationalise the mentoring and e-mentoring constructs, the contextual settings upon which effectiveness is contingent, the methodologies used to explore it, and in outcomes and benefits which arise.

To advance research and understand this variability, it is important to identify a construct or constructs which may assist with conceptualising and imposing some order on the complexity of

e-mentoring processes, context and methodologies upon which the definition and understanding of effectiveness is contingent, and which gives rise to such variability.

1.4 Objectives of the study

1.4.1 General objective and location of the study

The general objective of this thesis is to develop and test the DeLone and McLean model of IS success (1992) as a justified, flexible and useful basis for evaluating effectiveness and accounting for variability in approaches with reference to a structured e-mentoring program. The framework will be developed and applied in the small business context because the researcher is engaged as an e-mentoring practitioner in this field.

1.4.2 Specific objectives of the study

The specific aims of this study are to:

- review the metrics and methodologies used in existing research studies of mentoring, e-mentoring and small business interventions, and respecify the model based on this review;
- use the results of the above-mentioned review and the respecified model as a basis for selecting an appropriate evaluation strategy;
- use the respecified model as a basis for developing an evaluation instrument;
- apply and test the framework, evaluation strategy and instrument by way of an examination of actual practice; and
- demonstrate how the framework provides a solution to the identified research challenges inherited from the informing disciplinary areas.

1.5 Research questions

The research questions are directly derived from the objectives of the study set out in 1.4.

1.5.1 Central research question

The central question this thesis seeks to answer is: "How does translating the DeLone and McLean's model of Information Systems Success to the structured e-mentoring context, provide a justified, flexible and useful taxonomy for accommodating variability and advancing effectiveness evaluation?"

1.5.2 Research sub-questions

This study was driven by the following research questions:

- How does the framework provide a coherent and sufficient taxonomy for the metrics used in the informing disciplinary areas?
- How does the framework assist with selecting an evaluation research strategy?
- How does the DeLone and McLean taxonomy provide a basis for developing quantitative and qualitative evaluation instruments?
- How does integrating the DeLone and McLean taxonomy within the framework assist with classifying and interpreting data when applied in the research setting?
- In what ways does the framework provide solutions to the identified research challenges inherited by the field?

The central proposition of this thesis is that the framework contributes in each of these ways, and therefore assists with evaluating effectiveness, confirming the proposed nexus between the DeLone and McLean IS success model and the evaluation of structured e-mentoring as justified, relevant, congruent, useful, and critical as a basis for advancing the field.

1.6 Overview of methodology

The rationale for the methodologies to be used in the study will be more fully detailed in Chapter 2. The discussions of the methodologies relating to the particular stages of the research will be outlined in detail in Chapters 3, 4 and 5. This section aims to provide a preliminary overview of the study's methodology to assist with clarity and understanding for the reader.

1.6.1 Conduct of research

The study was designed to review a selection of past research studies across the informing research disciplines to establish and consolidate the metrics and methodologies used to date. On this basis, a framework for evaluation is proposed which integrates the respecified DeLone and McLean model (1992). The framework was then refined with the assistance of experts across the informing fields. It was then tested by applying the framework to an examination of actual practice with a view to gaining an understanding of the possible determinants of structured e-mentoring effectiveness. The study reports on the sufficiency and limitations of the framework in this new context.

To advance the field in an emerging discipline, the methodology was designed to provide for building on the theory and/or body of understanding which exists to date. The approach provides a basis for observing, describing, categorising and proposing possible linkages between antecedents and outcomes, accommodating "anomalies" or particularities which disconfirm the existing construct to further refine the construct or constructs. The research

methodologies are appropriate to the questions being asked and adopt a variety of approaches (Denzin 1978).

Because the field involves human/social actors, the inclusion of 'human-centred' research was regarded as appropriate. Understanding the meanings of individuals and effectiveness involves utilising qualitative approaches which extend beyond approaches that seek understanding exclusively in quantitative terms. The methodologies provide for capturing individualised outcomes, the distinctive or differentiating features of e-mentoring partnerships, as well as patterns or commonalities across the e-mentoring experience.

1.6.2 Research process

The steps toward addressing these research questions were as follows:

Research step 1:

Cognisant of the issues raised in a review of the literature, review a selection of studies from each of the informing disciplinary areas of small business and entrepreneurial learning, mentoring and e-mentoring to identify firstly the metrics used, and secondly some of the difficulties, disincentives and limitations which inform the evaluation of the effectiveness of structured e-mentoring. This data will be presented and discussed in Chapter 3. Because of the interdependence of the effectiveness dimensions, the need to discuss criteria in relation to other criteria rather than in isolation, and the complexity of the issues arising from the review, the presentation of the discussion and findings is unavoidably complex. Every effort has been made to present data arising from the review in a logical and orderly way by explaining and numbering the main and breakout tables.

Step 2:

Based on the understanding of the characteristics of existing approaches developed in Step 1, draw on the DeLone and McLean model to develop a conceptually and theoretically appropriate taxonomy for evaluating e-mentoring in the small business context.

Step 3:

Consult with experts across the multidisciplinary informing research areas on the utility of the framework developed in Step 2 and re-specify and refine it further. This data and discussion will be presented in Chapter 4. The quotational data will be presented in the body of the thesis so that the interpretation provided can be substantiated.

Step 4:

Use the framework developed and refined in Steps 1, 2 and 3 to select an evaluation research strategy and develop appropriate evaluation instruments. Because the examination of actual practice has the dual purpose of establishing links between the DeLone and McLean dimensions and effectiveness, and testing out the proposed contingency framework, the evaluation strategy developed is necessarily driven by these dual imperatives. The methodology for the examination of actual practice will be set out in Chapter 5.

Step 5

Using the research strategy and evaluation instruments developed in Step 4, apply the framework to an examination of a case of actual practice to (i) consider the adequacy of the dimensions to support a *quantitative* analysis of effectiveness, and (ii) consider the adequacy of the framework for supporting description, classification, analysis and interpretation of *qualitative* data around effectiveness. The examination of actual practice will be set out in Chapters 6, 7 and 8.

Step 6

To examine the value and limitations of the model, the ways the framework extends our understanding of effectiveness and the ways substantiating claims of effectiveness can be approached. This discussion and analysis will be presented in Chapter 9.

If the data and findings arising from each of these research steps confirms the DeLone and McLean model as useful in each respect, the research steps outlined above would provide support for the proposition that the framework is useful as a means of evaluating the effectiveness of structured e-mentoring in this context.

1.7 Thesis outline by chapters and research sub-questions

The thesis will report on an exploration of the following questions:

Part I - Chapters 1 and 2 consider the question "What are the key definitional and research challenges inherited by the research area in the evaluation of the effectiveness of structured e-mentoring in the small business context?" Chapter 1 presents a discussion around the synergies between effectiveness research in the informing disciplinary areas and Information Systems (IS), and the basis for proposing that it is possible to draw on DeLone and McLean's model of IS effectiveness.

Part II - Chapters 3 and 4 will address the question "How might the model require respecification for the new context of structured e-mentoring?" The focus will be on developing a framework which might assist with advancing effectiveness evaluation research. These chapters will consider the questions "What metrics have been used in the informing disciplinary areas?" and "What are some of the research difficulties and disincentives which have arisen in the informing research areas in different research settings?" On the basis of the review of a selection of existing studies of effectiveness in the informing disciplinary areas, the question of the form of framework that might be developed to usefully abstract the complexity of the constructs and processes involved to assist with advancing effectiveness evaluation will be considered. This will be followed up by asking experts in the informing disciplinary areas to critique and suggest modifications or refinements to the proposed framework, and will conclude with an initial respecification of the model applied in the context of structured e-mentoring.

Part III - Chapters 5, 6, 7 and 8 will report on the application of the framework in the research setting. Chapter 5 will outline the methodology used in the examination of actual practice. Chapter 6 will outline how the program was intended to function and the pedagogical features which informed the program's development. Chapter 7 will apply the framework using quantitative approaches to data collection, and Chapter 8 will apply the framework using a qualitative approach. Chapter 8 will comprise a comparative analysis of effective and ineffective e-mentoring partnerships. This part will consider whether or not there is support for proposing factors which may influence effectiveness. The question "Does the proposed framework provide a basis for meaningfully classifying and interpreting the effectiveness of structured e-mentoring?" will be considered.

Part IV - Chapter 9 will discuss the conclusions and implications of the study. It will consider whether or not the framework accommodates the metrics used across the informing disciplinary areas, provides a relevant, flexible and justified basis for selecting a research strategy, provides a basis for developing measurement instruments, provides a basis for credible, meaningful and valid interpretation, and provides a solution to some of the research challenges inherited from the informing disciplinary areas and therefore inherent to the evaluation of structured e-mentoring effectiveness.

1.8 Structure of the thesis

The structure of the thesis can be summarised as follows:

Part I   Introduction to the research problem and purpose of study

             Chapter 1   Introduction and Literature Review

             Chapter 2   Research method and rationale

1.9 What is not the aim?

It is not the aim of this study to develop protocols for evaluation because, as Patton suggests, there are no rules for standardising data collection and methods in evaluation (Patton 1990). Cronbach observed that designing an evaluation is as much art as science – "[d]eveloping an evaluation is an exercise of the dramatic imagination" (Cronbach cited in Patton 1990 p.13). A framework for evaluation must therefore provide for the art as much as the science of evaluation design. This thesis proposes that the respecified framework provides a basis for the art and science of evaluation design.

1.10 Overview of the proposed framework

This section foreshadows the final specification of the contingency framework which is set out in the concluding chapter of this study. It is included at this stage not to preempt the research program but to assist with clarity and understanding for the reader. The thesis proposes a framework to assist with conceptualising the measurement and methodological complexities, and contextual contingencies, around structured e-mentoring effectiveness. Drawing on IS success literature, the framework incorporates as Phase 1 an adaptation of DeLone and McLean's model of IS effectiveness as a means of imposing a meaningful taxonomy on the range of measures adopted in the literature to date, and a way of meaningfully and usefully operationalising the effectiveness construct. The proposed framework is set out below in Figure 1: The framework has been renamed for the purpose of distinguishing between the respecified framework and the DeLone and McLean's model.

Phase 1 – E-mentoring dimensions and measures

NATURE AND QUALITY OF MENTORING PARTNERSHIP
- Quality of mentee's relationship with mentor
- Diversity of supports and advice
- Mentor as sounding board

(formerly System quality)

Adaptation

PROGRAM SUPPORT QUALITY
- Quality of match
- Quality of program structure, including choice of instructional technology
- Creation of individualised learning pathways

(formerly Information quality)

USE
- Nature, quality and frequency of interaction
- Influence of email delivery

USER SATISFACTION
- Perceived value

IMPACT
- Learning
- Business skills development
- Benefits inc long-term and unexpected

Phase 2 – Context – contingency factors
Research strategy considered with reference to:
- External environmental factors
- External mentee business factors
- Internal mentee and mentor factors (also factors relating to host/facilitator)

Phase 3 – Key methodological decisions to maximise validity
Research strategy considered with reference to:
- Internal validity
- External validity
- Construct validity

Phase 4
Selection of research strategy

Phase 5
Selection of "measures" or ways of understanding each dimension

Figure 1 - Rickard contingency framework for evaluation of structured e-mentoring (derived from DeLone and McLean's 1992 model of IS success)

The framework set out in Figure 1 is a collapsed version of the expanded Figure 23 and Table 96 presented in Chapter 9. To summarise the proposed contingency framework,, Phase 1 of Figure 1 (expanded fully in Figure 23 and Table 96 in Chapter 9) incorporates the DeLone and McLean model respecified for the structured e-mentoring context further to the Literature review in Chapters 1 and 2, the results of a review of a selection of effectiveness studies in Chapter 3, critique and refinement by an expert panel in Chapter 4, and the application of the framework in Chapters 7 and 8. The respecified DeLone and McLean model represented in Phase 1 also details the linkages between effectiveness and the DeLone and McLean dimensions identified in the examination of actual practice. The detail of the proposed linkages within each of the dimensions is expanded in Figure 23.

Phase 2 of Figure 1 (expanded fully in Table 96) codifies the contextual influences upon which effectiveness is contingent. These influences are classified as External environmental factors, External mentee business factors and Internal mentee and mentor factors. Phase 3 of Figure 1 (also expanded fully in Table 96) outlines the methodological decisions identified as common to the informing disciplinary areas to be considered in developing an evaluation strategy. These are classified for the potential impact of the decisions on the validity of an effectiveness study. Phases 4 and 5 represent in sequential terms the finalisation of the process of selecting an evaluation strategy which this figure represents.

This thesis is a critical exposition of the program of research which led to the final specifications that are set out in Figure 23 and Table 96 of Chapter 9 and summarised here.

1.11 Context of e-mentoring research and practice for self-employed professionals

The evaluation of the effectiveness of structured e-mentoring for small business sits at the intersection of the three problematic research areas of (a) small business training/entrepreneurial learning, (b) mentoring and (c) e-mentoring. The study occurs at a time of growth in non-standard work arrangements, when support for small business is a priority, and information communications technology offers new opportunities for delivering support and assistance.

To set this research into the current Australian context, it was necessary to briefly review the literature and data sources in the areas of the contribution of small business to the Australian economy, the importance of the self-employed as a segment of the labour market, the growth in non-standard work, and the global imperative for training solutions which utilise information and communications technology. It was also necessary to position the study by acknowledging the lag in e-mentoring effectiveness evaluation research behind practice in the small business e-mentoring context.

1.11.1 The contribution of small business to the Australian economy and Government mentoring assistance programs

For the purposes of this thesis, the definition of small business will be that adopted by the Australian Bureau of Statistics (2001) as a business employing less than 20 people. Categories of small businesses include:

- non-employing businesses - sole proprietorships and partnerships without employees;
- micro businesses - businesses employing less than 5 people, including non-employing businesses; and

- other small businesses - businesses employing 5 or more people, but less than 20 people.

The application of the framework involves self-employed contractors who are a segment within small business. They are defined in detail in Chapter 5, Section 5.2.3.

The importance of the small business sector to the Australian economy is widely recognised. At 2001, small businesses employed over 3.5 million people comprising 49 per cent of private sector employment, they accounted for 13 per cent of total export revenue in 2000, and in 2002, contributed around 30 per cent to Australia's Gross Domestic Product (Australian Bureau of Statistics 2001). A range of current Government assistance programs funded and administered under the Building Entrepreneurship in Small Business Program (prior to 2005, known as the Small Business Enterprise Culture Program), provide mentoring support to small business owners/operators in an effort to maximise the contribution of the small business sector to promoting sustainable economic growth, creating employment and improving export performance.

1.11.2 Growth of self-employed contractors within small business sector and growth of professionals as an occupational group within self-employed contractors

A 2001 Productivity Commission report, Self-Employed Contractors in Australia: Incidence and Characteristics (Waite & Will 2001) concludes that contracting including independent contracting, dependent contracting and sub-contracting, had grown relative to the employed workforce in Australia between 1978 and 1998. The authors however discuss the difficulties with obtaining accurate and comparable time series data. They suggest that: "[r]esearchers investigating contract employment have had to deal with a lack of suitable data in the official Australian Bureau of Statistics (ABS) labour force collections ... [because] until 1998, the ABS did not collect data specifically on contracting" (2001 p.17). The nature of ABS data collection and analysis, they suggest, may have led to incorrect conclusions. They go on to state:

Self-employed contractors are classified within the own-account worker, employee and employer categories in standard ABS labour force data. A quick look at the LFS [Labour Force Survey] data indicates that own-account workers and employers fell as a share of total employment between February 1978 and August 1998 (ABS 1997b, Cat. No. 6359.0). However the raw data are deceptive. Owner-managers of incorporated enterprises can effectively be working either on their own account or as employers, but because they are employees of their own business they are classified into the employee category of the LFS data. If they are redistributed into the own-account worker and employer categories it is clear that these forms of employment became more common in the two decades to 1998 (Table 3.1):

Table 3.1	The distribution of employment by type* Share of total employment	
	February 1978	August 1998
	%	%

Employers	6.7	8.6
Own-account workers	9.7	11.8
Employees	83.6	79.6

*Owner-managers of incorporated enterprises have been redistributed from the employee category of LFS data to the own-account worker and employer categories. *Sources*: ABS ('Owner managers of incorporated enterprises', Feature article, Labour Force, Australia. Cat. No. 6203.0, July; *Forms of employment survey*, ABS Cat. No. 6359.0)

> *"... In summary, time-series data specifically on self-employed contracting do not exist. Within the ABS time series data on different categories of employment, self-employed contractors are classified within the employee, own-account worker and employer groups, and cannot be separately identified. However, these data can be used to shed light on changes across time in self-employed contracting.*
>
> *Between 1978 and 1998 the shares of own-account workers and employers in total employment rose, while the share of employees fell. Using this information, and assuming that the shares of self-employed contractors in each type of employment in 1978 and 1998 as those reported by VandenHeuvel and Wooden (1995a) for 1994, the share of self-employed contractors in total employment rose from about 7.3% in 1978 to 8.4% in 1998 - a 15 per cent increase.*
>
> *Furthermore, own account employment growth has been higher in industries in which self-employed contracting is relatively common. It is therefore likely that the share of self-employed contracting in own-account employment has risen. Because the majority of self-employed contractors ... are classified as own-account workers, it is therefore likely that the share of self-employed contractors in total employment has grown to more than 8.4 per cent.*
>
> *Evidence from cross section data suggest an increase in contracting generally, but the comparable data from more than one point in time ... do not permit a clean identification of self-employed contractors* (2001, pp.27-28).

The difficulties of accessing Australia-wide aggregated data is clearly problematic - and this is also the case with obtaining data for particular industry segments or occupational categories.

Waite and Will (2001) did however confirm the relatively high percentage of professionals as an occupational group operating as self-employed contractors compared with other occupational groups:

> *The share of self-employed contractors in the professionals workforce, 10 per cent, was high relative to contractors' share in most other occupational groups.* (Productivity Commission estimate derived from ABS Forms of Employment Survey, Cat. no. 6359.0)

In summary, the analysis set out in the Productivity Commission report confirms that the share of self-employed contractors within the category of employed persons in Australia increased by at least 15 per cent between 1978 and 1998, and confirmed the relatively high proportion of professionals operating as self-employed contractors when compared with other occupational groups.

1.11.3 Growth of contingent workforce and implications for training

This research intersects with recent debate around the growth of the contingent or non-standard workforce. Recent studies have indicated that there are significant implications for training and skills development for those in non-standard work arrangements (Hall et al. 2000, Bound & Owen 2000, Vandenheuvel & Wooden 1999). The Hall et al. study found a link between low levels of skills formation and non-standard forms of work. In light of the significant and growing proportion of professionals in non-standard work arrangements, there is a potential impact on skills and knowledge formation for this group.

1.11.4 International Labour Organisation (ILO) Recommendation on Human Resources (HR) and Training

In 2004, the ILO formulated a Recommendation concerning Human Resources Development: Education, Training and Lifelong Learning which includes reference to the need to promote access to education, training and lifelong learning for people with nationally identified special needs including the self-employed, and to encourage the use of new information and communications technology in learning and training (ILO 2003): The ILO recommends that:

> [m]*embers should:*
> - *promote access to education, training and lifelong learning for people with nationally identified special needs, such as youth, low-skilled people, people with disabilities, migrants, older workers, indigenous people, ethnic minority groups and the socially excluded; and for workers in small and medium-sized enterprises, in the informal economy, in the rural sector and in self-employment, and ..*
> - *encourage the use of new information and communication technology in learning and training, to the extent possible.*

The growth of self-employed contractors as a segment within the small business sector and their potential for differential access to training suggests that professionals operating as self-employed contractors constitute a segment of the small business sector that justifies some attention; developing targeted technology-assisted training is potentially a useful way of assisting this group.

1.11.5 Lag between practice and research creates a gap in the literature

The lag between research and practice has created a gap in the literature. There is a significant gap in academic research in the area of the evaluation of effectiveness of structured e-mentoring in the small business context. Much of the research is speculative commenting on what may inhibit or enhance the effectiveness of e-mentoring in the small business context (Sullivan & Duffy 2000, Wright & Tao 2001, Woodd 1999, Stokes 2001 et al.). While a lag between research and practice is not uncommon particularly in research areas utilising information technologies (Benbasat & Zmud 1999), Gunawardena et al. (1997) suggest, in relation to how

computer-mediated communication impacts the learning process,: that "the utilization of the medium .. has in many respects outstripped the development of theory on which to base such utilization" (Gunawardena et al. 1997 p.397-398 cited in Murphy 2004). This lag between practice and research was confirmed by Perren as characterising the e-mentoring field. Perren's Review of the Literature (2002) acknowledged this and urged a robust examination of actual practice which explicitly addressed the evaluation of e-mentoring effectiveness. Megginson et al. also noted the scarcity of data available on e-mentoring effectiveness in the small business context (Megginson et al. 2003).

1.11.6 Summary

This section briefly highlighted each of the major contextual factors which make this study significant. The importance of small business to the growth of the Australian economy, the growing and relatively high proportion of professionals which comprise self-employed contractors as a segment of the labour market, and the suitability of mentoring as a means of delivering suitable learning to those in small business make self-employed professionals a significant segment of small business, make effective mentoring support a timely and relevant issue. The use of information and communications technology to support learning and training for those in non-standard forms of work, the need to explore and understand how to provide some form of robust substantiation of e-mentoring effectiveness, and the need to provide a basis for developing theory to support the utilisation of computer-mediated communication in e-mentoring practice and evaluation all combine to make evaluation of the effectiveness of structured e-mentoring i relevant and important.

1.12 Literature review

The aim of this literature review is to identify the characteristics in each of the informing disciplinary areas which may constitute obstacles, difficulties and disincentives to evaluating effectiveness. This review will provide a basis for identifying the synergies between the key research challenges which characterise effectiveness evaluation across the informing disciplinary areas.

1.12.1 Key characteristics and research challenges in the informing disciplinary areas – the small business context

The small business sector is most critically characterised by heterogeneity and this has implications for the type of training and support developed and delivered to those in small business. Evaluation research in the small business context is characterised by challenges in the

areas of the complexity of the phenomena, context, methodology, data collection, paradigm location and measurement which arise out of this heterogeneity.

1.12.1.1 Complexity and variability in small business

In discussing the complexity and heterogeneity of the small business sector, Atterton says:

> *We talk about the small business sector as if it is some sort of market niche and I do not know how 96 per cent of anything can be a market niche. It is a massively heterogenous group and I think we could do far more in terms of segmentation: which segments we want to work with and how we develop the capability to work in that sector* (Atterton 2002, p.970).

Assistance to the small business sector can therefore be characterised by, in Atterton's terms, the need for segmentation. There is widespread acknowledgement of the "uniqueness" of each business in terms of size, the type of business engaged in, profit and turnover, whether home or office-based, the industry sector in which they operate, in the products and services produced, in the processes and level of technology used, and in the specific community and business environment in which they are located (Tolentino 1998, Devins & Gold 2000). This complexity and the multiplicity of intervening contextual variables which may influence outcomes has implications not only for practice but also for exploring the concomitant variability in effectiveness outcomes.

1.12.1.1.1 The appropriateness of competency-based approaches in small business

In the United Kingdom, the trend in small business research is toward a competency-based approach to developing learning frameworks for owner-managers in small business. This approach whereby learning is related to broad external competencies is however criticised by Gibb who suggests that generic competency standards as a basis for entrepreneurial learning is inconsistent with the research on learning requirements for small business. The entrepreneurial literature strongly indicates a need and preference for individualised, contextualised and experiential learning (Gibb, A.A. 1997). This was also confirmed in the work of Devins and Gold (2000). "Cracking the Tough Nuts: mentoring and coaching the managers of small firms", an exploration of mentoring of the managers of small firms who participated in a program called Building Management Competencies. A case study approach was used to examine and evaluate the program's impact on 20 organisations working closely with their Business Coach based on generic management competencies. Devins and Gold found that:

> *The crucial point about all the examples is their unpredictable path and their lack of connection to the predicted package of resources and activities that had been developed in advance of the programme. There was only one case which has followed what might be referred to as the 'typical model' of business support* (Devins & Gold 2000 p.254).

Devins and Gold found that the model of business support they applied did not provide for the heterogenous and diverse engagement with the support provided.

Just as the characteristics of small business have implications for practice, so too are there implications for evaluation research.

1.12.1.2 Quality of data in small business research

1.12.1.2.1 Nature of data

Much small business research gives rise to self-report data. Storey (1998) identified problems with bias and error in self-report research methods in small business in that ".. some entrepreneurs will overestimate the impact of the initiatives … [while others] .. are likely to underestimate the contribution of policy by claiming that any improvements in their business reflected their entrepreneurial skills, rather than public money" (p.20). Nisbett (1977) suggested that findings using self-report data may be contradicted by findings using other methods of data collection, so data quality is a key methodological challenge in small business research.

1.12.1.2.2 Sampling problems

Sampling difficulties are a major issue with much small business research largely due to the heterogeneity of the sector. The segmentation approach advocated by Atterton has implications for research in that any sample based on a particular "segment" is potentially atypical of the small business sector more generally and this impacts on the validity of inferences made to the broader small business population.

The heterogeneity which characterises small business can also make it difficult to construct matched samples (Curran & Storey 2000). This means that experimental work comparing outcomes of a group which has accepted business support with a control group that has not, is problematic. Evaluating effectiveness which is grounded in positivist assumptions leads to a difficulty in establishing causality between an intervention and effectiveness.

Small sample size is another issue frequently cited as a sampling difficulty in small business research. This is attributed to a range of factors including poor take up of support services (Curran & Blackburn 2001, Curran 2000), low response rates (Curran & Storey 2000), and the difficulty of accessing sufficiently large sampling frames (Curran & Blackburn 2001). This means that in experimental research which makes claims relying on statistical validity, a sample may not, in Curran and Storey's terms, meet "statistical criteria for establishing validity" (2000 p.17). With the heterogeneity of the small business population, a very large sample would be needed to ensure representativeness across a range of variables that is often not available.

Curran and Storey (2000) point out that while small sample size is not necessarily of itself a difficulty, the issue of response bias which may follow from small sample size is potentially a problem. They identify the most common biases in small business research as firm size bias (that is, smaller firms have been shown to be less likely to respond than larger firms) (Goffee and Scase 1995 cited in Curran & Storey 2000) and sector bias (that is, firms in some sectors are more likely to respond than others (Curran & Blackburn 2001). If the individuals or firms who respond have, in Curran and Blackburn's terms, "had a more positive experience than those who do not" this may also result in response bias and therefore impact on the external validity of the research findings (Curran & Blackburn 2001 p.61).

1.12.1.2.3 Bias

While potentially having a positive impact on outcomes in practice, administrative and self-selection are problems which arise in evaluation research in relation to small business (Curran & Storey 2000). Curran and Storey define administrative selection as occurring "when only a proportion of the firms/individuals which apply to join [a] program are selected for inclusion" (2000 p.13). They define self-selection as occurring "when certain types of firms apply to join/participate in particular programmes" (p.13). The issue is that when these forms of selection occur, the outcomes of an intervention may not be representative in that the selection process may have involved firms or individuals who are atypical in some way. That is, the qualities that led to the individuals nominating or being selected for participation in a program may produce causal ambiguity in that these qualities, rather than the assistance program, may have contributed to the outcomes observed or reported.

Generalisability in small business research then is always open to challenge on the basis that the representativeness of the sample which supposedly represents the segment may be challenged therefore compromising generalisations to the particular small business segment and the small business sector more generally.

1.12.1.3 Measurement difficulties in small business research

1.12.1.3.1 Definition of concepts

The problem of adequately defining concepts and constructs in small business research is highlighted by Curran and Blackburn (2000). Failure to define concepts such as small business and small business owner, they suggest, may make comparability between studies difficult. Buelens et al. (2005) also discuss the need to establish the validity of constructs by ensuring that the measures being used are in fact appropriately operationalised, sufficiently comprehensive, confirmed, tested, and indicative of the constructs being used in a study, all of which threaten the measurement of effectiveness in the small business context.

1.12.1.3.2 Causality

Measurement problems are widely discussed in small business research. Storey's study "Six Steps to Heaven" (1998) considers the evaluation of the impact of an assistance program. While it considers evaluation at the policy level, the methodological and conceptual difficulties which are discussed in Storey's approach are also relevant to evaluation at other levels. Storey (1998) details the need to measure additionality with reference to deadweight and displacement, and discusses the difficulties with finding evaluators, politicians and policy-makers who will accept such issues as important to effectiveness evaluation.

Curran and Storey (2000) suggest that "it should be relatively easy to measure [additionality accounting for deadweight and displacement] .. but .. in practice, it is extremely difficult" (2000 p.11). This is because of the diversity of contextual variables which must be controlled to produce small business research with high internal validity. One of the major threats to internal validity is the failure to control for the influence of external or intervening variables which means outcomes cannot be attributed solely to the assistance provided to a small business (Buelens et al. 2005). This creates what is another major challenge in small business research - that of establishing causality between an intervention and its outcomes - because of the diversity of contexts into which the assistance is delivered, and the impossibility of controlling for all relevant variables.

Gibb confirms these challenges about small business training interventions when he states:

> *In the light of the substantial research that has been undertaken into cost benefit analysis of training there must be considerable doubt as to whether a definitive answer could ever be found to the question of payback on training (Gibb A.A. 1997 p.13).*

Given the difficulties of, in Gibb's terms, finding such definitive answers, the question then becomes "how can claims around structured e-mentoring effectiveness be substantiated?", and this is the subject of this study.

1.12.1.3.3 Capturing intangible benefits

The difficulties with measurement are symptomatic of a broader debate within small business research around the challenge of measuring intangible impacts. Lenihan and Hart's struggle with how to "calibrate less tangible impacts into deadweight estimates" (Lenihan & Hart 2004 p.10) sits alongside Wright and Tao's discussion around the issue of "hard" and "soft" measurement (Wright & Tao 2001) which is played out in the literature as the relative merits of quantitative and qualitative approaches to small business research. This debate is based on an acknowledgement that benefits may be difficult to quantify in econometric or other terms. Small

business research has in the past been dominated by quantitative methods which are grounded in positivist assumptions based on the idea that reality can be explained and knowledge and truth revealed by using quantitatively-based experimental methods. In "Six Steps to Heaven" (1989) Storey asserts that sophisticated evaluation relies on objectives being specified in a quantitative manner in the form of targets (p.4). "It is then necessary," he says "to compare the assisted firms with groups of firms not assisted by the policy" while all other influences are held constant (p.21). Storey does not address how experimental methodologies assist with understanding or quantifying, in his terms, the "unobservables" (Storey 1998 p.27).

1.12.1.4 Research paradigm – location of this study in relation to existing research

The present trend in evaluation of intervention programs for small to medium enterprises (SME) is a return to goal-orientated approaches. In the Organisation for Economic Co-operation and Development (OECD) report "Evaluation of SME Policies and Programmes", Storey (2004) advocates the use of approaches which specify goals, quantify targets and evaluate program success in terms of achievement of these goals. Storey's model uses a monitoring/evaluation continuum which both contrasts and has parallels with a transdisciplinary model of program evaluation set out by Scriven (1993).

Scriven elucidates some of the limitations of the goal-orientated approach which implicitly underpin Storey's methodology. Principally, Scriven suggests that such an approach potentially fails to take account of what he refers to as shortfalls, overruns and side effects. Scriven (1993) rejects the idea that program evaluation should simply involve assessing the attainment of predetermined goals. Such an approach may neglect important information on the effectiveness of a program. He says of side effects:

> *Side effects are often the main point ... Side effects were a latent killer for a literal interpretation of goal achievement evaluation. They cannot be ignored because they may require the abandonment of an otherwise successful program or the salvation of an otherwise unsuccessful program. But it is hard to design an investigation to find them, since they are, more or less by definition, unanticipated. The only systematic methodology for detecting side effects is the goal-free approach (*p.49).

Scriven goes on to suggest that evaluation with reference only to a program's goals potentially ignores what he terms "absolute values", cost analysis, generalisability and comparisons – that is, could the same outcome have been achieved more affordably or with fewer negative side effects? He also notes that some program goals may have different relative importance and that there may be varying levels of success for a range of these goals potentially creating a complex set of data/results which the program evaluator must effectively judge, rank and synthesise. The difficulty with measuring effectiveness exclusively in terms of program goals as prescribed by

Storey is that it effectively values at zero the intangible, unanticipated "side effects" and evolving benefits.

Storey proposes a "Six Steps" taxonomy for evaluating SME assistance programs. The steps include Step 1 - Take up of schemes, Step 2 - Recipients Opinions, and Step 3 - Recipients views of the difference made by the Assistance. These three steps are referred to by Storey as monitoring. The next three steps include Step 4 - Comparison of the Performance of 'Assisted' with 'Typical' firms, Step 5 - Comparison with 'Match' firms, and Step 6 - Taking account of selection bias. Steps 4, 5 and 6 are referred to as evaluation. Storey goes on to say that using a control group, applying statistical methods to account for the influence of variables other than those being studied and measuring against specific and pre-set targets ensures appropriate evaluation is occurring. In his proposed evaluation framework, Storey suggests that measuring use and asking users about their perceptions of value can be referred to as monitoring because they do not take into account an intervention program's objectives. A summary of the binary oppositions created by Storey's stance are set out in Table 1.

Table 1 – Summary of characteristics of monitoring compared with evaluation according to Storey 1998

Monitoring	Evaluation
• undertaken by cheap and cheerful brigade • happy sheets • sloppy analysts • analysts without integrity • methodology – self-report (includes selfish and self-interested as well as truthful) • only building blocks for evaluation • simple • targets – anything it happens to hit • selection methods ignored • not Heaven	• careful • accurate • sophisticated • serious research community • methodology – must necessarily involve a control group • statistical methods • objectives which should be quantified and become explicit targets • approach receives "heavyweight" support • controlled for selection • Heaven

What are the implications of the conceptual separations between monitoring and evaluation set out in Table 1 for effectiveness evaluation in the small business context?

Storey's approach is limited in that it is prescriptive about methodologies to be used to evaluate effectiveness. The most significant limitation of Storey's analytical framework is that outcomes which cannot be researched using quantitative methods are implicitly valued as contributing less to an understanding of effectiveness than those which can be measured in quantitative terms.

While controlling for selection and including a control group to conduct an evaluation may be seen as ideal to researchers looking to prove or disprove the influence of policy or program interventions, the characterisation of evaluation methods which do not use a control group or use statistical techniques as less accurate, careful, rigorous or sophisticated monitoring is open

to challenge. Since mentoring and e-mentoring are set within a complex system of internal and external variables, experimental design is less likely to be useful in advancing the field. Research using other methodologies can extend knowledge about the effectiveness of small business interventions in different ways. Storey's work can be interpreted as reworking or reiterating a tension which runs throughout much of the entrepreneurial learning literature – between hard and soft measurement and ultimately between positivist and post-positivist/constructivist methodologies. Storey's analytical framework ignores the large body of research from the 1960s and 1970s which considered the virtual impossibility of ever being able to find a definitive causal relationship between a training intervention and program outcomes. (Gibb, A.A. 1997). Storey's framework potentially "values at zero" the rich data which may be obtained from alternative methodologies such as self-reported perceptions of value, tangible and intangible benefits, evolving benefits, and unanticipated benefits or side-effects. Evaluation of the effectiveness of structured e-mentoring in the small business context should not be restricted by neglecting or stigmatising understandings gained by approaches to measurement beyond those supported solely by quantitative data and grounded in positivist assumptions.

1.12.1.4.1 Implications of adopting a positivist paradigm in small business research
Storey's approach to small business research can be considered in the context of the growth and contradictions in the paradigms through which knowledge in the social sciences can be advanced.

Science philosopher Kuhn (1970) conducted a study of the value systems of scientists. Kuhn comments that "quantitative predictions are [considered] preferable to qualitative ones" and that the methodological status hierarchy in science ranks "hard" above "soft data" where "hardness" refers to the precision of statistics. Qualitative data, then, carry the stigma of "being soft" (Kuhn 1970 pp.185-186). Storey's approach to small business research privileges hard over soft data and quantitative over qualitative analysis in the way described by Kuhn.

Nissen discusses human-centred research which must necessarily capture the opinions, beliefs, attitudes and perceptions of the social actors involved (Nissen in Mumford et al. 1984 p.39). The methodological challenge to effectiveness evaluation is that all these share the characteristic of being difficult to measure. Weick (in Mumford et al. 1984 p.5) emphasises this point by suggesting that if these "non-measurables" are ignored, they are effectively valued at zero. Weick quotes Vickers as saying, "I recall times when I have criticised some forecast or estimate for omitting some variable which must obviously be relevant to the result and have been answered - "We couldn't include that; we couldn't put a value on it." And if I objected - "But by

omitting it, you have valued it at zero; and you know that is the only value it cannot have" (Vickers quoted by Weick in Mumford et al. 1984 p.5).

Hirschheim (in Mumford et al. 1984) quotes Dilthey who suggests that human scientists need to explicate the processes which make experience meaningful. In discussing interpretive approaches, Patton suggests that the field of hermeneutics (defined as the principles of interpretation) asks, "What are the conditions under which a human act took place or a product was produced that makes it possible to interpret its meaning?" (Patton 1990 p.84). Within such an approach, "measurement [outside the natural sciences] becomes a tool to aid understanding" (Kanellis et al. 1998 p. 136).

In moving beyond positivism, Dilthey suggested the need to extend the notion of empirical as used by the positivists to recognise meanings, while Droysen highlighted the need to seek understanding. Hirschheim (1984) extends this line of reasoning by arguing that methodological pluralism is "irresistible" (p.33) with no one correct method of science but many methods and the "correct" one contingent on the problem to be studied, and the kind of knowledge desired.

Specifying quantitative targets and objectives may be seen as being in the interest of "accurate and scientific research" but is not necessarily in the interest of other stakeholders such as the entrepreneur, taxpayer or the research community because it may be insufficiently broad in scope to provide a full understanding of program effectiveness, or as Swartz and Boaden suggest, "to adequately indicate the richness of [the] social phenomena [being studied]" (Swartz & Boaden 1997 p.56). Storey's approach can be challenged on the basis that it effectively values hard over soft data and in doing so values at zero the beliefs, perceptions, opinions and attitudes of those participating in assistance programs. The quantitative approach privileged by Storey neglects to consider, in Patton's terms, the "conditions under which a human act took place or a product was produced that makes it possible to interpret its meaning" (Patton 1990), and implicitly advocates one correct method of science over others. Small business researchers who advocate evaluation research which exclusively uses quantitative approaches to measurement in effect impoverish small business research (Lyytinen & Klein in Mumford et al. 1984).

1.12.1.5 Methodological issues in small business research

1.12.1.5.1 Qualitative and quantitative approaches

In contrast to positivist scientific method which is based on a presumption that values are distinct from an objective reality, approaches since the 1960s that acknowledge the values, meanings, interpretations, intentions and world views of human beings involved in a social

phenomenon being studied, have gained currency (for a more detailed discussion of the positivist paradigm, refer to Chapter 2). Curran and Blackburn suggest that a research strategy which uses only quantitative methodologies generates knowledge based on aggregated data which may be inappropriate or insufficient in some contexts of small business research (Curran & Blackburn 2001).

Qualitative methodologies can be used to consider business and social phenomena with a view to exploration and understanding using naturalistic or interpretive inquiry methods. Qualitative approaches can be seen as "more people centred than aggregate approaches, do not adopt neo-classical economic assumptions about the behaviour of individuals, firms and market economies, [and] refuse to assume any simple, rational policy-making process" (Hytti & Kuopusjarvi 2004 p.29). Research using qualitative methods may provide a means to explore "issues not addressed by quantitative approaches but which are just as, or even more, important in finding out whether policies are meeting their goals" (Curran & Storey 2000 p.16). Qualitative research methodologies may, more than quantitative approaches, provide a means of "exploring the logics underlying small business owner behaviour [which is often] highly variable, complex and not infrequently unstable over time" and "revealing the actors logics and the situational constraints influencing their attitudes and behaviour"(Curran & Storey 2006 p.18).

Validity in qualitative compared with quantitative approaches to small business research is discussed widely in the literature. Curran and Blackburn (1994) list a range of criteria by which validity can be assessed in qualitative research including statement of the problem, definition of key concepts, methodological and analytical adequacy, validity of interpretation and forms of the claims made. This is in contrast to the statistical validity which forms the basis of claims of validity in quantitative research which is grounded in positivist assumptions including repeatability, predictive power, reductionism and refutability. These methodological differences in establishing validity are yet another instance of tensions in what is regarded as valid and credible research in small business.

1.12.1.5.2 Internal/external evaluation

Curran and Storey (2000) identify the issue of who is conducting an evaluation to be a key difficulty in small business research. They distinguish between two types of evaluations - the first are evaluations by Government agencies which are generally conducted by the private sector with results not entering the public domain and impacting little, if at all, on public policy, and independent evaluations usually conducted by academics. They suggest that this distinction is important because the first type is far more likely to be favourable than the second. The

impact of who is conducting an evaluation, whether or not it is internal or external, and whether or not this compromises the evaluation's independence and rigour is another methodological challenge in small business.

This sits alongside the issue of making explicit the audiences for small business research (Curran & Blackburn 1994). Curran and Blackburn suggest that the audiences comprise (1) academics and other researchers, (2) policy-makers, (3) support bodies and services, (4) private business sponsors and (5) small business owners themselves. The need to explicate audience is critical to evaluation research in the area of structured e-mentoring effectiveness in the small business context.

1.12.2 Key research challenges in the informing disciplinary areas – mentoring for small business

While the practice of mentoring is widely accepted as potentially beneficial, mentoring research in the small business context is characterised by key challenges in the areas of methodology, data collection, paradigm location, measurement and the complexity of the phenomenon and context. The following discussion outlines some of the implications for effectiveness evaluation.

1.12.2.1 Mentoring practice in the small business context

Since the 1970s, it has been broadly accepted that mentoring has a favourable influence on participants in terms of vocational and psychosocial support within organisations (Clutterbuck 1991, Kram 1980 et al.). While the problems associated with evaluating and quantifying the impact of mentoring on business performance are significant, the general weight of opinion is that there is a strong link between improved competitiveness of small businesses and participation in business networking and mentoring arrangements (Raffo Lovatt et al. 2000, Porter 2000, Devins & Gold 2000). Sullivan says of entrepreneurial mentoring: "The support of a mentor with suitable skills, knowledge and experience together with access to appropriate expertise elsewhere represents an effective support system [for entrepreneurs]" (Sullivan 2000 p.172). The 1995 Karpin Report which, among other things, examined ways of making the operation of small and medium sized enterprises more effective to promote sustainable economic growth, proposed that small business be provided with one-to-one mentoring to encourage self-employed contractors to seek advice for business problems as they arise and for the development of long-term management skills (Industry Task Force on Leadership and Management Skills 1995). This recommendation was confirmed by the 2003 Senate Inquiry into Small Business which similarly recommended the establishment of a national mentoring

program as well as a pilot study of the feasibility of an online mentoring and advisory service (Employment Workplace Relations and Education References Committee 2003).

Mentoring is increasingly being considered as a means of providing appropriate support to small business in that it is individualised, contextualised, experiential and relevant (Gibb 1997, Hartshorn & Parvin 1999, Sullivan 2000 et al.). Communications technology potentially provides a means of facilitating the delivery of this support. While developing appropriate training interventions with a view to supporting the small business owner/manager and improving business performance and evaluating their success at doing so is highly problematic (Bisk 2002 et al.), if small business is assisted by e-mentoring, then understanding how claims around its effectiveness can be substantiated is likely to be an important contribution.

1.12.2.2 Complexity of the mentoring phenomenon

Pierce (1987) argues that a mentor is the single thread that connects all successful individuals. In attempting to define the mentoring construct, the definition which underpinned the Business Mentors research report was as follows: "Behind every successful person there is one elementary truth; somewhere, somehow, someone cared about their growth and development. This person was their mentor" (1999 p.3). While the veracity of these statements is not challenged, such characterisations belie the complexity of the mentoring phenomenon, and ultimately compromise the research which follows from unclear construct definition. As Bisk states: "Mentoring is extremely complex and open to a diverse range of interpretations and applications (Bisk 2002 p.263). This, combined with the fact that "Mentoring takes place in a variety of socio-economic contexts" (Sullivan 2000 p.162), and that mentoring is a "highly personal experience" (Kochan 2005 p.223), make the mentoring phenomenon challenging for those attempting to evaluate its effectiveness.

The complexity of the mentoring construct is discussed by Gibb (2003) in "What do we talk about when we talk about mentoring? Blooms and thorns". Gibb describes the origin of holistic systems pioneers in management systems thinking of the late 1970s in which a great deal of the mentoring literature is located. He suggests that performance enhancing initiatives such as mentoring were seen as "a 'tangle'; a vast network of interlocking parts. To be faced with such intricate interconnections was like opening up a box to be met with a tangle of wires, without any diagram to explain which did what, but with an expectation that if certain of them could be changed then desirable results would come" (Gibb 2003 p.45).

Kram's work (1980) on the benefits of mentoring used an exploratory qualitative approach to develop a more advanced understanding of the mentoring construct (Kram 1980). She

acknowledged the complexity described by Gibb, but posited an interpretive construct which could impose some order on this "tangle of wires" through which the benefits arising out of the mentoring process could be explored. Kram utilised a taxonomy initially proposed by Schockett, Yoshimura, Beyard-Tyler & Haring-Hidore in 1983 which divided mentoring functions into the two broad classes of career and psychosocial benefits. This comprised a possible means, Kram suggested, of generalising benefits without standardising them. Kram's work was a major contribution to mentoring research. While Kram has since suggested that the taxonomy was not intended to be used more broadly and may not be relevant when other models of mentoring are utilised, her study, implicitly if not explicitly, underpins much of the subsequent mentoring research.

1.12.2.3 Quality of data and comparability in mentoring research

There are considerable concerns around the robustness of effectiveness evaluation in the mentoring literature (Perren 2002). Kent et al. (2003) suggest that "Empirical and evaluative research of mentoring programmes has been shown to be limited" (p.443). Ritchie and Genoni suggest that "The paucity of empirical and evaluative research of mentoring programmes has … been identified by Daresh (1995) and Chao (1997) and Gibb (1999) (Ritchie & Genoni 2002 p.68). Clutterbuck suggests in "The Problem with Research in Mentoring" (2003), that a significant amount of the extensive literature available on the effectiveness of mentoring is not well researched and has questionable validity. In 1991, Jacobi's review of the literature in relation to mentoring and undergraduate academic success suggested that research on mentoring relationships was diffuse and characterised by a lack of consensus. The quality and robustness of many mentoring research studies - of both naturally occurring mentoring and mentoring programs - is open to challenge.

1.12.2.3.1 Multiple definitions of construct of mentoring

In 1991, Ehrich and Hansford suggested that: "Researchers have not yet come to any consensus over a functional or scientific definition [of mentoring]" (1991 p.92). Clutterbuck suggests that problems with the lack of standardization of the definition of the construct of mentoring has implications for the field in terms of the validity and robustness of research. He identifies the failure to differentiate between supported or structured mentoring and that which is not structured or supported, as well as the failure to differentiate between assigned and naturally-occurring mentoring partnerships (along with a range of other factors), as compromising construct and internal validity and contributing to the lack of robustness in the field. Noe (1988) similarly suggests that: "While preliminary studies have focused on identifying the benefits proteges gain by participating in mentoring relationships, the mentoring construct remains unclear" (p.458).

1.12.2.3.2 Difficulties with comparing studies

Largely as a consequence of problems with developing a standardised definition of the mentoring construct, and the dispersal of the literature across a range of disciplines, it has been difficult to compare studies and to build a generalized mentoring knowledge base (Healy & Welchert 1990, Jacobi 1991, O'Neill 1998).

1.12.2.3.3 Nature of data

The predominant mentoring methodology has been to use retrospective surveys, pre and post-test questionnaires and interviews. The difficulty with these approaches is that there may be too few points of data collection to sufficiently explore and measure the development of the mentoring relationship (O'Neill 1998). These forms of research design also result in self-report data with all its limitations as identified by Nisbett (1977). Clutterbuck (2003) also notes the paucity of longitudinal mentoring studies and how few studies measure outcomes for both mentees and mentors, both potentially impacting on the quality of empirical data available to evaluate effectiveness.

1.12.2.4 Sampling problems in mentoring research

1.12.2.4.1 Sample size

Clutterbuck (2003) and Kram (1980) note that sample size is potentially an issue in mentoring research. They also acknowledge that qualitative approaches may involve more intensive study of a smaller number of respondents. While qualitative methodologies may yield rich data, such approaches yield *particularised* data which,. although having high internal validity, may be limited in terms of external validity and capacity to generalise to broader populations.

1.12.2.5 Paradigm - location of this research in relation to existing research

The issue of paradigm location is evident in Perren's Review of the Literature (2002). Perren suggests that: "no articles reviewed for this report provide a convincing evaluation of mentoring or e-mentoring of entrepreneurs that could be called upon to prove or disprove the influence" (Perren 2002 p.15) and of the more rigorous approaches: "[t]he most methodologically robust of these are the articles based upon semi-structured interviews (Deakins et al, 1998, Devins & Gold 2000, Graham & O'Neill 1997), yet even these rely on self-reported perceptions and make no attempt to provide some form of control group or quantification of the mentoring influence" (Perren 2002). Qualitative methodologies which do not adopt experimental method are deemed to be less reliable than approaches which quantify the effect of e-mentoring and use a control group. Perren, with positivist presumption, directs the reader to "the wider mentoring literature

[which] provides some helpful advice on how such … [a quantitative] evaluation might be conducted" (p.26).

Firstly, Perren's approach fails to acknowledge the significant knowledge base which exists about mentoring and e-mentoring which uses objective measures and is quantitatively based. Secondly, mentoring interventions are often underpinned by a constructivist approach to learning whereby the mentee "brings the issues to the table" and co-constructs their learning pathways or learning goals. This suggests the possibility that evaluation based on a constructivist paradigm may be appropriate for evaluation in this context. The possibility and validity of many different interpretations of effectiveness is a research challenge in mentoring research.

1.12.2.6 Measurement difficulties in mentoring research
1.12.2.6.1 Capturing benefits
Quantifying and capturing intangible, evolving and unanticipated benefits which characterise mentoring effectiveness is a key methodological challenge in mentoring research. Megginson (2000) suggests that the only methodological means of capturing mentoring processes and outcomes is by accessing the stories of mentors and mentees. Kent et al. (2003) advocate a mixed methods approach which provides for collection of scheme-wide information along with intensive and individualised reflexive questioning via interviews. The most appropriate means of capturing, measuring and understanding benefits is a major research challenge in structured e-mentoring effectiveness evaluation in the small business context.

1.12.2.6.2 Causality
The fact that mentoring occurs in an extraordinarily broad range of socio-economic contexts, that the process is devolved, private and one-on-one, is addressing different learning needs of individuals, and may differ and change for each partnership throughout a program, means selection and standardisation of methodologies and metrics is necessarily problematic. Evaluating individuals' interface with the structure of a system or program, and the processes, contexts and outcomes involved in mentoring is difficult within one program; the options for replication and comparative studies with the aim of generating generalisable linkages and therefore proposing causal relationships between effectiveness and its antecedents is another major challenge in mentoring research.

1.12.2.6.2.1 Ambiguity around causal direction
In the late 1990s, Seibert (1999) stated that "Ambiguity regarding causal direction can be a troubling problem in research on the effectiveness of mentoring. For example, high levels of

performance or commitment may be a factor leading to participation in a spontaneous or facilitated mentor relationship, rather than its result" (p.485). The difficulties with establishing causality or influence is implicit in the failure of much of the literature to identify, or attempt to identify, antecedents and consequences. While essential in evaluating the effectiveness of mentoring, this identification process is problematic. As noted by Clutterbuck (2003), in mentoring research "outcomes are almost never related back to goals/intent". In discussing the evaluation of the effectiveness of mentoring, Noe (1998) refers to the need to consider antecedents and consequences of mentoring relationships, to "identify the characteristics of .. mentoring programs that are critical to the effectiveness of the program" (p.474), and to investigate the determinants of successful .. mentoring relationships" (p.472). O'Neill also highlights the difficulty of clearly defining antecedents and consequences when he suggests that investigators may assume a tautological definition of mentoring by assuming that whoever is assigned the role of mentor actually fulfils the role, and whatever desirable things the mentor does is assumed to be part of the mentoring role (O'Neill 1998).

1.12.2.7 Methodological issues in mentoring research

1.12.2.7.1 Qualitative and quantitative approaches

The mentoring literature generally confirms the need for qualitative approaches to provide a comprehensive basis for mentoring effectiveness evaluation. Researchers adopt a variety of combinations of qualitative and quantitative approaches. Studies such as those undertaken by Seibert (1999) and Noe (1988) used exclusively quantitative approaches in considering determinants of effectiveness.

Kram's seminal work (1980) acknowledges the appropriateness of a qualitative study for her study suggesting that "[q]ualitative research helps conduct 'inquiry from the inside'" (Evered & Louis 1980 cited in Kram 1980 p.210). She adopts in-depth interviews as a means of exploring what she refers to as the subjective experience of mentors and mentees and the complexity of interaction between career histories, current situation and organisational context which characterises developmental relationships. Like Kram, Megginson suggests that in order to evaluate mentoring, it is necessary to explore the narratives told by mentoring participants. Broadbridge (1999) suggests that a qualitative approach to evaluation research will provide "more in-depth insight into the nature, role and benefits of the mentoring relationship" (p.443).

Pfleeger and Mertz (1995) note the difficulty of quantifying outcomes in mentoring evaluation, while Chao (1997) identifies the need for "[q]ualitative as well as quantitative data … to identify key mentoring behaviours within and across [mentoring] phases" (p.27).

Kent et al. (2003) recommended a methodology combining semi-structured survey questionnaire with interviews to achieve a balance between scheme-wide information and data around personal experiences. Deakins et al. (1997) similarly suggest the need for a combined qualitative and quantitative methods in order to evaluate against program targets set for an assistance program.

While methodology is contingent upon evaluation purpose, the literature generally confirms the value of combining qualitative and quantitative approaches in exploring and understanding mentoring effectiveness.

1.12.2.7.2 Selection bias

Seibert defines selection bias as "possible pre-existing differences between subjects in the experimental and control conditions" (1999 p.493) and attempts to account for possible bias using statistical tests. He acknowledges a range of studies (Fagenson 1992, Turban & Dougherty 1994 in Seibert 1999 p.486) which have shown that individual differences are related to "the amount of mentoring received". In acknowledging selection bias as an issue in mentoring research, Noe similarly notes that those involved in mentoring programs in the organisational setting are potentially atypical in that they are seeking management positions (1988) and that individuals engaged in career planning are more likely to participate in self-development activities such as mentoring. These are examples of pre-existing differences which could result in error and bias which commonly threaten the generalisability of findings in mentoring effectiveness research.

1.12.3 Key characteristics and research challenges in the informing disciplinary areas – e-mentoring

E-mentoring research is characterised by key challenges in the areas of methodology, data collection, paradigm location, measurement and the complexity of the phenomena and its context. The following discussion outlines the implications of these research challenges for effectiveness evaluation.

1.12.3.1 Complexity of the e-mentoring phenomenon

Research has found both potential advantages and disadvantages with email -based communication as a medium for technology-assisted learning. An overview of the advantages and disadvantages provides the basis for understanding the complexity of e-mentoring practice and evaluation.

A range of interdisciplinary research, predominantly in the education and mental health fields has identified problems associated with using the online environment to deliver individualised support. Social presence theory suggests that email lacks cues associated with face-to-face communication such as facial expressions, posture, dress, social status indicators and vocal cues (Sproull & Kiesler 1991 et al.) and that this negatively impacts on communication and learning when compared with face-to-face options. A growing body of research in the area of e-therapy, generally defined as utilising email to support or deliver psychological counselling, identifies a range of potential problems with practice in the online environment such as managing conflict (Munro 2000), assessing individuals for suitability (International Society for Mental Health Online 2004), ethical issues such as confidentiality (Grohol 1999), impression formation (developing an impression of your online partner) (Jacobson 1999) and the regulation and liability issues associated with online counselling (Hughes 2000). Many of these problems will apply in the context of e-mentoring practice.

There is research however which supports a contrary view. Single and Single suggest in their review of the e-mentoring literature that the informational, psychosocial, and instrumental benefits associated with e-mentoring generally mirror the benefits associated with mentoring (Single & Single 2005). Email-based communication can also potentially remove obstacles which may characterise face-to-face mentoring such as geographic dispersal and time constraints, and can provide a forum which allows for sophisticated exchanges between participants thereby improving the chances of higher learning (Kanuka 2005, Bates 1995, Garrison & Anderson 2003, McGreal 1998). Research has shown additional benefits of e-mentoring to be the value of impartiality and interorganisation connections (Single & Single 2005). This claim is discussed in similar terms by Bierema and Merriam (2002) who suggest the benefits of e-mentoring are that it is "boundaryless" and the exchanges "egalitarian". Research also indicates that one of the major obstacles to mentoring is the failure of mentoring partners to make time to meet (Noe 1988); e-mentoring can facilitate participation in this respect. Personal email has also been shown to have characteristics that foster the development of personal relationships online, especially for members of minority groups and where status differences can be ameliorated (Rheingold 1993). The suggestion has also been made that e-mentoring may partly ameliorate problems with cross-gender mentoring (Knouse 2001 p.166). Some research suggests that the power differential which may mark a face-to-face mentoring partnership may be overcome using e-mentoring (Beech & Brockbank 1999).

In discussing computer-mediated communication, Murphy suggests that:

> *Computer-mediated communication (CMC) in general, and online asynchronous discussions (OADs) in particular, offer many benefits for learning. The time- and*

place- independent nature of the OAD facilitates self-directed learning (Harasim, 1990) as well as greater flexibility of communication with fewer social constraints (Feenberg, 1987; McComb, 1993). The medium allows for a more reflective learning process, as students are free to read and respond to others' contributions at their own pace and are able to refer back to the cumulative record of discussions (Harasim, 1993; Kaye, 1992; Morgan, 2000). As Hara, Bonk and Angeli (2000) observe, 'such technology provides a permanent record of one's thoughts for later student reflection and debate'" (Murphy 2004 p.126).

The potential advantages of computer-mediated communication highlighted by Murphy including flexibility, fewer social constraints, reflexivity, self-paced learning and records available for reference, can similarly apply in the context of email-based mentoring.

1.12.3.1.1 Complexity and variability

The multiple roles of a mentor including guide, adviser, coach, motivator, facilitator and role model are acknowledged in the e-mentoring literature (Galbraith & Cohen 1995). In discussing the complexity of the mentoring construct in relation to e-mentoring, O'Neill (1998) suggests that mentoring is notable precisely for the "diversity in the kinds of assistance and support provided in the relationship" (O'Neill 1998 p.32). O'Neill (1998) acknowledges that the complexity and difficulties with defining the construct of mentoring are consistent with the complexity of the phenomenon itself. He suggests that "it may be [the] diversity in the kinds of assistance and support provided in the relationship that best characterises mentoring" (O'Neill 1998 p.32). O'Neill also suggests that the lack of a common definition may in part be a consequence of the dispersal of mentoring research across disciplines such as organizational dynamics, adult development, teacher training and nursing (1998). The complexity of defining and operationalising the e-mentoring construct, and accounting for the variability in effectiveness outcomes arising from this diversity, are key challenges for research in this area.

Variability in approaches to exploring and measuring e-mentoring effectiveness in the small business context is not a feature of the literature to date, due to the paucity of relevant research data.

1.12.3.2 Quality of data in e-mentoring research

1.12.3.2.1 Definitions of e-mentoring construct

As stated earlier, Boyle-Single and Muller have provided a definition of e-mentoring and structured or supported e-mentoring (refer to Section 1.3.2). They describe e-mentoring as "a new medium for mentoring" (p.119) - as mentoring which primarily uses email for communications between mentoring partners - essentially as a type of mentoring with qualities

which facilitate the development of the mentoring relationship online. They suggest that e-mentoring should "build on the lessons learned from face-to-face mentoring programs" (p.119).

This approach is in marked contrast to O'Neill (1998) who suggests, as stated in the Introduction to this chapter, that e-mentoring relationships may "develop differently from their traditional counterparts, and serve different functions for the participants" (1998 p.31). He goes on to suggest that mentoring and e-mentoring relationships may develop so differently and serve such different functions that they deserve no comparison at all (O'Neill 1998 p.31).

These views form part of a diverse set of conceptualisations around the relationship between mentoring and e-mentoring which features in this emerging research area. Single and Single (2005) suggest that the benefits of e-mentoring *mirror* the informational, psychosocial and instrumental benefits associated with mentoring and that there are *additional* benefits. Hunt (2005) similarly says that some of the difficulties which occur with traditional mentoring are simply not present with e-mentoring which is in line with Noe's research that indicated one of the major barriers to effective mentoring is the capacity to meet (Noe 1988). Bierema and Merriam (2002) suggest that using computer-mediated communication can "enhance the mentoring process" while at the same time suggesting that "of course it's important to meet face to face if possible". Harris and Figg (2000) similarly suggest that "e-mentoring should only be done when face to face mentoring isn't available, feasible or appropriate" (cited in Single & Single 2005 p.305). A researcher's view of the relationship between mentoring and e-mentoring - whether e-mentoring is necessarily less effective than mentoring because of the lack of face-to-face contact, whether it is qualitatively more effective because it removes key obstacles which characterise the traditional mentoring process, whether it simply shares the potential for positive outcomes, or whether the functions and process are seen as unrelated to traditional mentoring - will inform approaches to evaluation and the way effectiveness is explored or measured, and understood. This thesis adopts the position that e-mentoring shares the potential for positive outcomes, and in the examination of actual practice, will investigate how e-mentoring program participants perceive the relationship between e-mentoring and mentoring.

1.12.3.2.2 Object of evaluation - dominated by formative approaches to date?

Formative evaluation is defined as being for the purpose of improvement of a skill-developing entity and summative evaluation as occurring in the context of reporting and decision-making about a program "for the benefit of someone outside the program" (Scriven 1981 p.7). The emphasis of formative evaluations is to inform program improvement, while the focus of summative evaluation is to consider outcomes. Wadsworth (1991) suggested that summative

and formative approaches to evaluation did not constitute different kinds of evaluation but as serving different purposes, functions or audiences.

Boyle-Single and Muller suggest that mentoring and e-mentoring evaluation share a common purpose: "For e-mentoring programs, the underlying principles and reasons for assessment remain the same as mentoring programs: to improve and enhance program features based on previous experience and to capture the benefits of the program for participants, to demonstrate the value of the program, and to justify the program to funders and funding agencies" (2001 pp.116-117). Because this is an emerging area of practice, there are many examples of the formative focus of approaches which to date appear to have dominated the literature to day, including the limited experimental work undertaken in the area of one-on-one e-mentoring (Kasprisin et al. 2003 et al.). O'Neill in both his 1998 and 2005 studies, Dimock (1997) and Clutterbuck (2003) are among some of the practitioners and/or researchers to acknowledge the need for exploratory research to support some level of theory development as opposed to evaluation which is characterised by the sole aim of improving practice. This thesis adopts the position that a summative approach will provide a basis for advancing existing understanding and building theory around structured e-mentoring effectiveness at this stage.

1.12.3.3 Sampling issues and bias in e-mentoring research

The difficulty of constructing matched samples, the predominance of non-probability/non-random samples in e-mentoring research studies and small sample sizes characterise e-mentoring studies. Self and administrative selection and bias is not widely discussed in the literature. Response bias whereby those responding are more likely to have had a positive experience than those who do not respond is also not an issue widely discussed in the e-mentoring literature.

1.12.3.4 Measurement difficulties in e-mentoring research

1.12.3.4.1 Capturing benefits

Perceptions of benefit or success are acknowledged in the literature as being contingent upon multiple extraneous and personal influences (Asgari & O'Neill 2005). The most notable characteristic of the identification of benefits in the e-mentoring research is the diversity ways in which evaluation researchers have operationalised success, benefits and effectiveness.

1.12.3.4.1 Causality

Single and Muller acknowledge the problematic issue of the direction of causality in "When Email and Mentoring Unite" (2001). In discussing the regularity of email exchanges as a predictor of effectiveness, they state:

The very nature of involvement, or the regular exchange of emails, currently leaves us in a quandary as to the direction of causality. Does an e-mentoring pair bond quickly and assess the value of the relationship and so exchange more email messages, or does the frequent and regular exchange of email messages cause an e-mentoring pair to be satisfied with their participation in the mentoring program and report benefits associated with participation? This remains a central question ... for the field as a whole" (p.118).

As discussed in relation to the mentoring field, the impracticality of controlling for extraneous influences on e-mentoring outcomes and ambiguity in causal direction are key research challenges for structured e-mentoring effectiveness evaluation.

1.12.3.5 Quality of data in e-mentoring research

1.12.3.5.1 Self-report data

The review of the e-mentoring literature suggests a predominance of self-report data in studies of e-mentoring effectiveness. The review of effectiveness studies in Chapter 3 will explore this further.

1.12.3.5.2 Nature of the data

A lack of multiple lines of evidence, a predominance of cross-sectional rather than longitudinal studies, the prevalence of questionnaires as a data collection method and a general lack of quasi-experimental or experimental work characterises data quality in the field. O'Neill (1998) suggests that because e-mentoring research is still in its early stages, research and evaluation using naturalistic methods of enquiry rather than experimental methods is preferable (O'Neill 1998 p.78). He suggests that experimental research design would mean inappropriately invasive research, the need to deny access to e-mentoring to a control group, and the fact that the advancement of the field does not rest at this stage on the proof or disproof of any particular hypotheses. Along similar lines, Boyle-Single and Single suggest that e-mentoring discourse, while in its exploratory stages, is progressing rapidly with scholars writing "conceptual and theoretical articles in which they discuss .. e-mentoring and e-mentoring programs, their potential and applications, and suggest.. directions in research" (Boyle-Single & Single 2005 p.304).

In his Review of e-Mentoring Literature, Lew Perren (2002) suggested that while "helpful at a descriptive level, advice on mentoring processes and improving [e]mentoring schemes for entrepreneurs should be treated with some caution as they are largely speculative and claims of efficacy are less robust." Perren suggests that the e-mentoring literature is characterised by a lack of robustness and speculation on effectiveness rather than evaluating it in the context of actual practice. In contrast to O'Neill and Boyle-Single and Single's approaches, he advocates

the use of experimental approaches to enhance the robustness of data. The existing data then can be characterised as limited in terms of data sources, length of engagement in the field, not providing for control of extraneous variables and lack of robustness. Some researchers regard these limitations as indicating the exploratory stage of the field.

1.12.3.6 Methodological issues in e-mentoring research

1.12.3.6.1 E-mentoring as a human and social rather than computer-based activity

The importance of evaluating e-mentoring effectiveness as not only a technical computer-based activity but as a social learning experience is evident in the growing research in the field. The need to progress studies of e-mentoring beyond evaluation of cost and technical capability was referred to by Dimock (1997). Dimock suggested that while initially the research focus of evaluating e-mentoring in education was on technical functionality and simple cost/benefit analysis, Kiesler et al. (1988) argued for an increased focus on the psychological and social aspects" of computer-mediated learning environments (Kiesler et al 1998). Dimock quotes Sheingold who suggests that: "It is not the features of the technology alone, but rather the ways in which those features are used in human environments, that shape its impact" (Sheingold 1991 cited in Dimock 1997 p.3).

1.12.3.6.2 Need for qualitative data

The Mentors By Net researchers suggest: ".. It is prudent to point out that further qualitative research is required to understand how and in what ways electronic mentoring can be most effective" (Megginson et al. 2003 p.15). This suggests a paucity of qualitative data which might advance research by providing a more meaningful and useful understanding of how mentoring relationships develop and factors which may determine or influence effectiveness.

1.12.3.6.3 Evaluative referent

An underlying difficulty in the literature on evaluating the effectiveness of e-mentoring is the issue of an evaluative referent. This is a term used by Seddon (Cameron & Whetten 1983) and Myers Kappelman and Prybutok (1998) in IS effectiveness evaluation. Myers et al. propose that the following questions should be asked: "Against which referent is effectiveness to be judged? ([Should] effectiveness of this organisation [be] compared to: some other organisation; some ideal level of performance; stated goals of the organisation; past performance of the organisation; or certain desirable characteristics" (p.97). This concept can assist in making explicit the ways in which researchers and practitioners may characterise the relationship between e-mentoring and mentoring. As set out in Section 1.12.3.2.1, a selection of the literature proposes that many of the benefits of e-mentoring 'mirror' the benefits of mentoring, while other studies suggest that aspects of e-mentoring can be *more* or *less* effective than

mentoring.. Each of these approaches either implicitly or explicitly use an imagined mentoring counterpart as the evaluative referent to underpin their research.

The literature strongly suggests that while different researchers may make judgements about the comparative worth of the originary over the online mode, an assumed relationship between mentoring and e-mentoring underpins much of the literature to date. While accepting that differences in the online mode affect the learning and pedagogical models utilised to facilitate practice, this thesis accepts that mentoring research should and does inform e-mentoring practice and evaluation research.

1.12.3.6.4 Internal/external

In both mentoring and e-mentoring research the issue of internal/external evaluation is not widely acknowledged. It is evident in the e-mentoring literature that those involved in evaluation are commonly involved in e-mentoring practice (for example, O'Neill, Rickard, Brown & Kysilka, Single & Muller, Megginson et al.). While it is desirable that research in this emerging area is informed by issues arising out of practice, it is of some concern that the potential for bias and error which may arise out of the predominance of internal studies – those evaluations conducted by practitioners directly involved in the program being evaluated – is not acknowledged and discussed more widely.

1.12.3.7 Location of this research in relation to existing research

Because it has been deployed in a range of contexts, the literature on e-mentoring is dispersed throughout business and management, education, psychology, social work, nursing and other fields. This has meant a wide range of definitions of the e-mentoring construct which utilise varying technologies, intervention programs which provide structure and support in different ways, diverse contexts into which e-mentoring is deployed, and multiple means of evaluating its effectiveness.

The majority of studies however appear to be in the academic context. This means the generalisability of findings in relation to effectiveness across other contexts may be open to challenge. The examination of actual practice in this study focuses on a segment within small business that is outside the academic context and as such, the generalisability of much of the existing literature to small business is at issue.

1.12.4 Key characteristics and research challenges in the informing disciplinary areas – IS effectiveness

As with small business, mentoring and e-mentoring research, IS research is characterised by key challenges in the areas of methodology, data quality, paradigm location, measurement and the complexity of the phenomena and its context. These issues are outlined to highlight the synergies with the other informing disciplinary areas and the implications for effectiveness evaluation.

1.12.4.1 Complexity of the IS effectiveness construct and variability

Garrity and Sanders (1998) highlight the complexities of evaluation, suggesting the following:

> *Evaluating the success of a system is a complex responsibility. There are numerous methodological issues to contend with, a number of agents to satisfy, and many criteria to choose from. We cannot afford to counter this complexity by concentrating research efforts on any one particular instrument. Standardization increases researcher efficiency, but it has several adverse side effects. First of all, it ignores the type of system being evaluated ... Standardization on either side of the success equation, between independent and dependent variables, implies a research focus. Such a focus may be premature, given we are still grappling with theory development for success indicators and predictors* (p.26).

Along similar lines, DeLone and McLean (1992) suggest that a large number of IS success measures necessarily exist because of the variability in the ways information and information systems can be viewed.

1.12.4.2 Location of this research in relation to existing research

IS effectiveness evaluation studies have in the past been commonly informed by a mechanistic view of science and computing which considers information systems as deterministic (du Plooy 1998). In the late 1970s and 80s, approaches grounded in positivist assumptions and a mechanistic world view predominated. The trend in research was to favour quantitative measures and economic and tangible measures, and chiefly comprised cost/benefit analyses.

That information systems have a social side or context has been recognized since the mid-1970s. As early as 1974, Gordon B. Davis defined an information system as an "..integrated man-machine system .." (Davis 1974 cited in du Plooy p.110). In 1972, Lucas advocated the idea that users should be included when assessing the IS function (1972 cited in Myers et al. 1998 p.96). Developing this as a basis for defining information systems, Van Steernis in 1990 (cited in du Plooy 1998 p.110) describes an information system as having three sub-systems which he categorises as "hardware, software and otherware". The first two subsystems are designed to be deterministic and reliable and the higher the level of determinism, the more

successful they are. The third subsystem, otherware, is non-deterministic". Du Plooy describes Ashby's Law of Requisite Variety as follows:

> *If systems are deterministic, they can only exhibit a finite number of possible states ... If systems are non-deterministic, the number of possible states that they may achieve approaches infinity"* (p.112).

Goldkuhl and Lyytinen (1982) suggest that "the interpretive perspective views information technology systems often as social systems that have information technology embedded into [them]." This view is consistent with Yourdon's definition which describes an information system as "composed of hardware, software, data, procedures and people" (Yourdon 1989 pp.18-19). To re-position the definition in the context of structured e-mentoring, an e-mentoring system is a social system which has email or computer-mediated communication embedded into it; and combines software, data, procedures and people. Such a system is non-deterministic and in du Plooy's terms, the nature and number of possible effectiveness outcomes approaches infinity.

In the mid-1980s there was widespread acknowledgement by researchers of the need to identify stakeholders and the fact that effectiveness for one group may not necessarily represent effectiveness for others (Abu-Samahan 1998). In the early 1980s, Avison & Horton (cited in Abu-Samahan 1998), suggested that "there is no single best approach to evaluation but the choice needs to be made to suit specific applications and organisations" (p.140).

Du Plooy argues that the "human" or "sociological" side of information systems is of such importance that they are best understood as social systems. In the late 1990s, information systems came to be described as socio-technical systems - that is, social systems technically implemented (Hirschheim and Kelin in du Plooy 1998). This thesis argues that the evaluation of e-mentoring effectiveness can usefully be considered with the e-mentoring assistance program viewed as a socio-technical system comprised of deterministic software and hardware and also a critical non-deterministic or social subsystem which involves people with an infinite set of responses to that software and hardware. Successful e-mentoring interventions, like successful information systems, are more than deterministic technical artefacts (Garrity & Sanders 1998 p.11). This approach is supported by Vitalari who says: ".. humans learn and are capable of a great deal of indeterminacy in their actions. The social scientist cannot assume patterned, rigid, routinized behaviour or a finite set of human reactions" (Vitalari in Mumford et al. 1984 p.250).

Issues around the research paradigm underpin Klein and Lyytinen's discussion of rigour in IS research (Klein & Lyytinen cited in Galliers in Mumford 1984). They suggest that::

[r]igourousness in research is always something for which one should strive. But rigournessness in the context of IS research as opposed to research in the physical sciences may well mean quite different things. While we seek to use relevant facts at the expense of 'armchair speculation', while we seek to ensure that all trained observers at all times should be able to reach the same conclusions ... in IS research, we would obviously make every attempt at objectivity but we should always bear in mind our limited vision. When it comes to respect for the facts, the appropriate question to ask is 'whose facts?' since many interpretations are always likely and indeed, are perfectly valid (p.283).

The possibility and validity of many different interpretations of effectiveness is a key research challenge in IS research as it is in mentoring research (refer Section 1.12.2.5).

1.12.4.3 Methodological issues in IS research

1.12.4.3.1 Qualitative and quantitative approaches – the debate between hard and soft measures

In the late 1970s, evaluating IS effectiveness focused on financial and economic analyses emphasising the use of "hard" data (Brynjolfsson 1993). The early emphasis was on measuring outcomes in relation to the deterministic elements of the IS function, in Singleton's terms, "IS evaluation focused almost exclusively on operational and transactional systems" (Singleton 1998 p.326 cited in Saunders & Jones 1992 p.64). In the mid to late 1990s, a body of research developed which explores the "messiness" of information systems (Wastell & Newman 1996, Brooke & Maguire 1998, Nandbakumar & Avison 1999 cited in du Plooy 1998 p.108). This research is positioned within the context of extensive studies which advocate "using a mixed approach to Information Technology evaluation including both hard and soft measures - essentially a move beyond mechanistic, quantitative and econometric analyses to acknowledge the social context of information systems" (Abu-Samahan 1998 p.138) and therefore adopts qualitative as well as quantitative data collection techniques to evaluating effectiveness.

1.12.4.4 Measurement problems in IS research

The IS function is widely acknowledged as difficult to measure. There is no single standardised measure for IS effectiveness (Carlson & McNurlin 1992 cited in Myers et al. 1998). Niederman et al. (1991 cited in Myers et al. 1998) suggest that effectiveness of the IS function is in practical terms impossible to define and measure meaning surrogate measures are used which may or may not be appropriate and sufficient. Scott defines IS effectiveness as a latent measure because it cannot be measured directly (Scott 1994). In research characterised by measurement difficulties, the proposition that a combination of measures should be utilised to evaluate IS effectiveness was introduced (Drucker 1989 cited in Myers et al. 1998, Bender 1986, Ahituv 1980, Matlin 1979, King & Schrems 1978). Drucker (1989 cited in Myers et al. 1998) advocated a diversity of measures to assess IS performance.

1.12.4.4.1 Capturing benefits

The difficulty of measuring the benefits of information systems is widely reflected in the literature. While a cost/benefit analysis may be a legitimate approach to evaluating effectiveness in some circumstances, Ahituv and Neumann have noted that benefits may not be easily converted to monetary values (Ahituv & Neumann cited in Burgess 2001). Faster-decision making is cited by Burgess as an example of a benefit arising from implementation of an information system which is difficult to quantify but nonetheless real (Burgess 2001 p.31).

1.12.4.4.2 Causality

Remenyi (1999) discusses the difficulty of identifying the full range of outcomes and causal relationship between outcomes and benefits which arise from the implementation of an information system. Remenyi says: "..it is seldom possible to produce a definitive statement of all the benefits that an information systems development project will produce. In fact .. identification [of success] is often quite elusive" (p.3). Remenyi's discussion acknowledges the difficulties of making causal connections between benefits and the IS system and echoes the same difficulty discussed in the other informing disciplinary areas.

1.12.4.4.3 Intangible outcomes

In the 1980s, there was a developing awareness of the need to capture "soft" benefits in IS evaluation research (Hamilton & Chervany 1981, Strassman et al. 1988, Saunders & Jones 1992). Remenyi discusses the issue of evaluating "subtle" or intangible outcomes in terms of "benefit measurement". He says: "Intangible benefits may often be quantified by measuring instruments such as questionnaires, but it is quite difficult to make a creditable connection between what can be measured with such devices and the impact on a business's financial results." Remenyi also suggests that benefits may evolve over time, and some benefits that arise during the project "may turn out to be illusionary and not really exist" (section 4.4).

1.12.4.5 Quality of data in IS research

Much of the focus of IS research is on the development of tools to measure why and how IS are effective, or in Lyytinen and King's terms, "to search for rigor and systemic criteria in assessing and developing [IS] artefacts" (Lyytinen & King 2004 p.228). In their review of studies which considered IS success, DeLone and McLean found that "there [were] nearly as many measures as there [were] studies" (DeLone & McLean 2001 p.61). DeLone and McLean's seminal work on evaluating effectiveness (1992) suggests that "the elusive dependent variable" most critically characterises data quality in IS effectiveness research. One of the predominant features of the data which arises from using a range of measurement instruments, they suggest, is that

comparative research is problematic and compromises the development of a cumulative research tradition. This thesis take the position, in line with Seddon's approach, that says there is nothing intrinsically wrong with a multitude of measures, but acknowledging the difficulties it creates for generating generalisable knowledge and cumulative research in the field.

1.12.5 Summary of intersecting common characteristics

The literature review pointed to significant intersections between the research challenges in IS research and the informing disciplinary areas of small business, mentoring and e-mentoring. These intersections assist with understanding the disincentives and obstacles to structured e-mentoring effectiveness evaluation, and the basis upon which to consider drawing on IS success models to advance structured e-mentoring effectiveness research.

The literature review indicated that the informing research disciplines were characterised by commonality in the key areas of:

- the complexity of the phenomena and their context;
- the involvement of human actors;
- the elusiveness of the dependent variable or ways to explore and understand effectiveness;
- that practice is at the centre of research and evaluation;
- that uniqueness or individualised outcomes characterise benefits;
- the context-dependent nature of effectiveness;
- that central constructs are marked by problems with their definition, critical issues around data quality including the nature of the data, sampling problems involving bias and error;
- that establishing causality is problematic both in terms of controlling for extraneous variables which may influence outcomes and ambiguity in causal direction; and
- the need for qualitative approaches alongside quantitative approaches to fully explore effectiveness.

1.12.6 Why a nexus between IS effectiveness models and e-mentoring?

While some of the synergies and intersections between small business, mentoring and e-mentoring research have been discussed, and key issues set out in the literature on evaluation identified, on what basis does IS research provide possible solutions to some of the difficulties involved and hence, contribute to the advancement of research in this emerging area?

Lyytinen and King (2004) discuss the need for IS research to be deployed in "salient" areas. On the basis of the review of the literature which informs the evaluation of e-mentoring

effectiveness, it is proposed that small business mentoring utilising email is a salient area for IS research.

1.12.6.1 A systems approach to IS and structured e-mentoring evaluation

Patton (1990) describes a systems perspective as suited to studying complex phenomena with interaction between constituent parts and characteristics which are best understood by considering the phenomenon together. He says: "a systems perspective is becoming increasingly important in dealing with understanding real world complexities" (p.78). In terms of evaluation and measurement, a systems model provides a means of achieving a more thorough knowledge and understanding of the effectiveness of a system by combining different measures rather than looking at measures in isolation (Nicholson 2004).

Approaching the evaluation of e-mentoring using a systems approach may be useful because it has the characteristics of complexity with a multiplicity of variables, a high degree of influence between the various dimensions and the context into which it is placed, and the fact that a complex construct such as e-mentoring is best evaluated when all its parts are considered not in isolation but in relation to its constituent dimensions.

There are a number of parallels between the initial study of DeLone and McLean (1992) in attempting a taxonomy IS research, and a review of the literature of the informing disciplinary areas over the last two decades. DeLone and McLean say that:

> *..it is apparent that there is no consensus on the measure of information systems success. Just as there are many steps in the production and dissemination of information, so too are there many variables which can be used as measures of IS success. No single measure is intrinsically better than another; so the choice of a success variable or variables is often a function of the objective of the study, the organisational context and the aspect of the information system addressed. IS success is a multi-dimensional construct which should be measured as such* (p.80).

Structured e-mentoring programs, as a type of information system, are similarly multi-dimensional constructs which should be measured as such with reference to multiple or multi-factor measures. Because of the complex and interdependent nature of the dimensions of e-mentoring evaluation, a holistic or systems approach appears to be most appropriate to the context of e-mentoring. Such an approach is in contrast to the cyclical and iterative but ultimately linear approach to evaluation suggested by Boyle-Single and Muller (1999). A systems approach is a useful means of abstracting a complex reality with interdependent relationships between the dimensions of the construct being considered.

1.12.6.2 The value of modelling

Abstraction can be defined as the suppression of detail to control complexity (Dunn 1995). Models can be useful abstractions or representations of complex reality (Roldan & Leal 2003, Faucheaux et al. 1976). On the basis of the Literature review, it would appear that to properly address the gap in the literature around evaluation of structured e-mentoring for small business, the field would benefit from a taxonomy or classification framework which would form an appropriate representation of the e-mentoring construct with its inherent complexity and interdependencies. In Gibb's terms, such a taxonomy would provide a means of dealing with the "tangle of wires" which comprise a structured e-mentoring system (Gibb 2003).

1.13 DeLone and McLean model

1.13.1 The model and definition of the dimensions

On the basis of the review of the literature and the need for modelling and a systems approach, it is proposed that the DeLone and McLean model of IS (1992) success potentially offers a taxonomy which would assist in providing solutions to the research challenges arising from the commonalities identified in the literature review.

DeLone and McLean's 1992 model primarily builds on the work of Shannon and Weaver (1949) who suggested that information success could be measured at the technical, scientific and effectiveness levels, and Mason (1978) who emphasised the idea of antecedents to outcomes. On the basis of a review of a selection of 180 IS effectiveness studies, DeLone and McLean proposed six interdependent process-based information systems levels or dimensions (collapsed to five dimensions in their own 2002 re-specification) as a framework for evaluating IS effectiveness.

The 2002 DeLone and McLean model of IS success is set out below:
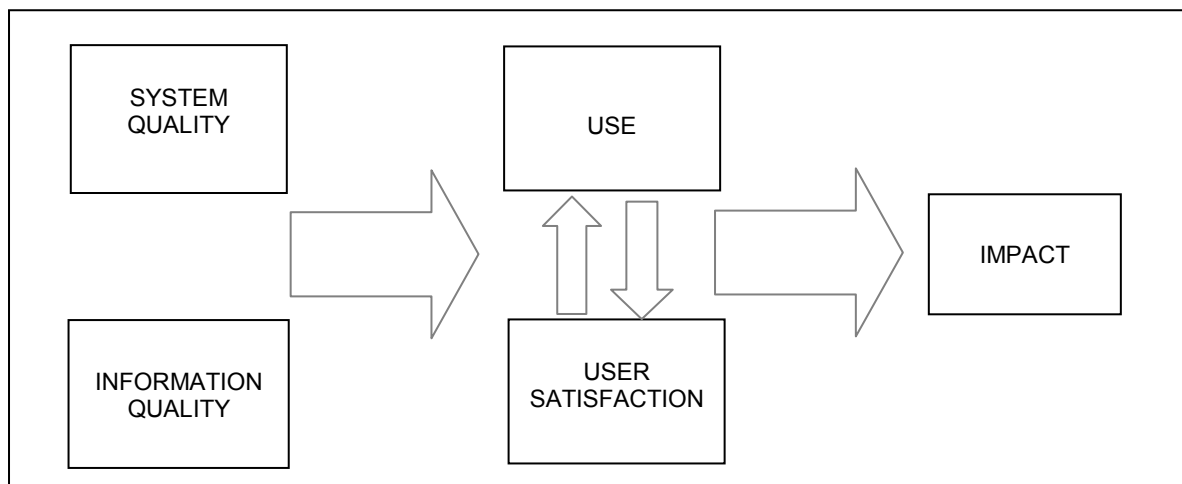
Figure 2 – DeLone and McLean model of IS success

The dimensions defined and measures identified for each of the dimensions set out by DeLone and McLean are summarised in the following table based on Reyes' overview and analysis of the DeLone and McLean framework (Reyes 2000). The information is presented in tabular form for the sake of brevity and clarity (Miles & Huberman 1994).

Table 2 – Definition and measures for DeLone and McLean's dimensions

Dimension	Definition	Measures or indicators used
System quality	The quality of the information processing system	Response time, resource utilization, system reliability, system accessibility, ease of use, perceived useful of IS, usefulness of specific functions.
Information quality	The quality of information system output	Accuracy, precision, timeliness, completeness, relevance, format of reports.
Use	The recipient's consumption of the output of an information system	Frequency of use, motivation to use, use versus non-use, use in support of cost reduction, management strategy planning, competitive thrust.
User satisfaction	The recipient's response to the use of the output of an information system	User information satisfaction, decision-making satisfaction, user satisfaction with interface.
Individual impact	The effect of information on the behaviour of the recipient	Time taken to complete a task, decision quality, forecast accuracy, change in decision-making behaviour, value in assisting decision-making, productivity improvement, personal effectiveness.
Organizational impact	The effect of information on organizational performance	Profit performance, overall cost-effectiveness, overall manager productivity, return on assets, market share, stock price, inventory ordering costs.

DeLone and McLean described the relationships between the dimensions as follows:

> *System quality and information quality singularly and jointly affect both Use and User satisfaction. Additionally, the amount of Use can affect the degree of User satisfaction – positively or negatively – as well as the reverse being true. Use and User satisfaction are direct antecedents of Individual impact .. (DeLone and McLean 1992 p.83-87.*

1.13.2 DeLone and McLean model as a possible solution to research challenges

A unique set of challenges inform structured e-mentoring effectiveness research, yet patterns and intersections in theoretical orientation, methodological approaches and research difficulties in the informing research disciplines have been identified. A conceptual framework such as DeLone and McLean's potentially provides a taxonomy for selection of research strategies and evaluation criteria or measures for effectiveness evaluation. It also has the potential to usefully inform data description and classification, facilitate interpretation and data analysis, account for variability in outcomes, and provide a basis for making some initial propositions around the determinants of e-mentoring effectiveness. In these ways the DeLone and McLean model potentially assists with advancing research by supporting theory-building and providing solutions to some of the difficulties and disincentives inherited from the informing disciplinary areas.

Roldán and Leal (2003) suggest that:

> *According to Ballantine et al. (1996) and Seddon (1997), DeLone and McLean's work makes several important contributions to the understanding of IS success. Firstly, it consolidates previous research. Secondly, it provides a scheme for classifying the different measures of IS success that have been proposed in the literature into six dimensions. Thirdly, it suggests a model of temporal and causal interdependencies between the identified categories. Fourthly, it makes the first moves to identify different stakeholder groups in the process. Fifthly, it has been considered an appropriate base for further empirical and theoretical research. Sixthly, it has met general acceptance in the IS community* (p.69).

It is hoped that this study might contribute to structured e-mentoring effectiveness research in some of the ways that the DeLone and McLean model of IS success (1992) contributed to IS effectiveness research as identified by Roldan and Leal (2003). These include consolidating previous research, providing a scheme for classifying different structured e-mentoring measures, providing a means of proposing interdependencies and linkages between the dimensions and effectiveness, and creating a basis for guiding further empirical and theoretical research.

1.13.2.1 Complexity, causality and context

DeLone and McLean's 1992 model is, on the basis of the review of the literature, a useful starting point for inclusion in an integrated evaluation framework. The model provides a way of usefully representing the complexities and conceptual issues involved in evaluating the effectiveness of structured e-mentoring, provides a means of consolidating measures used in previous research, provides a way of classifying the measures used, proposes interdependencies between dimensions which may be useful in the context of structured e-mentoring, and establishes a potential basis for further research.

Put simply, it is suggested that practitioners or researchers conducting an evaluation will have a sound basis for making claims of effectiveness if they design into their evaluation measures or indicators of the five dimensions of DeLone and McLean's model. It is proposed that DeLone and McLean's dimensions provide a useful taxonomy for evaluating the effectiveness of structured e-mentoring.

1.13.2.2 Variability

As stated previously, DeLone and McLean suggest that a diversity in effectiveness measures was evident in their review of IS effectiveness studies,. This variability in approaches to measures of system effectiveness similarly marks the entrepreneurial learning, mentoring and e-mentoring literature. As Mitroff says: "What makes something scientific is not the absence of variability but rather our … ability to study why the results vary (Mitroff cited in Wood-Harper

1984 p.173). DeLone and McLean's model, in imposing a useful taxonomy may assist in studying, in Wood-Harper's terms, why, how and for whom effectiveness outcomes vary.

The model is underpinned by epistemological and ontological assumptions which suggest that if all the antecedents or independent variables are scientifically controlled for and measured, the dependent variable will be a true objective measure of IS effectiveness. While elusive, the positivist assumption is that IS effectiveness is an objective state which can be scientifically measured, and the findings replicated. In his 1997 work, Seddon (Seddon 1997) argued that the process and variance elements of the DeLone and McLean model were at odds. In his 1999 study Seddon suggested that the causal relationships within the model could be re-defined as influence, thus moderating the positivist epistemological assumptions underpinning the model. This fundamental amendment underpins the first respecification of the DeLone and McLean model.

Ballantine et al. argue that as a stand alone model, DeLone and McLean's model may be insufficiently complete (Ballantine et al. 1998 p.48). DeLone and McLean themselves indicate that contextual factors also need to be taken into account. This limitation will be considered in Chapter 3.

1.13.3 Commentary and respecifications of the model

A range of researchers have re-specified DeLone and McLean's model (Garrity & Sanders 1998, Doll et al. 1995, Iivari & Ervasti 1994, Etezardi-Amoli & Farhoomand 1996, Zinatelli et al. 1996, Ballantine et al. 1998). The model has been extended to include a service dimension (Parasuraman et al. 1988), amended to resolve what Seddon saw as anomalies in the model in terms of it being a combination of variance and process models (Seddon 1997), and altered to provide clarification of the role of stakeholders in IS evaluation (Seddon 1999). Grover et al. (1996) suggested that the IS effectiveness construct could be re-specified with reference to evaluative referent, unit of analysis and evaluation type. The Saunders and Jones model (1992) was intended to provide a basis for selecting IS effectiveness measures with reference to a set of IS function performance dimensions, organisational factors and the perspective of the evaluator.

Without preempting the research process to be undertaken in this study, the most significant critique and re-specification of the model for the purposes of this thesis is likely to be that offered by Myers et al. (1998) primarily because of the contingency theory approach into which the DeLone and McLean model is integrated. Their re-specification of the model provides not only an extensive selection of IS measures but also builds into the model provision for the complex range of external factors which affect information systems (and potentially e-

mentoring) effectiveness. The model parsimoniously and comprehensively integrates the work of Saunders and Jones (1992) and Grover et al. (1996), provides for evaluation of intangible benefits, for use of "soft" as well as "hard" evaluation data, accommodates the complexity of the IS effectiveness construct, provides for the infinite evaluation outcomes possible when information systems are considered as having both deterministic and non-deterministic dimensions, provides a non-prescriptive basis for selecting an IS evaluation strategy, as well as abstracting the multiple contextual factors which underpin and influence the selection of an appropriate effectiveness research strategy and measures for evaluating effectiveness.

1.14 Chapter summary

IS effectiveness literature has a number of synergies and interesting intersections with the methodological and conceptual difficulties in the entrepreneurial, mentoring and e-mentoring literature making it an appropriate discipline on which to draw in considering solutions to some of the difficulties inherited by the field of structured e-mentoring effectiveness evaluation and developing an evaluation framework.

In brief, a review of the literature suggests that:

- the small business sector is important to the Australian economy;
- there is an increasing need for programs which address training for independent contractors and consultants because of their growing incidence as a segment of the small business sector;
- there is either established or emerging refereed literature available on the evaluation of:
    - training programs generally;
    - small business training programs;
    - mentoring;
    - mentoring programs for small business; and
    - e-mentoring programs for a range of groups;
    which inform this emerging research area;
- there is a gap in the literature on evaluation of the effectiveness of e-mentoring training programs for small business;
- a systems approach and modelling are likely to be useful in developing a taxonomy for the evaluation of structured e-mentoring effectiveness; and
- the DeLone and McLean IS effectiveness model and some of the existing respecifications of that model have the potential to provide a basis for advancing the field of the evaluation of e-mentoring in the small business context.

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Chapter 2

Research rationale and methodology

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2 Research rationale and methodology

2.1 Chapter overview

Chapter 1 explored of some of the key research challenges which characterise effectiveness evaluation research in the informing disciplinary areas, and established the grounds for translating DeLone and McLean's model of IS effectiveness to the context of e-mentoring as a useful framework for advancing the field of structured e-mentoring effectiveness. The study's general and specific objectives were also detailed alongside the research steps to be undertaken to achieve these objectives.

On the basis of the understanding of the identified research challenges and objectives of the thesis, Chapter 2 will consider the research rationale for the methodologies to be used. It will present a review the evaluation literature, examine how the issues raised inform the evaluation of e-mentoring effectiveness, and justify the choice of the research methods in attempting to extend the present understanding of structured e-mentoring effectiveness evaluation. It will discuss paradigm stance and the issues which inform the location of the thesis. The chapter will then discuss some of the ethical considerations involved in the research, and finally, define some of the major terms which are included in the thesis.

As explained in section 1.6, while this chapter will provide an overview of the study's research rationale, Chapters 3, 4 and 5 will outline the methodologies relevant to the particular chapter in detail. Chapter 3 will outline the methodology adopted to review a selection of effectiveness studies, and Chapter 4 will describe and discuss the Delphi technique as it will operate in the process of refining the proposed evaluation framework. Similarly, the applied research which is reported in Chapters 6, 7 and 8 will be preceded by a detailed outline of the rationale and methodologies to be used in the examination of actual e-mentoring practice in Chapter 5.

2.2 Theoretical location, research paradigms and effectiveness evaluation

2.2.1 What is a paradigm?

There is no general shared theoretical base for evaluation. Rather, evaluation occurs in a multitude of theoretical locations and research paradigms and is defined differently according to the context in which it is occurs. Lincoln and Guba (1989) define a paradigm as "a basic set of

beliefs, a set of assumptions we are willing to make, which serve as touchstones in guiding our activities" (p.80).

Greene and Caracelli (1997 cited in Owen & Rogers 1999) define an enquiry paradigm as:

> *a set of interlocking philosophical assumptions and stances about knowledge, our social world, our ability to know that world, and our reasons for knowing it, assumptions that collectively warrant certain methods, certain knowledge claims, and certain actions on those claims. A paradigm frames and guides a particular orientation to social enquiry, including what questions to ask, what methods to use, what knowledge claims to strive for, and what defines high quality work* (p.86).

This study will use Greene and Caracelli's definition of an enquiry paradigm in discussing paradigm stance and the research rationale.

2.2.2 Why does the paradigm matter when considering effectiveness?

Put simply, the paradigm matters because it affects the assumptions made, the enquiry orientation adopted, knowledge claims made in evaluating effectiveness and verification strategies for ensuring the rigour and robustness of data.

2.2.3 Major paradigms in effectiveness evaluation - Positivism and Constructivism

Classical positivists such as Saint Simon, Comte and Durkheim believed that knowledge about the social world could be grounded in the same logic of causal and factual relationships between social phenomena which underlie the natural scientific world (Hirschheim in Mumford et al 1984). Of positivism and the inductive strategy, Blaikie says: "The Inductive strategy corresponds to a popular conception of the activities of scientists, i.e. of persons who make careful observations, conduct experiments, rigorously analyse the data obtained, and hence produce new discoveries or new theories. Personal opinions are excluded from this process in order to arrive at what is believed to be objective knowledge" (Blaikie 2000). Theory in positivist terms aims for explanatory and predictive power, based on experimental method and a definitive, objective set of effectiveness measures.

Based on his theory of cognitive development, Piaget is considered the pioneer of constructivist learning theory. Constructivist learning theory suggests that knowledge is not acquired but constructed by individuals who use their prior experiences and beliefs to interpret reality. A constructivist approach to effectiveness evaluation would suggest that effectiveness is a subjective judgment mediated by the values and interpretation of participants and the researcher (Weill & Olson 1989). Such a stance would require an interpretive approach to the "measurement" of effectiveness.

Effectiveness evaluation using a constructivist approach is likely to be guided by a subjective paradigm stance and methodological approach. A constructivist stance aims to explore and refine different, sometimes competing, constructions of effectiveness in particular contexts, acknowledging that there are no definitive measures of effectiveness. A constructivist approach acknowledges the difficulties with establishing causal links to "prove" natural laws using so-called objective scientific methods, and therefore the advancement of knowledge is a dialectic process involving synthesis of different constructions to achieve more sophisticated constructions with greater consensus around the particular constructions.

Bhasker suggests that that "meanings cannot be measured, only understood" (Bhasker 1979 cited in Kanellis et al. 1998 p.136).

> *... there can be no single account of success but only different perceptions included by context. The methodological import of this view has implications for measurement principally, that it becomes a tool to aid understanding and not to facilitate prediction* (Kanellis et al. 1989 p.136).

In these terms, a constructivist stance would suggest that in the context of mentoring, effectiveness is mediated by perceptions of mentees and mentors, as well as the values and interpretation of the evaluation researcher with the aim of contributing to the refinement of constructions of effectiveness.

2.2.4 Evaluating program interventions

Patton (1990) suggests that a program is as much affected by its context as the context is affected by the program: "Interventions are not stable. When they are introduced into a particular context they will be at least as much affected (changed) by that context as they are likely to affect the context" (p.451). This sits consistently with Lincoln and Guba's suggestion that evaluation should acknowledge the process of *implementation* of the program (Lincoln & Guba 1989). This conceptualisation of a program as adapted by those using it, and affected by its context, means that an understanding of this implementation and adaptation process is likely to be relevant, if not critical, to evaluating the effectiveness of structured e-mentoring. Implementation in these terms consists of a process of mentee and mentor adaptation (Patton 1990), and an e-mentoring partnership will be characterised by the unique series of mutual adaptations made by each of the e-mentoring partners in their own unique contexts. Therefore, whatever conceptual and analytical framework is developed needs to accommodate the fact that there will be virtually an infinite number of adaptations on implementation, and therefore types of experiences to be evaluated. This sits alongside du Plooy's work (1988) which discussed effectiveness research as being characterised by an infinite range of adaptations on

implementation, and infinite effectiveness outcomes (for an outline of du Plooy's research, refer to section 1.12.4.2).

While some social researchers suggest you cannot mix paradigms (Stern 1994, Wadsworth 1991 et al.), others suggest that a "paradigm of choices" (Patton 1990 p.61) allows for methods to be utilised particular to a research question involving choices from each paradigm (Patton 1990, Miles & Huberman 1994 et al.). Patton suggests that research and researchers are sufficiently complex to allow different approaches to co-exist to achieve particular research objectives in the name of 'situational responsiveness', while Miles & Huberman assert that research is primarily about the application of good 'warranted strategies' rather than epistemological allegiances to a particular paradigm stance.

A purely positivist research strategy using experimental methods would be a limiting approach in e-mentoring effectiveness evaluation because of the range of extraneous influences upon effectiveness and the difficulty of controlling for them, the highly individual and particularised experiences of the mentors and mentees, and the infinite adaptations of program content by participants upon implementation. For these reasons, aiming for proof, objective knowledge, causal explanation, and definitive quantitative measurement utilising inductive strategy, is inevitably problematic in structured e-mentoring research in the small business context.

2.3 The distinction between evaluation and research

While Patton distinguishes between evaluation and evaluation research on the basis of how systematically and empirically the process is approached (Patton 1990), many other writers suggest different distinctions between evaluation and research.

Owen and Rogers (1999) propose a distinction between evaluation and research based on the epistemological characteristics of the knowledge pursued and created. They contrast evaluation and research as follows:

Table 3 – Summary of characteristics of evaluation and research – Owen and Rogers 1999

Evaluation	Research
Must plan and communicate to clients	Aim is to find general explanations to advance the frontiers in a discipline or field of study
Specific policy or program interventions	Creation of new knowledge
Motivated by the need to inform decisions about those interventions	Search for generalizations
Commissioned - beholden to stakeholders	Answerable to scientific community
Evaluation takes a position	Disinterested value position
Limited range of evidence from which to present findings and reach conclusions (often post hoc)	High commitment to elaborate research designs

(Source: Owen & Rogers 1999 pp.64-65).

In view of the discussion about the assumptions of positivism set out in section 2.2, it is possible to suggest that Owen and Rogers' conceptualisation of research may be regarded as grounded in positivist epistemological and ontological assumptions of generalisability, replicability, objective truth and value-free research. The criteria against which evaluation and research are classified centre around the generalisability of findings, audience and/or stakeholders, value position and commitment to so-called sophisticated research design (for which it might be possible to read experimental research design).

Donald Stokes (cited in Lyytinen & King 2004 pp.230-231) differentiates between basic research as the "quest for fundamental understanding" and applied research as having "considerations of use". Lyytinen and King adapt Pasteur's Quadrant set out in Stokes' work as detailed Table 4 to further clarify the distinction between "noble" and "applied" research:

Table 4 – Pasteur's quadrant, as adapted from Stokes 1997

Pasteur's quadrant, adapted from Stokes (1997)		
Research inspired by	Considerations for User ("applied")	
Quest for fundamental understanding ("noble")	Pure basic research	User inspired basic research
		Pure applied research

According to Lyytinen and King (2004), Stokes' insight was that noble research generally advances both use and fundamental understanding simultaneously. In a similar way to Owen and Rogers, Stokes' distinction is based on generalisability of research, audience and stakeholders.

Making a similar distinction, Kidder (1981) suggests that:

> *Evaluation research differs from the other forms of research ... not in its methods but in its purposes, use, and relationship to social and political institutions. It is applied research. ... basic research is conducted to add to our store of knowledge, test hypotheses, build theories, and perhaps find some practical application in the future. But even with no forseeable practical application, basic research is carried on for its own sake. Applied research ... is carried on for practical reasons - to produce findings that are applicable, practical, immediately useful. Evaluation research is a special form of applied research, designed to evaluate programs ...* (p.83).

Williamson et al. (2000) consider information systems research as necessarily close to practice. He suggests that: "Information systems researchers draw problems from practice and the results of their studies usually generate theories, which need to be applied and tested by practitioners in the context of real world information systems. Information systems researchers are very conscious about the usefulness of their research results to industry as well as the rigour of their

approaches and their contribution to the core knowledge of the information systems field" (2000 pp. 17-18). This conceptualisation of research as necessarily tied to practice – as seeking fundamental understanding *and* having considerations of use – rejects the distinction made by Owen and Rogers in favour of Stokes' conceptualisation of "noble" research.

In discussing information systems research, Lyytinen and King (2004) note that: "There is a persistent hint in the anxiety discourse to the effect that research tied too closely to praxis is not really research at all, or at least, that it is an inferior form of research" (p.229) - that is, evaluation can be different to research but is sometimes seen as qualitatively inferior to, in Lyytinen and King's terms, "noble" research.

Interestingly a similar anxiety pervades social research more generally as outlined by Alexander and Reed (1993). They suggest that "Although the explicit postulates of logical positivism are not accepted by most practising social scientists, there remains an amorphous and implicit self-consciousness, a self-perception, that pervades contemporary social science practice, which may be called the 'positivist persuasion'. Though this orientation to social science had its heyday in the years following the second world war, it has continued to guide social science into the present" (p.1). This anxiety is relevant to this study of e-mentoring effectiveness evaluation research because of the acceptance (or otherwise) of the legitimacy of research (a) which is tied to practice with considerations of use, (b) with a focus on particular application or context rather than absolute generalisability, (c) which is mediated by the values of the researcher and experience as practitioner, and (d) driven by the subjective perceptions of the mentees and mentors involved in the assistance program.

These issues of practice, research, evaluation, applied research, use, generalisability, audience, objectivity and values are necessarily implicated in any evaluation of the effectiveness of e-mentoring. The issues intersect with the paradigm on which evaluation is based, and directly affect the type of evaluation and/or research undertaken, and the epistemological and ontological characteristics of the knowledge and understandings produced.

2.4 Advancing research

In "The Problem with Research in Mentoring", Clutterbuck (2003) suggests that mentoring research will not advance unless researchers begin to make generalisations about "classes of the mentoring phenomenon". How can such an imperative be approached in light of the research challenges involved in making such generalisations? In considering how to advance research in this emerging discipline, it is useful to look at the basis of theory-building and the different paradigmatic assumptions which an approach may privilege or preclude.

2.4.1 Advancing research by adopting a positivist approach to theory-building

In a discussion of the methods of theory-building, Lynham (2002) suggests that there are ".. different methods of theory-building which advocate different theory-building research processes" (p.221). In outlining theory-building within a positivist paradigm, Boland 1984) suggests that "theory identifies variables and their causal relations in order to make prediction" (Boland in Mumford et al. 1984 p.195). Mackensie and House approach theory as a "cycle of exploratory research aimed at theory building which is followed by confirmatory research or theory testing which is followed by conceptual refinement" (Mackensie & House cited in Garrity & Sanders 1998 p.4). Carlile and Christensen (2005) propose a model grounded in positivist assumptions and similar to Mackensie and House's approach. They refer to deductive and inductive theory building, the need for valid and reliable theory, and the iterative cycles of theory-building in which researchers attempt to build on each others work or how "communities of scholars cumulatively build valid and reliable theory" (p.2). They refer to theories as accumulated bodies of understanding. Carlile and Christensen describe the process of theory-building as occurring in two major stages - the descriptive stage and the normative stage. These "classic" positivist stages are summarised below.

Descriptive stage

The first descriptive stage entails the three steps of observation, categorization and association to develop constructs, frameworks and models. This *inductive* portion of the theory-building process occurs beginning with observation and then description. This involves the development of constructs described as the building blocks upon which bodies of understanding are built, and abstractions developed to help us understand a class of phenomena researchers have observed. This is followed by a second stage of classification that includes categorisation of the observed and described phenomena. The categorisations are referred to as frameworks or typologies. This step is then followed by a third stage of defining relationships whereby the relationship between the category-defining attributes and the outcomes observed are explored. Carlile and Christensen suggest that while "research such as this is important descriptive theory .. at this point it can only assert *on average* what attributes are associated with the best results" (2005 p.5).

The descriptive stage includes the identification of anomalies defined as occurrences in which the generalised theory is challenged or disconfirmed. This is followed by research which attempts to "resolve anomalies by them by redefining or refining the phenomena in different ways and proposing new associations between the "category-defining attributes and outcomes (Carlile & Christensen 2005 p.6).

Normative stage

The normative stage is based on a deductive approach *which* seeks to test the hypotheses inductively formulated in the first stage and to establish causal connections between phenomena and/or attributes. As in the descriptive stage, it includes a process whereby anomalies are resolved by "developing more accurate, less ambiguous ways to define and measure the phenomena" (Carlile & Christensen 2005 p.7). The predictive or explanatory power of theory is derived from this stage of theory-building which aims to establish causal connections (Carlile & Christensen 2005).

2.4.2 Alternative approaches to theory-building

Nissen (in Mumford et al. 1984) discusses how a positivist paradigm stance relies on a separation between theory and praxis based on a separation between subject and object. Lincoln and Guba (1989) use this subject-object separation to differentiate theory-building in the constructivist and positivist paradigms. Constructivism, they suggest, "denies the possibility of subject-object dualism, suggesting instead that the findings of a study exist precisely because there is an interaction between observer and observed that literally creates what emerges from that inquiry .. the naturalistic paradigm rejects the controlling, manipulative (experimental) approach that characterizes science and substitutes for it a hermeneutic/dialectic process that takes full advantage, and account, of the observer/observed interaction to create a constructed reality that is as informed and sophisticated as it can be made at a particular point in time" (Lincoln & Guba 1989 p.44). Constructivist approaches acknowledge that research is mediated by the constructions of the researcher with the interpretation comprising the way the connections between concepts and data are made (Pettigrew in Mumford et al. 1984).

Confirming the distinction made by Lincoln and Guba, Kathy Brittain-White (1984) distinguishes between an approach to theory-building grounded in positivist assumptions, and those based on a constructivist approach by acknowledging the role of the researcher in interpretation - in Pettigrew's terms (1984) the role of the researcher in linking data and concepts. "Inquiry from outside", she suggests, "calls for detachment on the part of the researcher who typically gathers data according to a priori analytical categories and aims to uncover knowledge that can be generalized to many situations. Inquiry from the inside is characterized by the experiential involvement of the researcher, the absence of a priori analytical categories, and an intent to understand a particular situation" (in Mumford et al. 1984 p.237).

2.4.3 The separation between qualitative and quantitative approaches

Ackoff rejects the separation between qualitative and quantitative research, stating that "Quantification at any stage depends on qualification. What is qualified at one stage may be quantified at another, but at any stage some qualitative judgments are required." Ackoff further suggests that "progress in science is a function not only of an increased capacity to quantify efficiently (i.e. to measure) but also of an increased capacity to qualify efficiently" (Ackoff cited in Kathy Brittain-White in Mumford et al. 1984 p.237).

This study will adopt qualitative alongside quantitative approaches to theory-building on the basis that advancing research in this area will require a capacity, in Ackoff's terms, to both quantify and qualify efficiently.

2.4.3.1 The value of qualitative approaches

Patton (1990) discusses the link between qualitative approaches to evaluation and causality. He says:

> *There is often concern raised when discussing paradigms that qualitative inquiry cannot establish causality, especially the relationships between program processes and observed outcomes, or other possible causal relationships that may help explain patterns in the data collected. Speculations on causal relationships in qualitative analysis are entirely appropriate - as long as they are clearly labeled as speculative. Lofland (1971) has been helpful in clarifying the role of causal speculation in qualitative analysis. He argued that the strong suit of the qualitative researcher is the ability 'to provide an orderly description of rich, descriptive detail' (p.59); the consideration of causes and consequences using qualitative data should be a 'tentative, qualified, and subsidiary task* (Patton 1990 p.62).

Patton goes on to suggest that "[e]valuators using qualitative methods provide perspective rather than truth, empirical assessment of decision makers' theories of action rather than generation and verification of universal theories, … context-bound extrapolations rather than generalizations, and credible balanced and useful information rather than objective, unassailable certainties" (1990 p.491).

Lincoln and Guba (1989) suggest that "generalisability in the conventional paradigm is absolute, at least when conditions for randomisation and sampling are met … [while] transferability is always relative and depends entirely on the degree to which salient conditions overlap or match" (p.241). In qualitative research, generalisability can be, in Lincoln and Guba's terms, supplanted in part by the principle of transferability. Curran and Blackburn (2001) suggest that "[a qualitative research approach] .. is especially advantaged for investigating human and social phenomena compared with positivist approaches" (p.120). They retain causality as a defining principle suggesting that "causality is intrinsic to the internal world

of meanings, motives and logics of the human actors and can only be established by research approaches which focus directly on these" (p.121). They suggest that qualitative research is "useful in establish[ing] what is 'behind the numbers' and especially to try to isolate causalities" (p.123). Curran and Blackburn also suggest that, rather than being supplanted by the principle of transferability (Lincoln & Guba 1989 p.241), the generalisability of a qualitative approach is still a defining and relevant principle even if "weakened" by "limited scale" (Curran & Blackburn 2001 p.122).

Validity and confirmability

Curran and Blackburn (2001) offer a six-point process for establishing the validity of qualitative research. They identify the following as being critical to establishing validity: (1) clear and precise statement of the research problem, (2) clear and precise statement of key concepts and assumptions, (3) methodological adequacy including sample size, theoretical justification of research method, sample representativeness, and strategies used to ensure data quality (including triangulation), (4) analytical adequacy defined as the clear statement of the logic, elements and stages of interpretation generation, (5) location of the context of interpretation in previous research, and (6) claims made specific to the interpretation and suggestions for further study made. In this way, they suggest that rather than being compromised, there are alternative criteria for establishing validity in qualitative research.

Lincoln and Guba (1989) suggest that confirmability is the equivalent to validity in quantitative enquiry. They suggest that confirmability is a strategy of verification for ensuring rigour by providing for an interpretation to be explicitly related to the data giving rise to the interpretation.

2.4.4 Issues in defining effectiveness evaluation

2.4.4.1 Different taxonomies

This section provides a summary of how some of the eminent evaluation researchers define effectiveness, and an overview of some of the major issues which underpin the definitions that are significant to the evaluation of structured e-mentoring effectiveness. Any study attempting to define effectiveness needs to consider the underlying issues which inform the multiple possible definitions of the term effectiveness. Indeed the multiple operationalisations of the construct are central to this thesis. The Oxford Advanced Learners' Dictionary (1992) defines effectiveness in terms of achieving an intended or desired effect, however, as suggested by Scriven, this may be an insufficient definition in evaluation because the side effects, evolving or unanticipated benefits of an assistance program may redeem an otherwise unsuccessful program, or compromise an otherwise successful program (Scriven 1993).

Different definitions of effectiveness evaluation are marked by the theoretical assumptions which underpin them. Wadsworth (1991) describes "impact assessment" as being grounded in the assumption that individuals are passive recipients of a program intervention. This definition may sit well within a research strategy grounded in positivist assumptions and sees participants as subjects of, or subject to, a program intervention, or a curriculum-based e-mentoring program using an instructivist approach to learning and norm-referenced evaluation. It may not, however, sit consistently with an approach which emphasises the subjective construction/perceptions of adult learners who engage with and adapt a program intervention to their unique circumstances. In turn, this affects the operationalisation and measurement of the effectiveness construct. In the former approach, a quantitative normative or criterion-based assessment using pre and post-test may be appropriate. In contrast, the latter, may more appropriately involve ipsative (defined as self-referencing) assessment using qualitative enquiry.

Wadsworth (1991) outlines Stufflebeam's approach to the aim of evaluating effectiveness which was "not to prove but to improve" (Stufflebeam in Madaus et al. 1983). Stufflebeam outlined four types of evaluation based on "different decision needs": (1) context evaluation which identifies strengths and weaknesses, assesses needs and judges relationships to objectives; (2) input evaluation which identifies and assesses system capabilities and alternative plans); (3) process evaluation which assesses and guides implementation by identifying defects, and refining design and procedure; and (4) product evaluation which identifies and assesses outcomes relative to objectives in order to serve 'recycling' decisions (continue, terminate, modify, refocus, etc. (Wadsworth 1991 p.68). The definition of effectiveness in each of these types of evaluation depends on the aim of evaluation and the particular type of decision-making the evaluation is, or is not, supporting.

Owen and Rogers (1999) conceptualise evaluation with reference to five forms - (1) proactive evaluation defined as evaluation undertaken to make decisions about an impending policy or program, (2) clarificative evaluation defined as evaluation undertaken to make explicit the essential features of a given policy or program, (3) interactive evaluation defined as evaluation undertaken to make decisions about improvement of a current or continuing policy or program, (4) monitoring evaluation defined as evaluation undertaken to provide checks on the state of a current continuing policy or program, and (5) impact evaluation defined as evaluation undertaken to assess the effects of a given policy or program. They go on to suggest that in making decisions about the level at which an evaluation is conducted, a simple three level "3 p's" approach - policy development, big "p" program provision (which may comprise for example collective consideration of programs funded under a government initiative) and small

"p" program provision (with evaluation at the level of the particular program) (Owen & Rogers 1999 p.90) - is fundamental to defining evaluation purpose. They describe the evaluation process with reference to deciding on one of these forms, determining at which of these levels the evaluation is to be conducted, deciding the evaluation questions, and then making judgments and recommendations. They suggest that evaluation questions are central to such a process and in putting this view cite Smith (in Owen & Rogers 1999 p.103) who describe evaluation as fundamentally a process of answering questions.

Patton developed the idea of utilisation-focused evaluation as being evaluation which explicitly develops an evaluation strategy around those who will use and/or be affected by the evaluation, acknowledging that users' goals, values and interests may conflict and require negotiation (Patton 1986). Patton suggests that evaluation process involves the researcher in collecting information about program "activities, characteristics, and outcomes" for use by the relevant stakeholders. Program effectiveness in these terms is critically informed by stakeholders or critical reference groups.

2.4.4.2 Role of the evaluator
In describing the historical development of the different approaches to evaluation of success or effectiveness since the 1960s in *Hard Won Lessons in Program Evaluation*, Scriven (1993) identifies six distinct approaches. The weak decision-support, relativistic and rich description views are founded on the objectivity or value-neutral role of the evaluator. The evaluator's role is to collect information about a program without directly making judgments about its merit or worth either through choice or scoping of the evaluation; value judgments are deferred to decision-makers or clients. The strong decision-support, social process and constructivist views outlined by Scriven differ in that they are based on the role of the evaluator as either choosing to or being inevitably implicated in making value judgements about the program which they are evaluating.

2.4.4.3 Stakeholder analysis in defining effectiveness
The identification of stakeholders is a key issue in any effectiveness evaluation or research. A distinction can be made between evaluation and research on the basis that evaluation is conducted on behalf of particular stakeholders while research is more likely to be independent because it is not beholden to stakeholders. Seddon (1999) highlights the importance of identifying on which stakeholders' behalf an evaluation is conducted in Information Systems research. Gibb (2000) suggests that value of mentoring can be explored through an adversarial paradigm. Where mentoring is pursued in the context of liberal values, it has the capacity to open up careers for disadvantaged groups while in the context of conservative values, mentoring

can be seen as contributing to the maintenance of the status quo, replicating desirable patterns of behaviour, etc." (p.46). Lincoln and Guba (1989) suggest that "Evaluations can be shaped to enfranchise or disenfranchise stakeholding groups" (p.9) again suggesting that stakeholder analysis and considerations of use are inseparable from any evaluation framework. Clutterbuck (2003) also noted in his review of the mentoring literature the small number of mentoring studies which evaluate impact for both mentee and mentor. He suggested that this was surprising considering the nature and quality of the interaction between these two stakeholders were so strongly linked to positive outcomes.

2.4.4.4 Evaluating individualised outcomes

Patton's work details the critical need for evaluation to capture individualised outcomes. He suggests that:

> [a]n important pattern in the delivery of education and human services has been a concern with individualization. Individualization means matching program services and treatments to the needs of individual clients. Highly individualized programs operate under the assumption that outcomes will be different for different clients. Not only will outcomes vary along specific common dimensions, but outcomes will be qualitatively different and will involve qualitatively different dimensions for different clients ... They argue that their evaluation needs are for documentation of the unique outcomes of individual clients rather than for measures of outcomes standardized across all clients (p.97-99).

He further states:

> The critical point is that a common activity ... can result in drastically different outcomes for different [individuals] depending on how they approached the experience, what their unique needs were, and which part of the activity they found most stimulating. For open educators, then, they need an evaluation approach that permits documentation of this variety of outcomes, and they resist measuring the success of such a complex, individualised experience by any limited set of outcome measures (for example, improved reading scores, better spelling or more knowledge about some specific subject) ... What program staff want to document under such conditions is the unique meaning of the outcomes for each client ... By combining these case histories it is possible to construct an overview of the patterns of outcomes for a particular [intervention] .. Thus qualitative methods and design strategies can be particularly useful for evaluation of programs that emphasize individualized client outcomes (Patton 1990 p.97-99).

Clearly the need to reconcile the evaluation of individualised outcomes with the need to generalise around structured e-mentoring effectiveness is central to evaluating the effectiveness of structured e-mentoring and will be addressed in this thesis.

The evaluation literature sets out a range of factors considered critical to defining effectiveness evaluation by leading evaluation researchers. Definitions of effectiveness are contingent upon a range of factors including the theoretical assumptions which underpin the evaluation, the

evaluation purpose, the identification of stakeholders, whether or not the evaluation is to provide decision-support, the policy or program level at which the evaluation is to be conducted, the role of the evaluator, and how individualised outcomes will be captured.

2.5 Location of the study

In his Review of the Literature (2002), Perren urges an examination of actual practice which would *prove or disprove* the influence of e-mentoring (p.15). Perren goes on to say: "Drawing purely on the academic research this report must conclude by suggesting that there .. [are] only tentative pointers to the efficacy of e-mentoring of entrepreneurs, so some form of robust pilot probably using 'quasi-experimental' method in a limited scale would probably be the best way to proceed at this stage" (Perren 2002 p.26). On the basis of the preceding discussion of paradigm stance, in advocating such an approach, Perren reveals his research approach to be grounded in assumptions which are drawn from a positivist paradigm. By advocating a method which controls for extraneous variables by way of an experimental approach, Perren suggests that were the appropriate methodologies to be adopted, it would be possible to make a definitive claim about whether the effect of e-mentoring is proved or disproved. [Note: Perren later acknowledges the positivist assumptions which grounded his Literature Review in stating "if another paradigmatic lens was applied to the meta-review, such as interpretivism, … it would probably lead to different conclusions" (Perren 2003 p.517).]

As Halcolm's Evaluation Laws (in Patton 1990) state, research and evaluation within a constructivist paradigm may relinquish "the burden of proof" in favour of trying to explore and understand the effectiveness of mentoring for stakeholders based on an understanding that it is relative, subjective and mediated by the perceptions and values of stakeholders and researcher.

How will this study contribute to advancing research? Because of the difficulties of definition and measurement, advancing research will involve theory-building with theory considered in broad terms as a body of understanding. A narrow definition of knowledge and theory to support structured e-mentoring effectiveness evaluation could lead to restrictive or impoverishing approaches thus limiting the field (refer to section 1.12.1.4.1 for discussion). Contributing research in the initial stages will include particular as well as generalisable knowledge, a commitment to description, categorisation and interpretation which may or may not constitute predecessors to theory-testing in the form of generation of propositions or hypotheses.

This thesis adopts Patton's 'situational responsiveness' (1990 p.39) or Miles and Huberman's 'warranted strategies' in choosing a research strategy to address the research questions set out in

section 1.5. Such an approach provides for the possibility of selecting from a range of variations, combinations, and adaptations based on methodological appropriateness.

The qualitative part of evaluation research set out in Chapter 8 of this study will reconcile the potentially contradictory need to understand the rationale of the mentored individuals with the need to generalise and build theory around e-mentoring as suggested by Clutterbuck (2003). While the qualitative part of the evaluation will be approached from within a constructivist paradigm, it will be necessary and useful to consider the mentoring construct in "lawlike ways" in pursuit of this imperative (Lincoln & Guba 1989 p.86). Adopting this stance provides for exploration of the linkages between effectiveness and its "determinants". This strategy will facilitate the identification of patterns and divergences alongside the recording and interpretation of the individual stories of the participants. The researcher will interpret the links between data and concepts and make explicit the basis of interpretations provided. The emphasis in the qualitative study will be, in Patton's terms (1990), on producing context-bound extrapolations, in Lincoln and Guba's terms (1989), potentially transferable understanding which is credible, valid and confirmable, rather than knowledge which is, in Curran and Blackburn's terms (1994), generalisable but weakened by limited scale.

The quantitative part of the study will maintain a "positivist persuasion" (refer section 2.3) while acknowledging the theoretical difficulties which underpin effectiveness evaluation using such an approach, and resiling from making absolute claims about the generalisability or truth of the findings. The emphasis in the quantitative study will be to provide an evidence base for quantitative measurement of effectiveness to be used in conjunction with qualitative approaches, cognisant of the failure of the sample to achieve statistical significance and representativeness.

The primary audiences for the research are both the research community and practitioners. The examination of actual practice will be undertaken at the individual level and will not be conducted to provide direct decision-support to the organisation hosting the program (refer to section 2.4.4.2 for a definition of decision-support evaluation).

The examination of actual practice will consider individualised outcomes for respondents. Respondents are accepted as active agents rather than passive recipients of a program, with the unique process of implementation and adaptation of the program to the particular needs of individuals acknowledged as critical to effectiveness evaluation in this context. The mentees are considered the primary stakeholders with mentors' views of critical importance to the evaluation in contributing to an understanding of mentee outcomes. In Smith's terms (Smith 1987 cited in Owen & Rogers 1999), the thesis will be based on the need to answer the research questions

posed by the thesis, and the specific evaluation questions guiding in the examination of actual practice. In Scriven's terms (1993), both the thesis and examination of actual practice will make value judgements based on the explicit value positions adopted by the researcher.

The findings arising out of this study will be proferred as an interpretation based on detailed substantiated and credible evidence. While the exploration will necessarily involve the discussion of applicability of the findings beyond the immediate research context, the research does not aim to provide generalisability; rather it will offer the practitioner/researcher findings which may have "application to their interests" (Crotty 1998).

That the findings will be challenged and refined by others to create more sophisticated approaches to structured e-mentoring effectiveness evaluation is inevitable and accepted. While the paradigm of choices approach can be read by Curran and Blackburn (2001) as a "crude mixing of two paradigms" (p.123), it is the view of the researcher that this approach best provides for advancing research in this emerging area. The research program is driven by the need to have research that is neither prescriptive in paradigm stance nor methodology. It is informed, rather than by the imperative, in Perren's terms, to "prove" the influence of e-mentoring (Perren 2002 p.15), by the need to conduct the research, in Patton's terms, systematically and empirically (Patton 1990 p.11) to provide a substantiated and confirmable interpretation. There will inevitably be contradictions which follow a paradigm of choice approach but in the theory-building stage of this emerging discipline, this is a justified selection of research strategy that enables the advancement of research without compromising the credibility of the study.

2.6 Key research challenges and implications

Based on the literature review of the informing disciplinary areas and the review of the evaluation research literature, the commonalities identified can be extended to indicate the key research challenges and the major implications of these key challenges. The commonalities, challenges and implications arising out of the review of the literature set out in Chapters 1 and 2 are summarised in Table 5. This table will be revisited in the final chapter of this thesis.

Table 5 – Commonalities, research challenges and implications

Commonalities *The field is at present or by nature characterised or informed by:*	Research challenge *The key research challenges for structured e-mentoring research in the small business context are:*	Implications *Implications of the key research challenges are:*
Elusiveness of the dependent variable (effectiveness)	How to usefully operationalise the construct of effectiveness evaluation	Require a taxonomy which provides for comparability and generalisability, or confirmability and transferability, which draws on effectiveness studies in the informing disciplinary

		areas
Involvement of human actors in assistance programs	Evaluation research should be "human-centred" and capture the perceptions of participants	Research should develop beyond hard or technical data to acknowledge the importance of human/social actors in evaluating effectiveness Paradigm location – the need to provide for theoretical pluralism Require methodologies which move beyond quantitative measures of effectiveness
Complexity of the phenomena	Adequate representation of construct of effectiveness to address construct underrepresentation Complexity an obstacle to understanding	Require methodologies which reflect the richness of the phenomenon under study Need for modelling/abstraction to deal with complexity Need for multi-dimensional construct for effectiveness evaluation to accommodate complexity and interdependent nature of the dimensions of the e-mentoring phenomenon
Practice at the centre of research and evaluation	Doubt as to the legitimacy of research tied to problems defined in practice Issues of robustness	Research should establish how it is legitimately tied to practice with considerations of use Researchers involved in practice should be explicit and reflexive about their relationship to the evaluand
Unique and elusive nature of outcomes	Methodology – measurement difficulties	Effectiveness evaluation should explore the diversity and uniqueness of the responses of those engaging with the assistance program or system Effectiveness evaluation should explore benefits which may be intangible, difficult to quantify and may be incidental or additional to those intended – that is, benefits that would be effectively valued at zero using a quantitative approach
Context-dependent nature of effectiveness	Difficulty in establishing causality	Evaluation requires an understanding of the difficulties of controlling for multiple contextual or extraneous variables and how the choice of paradigm affects claims of causality Evaluation researcher needs an awareness of ambiguity re causal/influence direction - difficulties around establishing linkages between antecedents and consequences Calls for a situationally-responsive effectiveness evaluation construct highlighting relevant contextual influences or variables upon which effectiveness is contingent
Central constructs characterised by problematic definitions	Problems with construct definition, and therefore comparability and generalisability	Require an understanding of definitional problems – inadequate, tautological or (often necessarily) non-standardized definition of central constructs To advance research, may need to accept lawlike attributes to enable comparability
Data quality	Compromises rigour and robustness but also generalisability	Require an understanding of problems with quality of data including the fact that data: o is necessarily at individual level; o needs to be ipsative but is therefore self-report; o may not be the result of multiple lines of evidence; o may not arise from a variety of methods and sources (lack of data triangulation); o may arise from heterogenous samples; o may be subject to error in that research does

			not account for self and administrative selection bias; o may arise from small samples; and o may not arise from longitudinal engagement in the field.

As summarised in Table 5, the literature review indicated the informing research disciplines were characterised by commonality in the key areas of involvement of human actors, research informed by practice, outcomes which are necessarily individualised, intangible, sometimes difficult to quantify and incidental to intended outcomes, the complex and context-dependent nature of effectiveness, problematic definition of central constructs, and difficulties with data quality.

The critical research challenges which arise out of the intersections identified in the informing parent disciplines are the need to ensure the research strategies are not exclusively grounded in positivist assumptions, measurement difficulties, the difficulty of developing a comparative research tradition due to problematic construct definition, the potential for construct underrepresentation, the need to provide for an interpretive tool in the face of complexity of the phenomena, the difficulty of asserting the legitimacy of research tied to problems defined in practice, issues of robustness and rigour, the difficulty of definitively establishing causality and the multiple bases upon which the generalisability of research in this area can be challenged.

The identification of the shared evaluation research challenges highlights not only the elusiveness of, in DeLone and McLean's positivist terms, the dependent variable, but even more profoundly, the research challenges involved in developing ways of exploring and extending understanding of structured e-mentoring effectiveness which must necessarily extend beyond approaches grounded in a positivist stance.

2.7 Ethical considerations

2.7.1 Practice and research

In the case of this study, the researcher is also a practitioner in the field. This brings with it the strengths of experience and professional judgment as a practitioner, but also ethical difficulties in evaluation research. The difficulties of the ethics of research in which the researcher is involved as both practitioner and researcher are challenging and serious but not insurmountable. The conjunction of roles is an advantage in an emerging research area because research questions and focus are informed by the experience of the researcher as practitioner. However such a close link between research and practice requires the researcher to acknowledge the limitations of the study (discussed in 1.12.1.5.2 and 1.12.3.6.4) which, while rigorous, may be

compromised by the fact that it is an internal study and therefore open to challenge on the grounds of bias.

2.7.2 Protecting the rights of research subjects

Ethical difficulties arise in any instance where the researcher holds an external role related to the research area. The researcher knows the subjects, can identify them and can potentially use the information provided by respondents in a context beyond the research. In the applied research involved in this study, participants were comprehensively informed about the nature of the research, that taking part was voluntary and that they could withdraw, ask questions, raise concerns or complain about the research process at any stage by way of an email to the researcher or research supervisor. The right of participants to privacy was respected, and information provided to the researcher had identifying information removed. Participants were advised that their participation or non-participation would not affect their future involvement in the professional association's activities. As the research interrogated individuals' business and social engagements, it had the potential to be highly personal, so the data was treated with sensitivity and respect for the subjects individuality and experience. Security of personal information and data protection was guaranteed by way of password-protection of electronic files, and storage of information in the academic institution.

2.7.3 Ensuring confidentiality

Where there is an exchange of information between parties involved in research, agreed procedures are required to ensure the confidentiality of information provided by research subjects. The following procedures were implemented to ensure this confidentiality:

- participants were asked to provide informed consent;
- only researcher and research supervisors had access to research data;
- participants were informed that there would be no differential treatment on the basis of information provided to researcher; and
- participants were advised that there were no circumstances under which originary data obtained by way of interviews would be released to the host organisation without prior consent.

The researcher was committed to discretion as is required when an individual holds both a research role and a position as a practitioner. The issue of effectively and ethically relating the external role of the researcher with their research interests relies on professional judgment and commitment to applying the principles of discretion, confidentiality and respect for the privacy of the subjects' personal information and information provided by the subjects to the researcher.

It is acknowledged that the dual role of the researcher as practitioner is simultaneously a primary limitation as well as a strength of this study, but every effort was made to protect the privacy of the research subjects, to acknowledge potential bias in the study, and make methodology and interpretation transparent and confirmable respectively.

For a discussion of the implications of the dual role of the researcher, refer to section 9.5. This section resolves that the dual role provided an interocularity which played an essentail role in advancing both "use and fundamental understanding" (Stokes cited in Lyytinen and King 2004 p.231).

2.8 Definitions

To conclude Chapter 2, the following definitions are included to aid clarity when reading this thesis.

Dimension

With the exception of Chapter 6, the term "dimension" is used to refer to the dimensions of System and Information Quality, User satisfaction, Use and Impact, which comprise the DeLone and McLean model. In Chapter 6, the term dimension refers to Reeves' (2003) pedagogical dimensions of the structured e-mentoring program rather than the dimensions of DeLone and McLean's model of Information Systems success. In Chapter 3, the term dimension is also used to refer to Buelens et al.'s (2005) dimensions of validity.

Framework

The term "framework" is used to refer to the contingency framework set out as Table 16 of Chapter 3, the final specification of which is set out as Table 96 in Chapter 9.

Learning

This thesis will draw on Collins and Berge's (1996) definition of the term "learning". They suggest "there are essentially two kinds of interaction with regard to learning. One is a student individually interacting with content. The other is social activity: a student interacting with others about the content. Both types of interaction are necessary for efficient, effective and affective learning" (Interaction and learning section).

Model

The term "model" is used to refer to the DeLone and McLean model of Information Systems effectiveness which is set out in its original form in Figure 2 of Chapter 1 and integrated into the contingency framework under Phase 1.

Phase

In relation to the contingency framework, the term "phase" is used to refer to the five phases which comprise the framework (as defined) proposed in Chapter 3.

Professional association

The "professional association" is the host organisation referred to in this thesis. Mentees are members of the professional association, and mentors may or may not be members of the association. The researcher is the program facilitator.

Program

The term "program" in Chapters 5, 6, 7 and 8 refers to the structured e-mentoring program conducted by a professional association and used as the basis for the applied research in Part III.

2.9 Chapter summary

In summary, this Chapter reviewed the evaluation literature by considering how assumptions underpinning the positivist and constructivist paradigms affect evaluation research and the choice of methodology. In light of existing evaluation research, ways of advancing structured e-mentoring evaluation research were considered. Having reviewed the literature in the informing disciplinary areas in Chapter 1 and the evaluation research in Chapter 2, the commonalities, key research challenges and the implications for research in this field were discussed and summarised. The chapter highlighted some of the ethical considerations involved when a researcher has a dual role as practitioner, and presented a set of definitions to assist with reading the remainder of the thesis.

Chapter 3 will begin the process of developing and refining a framework to assist in meeting some of the key research challenges and addressing their implications as detailed in this chapter.

Part II - Development and refinement of framework

Part II will develop and refine a framework for the evaluation of effectiveness in the structured e-mentoring for small business context. To this end, it will review a selection of effectiveness studies from the informing disciplinary areas against a set of criteria developed from the review of the literature in Part I. Based on this review, DeLone and McLean's model for evaluating IS success will be respecified for the context of structured e-mentoring. This framework will then be subjected to review by a panel, selected from the informing disciplinary areas for their expertise and eminence in their fields, with a view to determining how the framework might be challenged and improved.

Chapter 3

Developing the framework - a taxonomy for selecting strategies for evaluating effectiveness in the area of e-mentoring for small business

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3 A taxonomy for selecting strategies for evaluating effectiveness in the area of e-mentoring for small business

3.1 Chapter overview

Part I discussed the basis for drawing on Information Systems effectiveness models in the structured e-mentoring for small business context. It outlined the defining features of different evaluation paradigms and their implications for effectiveness evaluation, identified the major intersections between the informing literature, and explained how the characteristics of each of the disciplinary areas have contributed to difficulties and disincentives in evaluating effectiveness. Chapter 3 will draw on this understanding to review a selection of effectiveness studies from the informing disciplinary areas.

DeLone and McLean reviewed the Information Systems literature which used effectiveness as the dependent variable and found great variability in both outcomes and measures (DeLone & McLean 1992). They used the variability as a basis for developing a taxonomy for Information Systems success research. This same approach will be applied in the context of structured e-mentoring with the aim of developing a taxonomy for effectiveness evaluation research in the small business context. The studies selected evaluate effectiveness, impact, success, additionality or benefit in some way. The review will establish the appropriateness and sufficiency of the DeLone and McLean model for IS success in the structured e-mentoring environment, and will identify and address the inadequacies which become evident. Using an inductive and systematic process, the review will establish whether or not the proposed adaptation of the DeLone and McLean model can be justified as a taxonomy for selecting a research strategy that is consistent with existing evaluations. The review will conclude with a framework which, it is proposed, provides a basis for researchers and practitioners to select research strategies, measures and methodologies appropriate for evaluating the effectiveness of e-mentoring in the small business context. The full review findings are attached as Appendix 1.

The Chapter will comprise the following sections - a discussion of the evaluation checklists, an outline of the review process, an overview of the studies used in the review, the review findings in the form of a data summary alongside an interpretation and discussion, a summary of the

discussion based on the findings, presentation of the proposed framework and conclusions drawn from the review.

3.2 Respecification and the evaluation checklists

Sections 3.2 and 3.3 will explain the respecification of the DeLone and McLean model for the new context, will detail the rationale for including criteria in the review, and will then outline the four checklists.

3.2.1 Preliminary respecification of DeLone and McLean's model

As stated in Section 1.13.2.2, Seddon's redefinition of the causal relationships between the DeLone and McLean dimensions as *influence* will be adopted, thus moderating the positivist epistemological assumptions underpinning the model. This initial amendment comprises the first respecification of the DeLone and McLean model.

The review of the Information Systems effectiveness and mentoring literature indicated that a basic adaptation of the model would be necessary to make it relevant to the context of structured e-mentoring prior to applying it in the review. The work of Collins and Berge (1996) and McLaughlin (1976) provided the basis for the redefinition of the dimensions of System quality and Information quality for the structured e-mentoring context, the second respecification of the DeLone and McLean model.

3.2.1.1 System quality

The original DeLone and McLean dimension of System quality was defined with reference to attributes such as data currency, response time, turnaround time, data accuracy, reliability, completeness, system flexibility, ease of use, presentation, documentation quality and quality and maintainability of the program code or website. These measures were seen as likely to be insufficient in the context of structured e-mentoring because the system or program is not independent of the individuals who use the system; the mentee and mentor *are* in effect the e-mentoring system.

As set out in the section 2.8, in their definition and discussion of effective learning based on the sociality of learning, Collins and Berge (1996) discuss the conceptual separation of (1) the interaction of a learner with content and (2) with others about the content (Interaction and learning section). System quality was redefined to emphasise the sociality of learning in the e-mentoring context with reference to item (2) of Collins and Berge's definition. The dimension of System quality was redefined as the nature and quality of the interaction between the mentee

and mentor. This re-definition transfers the technology of the e-mentoring system from System quality to Information quality.

3.2.1.2 Information quality

Information quality was defined in the original DeLone and McLean model with reference to the attributes of accuracy, timeliness, accessibility, security, content and relevance. While these measures are important measures of information quality in the Information Systems environment, the measures of content and relevance were expected to be of greater significance in the context of evaluating structured e-mentoring.

McLaughlin (cited in Patton 1990 p.106) says "Where implementation was successful, and where significant change in participant attitudes, skills and behaviour occurred, implementation was characterised by a process of mutual adaptation in which project goals and methods were modified to suit the needs and interests of the local staff and in which the staff changed to meet the requirements of the project." This process provides the basis for respecification of the DeLone and McLean model for the structured e-mentoring context.

In line with McLaughlin's conceptualisation of the nature of intervention programs, and combined with item (1) of Collins and Berge's definition of learning (1996), Information quality was redefined to emphasise the nature, quality and content provided to, and adapted by, the mentee and mentor. This includes factors such as the technological system supporting the mentee and mentor, the pedagogical structure of the program, the matching process, training provided, program features, the relevance and value of content, the value of e-moderation or support provided by the facilitator, and the nature and extent of program adaptation. The redefinition emphasises the content and relevance attributes from the original dimension. The technology which comprises the e-mentoring structure, included in the DeLone and McLean model under the dimension of System quality, has been transferred to the dimension of Information quality. This qualitatively changes the nature of Information quality from constituting the output of the system to comprising the major input to the system.

In summary, System quality was redefined for the structured e-mentoring context as the nature and quality of the mentoring relationship, and Information quality was redefined as the nature and quality of the program content and structure including the information communications technology which underpinned the program, and the adaptation of generic program structure by the mentor and mentee. With the IS technology supporting the mentoring process transferred to the dimension of Information quality, the interaction between (a) the mentee and mentor, (b) the

program structure and (c) the technology used to support the program, together comprise the antecedents to use, user satisfaction, impact and effectiveness.

3.2.2 Research rationale and selection of criteria

In this review, a selection of effectiveness studies across the informing disciplinary areas will be assessed against a range of criteria in addition to the DeLone and McLean dimensions. These criteria were developed with reference to the literature review and are set out in Tables 6, 7, 8 and 9. The following section sets out the rationale for the inclusion of the criteria. The DeLone and McLean dimensions and these criteria will form the basis of four checklists which will underpin the review.

3.2.2.1 Stakeholders

Seddon states that "IS success ... is conceptualised as a value judgement made by an individual from the point of some stakeholder" (Seddon 1997 p.248). He suggests that the explicit identification of stakeholders is thus important in evaluating success or impact. Indirectly referring to stakeholders, Curran and Blackburn (2001) discuss the importance of audiences for small business research which include researchers, policy-makers, support bodies, business sponsors and small business owner-managers. The identification of stakeholders and audiences is important because they impact not only on what and how research is conducted, but how and by whom it is received (refer also to "Useful to practitioners" criterion in section 3.2.2.3).

3.2.2.2 Liberal/ conservative values (effect change or maintain status quo)

Gibb (2003) suggests that the value of mentoring can be explored in terms of whether it is grounded in liberal or conservative values, and whether it is intended to effect change or maintain the status quo. "Where mentoring is pursued in the context of liberal values, it has the capacity to open up careers for disadvantaged groups while in the context of conservative values, mentoring can be seen as contributing to the maintenance of the status quo, replicating desirable (or undesirable) patterns of behaviour, etc." (p.46). Lincoln and Guba (1989) suggest that "Evaluations can be shaped to enfranchise or disenfranchise stakeholding groups" (p.9). In these ways, the value context in which an assistance program is offered can be an important part of evaluating effectiveness.

3.2.2.3 Evaluative referent

Evaluative referent is an important issue in effectiveness evaluation beyond that discussed in section 1.13.3.2.1. In his Problems with Mentoring Research (2003) Clutterbuck acknowledges the importance of the evaluative referent suggesting that, as a minimum, outcomes should be related back to the program goals which defined the purpose of the mentoring relationship.

Cameron and Whetten (1983) discuss the importance of the evaluative referent in IS effectiveness evaluation. They propose that the following question should be asked in evaluating effectiveness:

> *Against which referent is effectiveness to be judged? … effectiveness of this organisation compared to: some other organisation; some ideal level of performance; stated goals of the organisation; past performance of the organisation; or certain desirable characteristics* (Cameron and Whetten in Seddon 1999 p.3).

Evaluative referent is an important criterion for effectiveness evaluation because (i) of the need to reference in some form program goals as an evaluative referent, (ii) the literature review identified mentoring as an implicit evaluative referent to much of the e-mentoring literature, and (iii) of the difficulties of undertaking comparative research utilising experimental method in mentoring research where a control group is the evaluative referent. Evaluative referent was therefore included as a criterion in the checklists.

3.2.2.3 Policy-relevance

Curran and Storey discuss the need to make research policy-relevant (2000). This criterion was included because of its possible relationship to the question of stakeholders or audiences for research. It is also likely to be related to the level at which the effectiveness study is undertaken (refer to Owen and Rogers' discussion of the "3 p's" in Section 2.4.4.1). For these reasons, the question of the relevance and use of the studies was a criterion considered in the review.

3.2.2.4 Storey's analysis

The studies were reviewed against Storey's model of evaluation (refer to Section 1.13.1.4 for summary of Storey's "Six Steps" model). As Lenihan and Hart (2004) assert, "regardless of 'what' is being evaluated, many of the key concepts and frameworks discussed in the context of industrial policy evaluation .. are highly transferable to varying contexts" (p.1). It is for this reason that the studies including and beyond those involving small business interventions are considered against Storey's evaluation model. The methodological "inadequacies" described by Storey as marking studies of small business interventions may similarly mark studies in the mentoring and e-mentoring in the small business context.

3.2.2.5 Internal/ external

The significance of the distinction between internal and external studies in relation to evaluator bias is outlined by Curran et al. (1999): "It is suggested that where those conducting the evaluation are dependent on the initiator or deliverer for their fees and future similar work, there are pressures to be less critical than where funding is independent and those conducting the evaluation are not dependent on policy sponsors or delivering agencies for future funding"

(p.11). Internal and external evaluation is also problematised by Patton (1986) who describes approaches to evaluation in terms of internal and external and then qualifies each with respect to the role of the researcher. Storey identifies the potential bias in the views of research subjects involved in internal evaluations. He suggests that participants will provide the evaluation research with answers they want to hear, or conversely not wanting to admit to having been assisted (Storey 1998). The discussion of this issue in Chapter 1 across each of the informing disciplinary areas established its importance as an issue in relation to identifying potential bias and error and its inclusion in the review criteria is justified on this basis.

3.2.2.6 Qualitative/quantitative approach

The tensions between qualitative and quantitative approaches, and hard and soft measures in small business research are discussed extensively in the recent small business literature and outlined in Chapter 1. In advocating further qualitative studies in small business research, Curran and Storey (2000) suggest that a qualitative approach which "explores issues not addressed by quantitative approaches" (p.16) would be desirable. They discuss the importance of pursuing non-positivist approaches to "social and business phenomena" (p.41) and suggest that qualitative approaches yield data and understanding which "would be difficult or impossible to arrive at using positivist, quantitative approaches" (p.109). In a similar way, Hytti and Kuopusjarvi (2004) suggest that qualitative data has the advantage of being more "people-centred" than aggregate approaches, do not adopt economic assumptions about the individuals being studied, and do not assume a "simple, rational policy-making process" (p.29).

This criterion was included in an effort to capture some of the issues around the relative merits of qualitative and quantitative approaches in the selection of studies under consideration.

3.2.2.7 Sample size, sampling and generalisability issues

Clutterbuck (2003) identifies small sample size and other sampling issues as impacting on the robustness of research in the field of mentoring. Storey (1998) also discusses the inferential problems and general difficulties associated with non-probability sampling and small sample size. Curran and Storey (2000) discuss sampling issues in small business research including the difficulty of creating a matched sample group because of the heterogeneity of small business, the low-takeup rates of small business assistance programs, the low response rate to surveys, and the lack of appropriate and comprehensive sampling frames. This criterion was included as a means of identifying and highlighting these issues.

3.2.2.8 Data collected on demographic variables? Contextual variables controlled for?

The difficulty of controlling for contextual variables is acknowledged by a range of researchers across the disciplinary areas including Storey (1998), MacDonald and Coffield (1991), and Pfleeger and Mertz (1995).

In discussing deadweight and displacement, Curran and Storey (2000) suggest that "while it should be relatively easy to measure ... [contextual variables] .. in practice it is extremely difficult. Because firms supported are relatively small they are extremely sensitive to external influences which are *difficult to control for*" (emphasis added). Along similar lines, MacDonald and Coffield (1991) suggest that: "it proved very difficult to isolate factors which might explain the success of some and the failure of others" (p.250). Pfleeger and Mertz (1995) similarly acknowledge the difficulty of the failure to control for extraneous variables and its impact on claims of causality around effectiveness in their work and make a range of comments indicating this difficulty: "[e]ach experience was to some extent unique, involving as it did specific persons in a particular organisational environment within a project in which no attempt had been made to standardise factors of that relationship" (p.66), "the changes might have occurred if the project had never existed" and "it is not clear to what extent the changes in the status or position of proteges can be attributed to the mentoring project or anything done in its name" (p.69). Demographic/contextual variables were used as a review criterion in an effort to identify the issues around context and the extent to which contextual variables were controlled for or acknowledged as threatening the validity of effectiveness studies. Ultimately this criterion was closely linked to the criteria of whether an experimental or non-experimental research strategy was used. The research strategy criterion which relates to this one (detailing whether a study adopted an experimental or non-experimental approach) was added at a later stage of the review process.

3.2.2.9 Summative and/or formative evaluation

Summative and formative approaches to evaluation consider outcomes of a program, and ways to improve a program respectively. Boyle-Single and Muller (1999) advocate an iterative approach to e-mentoring evaluation which includes a combined summative and formative approach. While clearly all the studies adopted at least in part a summative approach in being selected as effectiveness studies for this review, this criterion was included as a means of capturing where the summative approach was combined with a formative approach as advocated by Boyle-Single and Muller.

3.2.2.10 Concepts clearly defined? Precise definition of key constructs such as mentoring and small business support

Clutterbuck (2003) identifies the difficulty of defining the types of behaviours which constitute mentoring as a problem in mentoring research. He suggests this is one of the bases for the lack of robustness in the mentoring field. Noe (1988) similarly suggests that: "While preliminary studies have focused on identifying the benefits proteges gain by participating in mentoring relationships, the mentoring construct remains unclear. Likely, this is because of a lack of agreement regarding the functions provided by mentors and differences in the purpose and extent of formalisation of mentoring programs in organisations" (p.458). Curran and Blackburn (2001) also discuss the difficulties with clearly defining small business terms including small business and small business owners. This criterion was therefore included for its potential to provide a basis for understanding the functions provided by mentors, and how the mentoring and other constructs are (or are not) defined in the studies under review.

3.2.2.11 Comments on quality and limitations of study

This criterion relates to validity and was included prior to the formal inclusion of internal, external and construct validity criteria. It was retained under a more general heading to show that validity can usefully be viewed more broadly than the three dimensions used, and to show how the review process unfolded and became progressively more sophisticated.

3.2.2.12 Evaluation level - impact of program on individual (micro) or at policy and program level (macro)

Studies will be reviewed for whether they consider evaluation at (i) the individual or "micro" level, (ii) the program level, or (iii) the policy level. A number of studies made generalisations at the program and policy level based on findings of their research at the individual level, but MacDonald and Coffield (1991) were the only researchers to explicitly problematise this issue. As researchers, they suggested they were involved in a process which required them to "move backwards and forwards from *macro* issues .. to *micro* themes" (p.16). The criterion was included to capture the different ways of describing and understanding the level of a program evaluation.

3.2.2.13 Context explicitly discussed?

The inclusion of this criterion preceded, and is related to, the criterion "Contextual variables controlled for". The studies were read with a view to understanding how the researchers discussed the context of the intervention programs. While the assessments are not ultimately very useful, this criterion was retained to show how the review process unfolded and became

more sophisticated with regard to the researcher's level of understanding about the paradigm location of research, and the impact of context on effectiveness evaluation.

3.2.2.14 Assigned mentors or partnerships occurred naturally? and Is program supported by a third party?

Clutterbuck (2003) notes that mentoring researchers may compare not only assigned with self-selecting or naturally occurring mentoring partnerships, but also supported mentoring partnerships with those not supported. This criterion was included in an effort to provide not only transparency and clarity on these issues, but to investigate the extent to which the studies under review compared, in Clutterbuck's terms, "apples with oranges".

3.2.2.15 Measures of ineffectiveness as well as effectiveness - successful and unsuccessful, positive and negative impact

Myers et al. (1998) suggest that evaluation of effectiveness should include measures of both effectiveness and ineffectiveness. This is based on the work of Cameron (cited in Myers et al. 1998) who proposed a model of organisational ineffectiveness on the basis that it may be easier and more beneficial for organisations to identify problems or faults than to identify criteria for effectiveness. Using this as a basis for studying effectiveness, an organisation is effective when it is free from characteristics of ineffectiveness. The decision was made to investigate the extent to which this occurs in the context of the studies under review. The work of Scandura (1998) on dysfunctional mentoring relationships, or in Cameron's terms, ineffective mentoring relationships, indicates that this is an area of research which may contribute to the body of knowledge in this area.

3.3 Overview of the checklists to be used

Based on the DeLone and McLean dimensions and the criteria set out in section 3.2.2, a series of four checklists against which articles were analysed, formed the empirical basis of this review process.

3.3.1 Review against the dimensions of DeLone and McLean's Information Systems Effectiveness Model – Checklist 1

The first checklist comprised the redefined dimensions of the DeLone and McLean model. Table 6 details the dimensions and variables typically covered by these dimensions, and how the variables have been adapted to be relevant to the new context.

Table 6 - Dimensions and variables covered by DeLone and McLean model

Dimension	Variables typically covered by dimension in IS context	How the variables have been adapted or collapsed for the environment of structured e-mentoring in small business
System quality	In IS research, this dimension is operationalised with reference to data currency, response time, turnaround time, data accuracy, reliability, completeness, system flexibility, ease of use, presentation, documentation quality and quality and maintainability of the program code or website	In IS research, this dimension considered variables relating to the interaction between the user and the IS system. To transfer this dimension to the e-mentoring context, the definition was repositioned to emphasise the interaction between mentee and mentor.
Information quality	In IS research, this dimension is operationalised with reference to accuracy, timeliness, accessibility security, content and relevance.	To provide for the standard structure and content of the program to the mentoring partnerships, the dimension has been redefined to emphasise program structure and content, including the technology which supports it. However, critically it also includes the deployment of the standardised structure in an interactive human and consequently non-deterministic setting and therefore includes the development of adapted and individualised learning pathways. The variables of content and relevance are emphasised in the redefinition.
Use	In IS research, the measures of actual and reported use, intended and past use were among those used to operationalise the dimension of use.	In the mentoring literature frequent interaction was found to be critical to the success of a mentoring partnership (Bierema & Merriam 2002 et al.). It would be reasonable to expect that use, which in the existing literature is most frequently operationalised and measured as reported contact frequency, is a dimension appropriately included to operationalise the e-mentoring effectiveness construct.
User perceptions of value	The IS literature suggested a need for multi-attribute satisfaction measures rather than single measures (Swanson, Bailey & Pearson, Kriebel and Ives, Olson & Baroudi, Sanders cited in DeLone and McLean, 1992, p.69). In IS research, this dimension is operationalised with reference to program experience at the perceptual level. Gatian (cited in Myers et al. 1998 p.97) found support for the relationship between user satisfaction and information systems effectiveness. Myers et al (1998) point out that user satisfaction alone is an insufficient measure of impact but is legitimate as part of a research strategy to determine effectiveness.	To provide for the likely diversity in mentee responses regarding their perceptions of the value of their e-mentoring experience, this dimension will be evaluated using qualitative approaches and a variety of measures. In this way, the data will have the characteristic of being "multi-attribute".
Impact	In IS research, the diversity of variables used to measure impact in the information systems environment are as diverse as in the mentoring and small business context. This was the catalyst for	Galletta and Lederer's (1989) proposal that impact measures in information systems can be broadly described in terms of personal and economic has been adopted in the respecified model. This is alongside Kram's career and psychosocial

	the development of the DeLone and McLean model (DeLone & McLean, 1992 p.69).	benefits extended to provide specifically for business skills support and development The definition collapses organisational and individual impact in line with DeLone and McLean's 2002 own respecification of the model. Quantitative and qualitative approaches will be used in an effort to explore the richness and diversity of the impacts of e-mentoring.

3.3.2 Review of validity and methodological adequacy

As well as the DeLone and McLean dimensions, the articles will be reviewed for validity and methodological adequacy. Validity is defined with reference to the dimensions discussed by Buelens et al. (2005) in their review of small business studies. The dimensions include internal validity, external validity, construct validity and statistical conclusion validity (Buelens et al. 2005 p.5). The review did not attempt to assess the studies for statistical conclusion validity. The positivist assumptions implicit in these definitions of validity and the threats to it are acknowledged and are allowed - rather than fundamentally accepted - in line with the acceptance of "lawlike attributes" of the construction of e-mentoring effectiveness adopted for the purposes of this review with a view to potentially advancing understanding (refer to section 2.5). The review also referenced Curran and Blackburn's (2001) framework for validity of qualitative data. The criteria outlined from section 3.2.2.1 to 3.2.2.15 above were allocated to the dimensions of internal, external or construct validity either at the outset of the review or throughout the review process.

3.3.2.1 Internal validity – Checklist 2

The second checklist is set out in Table 7 and details the criteria considered under the dimension Internal validity. In their overview of Internal validity, Buelens et al. (2005) suggest that small business research can usefully be considered by the organising principle of Internal validity. This principle was regarded as potentially useful when extended to the mentoring and e-mentoring fields. Buelens et al. define the key aspects of the dimension as follows.

> *Internal validity:*
> * *pertains to the correctness of inferences about causal connections between focal constructs;*
> * *the confidence one has that there is a true cause-and-effect relationship between the constructs under investigation; and*
> * *the evidence that the observed relationships which are found in a study reflects the real co-variation between the variables.*

They suggest that a possible threat to internal validity occurs when contaminating and extraneous variables are not controlled for. This will be a focus of the review.

Table 7 - Criteria or variables covered under Internal validity

Criteria or variables covered
Buelens et al. (2005)
Time frame 1. cross sectional design 2. longitudinal design 3. combination of both 4. unclear
Research strategy 1. experimental methods (lab or field experiments, experimental simulation and computer simulation 2. non-experimental methods (field study with primary data, field study with secondary data, and ethnographic study defined as an examination of an intact cultural group in a natural setting over a prolonged period of time by collecting primarily observational data - can be interviews) 3. other studies (meta analysis and multiple research strategies)
Supplementary criteria adopted
• data collected on demographic variables? Contextual variables controlled for? • evaluative referent (e.g. outcomes related back to program goals, compared with a similar program or with a control group?) • context explicitly discussed? • assigned mentors or partnerships occurred naturally? • is program supported by a third party? • qualitative and/or quantitative approach? • summative and/or formative approach? • useful to practitioners?

3.3.3.2 External validity – Checklist 3

The third checklist is set out in Table 8. It details the criteria considered under the dimension External. In their overview of External validity, Buelens et al. (2005) suggest that:

> *External validity:*
> * *reflects the correctness of inferences about the generalisability of a study's results across populations of settings, subjects, or time periods; and*
> * *pertains to the extent to which the conclusions of a study also hold for subjects other than the ones used in the study in terms of place, time or context.*

They suggest that external validity may be threatened when empirical findings are generalised to subjects who hold different characteristics in comparison to the examined sample. This will be a focus of the review. Buelens et al. also note that there is often a trade-off between internal and external validity when choosing a type of research strategy. For instance, the potential internal validity obtained through controlled laboratory experiments with precise measurement may come at the expense of the generalisability of the research findings. Alternatively, field studies in a real business setting may lead to high external validity but low internal validity given possible contaminating factors. The review will therefore also note instances where this may have occurred.

Table 8 - Criteria or variables covered under External validity

Criteria or variables covered
Buelens et al. (2005)
Type of sample 1. private sector (non government) 2. public sector (government) 3. mix of both sectors 4. not reported

Occupation of subjects
1. entrepreneurs or small business owners 2. franchisors or franchisees 3. venture capitalists 4. managerial positions 5. employees 6. students 7. mix of different occupations 8. not reported
Type of sampling 1. random 2. non-random 3. mix 4. not reported
Research strategy - see Internal Validity
Supplementary criteria adopted
• sample size and sampling issues • at which stage according to Storey's evaluation continuum (Storey, 1998, p.13) • internal/external evaluation • liberal/ conservative values (maintain status quo or effect change) • evaluation level (individual or policy) • comments on quality and limitations of study

3.3.3.3 Construct validity – Checklist 4

The fourth checklist is set out in Table 9. It details the criteria considered under the dimension Construct validity (framed more narrowly than in Buelens et al.'s study - refer toTable 9 for details). In their overview of Construct validity, Buelens et al. (2005) suggest that:

> *Construct validity:*
> * *is a function of the degree of correspondence between a construct and its operational definitions; and*
> * *refers to whether a study's variables have been adequately defined and measured by appropriate instruments, procedures, manipulations or methods.*

They go on to suggest that threats to construct validity occur when investigators use inadequate definitions and measures of variables, so this will also be interrogated in the review.

Table 9 - Criteria or variables covered under Construct validity

Criteria or variables covered
Buelens et al. (2005)
Number of data sources (The following techniques have not been considered for assessing construct validity: confirmatory factor analysis, exploratory factor analysis, alternative methods to test for discriminant, convergent and predictive validity, inter-rater reliability, and internal consistency measurement
Supplementary criteria adopted
• Stakeholders - does the study measure outcomes for all parties? • Evaluation on behalf of which stakeholder/s? • Concepts clearly defined? Precise definition of mentoring, small business, small business owner, etc. • Measures of ineffectiveness as well as effectiveness - successful and unsuccessful, positive and negative impact

3.4 The review process

The process involved a systematic review of a total of 31 articles using a grounded theory approach. Grounded theory (Glaser & Strauss 1967) refers to the inductive development of

theory on the basis of specific data. It is an interpretive method used in this review to empirically assess a selection of studies against the criteria set out in the checklists described in Tables 6, 7, 8 and 9 in section 3.3.

The studies were purposively selected on the basis that they either explicitly or implicitly evaluated effectiveness, additionality, impact, benefit or success as the dependent variable or means of evaluating effectiveness. Articles were chosen from each of the major disciplinary areas which inform the evaluation of the effectiveness of e-mentoring in the small business context. In the same way as DeLone and McLean's review of Management Information Systems literature (1992), the sample for this review is not intended to be exhaustive. Rather, studies were selected to be representative in that it includes those which exemplify a range of different approaches and highlight various issues which appear to significantly and critically inform the study of the evaluation of e-mentoring in the small business context. The breakdown of articles reviewed by disciplinary research area is as follows:

Table 10 - Number of evaluation studies reviewed by disciplinary research area

Research area	Frequency
Small business training interventions	7
Mentoring - in context other than small business	7
Mentoring for small business	6
E-mentoring - in context other than small business	8
E-mentoring for small business	3
Total	*31*

The small number of studies evaluating the effectiveness of e-mentoring for small business is indicative of the lag in the literature in this area (refer to discussion in section 1.11.5).

Articles were sourced by a range of methods - they were identified as part of the initial literature review, by referral from research colleagues, and from bibliographies of articles. Internet searches were conducted, primarily using the Google search engine (http://www.google.com.au). Keywords used in searching included e-mentoring, telementoring, virtual mentoring, small business training, entrepreneurial learning, mentoring, coaching, business counselling and their derivatives. Online libraries provided the vehicle for searching online databases. EBSCOhost Business Source Premier provided access to over 3,600 fulltext journal titles. Over 1,050 of the titles are peer-reviewed. Business Source Premier covers research areas including management, economics, finance, accounting, international and small business, marketing and tourism. Emerald FullText was another source of articles. Emerald is a collection of around 100 academic and professional journals in the areas of management, human resource management, marketing, operations and production, accounting and finance, Information Management and Information Management and Information Systems. Ingenta also provided fulltext access to a

number of articles. Ingenta also provided access to a range of academic and professional research articles online - around 19 million articles from 29,500 publications, including 8,000 online including articles from the business and social sciences research areas. Expanded Academic Index further provided generally fulltext access to material from research areas including social sciences, humanities and technology. IS World was the primary gateway used to obtain information and articles on Information Systems. It provided access to resources related to information systems technology for information systems academics and practitioners, and is located at http://www.isworld.org/.

The review drew on the review process pursued by DeLone and McLean in their seminal 1992 study and extended by Seddon in 1999. The aim of DeLone and McLean's review was to classify studies where Information Systems success was the dependent variable and to identify the measures used. The aim of this review is to identify the measures used, and classify them according to the DeLone and McLean dimensions. Like DeLone and McLean, classification into the dimensions was arbitrary at times with any crossover and classification difficulties acknowledged as the review tables developed. This review replicated the process used by Seddon (1999) in that the first stage involved selection of the studies which used effectiveness as the dependent variable, and the second stage involved identifying the approaches and measures used. Unlike Seddon, whether or not the studies were regarded as "empirical" was not used to guide the selection process as this was seen as a methodological issue better dealt with in the data analysis phase.

Articles were not included where they described studies which were speculatively based (Stokes 2001, Porter 2000, Temple 1999, Evans & Volery 2001, Eisenman & Thornton 1999, Doyle 1995) - that is, those which asked potential participants to discuss what type of intervention they believed would be most effective or speculated on this issue as researchers based on previous studies and review of the literature.

Further studies excluded from the review included those which analysed the nature of learning or mentoring required for small business without considering a particular program and its effectiveness (Gibb, A.A. 1997, Hartshorn & Parvin 1999, Raffo et al. 2000, Cope & Watts 2000, Woodd 1999). These studies often concluded with recommendations on programmatic features or approaches which were likely to enhance effectiveness. As Gibb points out, there is extensive analysis available on the "preconditions for successful implementation" (Gibb 1999) but as this was not the focus of this review, they were not included. Likewise, articles which undertook an historical review of e-mentoring programs (Bierema & Merriam 2002, Boyle-Single & Single 2005) were not included.

Studies were also excluded if they used a mentoring model that involved peer or group mentoring rather than one-on-one partnerships. This was the case with the exception of the 2005 Asgari & O'Neill study which, while it involved a group of students assigned to a mentor, still involved one-on-one communication between student and mentor was therefore included in the review.

Following the identification of articles which evaluated effectiveness, the review process involved an initial review of the articles against the DeLone and McLean dimensions as Checklist 1, and then against criteria set out in Checklists 2 to 4.

The review process was an active one in which the researcher revised and updated the categories according to issues that arose as the review process unfolded. In this sense the review involved an iterative process of ongoing review, data analysis and revision of categories. As the review progressed, further criteria were added in an effort to better accommodate and record the issues which arose. As the review progressed, validity emerged as an appropriate organising concept, and the criteria were re-positioned around the three dimensions of internal, external and construct validity. The criteria set out in the checklists set out in 3.3 were mapped on to the internal, external and construct validity checklists and another pass of the studies ensued.

Measures were recorded in a further pass of the literature. In some cases, measures were included which were not explicitly included in the studies reviewed. An example was the pedagogical structure of the program. This was included further to exploratory work in describing e-mentoring programs with reference to their pedagogical structure (Rickard 2004).

Only at the conclusion of the review when the extent of the contingent nature of effectiveness and the shared methodological challenges became evident did contingency theory as proposed by Myers et al. (1998) emerge as potentially relevant to an e-mentoring effectiveness evaluation framework in the small business context. The DeLone and McLean dimensions, the measures identified, the methodological difficulties and the multitude of contextual factors which emerged as influencing effectiveness suggested that contingency theory combined with the DeLone and McLean dimensions could potentially provide a more sufficient framework for selecting evaluation strategies and a solution for advancing research and assisting practitioners in this specialist emerging field.

The separation of the dimensions and measures from the variables upon which effectiveness was contingent led to far greater clarity and a framework which had coherence and meaningfully accommodated the outcomes of the review. Subsequent inclusion of a checklist of methodological issues in the proposed model integrated the methodological issues identified throughout the review across the informing disciplinary areas.

3.5 Overview of effectiveness studies used in the review

The following table summarises the effectiveness studies used in the review.

Table 11 - Overview of studies included in review and how effectiveness is operationalised and/or measured across the studies reviewed

Training and small business interventions	
Hart, M. & Roper, S. 2003	Study aims to, in general terms, assess the impact of Business Link support on productivity. The study uses an econometric analysis and the methodology designed to allow for assistance and selection effects.
Wright, P.C., and Tao, F.K.C., 2001	Study evaluated a training course offered by a university in Hong Kong to 36 owner/operators of small businesses. In addition to this, the study explores providing coaching in addition to this training as a means of effecting meaningful behavioural change. However the evaluation and data refer exclusively to the training intervention. The effectiveness of coaching as a supplementary activity is speculative.
Leitch, C.M. and Harrison, R.T., 1999	Study aims to evaluate the design and outcomes of an entrepreneurial development program which focused on leadership development in both large and smaller growth-oriented companies.
Chrisman, J.J., 1999	Study evaluates the economic impact of the Small Business Development Center program in the United States in terms of whether or not it adds value consistently over time.
Lenihan, H. & Hart, M., 2004	Study undertakes an econometric analysis of the impact of two public sector support programs provided to Irish industry
Thomas, T. & Landry, B, 2002	Study evaluates the impact of the Atlantic Canada Opportunities Agency (ACOA) which provides support to small businesses with reference to macro-economic indicators. The aim of the policy initiative is to enhance the growth of earned income and employment opportunities.
MacDonald, R. & Coffield, F., 1999	This study is an empirically-based discussion of the attempts to create an enterprise culture in the North of England. The researchers use a qualitative approach to investigate the successes and failures of youth running businesses.
Mentoring - in context other than small business	
Kram, K., 1988	Study aims to evaluate the impact of naturally-occurring mentoring on career advancement and personal development. Specifically, outcomes were measured in relation to career functions, sponsorship, exposure and visibility, coaching, protection and challenging assignments, and in relation to psychosocial functions, role modelling, acceptance and confirmation, counselling and friendship.
Hunt, D.M., 1992	Study aims to evaluate the outcomes of a program situated in an academic setting which partnered junior teaching staff with senior faculty from the point of view of outcomes for mentors over a period of seven years. The aim of the program was to enhance the careers of junior staff and rejuvenate the careers of senior staff. Outcomes are measured across a range of career and psychosocial criteria including teacher rating, career rejuvenation, professional relationships and friendship development, increased self confidence, praise/recognition received and collegiality.
Chao, G.T., 1997	Study explores the positive outcomes of a mentoring program delivered to engineering alumni from a large midwestern university and a small private institute in the United States. It examines the linkages between mentorship phases, functions served by the mentor and outcomes.
Noe, R.A., 1988	This study measures effectiveness in terms of career and psychosocial benefits experienced by proteges who were assigned a mentor. The program assigned mentors in nine education settings across the United States. Noe developed a measurement instrument to provide a quantitative

	measure of the types of functions mentors provide to mentees.
Seibert, S., 1999	Study considers effectiveness of a third-party-managed program in the private sector. Effectiveness is measured in terms of individual and organisational outcomes including job satisfaction, organisational commitment, work role stress and self-esteem at work.
Hale, R., 1999	Study evaluates the impact of a mentoring program introduced into an organisational setting in Scotland. It considers the benefits for mentees, mentors and the organisation.
Pfleeger, S.L., & Mertz, N., 1995	Study evaluates the outcomes of a pilot mentoring program delivered across three universities and three commercial organisations which aimed to assist women in Computer Science with advancing their careers. The researchers also aim to describe characteristics and behaviours which mark both successful and unsuccessful mentoring partnerships.
Mentoring for small business	
Broadbridge, A., 1999	This study measured the benefits of mentoring to the career development of retail managers. More specifically, it examined the experiences of retail managers careers, the factors that helped and hindered them and their career aspirations.
Dusseldorp Skills Forum, 1999	The aim of the Business Mentors Program, developed and delivered in Tasmania, Australia, was to provide support for small business by providing access to volunteer mentors drawn from the local community's pool of retired- semi-retired and active business people. The study aimed to evaluate the program's successes and barriers to success.
Devins, D. & Gold, J., 2000	This study presented the findings of an intervention program for small business conducted by a Training and Enterprise Centre in Sheffield in the UK. The study evaluates the impact of the intervention of business mentors on 20 small business managers who had to that point resisted accessing government support services at the local level.
Kent, T., Dennis, C. & Tanton, S., 2003	This study assesses the effectiveness of the outcomes of a mentoring project for SME retailers developed and delivered in London in 2001-2002. The objectives of the program were to encourage retailers to maximise their potential, help them adapt to changes in retailing, develop new ideas, produce action plans for business development and to encourage entrepreneurship and disseminate innovation in the retail business community. Success was evaluated in these terms.
Bisk, L., 2002	This study considers, in the context of mentoring support provided to Irish entrepreneurs, the effectiveness and benefits of formal mentoring.
Deakins, D., Graham, L., Sullivan, R. & Whitlam, G., 1998	This study looks at the impact of a mentoring program provided to new start entrepreneurs in the West of Scotland and finds that "such support can achieve successful results".
E-mentoring - in context other than small business	
Gordon, S.M., Edwards, J., Brown, G., Finnigan, F.A., Yancey, V., Butler, A.Y., Davis, W.D. and Stitt, D.M., 2005	Study aims to evaluate the extent to which effective mentoring occurred in a mentoring program for doctoral students conducted and evaluated by the School of Educational Leadership and Change at Fielding Graduate University. It measured effectiveness with reference to academic guidance, personally directed support, effective communication, willing and active collaboration, enhancement through face to face interactions, and personal relationship growth.
O'Neill, D.K., 1998	O'Neill's study reports on an e-mentoring project in an educational setting which involved 90 students and 100 mentors involved in a science project. O'Neill's dissertation presents in-depth analysis of successful and unsuccessful telementoring relationships and assesses the impact of telementoring on the sophistication of students' written arguments in scientific reports.
Brown, S.C. & Kysilka, M.L., 2005	This study considered the effectiveness of a program which paired undergraduate students about to begin teaching with mentors who were experienced teachers undertaking doctoral studies in New York and Florida, USA. All communication was via email. Effectiveness was considered in terms of professional development for both parties.
Asgari, M. & O'Neill, D.K.	This study examines the success of an open (participants can read the exchanges of other mentoring partnerships) curriculum-based e-mentoring program delivered to 72 adolescents in a secondary school setting.
Dimock, K.V., 1997	This study explores the effectiveness of a program called the Electronic Emissary Project in terms of whether or not and how a classroom curriculum-based telecomputing project increases student interest and engagement with content and increases the amount of content and depth of

	analysis of that content.
Boyle-Single, P.B., Muller, C.B., Single, R.M. & Carlsen, W.S., 2002	MentorNet is a large-scale structured e-mentoring program delivered across a number of universities in the United States which pairs women in engineering, science and other technology-related courses with male and female industry professionals who act as mentors. The aim of the program is to address the underrepresentation of women in these professions. The study evaluates the mentoring experiences and benefits and value of the MentorNet program.
Lewis, C.W., 2005	The Hewlett Packard program became the International Telementor Program in 1999. The program matches school students with industry-based professionals and mentoring occurs around science and maths project-based curricular material in consultation with teachers. The program uses email as the communication tool. The study evaluates program outcomes between 2002 and 2005. The study evaluates the impact of the program on student mentees.
Cascio, T. & Gasker, J., 2001	One of the aims of social work education is to transmit the social work culture to students. This study evaluates the impact of an e-mentoring program developed to improve students identification with social work values. Graduate social work students mentored undergraduate social work students.
E-mentoring for small business	
Rickard, K., 2005	Study aims to evaluate effectiveness of an Australian-based e-mentoring program called Mentors Online for independent contractors and consultants with reference to personal and business skills development. Specifically, outcomes were evaluated in terms of quality of structure and content of program, quality of mentee/mentor interaction, use or engagement with intervention program, impact and user perceptions of value.
Stokes, K., Garrett-Harris, R. & Hunt, K., 2003	Study aims to evaluate effectiveness of an e-mentoring program for SME's MentorsByNet rolled out in the two UK regions of Surrey and London with reference to personal and business skills development, generally, developing and growing the skills, knowledge, and the confidence of SME owner/managers to help them succeed. Specifically outcomes in terms of quality of mentee/mentor interaction, use or engagement with intervention program, impact and user perceptions of value (this program used the Australian-based Mentors Online program first delivered in 2000 and reported in the 2005 Rickard study as a model and used a similar evaluation instrument).
Megginson, D., Stokes, P. & Garrett-Harris, R., 2003	Study aims to evaluate the impact of an e-mentoring program for SME's called MentorsByNet which was delivered via the Surrey Business Link (United Kingdom) (p.7). The study, which aimed to develop and grow the skills, knowledge and the confidence of SME owner/managers to help them to succeed, measured across program experience, program outcomes, use, user satisfaction and impact (this program also used the Australian-based Mentors Online program first delivered in 2000 and reported in the 2005 Rickard study as a development model and the questionnaire as the basis for their evaluation instrument.)

3.6 Findings and discussion

The interdependence of the effectiveness dimensions, the need to discuss criteria in relation to other criteria rather than in isolation, and the complexity of the issues arising from the review, made clear presentation of the discussion and findings difficult. The complexity of the data meant that the presentation of the findings is also complex and "messy". Every effort has been made to present the data in a logical and orderly way by explaining and numbering the tables. Tables 12, 13, 14 and 15 set out the findings of the review against the criteria set out in Checklists 1, 2, 3 and 4 respectively. Breakout tables are included to supplement, cross-reference and clarify the discussion. The breakout tables are indented, and where necessary, the

rationale for presenting the data as breakouts to the main table explained. The findings will be presented and followed by a discussion of their implications.

3.6.1 Checklist 1 - DeLone and McLean dimensions

This table presents the data arising out of the review in relation to the criteria of the DeLone and McLean dimensions.

Table 12 - Findings - DeLone and McLean model

Criterion	Findings and Discussion
System quality	Findings Of the 24 mentoring and e-mentoring studies reviewed, only two did not report on System quality as defined in section 3.3.1, and did not consider the quality of the mentee/mentor interaction as central to the effectiveness of the mentoring process. The Hunt (1992) study, which was a mentoring study in a context other than small business, focused on outcomes for mentors and on this basis did not consider in detail mentee/mentor interaction. The Broadbridge (1999) study, which was a mentoring study in the small business context, acknowledged the limitations of their study in not analysing the mentoring interaction or process.
	Discussion With only two of the 24 mentoring and e-mentoring studies not considering the quality of the mentee/mentor interaction as central to effectiveness, the importance of this dimension was confirmed in the review of effectiveness studies.
Information quality	It would be reasonable to expect that the number of studies reporting on Information quality as defined in section 3.3.1 would concord with the number of interventions which provided a generic program structure. Of the 31 studies, nine were supported by a generic program structure, seven provided detail on Information quality. Of the nine studies which provided a program structure, eight were in an education setting (tertiary or K-12) and were curriculum-based. Only one study outside the education setting provided a generic program structure and reported on Information quality (Rickard 2005). Only one of the training and small business intervention studies discussed program structure or the nature and content of the assistance provided (Wright & Tao 2001). Of the nine mentoring and e-mentoring for small business studies, only one discussed Information quality but only one provided a generic program structure to participants (Rickard 2005). Of the e-mentoring studies (including in small business context) seven out of the 11 studies reported on the nature and quality of the structure and content of the program. Of the 24 mentoring and e-mentoring studies, 19 of the programs assigned mentors to the mentees. However only seven of the programs reported on the nature of the matching process.
	Discussion The findings suggest that Information quality is relevant where a generic program structure is included as part of assistance or intervention. Rather than suggesting a limitation of the DeLone and McLean framework, the framework provides a basis for identifying the limitations of studies which offer a generic program structure but fail to report on the nature of the content provided. The review indicates that the majority of e-mentoring programs offered outside the small business context are in an education setting supported by previously established or modified curriculum-based structure. The lack of interventions offering a generic program structure in the small business context is likely to be related to the putative difficulty of providing generic assistance to a heterogenous small business population (refer to discussion in Review of small business literature in Chapter 1). Of the e-mentoring studies (including in small business context) seven out of the 11 studies reported on Information quality. Boyle-Single and Single (2005) acknowledge

	"the importance of proper program structure to improve participant involvement and increase the benefits of e-mentoring programs" (p.305). Boyle-Single and Muller (2001) suggest in fact that structure is more important in the case of e-mentoring than with mentoring programs (p.117). In light of this, the fact that only seven out of the 11 e-mentoring studies discussed program structure points to a limitation of e-mentoring studies rather than suggesting a lack of relevance of this dimension to evaluating e-mentoring effectiveness. With only seven of the 19 programs which assigned mentors reporting on the nature of the matching process, again this points to a limitation of the studies – that is, where programs are assigning mentors, the researchers should discuss the nature of the matching and how mentors were assigned. This failure to describe program structure and content and any adaptation by participants, thus providing a basis for comparison between program structures, is an obstacle to establishing antecedents to effectiveness, and comparability between studies.
Use	Findings In comparing the number of mentoring with e-mentoring studies which reported involvement data, four of the 13 mentoring studies reported on contact frequency while seven of 11 e-mentoring studies reported on contact frequency. While the Boyle-Single Muller et al. 2002 study did not report on involvement data, this information is available in other studies of the MentorNet program by the same authors, so it is possible to extrapolate these figures to say that eight of the 11 e-mentoring researchers were aware of the importance of maintaining involvement data.
	Discussion The review suggests that involvement data are reported more frequently in the e-mentoring literature than the mentoring literature. Rather than replicating this possible shortcoming of the mentoring literature, e-mentoring effectiveness studies have to date included Use as a dimension of effectiveness evaluation. In studies which do report involvement data, with the exception of the Boyle-Single Muller et al. study which was not formally included in this review (refer to discussion of the link between causality and interaction frequency in section 1.13.3.4.1) the issue of the relationship between contact frequency and effectiveness is not discussed in detail.
User satisfaction	Findings All of the 31 studies across the disciplinary areas referred to user satisfaction in evaluating effectiveness.
	Discussion The interdisciplinary literature acknowledges the widespread use of user satisfaction as an appropriate but not necessarily sufficient measure of effectiveness. The literature review however suggested that data quality may be an issue which compromises measurement of this dimension. On this basis, the studies were also reviewed for the nature of data collection instruments, the number of data sources, and the number of studies which relied exclusively on self-report data. Tables 12a, 12b and 12c set out the nature of data collected, the number of data sources and whether or not data was all self report. Refer to breakout tables 12a, 12b and 12c.

Table 12a sets out the data arising out of the review in relation to the nature of data collection instruments used in the effectiveness studies.

Table 12a – Methodology used to collect data

Findings	
Nature of data collected	Frequency
Questionnaire	9
Questionnaire and interviews	6
Questionnaire and open-ended questions	1
Questionnaire and content of email exchanges	3
Questionnaire and case study	1
Questionnaire, group interviews, individual interviews and tracking of email exchanges	1
Interviews	9
Questionnaire and economic statistics from multiple sources, econometric modelling, time-trend analysis versus a comparison group and reference to other macro-economic indicators	1
Total	31

Table 12b sets out the data arising out of the review in relation to the number of data sources used in the effectiveness studies reviewed.

Table 12b – Number of data sources

Findings	
Number of data sources	Frequency
1	18
2	10
More than 2	3
Total	31

Table 12c sets out the data arising out of the review in relation to the number of studies which relied exclusively on self-report data in the effectiveness studies reviewed.

Table 12c – Number of studies which relied exclusively on self-report data

Findings	
Number of studies which relied exclusively on self-report data	Frequency
Relied on self-report data	25
Did not rely exclusively on self report data	6
Total	31

Table 12, continued ..

User satisfaction, continued ..	Discussion – Tables 12a, 12b and 12c
	In looking at the number of data sources used, the review indicates that 18 of the 31 studies used only one data source, 10 referred to two data sources, and only two of the studies referred to more than two data sources. In looking at the data collection methods, the review found that data was obtained mainly by questionnaire or interview (nine studies by questionnaire and nine studies by interview), followed by questionnaire and interview (six studies), questionnaire and content of email exchanges (three studies) and to a lesser extent, questionnaire and open-ended questions (one study) and questionnaire and case study (one). 25 of the 31 studies relied exclusively on self-report data.
	This suggests that across the research disciplines which inform the evaluation of e-mentoring in the small business context, the predominance of self-report data, and the lack of data triangulation whereby findings are confirmed by data collected from more than a single source, may be limitations of the body of research. This confirms that using a methodological approach which confirms self-report data with reference to other data sources is a major methodological challenge for research into e-mentoring in the small business context.
	Response rates Response rates are generally low in small business research (Blackburn & Curran 2001). Most of the studies did not report on response rates. Of the four studies which did, the response rate was between 51 and 68 per cent. Considering the number of studies which used questionnaires as one of or the main data collection method (22 out of 31 studies – refer to Table 12a), this is of some concern.
Impact	Findings To be included in this review, it was a requirement that the study evaluated impact, effectiveness, success, benefits or additionality, therefore all the studies evaluated impact in some way. The diversity of these measures is the key finding in relation to this dimension and a summary of the measures used to evaluate effectiveness is set out in the proposed framework.
	Discussion How, and the degree to which, the mentoring and e-mentoring studies capture and measure the benefits of assistance was a central focus of this review. The review confirmed that evaluation researchers have attempted to capture and quantify the intangible as well as tangible (Remenyi 1999), and unanticipated as well as anticipated benefits, using soft and hard measures. Impact can also be usefully characterised in terms of whether the study reports on

effectiveness at the individual or policy level. 28 of the studies evaluated at the individual level. Of these, seven studies discussed the policy implications of their evaluation at the individual level (MacDonald & Coffield 1991, Wright & Tao 2001, Lenihan & Hart 2004, Bisk 2002, Deakins et al. 1998, Stokes et al. 2003, and Megginson et al. 2003). Three studies (Hart & Roper 2003, Chrisman 1999, and Thomas & Landry 2002) evaluated at the policy level. MacDonald and Coffield's study (1991) complicated this paradigm by moving between micro and macro but this study was exceptional in doing so. Galletta and Lederer's (1989) proposal that impact measures in information systems can be broadly described in terms of personal and economic emerged as an organising principle and has been included in the proposed model for selecting evaluation strategies.

3.6.2 Checklist 2 - Internal validity

The following table sets out findings in relation to the criteria grouped under the classification of Internal validity.

Table 13 - Findings - Internal validity (Checklist 2)

Criterion	Findings and Discussion
Time frame	Findings Of the 31 studies, 22 studies were cross-sectional and nine were longitudinal studies. Of the 24 mentoring and e-mentoring studies, 17 were cross-sectional and seven were longitudinal.
	Discussion With 22 of the 31 studies overall, and 17 of the 24 mentoring and e-mentoring studies using a cross-sectional approach, there is clearly a need for further mentoring and e-mentoring research studies which use a longitudinal time frame. As suggested by Patton (1986) there is a need to ensure that evolving benefits are captured by research and this will not occur unless researchers use a longitudinal approach.
Research strategy (experimental, non-experimental etc.)	Of the 31 studies, 23 used a non-experimental approach and only eight used experimental methodologies. Of the 24 mentoring and e-mentoring studies, 20 used a non-experimental approach and only four used an experimental approach.
	Discussion 23 of the 31 studies used a non-experimental approach and only eight adopted quasi-experimental approaches. Of the 13 mentoring studies, 10 used a non-experimental research strategy while three adopted an experimental approach. Of the 11 e-mentoring studies, only one adopted an experimental approach. The review would suggest that non-experimental methodologies predominate in the mentoring and e-mentoring fields. In Buelens et al.'s terms (2005), because contaminating and extraneous variables were not controlled for in 23 of the 31 studies, this means that the internal validity of the body of knowledge built up in the research area is open to challenge. It suggests that claims of causality between antecedents and outcomes are open to challenge on the basis of the predominance of non-experimental methods. These findings can be considered alongside the criteria of "Contextual variables controlled for" and "Context explicitly discussed" included in the review. The contextual variables identified by researchers in the studies reviewed as influencing effectiveness included: age, gender, education level, market conditions, business strategy, characteristics of owner-manager, regional differences, organizational or business features, organizational culture, socio-cultural context such as willingness to accept assistance, locus of control, career planning, job involvement, duration of mentoring partnership, personality characteristics, interpersonal skills, business sector and industry, learning setting, features of technology used, comfort with technology used, time available to make the most of assistance, workload of advisors and mentors, inflation, differences in tax rates/treatment, business structure, type of clients served and whether or not the business owner is a recipient of a grant. These factors are organised under the headings of external environmental factors, external mentee business factors and internal mentee and mentor factors in the proposed model. In considering whether or not contextual variables were controlled for, eight attempted to control for specific contextual variables in some way, 12 presented detailed demographic data and 11 did not attempt to control for contextual variables nor present any detailed demographic data relating to their sample.

	This supports the suggestion that controlling for contextual variables using experimental methods does not predominate in the research studies reviewed as a means of establishing linkages or causality, and confirms the discussion in Chapter 1 that controlling for contextual variables and establishing causality are major methodological challenges in the fields of small business training, mentoring and e-mentoring research.
Data collected on demographic variables? Contextual variables controlled for?	Refer to Discussion above.
Evaluative referent	Findings Of the 31 studies, two did not identify an evaluative referent, one compared outcomes of formal with informal mentoring assistance, 14 related outcomes to program goals, six compared assisted with a matched non-assisted group, two compared the outcomes of the same program over time, two considered outcomes in terms of broad policy aims, three studies (in education settings) considered outcomes in terms of student development against external education curriculum-based standards, and one considered outcomes in terms of participant expectations. In line with the findings regarding the limited experimental work in the mentoring and e-mentoring fields, only six studies explicitly compared the assisted group with a matched non-assisted group.
	Discussion The findings would suggest that evaluative referent is important in defining the nature of the study and the research approach used to evaluate its effectiveness, and can indicate the basis on which validity may be open to challenge.
Context explicitly discussed	Refer to Discussion under Research strategy – Internal validity.
Assigned mentors or partnerships occurring naturally	Findings Of the 24 mentoring and e-mentoring studies, 19 programs assigned mentors, one program provided for mentees to select from available mentors, three involved spontaneous or naturally occurring mentoring partnerships, and one did not distinguish between assigned or spontaneous mentoring partnerships in their report.
	Discussion Clutterbuck (2003) suggests that studies must be clear on whether mentors are assigned or whether the partnerships occurred spontaneously, and whether programs are supported or not supported. While most studies distinguished between assigned and spontaneously occurring mentoring partnerships, it is of concern that even one study did not make the distinction clear.
Program supported by third party	Findings For the purposes of the review, support included not only programs which provided a generic program structure but also those which provided assistance with preparation prior to the program, matched mentees and mentors, and/or provided training to mentees and/or mentors prior to the program. Of the 24 mentoring and e-mentoring studies, 14 studies provided third party support, nine did not provide support and one study did not report on whether partnerships were or were not supported 11 of the 24 studies involved e-mentoring partnerships in which the mentor was assigned to the mentee. Only one of these e-mentoring programs did not provide support to assigned partnerships. Of the 13 mentoring programs six did not provide support to the mentoring partnerships.
	Discussion The review suggests that e-mentoring practitioners in the studies reviewed were more likely than mentoring practitioners to provide support. This is in line with the suggestion in Boyle-Single and Muller that e-mentoring practitioners are aware of the consequences of failing to provide training, coaching, follow-up, adequate planning and committing appropriate resources on effectiveness (Freedman cited in Boyle-Single & Muller 2001 p.109). The review revealed that where support was acknowledged, the discussion of the nature of the support was often limited, making comparability and determination of antecedents to effectiveness problematic across programs. The review confirmed the importance of identifying these factors in evaluating effectiveness, and the proposed framework should explicitly refer to them. They can be appropriately discussed with reference to the nature, content and structure of program so

	could be referenced under the DeLone and McLean dimension of Information quality.
Qualitative and/or quantitative approach	**Findings** Of the 31 studies, 11 relied on qualitative data, six relied on quantitative data and 14 combined qualitative and quantitative data collection methods. Of the 24 mentoring and e-mentoring studies, 10 relied on qualitative data, four relied on quantitative data, and 10 combined qualitative and quantitative data collection methods.
	Discussion The extent of qualitative data used across the disciplinary research areas reviewed confirms that qualitative approaches are seen as an appropriate means of researching effectiveness across the informing disciplinary areas. The review also suggests that mixed methods have been utilised widely to obtain knowledge and an understanding of mentoring processes and outcomes. The implications for any proposed framework are that the framework cannot be prescriptive regarding the choice of qualitative or quantitative approach. The review indicated that there were minimal differences in the relevance of the DeLone and McLean dimensions for qualitative compared with quantitative studies and experimental compared with non-experimental designs. This suggests that the framework is not limited to studies which adopt either a qualitative or quantitative methodological approach, nor to a study adopting an experimental or non-experimental design. This is consistent with the intention to create a framework which is not prescriptive in relation to paradigm location; within the respecified model, methodology should be treated as separate to the DeLone and McLean dimensions. It is a strength of the DeLone and McLean model for evaluating system effectiveness that the dimensions are not methodologically prescriptive. When assessing against the criterion of Storey's model, only one of the qualitative studies was higher than Step 3. This confirms the potential limitation of Storey's model in that, according to the review process, it is predominantly studies which adopt qualitative approaches to effectiveness evaluation which are stigmatised as monitoring.
Summative and/or formative approach	**Findings** Of the 31 studies, eight utilised a predominantly summative approach and the remaining 23 combined a summative and formative approach.
	Discussion The proportion of summative compared with formative studies evident in this study is not representative of the literature more generally because studies were selected on the basis that they evaluated outcomes and they are therefore overrepresented in the sample. With 23 of the total 31 studies and 10 of the 13 of the mentoring studies and all of the 11 e-mentoring studies combining a summative and formative approach, it would be reasonable to expect a similarly high proportion of the 31 studies to be useful to practitioners.
Useful to practitioners	**Findings** In the judgement of the reviewer, or as nominated by the researchers themselves, the breakdown of the groups which would primarily find the studies useful is as follows: Useful to practitioners .... 3 } Useful to practitioners and researchers .... 16 } 21 Useful to practitioners, researchers and policy makers .... 2 } Useful to researchers .... 2 Useful to researchers and policy makers .... 1 Useful to policy-makers .... 2 Useful to entrepreneur/manager .... 1 Useful to entrepreneur/manager and policy-makers .... 2 Useful to entrepreneur/manager and researchers .... 1 Useful to entrepreneur/manager, practitioners and researchers .... 1 *Total* .... *31* The review suggests that 21 of the 31 studies could be considered primarily useful to practitioners. Of the nine mentoring for small business and e-mentoring for small business studies, six of the studies were assessed as being relevant to practitioners. The breakdown of the nine mentoring for small business and e-mentoring for small business studies is as follows: Useful to entrepreneur/manager and policy-makers .... 1 Useful to entrepreneur/manager and researchers 1

	Useful to practitioners and researchers	5
	Useful to researchers and policy-makers	1
	Useful to entrepreneur/manager, practitioners and researchers	1
	The review of mentoring for small business and e-mentoring in the small business context was assessed as being relevant to policy-makers in two studies.	
	Discussion The review suggests that 21 of the 31 studies were assessed as primarily useful to practitioners, and seven of the studies were assessed as relevant to policy-makers. With six of the nine mentoring for small business and e-mentoring for small business studies assessed as being relevant to practitioners, there is some basis for suggesting that the research studies reviewed are primarily useful to practitioners. This suggests that "considerations of use" as set out in section 2.3 is widespread in effectiveness studies in the informing disciplinary areas, and confirms the findings in relation to the formative emphasis of mentoring and e-mentoring studies. The breakdown of the nine mentoring for small business and e-mentoring for small business studies indicates that only two studies were assessed as being relevant to policy-makers. This suggests that where appropriate research in the mentoring in the small business context and e-mentoring for small business fields should provide a basis for assisting with determining policy or being "policy-relevant" in Storey's terms.	

3.6.3 Checklist 3 – External validity

The following table sets out the findings of the review for the criteria classified under External validity.

Table 14 - Findings - External validity

Criterion	Findings and Discussion
Type of sample	Refer to breakout tables 14a, 14b and 14c

Tables 14a, 14b and 14c set out the findings in relation to the characteristics of the sample and sampling techniques used.

Table 14a - Type of sample (private, public, mix, other)

Findings				
Type of sample	Private	Public	Mix	Other (inc. education settings)
Small business studies	5	0	0	2
Mentoring studies	7	2	2	2
E-mentoring studies	4	1	0	6
Total	16	3	2	10
	Discussion The type of sample is relevant to evaluation of effectiveness because it raises the issue of whether even if the assistance was effective in private sector samples, whether those findings are generalisable beyond this sector. 10 studies were in educational settings and this raises the question of whether these findings are generalisable to the private or public sector. This review of effectiveness studies according to this criterion confirms that generalisability is a key research challenge shared by the informing disciplinary areas.			

Table 14b - Occupation of subjects

Findings				
Occupation of subjects	Entrepreneur/manager	Students	Managers	Other
Small business studies	6	1	0	0
Mentoring	4	0	3	6

studies				
E-mentoring studies	3	8	0	0
Total	13	9	3	6

	Discussion The occupational spread or concentration within a sample will impact on a study's internal or external validity in that a spread of occupations will result in a high level of external validity while a concentration of particular occupational or occupational groupings may improve internal validity but limit the findings to that population. Not surprisingly entrepreneurs dominated in the sample of studies selected, followed by students and managers working in an organisational setting. The review of effectiveness studies according to this criterion confirms that generalisability is a key research challenge shared by the informing disciplinary areas.

Table 14, continued ..

Criterion	Findings and Discussion
Sample type and sampling	Findings Only two of the studies reviewed explicitly discussed statistical external validity checks while one indicated that external validity was maximised by way of independent review and verification. The studies could be conceptually divided into those which considered specific groups in specific settings in which the samples could be referred to as homogenous in some way, and those whose studies were across different settings, sectors, industries, etc. and could be considered as heterogenous in some way. The following tables gives some examples of how the samples were described in a selection of the studies. Refer to breakout tables 14c and 14d.

Tables 14c and 14d detail the findings in relation to the heterogeneity or otherwise of the sample.

Table 14c – Nature of sample - homogenous

Findings	
Nature of sample - cohort	Research study
Female engineers and scientists	Boyle-Single
Doctoral students	Gordon etc
School students	O'Neill and Dimock
Educators	Noe
Engineering graduates	Chao
Undergraduate social work students	Cascio and Gasker
Professional independent contractors	Rickard
Women with potential for career advancement in commercial organisations and universities	Pfleeger and Mertz

Table 14d – Nature of sample - heterogenous

Findings	
Nature of sample	Study
Service sector	Deakins
Retail sector	Kent
Retail managers	Broadbridge
Owner managers in small business – 6-60 employees across sectors	Devins and Gold

Table 14, continued ..

Sample type and sampling	Discussion The homogeneity of the samples referred to in Table 14c provides a potential basis for claiming high internal validity of findings around effectiveness. However this homogeneity or particularisation of the sample may compromise the representativeness of the sample and therefore the generalisability of the findings to the broader education or business sector.

	Conversely, the studies referred to in Table 14d, because they occur across sectors, occupations, etc. or are characterised by heterogeneity can potentially claim representativeness, and therefore high external validity and generalisability. However, on the basis that the sample may be atypical or contaminated by other factors in some way, the internal validity of these studies is potentially compromised.					

As Buelens et al. (2005) suggest, often the selection of research strategy involves a form of trade-off between internal and external validity and the review suggests that this is the case with the studies considered.

The impact of small sample sizes on generalisability is discussed by Curran and Blackburn (1994). Where the size of a sample is small, there is potential for the cohort to be non-representative of the broader population. So where sample size is small, there are potential inferential and generalisability difficulties.

Sample size however cannot be usefully considered without considering the research strategy. A small sample for a series of in-depth interviews, for example, may be appropriate while a larger sample is obviously more desirable when using a quantitative approach which relies on establishing statistical significance. The following table sets out sample size by study and notes whether the study adopted qualitative or quantitative methodology. *(Note that where combined quantitative and qualitative approaches are used in Table 14e, both sample sizes are recorded so studies do not total 31.)*

Refer breakout table 14e.

Table 14e sets out sample size by whether qualitative or quantitative data underpinned the study.

Table 14e – Sample size by qualitative or quantitative research methodology

Findings						
		< 50	50-100	101-200	201-1,000	> 1,000
Small business studies	Qualitative	2	1	0	0	0
	Quantitative	2	0	1	0	2
Mentoring studies	Qualitative	5	1	1	0	0
	Quantitative	2	2	4	0	0
E-mentoring studies	Qualitative	4	3	2	0	0
	Quantitative	1	1	1	0	1
Discussion						
Of all the samples used in mentoring and e-mentoring studies, 13 of the 24 samples involved qualitative approaches to effectiveness evaluation using sample sizes of less than 100. This suggests that in e-mentoring and mentoring studies using qualitative approaches, sample sizes of less than 100 predominate. This in turn may suggest that sample size is not a major issue in compromising qualitative research in the informing mentoring and e-mentoring research.						

The following table sets out at which stage of Storey's model the effectiveness studies were, in the judgement of the researcher, located (refer to explanation of Storey's evaluation steps from 1-6 in section 1.13.1.4).

Table14f - At which stage of Storey's model

Findings						
	Monitoring			Evaluation		
At which stage of Storey's model	1	2	3	4	5	6
Small business studies	0	1	2	1	0	3
Mentoring studies	0	1	8	2	2	0
E-mentoring studies	0	1	8	0	2	0
Total	0	3	18	3	4	3
Discussion						

In Storey's terms, of the 24 mentoring and e-mentoring studies, 18 "monitored" evaluation while only six undertook "evaluation". Whether or not the characteristics of the predominantly "monitoring" studies as defined by Storey compromise the credibility of mentoring and e-mentoring studies is confirmed as an issue by this review.	

Table 14, continued ..

Criterion	Findings and Discussion
Type of sampling	Refer to breakout table 14g

Table 14g - Type of sampling

Findings				
Type of sample	Random	Non-random	Mix	Not reported
Small business studies	2	5	0	0
Mentoring studies	4	7	0	2
E-mentoring studies	0	10	1	0
Total	6	22	1	2
	Discussion Of the mentoring and e-mentoring studies, 17 of the 22 used non-random sampling. This review suggests that studies in this field adopt research strategies which predominantly use non-probability samples. The extent to which the use of non-probability sampling compromises the informing fields is confirmed as an issue by the review.			

Criterion	Findings and Discussion
Sample type and sampling	Discussion – summary of Tables 14e, 14f and 14g Representativeness and generalisability were confirmed as issues arising out of the review of sample type, sample size and sampling method. Of the mentoring and e-mentoring studies, 17 of the 22 used non-random sampling. The review suggests that studies in this field adopt research strategies which predominantly use non-probability samples. This is combined with the fact that 11 of the studies in the small business, mentoring and e-mentoring fields adopted qualitative approaches with sample sizes of less than 50, 20 of the 24 mentoring and e-mentoring studies used a non-experimental approach, and 18 of the mentoring and e-mentoring studies at Step 3 or lower on Storey's model. If the review of effectiveness studies in the informing disciplinary areas is grounded in positivist assumptions, the generalisability, inferential power and external validity of the research in the informing disciplinary areas is potentially open to challenge on these grounds. The extent to which these issues compromise knowledge claims in effectiveness studies in the informing disciplinary areas is confirmed as a key issue by this review.

Table 14, continued ..

Findings			
Internal/external evaluation	Overall 7 of the 31 studies were internal and 18 studies were external. Six studies did not report on whether or not they were internal or external.		
Internal or external study?	Internal	External	Not reported
Small business studies	0	5	2
Mentoring studies	1	9	3
E-mentoring studies	6	4	1
Total	7	18	6
	Discussion With seven of the 31 studies internal, and six studies not reporting on whether or not they were internal or external, the potential for bias is confirmed by the review process. This has implications for data quality with robustness open to challenge on this basis.		
Criterion	Findings and Discussion		
Liberal/conservative values	This criterion appeared to be relevant in the case of the MacDonald and Coffield (1991), the Boyle-Single et al. (2002) and Pfleeger and Mertz		

	(1995) studies.
	Discussion In the case of the MacDonald and Coffield (1991) study, the researchers considered the political context of providing government-funded assistance to entrepreneurs and make the point that this is a politically-driven assistance strategy. The Pfleeger and Mertz (1995) study considered mentoring as a means to addressing gender inequity in the workplace. The stated objective of the MentorNet program was also to address gender inequity so in Gibb's (2003) terms was aimed at effecting change rather than maintaining the status quo. The value context, into which the intervention programs were introduced, was particularly evident and made explicit in these three cases but is relevant to all effectiveness evaluation studies.
Evaluation level (individual or policy/program)	Refer to Discussion of DeLone and McLean criteria under Impact.

3.6.4 Checklist 4 – Construct validity

The following table sets out the findings of the review process in relation to the criteria classified under construct validity.

Table 15 - Findings - Construct validity

Criterion	Findings and Discussion
Number of data sources	Findings (refer to Table 12b) The quality of the data collected is the issue when considering this criterion. With 18 of the total 31 studies using only one data source, and only three studies using more than two data sources, the review suggests that data triangulation or use of multiple lines of evidence is an issue in the informing disciplinary areas. 22 of the 31 studies used questionnaires as the basis for their data collection and it is unclear the extent to which the studies established the reliability and validity of the survey instruments used. That is, whether the survey instruments were reliably measuring the constructs that were being purportedly measured in the research, is not well established across the disciplinary studies. 25 of the studies used self-report data and this form of data are open to challenge on the basis that self-report data does not necessarily concord with data collected by alternative data collection methods (Nisbett 1977).
	Discussion Overall, the review indicates a potential problem with the quality of the data in terms of the number of data sources. (Refer also to Table 12b under User satisfaction dimension at Findings - DeLone and McLean framework.)

Stakeholders were reviewed separately for small business studies and mentoring and e-mentoring studies.

Table 15a(i) – Primary stakeholders identified - small business studies

Findings	
Stakeholders (measure outcomes for which parties)	Entrepreneur or small business manager
Small business studies	7

Table 15a(ii) – Primary stakeholders identified - mentoring and e-mentoring studies

Findings						
Stakeholders (measure outcomes for which parties?)	Mentees	Mentors	Mentees and mentors	Mentees, mentors and host or program developers	Mentees, mentors and organisation	Mentees, mentors and local business community
Mentoring studies	8	1	2	0	1	1
E-mentoring studies	3	0	6	1	1	0

Total	11	1	8	1	2	1

Discussion
Clutterbuck (2003) suggests that with mentoring being an alliance which is so clearly a two-way relationship, the number of studies which do not evaluate the effectiveness of a program on behalf of both mentees and mentors is of concern. The review found that 12 of the 24 mentoring and e-mentoring studies identified mentees and mentors as key stakeholders, and 10 evaluated outcomes as a minimum for mentees and mentors. These findings suggest that the failure to evaluate effectiveness for both mentees and mentors may compromise construct validity. It is a possible failing of the research field which may contribute to limited robustness. All the studies identified either mentees or mentors as stakeholders as a minimum so this would suggest that researchers have at least implicitly acknowledged that their evaluations of effectiveness are, in Seddon's terms, from the point of mentees or mentors as primary stakeholders.

Table 15b(i) - Evaluation on behalf of which stakeholders - small business studies

Findings			
Evaluation on behalf of which stakeholders	Entrepreneur or small business manager	Entrepreneur and policy-makers	Entrepreneur, local economy and taxpayers
Small business studies	2	4	1

Table 15b(ii) - Evaluation on behalf of which stakeholders - mentoring and e-mentoring studies

Findings						
Evaluation on behalf of which stakeholders	Mentees	Mentors	Mentees and mentors	Mentees, mentors and host or program developers	Mentees, mentors and organisation	Mentees, mentors and local business community
Mentoring studies	7	1	1	0	3	1
E-mentoring studies	6	0	3	2	0	0
Total	13	1	4	2	3	1

Findings
The review confirmed a distinction in the effectiveness studies between the parties for whom effectiveness is measured (referred to in Table 15a(i) and (ii) as Primary stakeholders) and on which stakeholder's behalf the evaluation is conducted (referred to in Tables 15b(i) and 15b(ii) as stakeholders). This would suggest that the role of stakeholders in defining evaluation purpose is fairly well established in the informing disciplinary areas, and does not represent a major threat to construct validity.

Table 15, continued ..

Criterion	Findings and Discussion
Concepts clearly defined	Findings and discussion
	The mentoring literature was marked by limited agreement on the nature of the antecedents to impact or effectiveness. In the cases of Kram 1980, Noe 1988 and Chao 1997, the researchers undertook their studies using the definitions and operationalisation of the mentoring construct proposed by Kram. However the measures selected in different contexts and for different stakeholders were necessarily diverse reflecting different program contexts and purposes. The definition of mentoring and operationalisation of the construct which was necessarily contingent upon the aim of the particular program was made explicit in many of the studies reviewed.
	Some of the studies adopted what O'Neill (1998) referred to as a tautological definition of mentoring by suggesting that all the benefits were the results of mentoring. Pfleeger and Mertz for example discuss the fact that outcomes were measured against "what was done in the name of mentoring" (Pfleeger and Mertz 1995) but acknowledged that their study was limited in that the antecedents were not precisely defined. Hale (1999) similarly does not define the assistance and types of behaviours which produced the outcomes identified in that study.
	Some of the studies defined mentoring very broadly (Broadbridge 1999, Dusseldorp Skills Forum 1999, Lewis 2005) and this broad definition means that effectiveness cannot be linked in any valid way to the antecedents which produced them.

	In Buelens et al.'s terms, inadequate or context-specific definitions of the mentoring construct impacts on construct validity. This in turn impacts on comparability and claims of causality, and is confirmed as a major challenge for mentoring research.

Table 15c - Measures of ineffectiveness as well as effectiveness

Findings		
Did study measure ineffectiveness as well as effectiveness?	Yes	No
Small business studies	4	3
Mentoring studies	2	11
E-mentoring studies	0	11
Total	6	25
Discussion		
Of the 31 studies, 25 did not include any measures of ineffectiveness alongside measures of effectiveness. Across the research disciplines reviewed, response bias is an issue. That is, those who respond to a questionnaire are more likely to have had a positive experience with the assistance provided under a program or policy initiative. The review would suggest that identifying and monitoring ineffectiveness is a possible area for further research.		

3.7 Summary of findings and discussion

The review of effectiveness studies in the informing disciplinary areas indicated that the DeLone and McLean dimensions as redefined for the structured e-mentoring context provide a relevant and appropriate taxonomy for dealing with the complexity and variability in mentoring and e-mentoring effectiveness studies, and usefully and comprehensively accommodated the diverse metrics used across the effectiveness studies. The major finding in relation to the metrics used in evaluating effectiveness against the DeLone and McLean dimensions, and specifically, in evaluating benefit or impacts, was their diversity and contingent nature.

Data quality was confirmed as an issue which potentially compromises the robustness of effectiveness research across the informing disciplinary areas, specifically the lack of data triangulation or multiple lines of evidence, the paucity of longitudinal data, and predominantly self-report data. The potential for bias on the part of evaluation researchers was confirmed with seven of the mentoring and e-mentoring studies being internal evaluations and four studies failing to identify the relationship between the program and evaluation researcher. In contrast to Clutterbuck's assertion that mentoring evaluation researchers fail to distinguish between assigned and naturally-occurring mentoring partnerships (2003), all but one of the effectiveness studies reviewed did make this distinction. This would suggest that this is not a major obstacle to comparability and advancing evaluation research. The heterogeneity or homogeneity of the samples used and therefore the validity of the data arising from the effectiveness studies left many open to challenge on the basis of compromised internal or external validity. On the basis of sampling problems, the difficulty of making generalisable findings was evidenced in the review.

Problems with the definition of concepts in the mentoring and e-mentoring studies was confirmed most importantly in relation to the definition of the mentoring construct. The review identified the major problems with construct definition as the necessarily specific relationship between the purpose of an assistance program and the mentoring definition, the tautological nature of the definition of mentoring, and very broad definitions of mentoring. The review confirmed that there was limited commonality in the definition, measurement and operationalisation of the mentoring construct. These difficulties confirm that construct validity, and in turn, comparability, establishing antecedents to effectiveness, and claims of causality are key research challenges in the mentoring and e-mentoring fields. The review confirmed that one of the major research challenges in this context is defining the mentoring construct where the supports provided are as unique as the contexts into which the assistance is provided.

Another major threat to construct validity confirmed in the review was the lack of definition of the nature of the support in programs which provided third-party support. Even where studies indicated that support was provided, description of the nature of that support was limited. This suggests that the DeLone and McLean dimension of Information quality as redefined is critical to establishing antecedents to effectiveness and fundamental to proposing causal linkages between a program and effectiveness, and confirmed as a neglected area in the existing research.

The review confirmed the predominance of the questionnaire as the major type of data collection instrument, followed by questionnaire and interview combined. The review of mentoring and e-mentoring studies confirmed the predominance of the use of qualitative data alone or combined with quantitative methods with only four of the 24 studies relying on quantitative methods alone. The review confirmed the predominance and importance of qualitative methods as a means of exploring and evaluating mentoring and e-mentoring effectiveness. That only one of the qualitative studies was categorised as being higher than Step 3 on Storey's model indicates that evaluation in Storey's terms, against criteria grounded in positivist assumptions, does not, to date, characterise effectiveness evaluation research in the mentoring and e-mentoring fields.

While all the studies adopted a summative approach to evaluation research, the review also confirmed the predominance of a formative emphasis in program effectiveness studies across the informing disciplinary areas. In considering whether or not and for whom the effectiveness studies would be useful, the review identified 21 of the 31 studies as primarily useful to practitioners, confirming the findings in relation to the predominantly formative emphasis of the effectiveness studies reviewed, and the importance and acceptance of "considerations of use" in research in the informing disciplinary areas.

The goals of an assistance program were the predominant evaluative referent identified in the review. This is in contrast to Clutterbuck's claim that most mentoring studies fail to relate outcomes back to program goals (Clutterbuck 2003 Item 4 Outcomes). The three programs which explicitly discussed the program in terms of liberal or conservative values were the MacDonald and Coffield (1991), Boyle-Single et al. (2002) and Pfleeger and Mertz (1995) studies. Their analyses suggest that the value context in which the program operates can be critical to evaluating effectiveness.

The review identified only eight of the 31 studies as adopting experimental approaches which attempted to control for contextual variables in some way. Twelve studies described the sample in detail allowing for judgement around the typical and atypical characteristics of the sample which may impact on effectiveness and the generalisability of the studies' findings. A surprising 11 studies neither controlled for contextual influences nor provided demographic data about the sample used in the effectiveness study. The review therefore confirms the difficulty of making inferences about causal relationships between an assistance program and effectiveness in the informing disciplinary areas. Such claims are compromised by the failure to address the issue of how contextual factors may influence effectiveness.

Finally, only six of the 31 studies, and only two of the 24 mentoring and e-mentoring effectiveness studies included measures of ineffectiveness as well as effectiveness suggesting that this is not an approach used widely in the informing disciplinary areas to evaluate effectiveness.

Conclusion

The review confirmed that while the DeLone and McLean (1992) taxonomy usefully accommodated the metrics used to date, it does not accommodate the contextual factors upon which effectiveness is contingent, nor the shared research challenges of the informing disciplinary areas which impact effectiveness evaluation. This justifies the repositioning of the taxonomy within a contingency framework specifying the range of contextual factors upon which effectiveness may be contingent, and the inclusion of the methodological phase which sets out some of the common threats to validity of effectiveness evaluation research across the informing disciplinary areas.

As suggested by Curran and Blackburn (2001) of small business research:

> *Whatever the criteria applied, .. given the complexities and range of influences .. all studies are bound to fail on one or more criteria, limiting the generalisability of their*

results. In other words, there are no perfect unchallengable outcomes from research on SMEs (or any other business phenomena) (p.7).

The review confirms that this understanding is appropriate to the context of evaluating mentoring and e-mentoring research in the small business context. The criteria developed and adopted in the review, and the research challenges identified across the informing disciplinary areas, assisted with developing a framework for effectiveness evaluation which creates a coherence around the issues, is situationally-responsive and has practical application in providing a basis for selecting an evaluation strategy. In Curran and Blackburn's (2001) terms, given the complexities and range of influences, the proposed contingency framework can assist not only with selecting a research strategy, but with identifying where the research strategy may be open to challenge, and upon which criteria the challenge can be based.

3.8 Proposed framework

Because e-mentoring in the small business context is an emerging research area, an evaluation framework should not be prescriptive either in methodology or focus. Curran and Blackburn (2001) advocate a "horses for courses" approach to small business research (p.44). Likewise Hytti and Kuopusjarvi (2004) suggest that there is no one size fits all approach (p.26). In developing a framework to provide a basis for guiding researchers and practitioners with selecting an evaluation strategy for e-mentoring in the small business context, this research draws directly on and transfers to the e-mentoring in small business context the work of Myers et al. In "A Comprehensive Model for Assessing the Quality and Information Systems Function: Toward a Theory for Information Systems Assessment". They suggest that their IS Assessment Selection Model "neither dictates a universal solution ... nor advocates a situation-specific view" (Myers et al. 1998 p.10). "Contingency theories, " they suggest, "propose that different strategies are appropriate for different settings. They differ from the universal view by emphasising 'it all depends' and they differ from the situation-specific view by asserting that there are classes of settings for which strategic generalisations can be made" (p.110).

Further to the review of existing literature in the multidisciplinary research areas which inform e-mentoring effectiveness in the small business context, it is proposed that the framework set out in Table 16 provides a justified, appropriate and sufficient basis for developing e-mentoring effectiveness evaluation research strategies.

Table 16 - Structured e-mentoring in the small business context contingency theory development framework

Phase 1 - E-mentoring dimensions and measures	Phase 2 - Context – contingency factors	Phase 3 - Key methodological decisions in maximising validity	Phase 4	Phase 5
System Quality – nature and quality of engagement with e-mentoring partner – considered or measured with reference to: Nature and quality of engagement between mentee and mentor ▪ type of advice and career and psychosocial support provided including (career) sponsorship (if relevant to model of mentoring used), exposure and visibility, coaching, protection and challenging assignments, (psychosocial) role modelling, acceptance and confirmation, counselling and friendship ▪ business skills support provided ▪ whether engagement continued beyond program ▪ whether and how mentor used as sounding board ▪ level of respect for e-mentoring partner ▪ duration of e-mentoring partnership ▪ perceived importance of advice received ▪ perceived difference in mentee's ability to achieve ▪ perceived quality of the relationship ▪ guidance received ▪ most positive aspects of mentoring partnership ▪ most difficult aspects of mentoring partnership ▪ whether willing and active collaboration occurred ▪ whether mentoring partnership was a positive/negative experience ▪ whether mentee/mentor would recommend program ▪ quality of the rapport within a dyad ▪ quality of the contracting between the mentoring partners ▪ skills (netiquette, understanding of mentoring) ▪ contractual expectations (what is the role of each party in the arrangement?) ▪ goal clarity (what are we trying to achieve?) ▪ goal commitment ▪ relationship commitment Nature and quality of engagement with facilitator ▪ satisfaction with facilitation, nature and frequency of engagement with facilitator **Information Quality – nature and quality of and interaction with content and structure (process of adaptation/implementation) – considered or measured with reference to:** ▪ the process of learning including adaptation of generic content to individual needs, personal goal setting and integration of learning with day to day business activities ▪ quality and development of mentoring engagement in terms of phases ▪ whether assigned/self-selecting mentoring partnerships ▪ nature and quality of programmatic features ▪ pedagogical structure of program ▪ nature and value of matching process ▪ quality and nature of support from facilitator	**Research strategy considered with reference to:** **External environmental factors** ▪ industry ▪ sector ▪ competitive environment ▪ culture ▪ economy ▪ availability of resources ▪ climate ▪ government policy content/policy incentives **External mentee business factors** ▪ age of business ▪ stage of business life cycle ▪ size of business as defined by turnover, number of employees and/or profit ▪ qualifications and experience of business owner/manager ▪ deployment of technology ▪ socio-cultural background ▪ products and services produced ▪ business structure ▪ previous business success ▪ type of clients served ▪ business location ▪ business home or office-based **Internal mentee and mentor factors (also factors relating to host/facilitator)** ▪ socio-economic background/class ▪ learning attributes	**Research strategy considered with reference to:** **Internal validity** ● time frame – cross-sectional (to capture levels of improvement, short-term outcomes or establish outcomes with reference to pre- and post-assistance states) or longitudinal (to capture long-term behaviour change, evolving benefits, and development of mentoring phases) ● experimental/non-experimental approach (to establish causal relationships between antecedents or outcomes, or to explore and expand understanding, or suggest influences) ● which, if any, contingency variables are controlled for (in experimental context) ● evaluative referent – effectiveness measured against outcomes for matched non-assisted group, against program goals or fitness for purpose, against individual personal goals, against the extent of time and/or money invested by small business owner/manager, against external business and management competencies, etc? ● nature of assessment of learning outcomes or development - referenced normatively, ipsatively or against external criteria (development of mentee may not usefully be measured against other program participants or with reference to, for example, external competencies) ● qualitative/quantitative/combined approach (which approach or combination of approaches will capture outcomes in a form which is useful and relevant in the context of the purpose of the evaluation of the assistance program and in detailing individualised outcomes) ● summative, formative or combined	**Selection of research strategy**	**Selection of "measures" or ways of understanding each dimension**

- quality of pre-program training provided
- satisfaction with matching process
- relevance of support/content
- timeliness of support/content
- value of structured exercises
- level of system security

Use
- interaction/involvement frequency
- time spent with mentor/mentee
- engagement with content
- engagement with facilitator
- ease of access
- regularity of engagement
- extent to which email delivery impacted on use

User satisfaction
- recommend program to others, satisfaction with mentee/mentor interaction, nature of stories of mentoring experience told by the mentee, whether mentees and mentors would use service again, nominated monetary value of program, perceived value and significance of intervention

Impact

Mentee – career
- promotion, salary growth, intrinsic job or work satisfaction, future prospects, career progression, career mobility, opportunities, overcome discrimination, ability to overcome obstacles to career progression, career planning - also measures of ineffectiveness, intended and unintended outcomes (side effects)

Mentee – psychosocial
- feelings of pride, enjoyment and self-achievement, flexible and adaptable leadership, self-worth, ability to achieve objectives, ability to cope with problems, ability to learn and manage, ability to cope with change, sense of competence, sense of professional identity, self-development, validation and emotional support - also measures of ineffectiveness, intended and unintended outcomes (side effects)

Mentee - business skills development (other than direct economic)
- improved skills in areas of finance, marketing, pricing and costing, bookkeeping and accounts, taxation, computer skills, budgeting, credit control, stock control, company law, planning, decision making, record keeping, cash flow planning, preparing a business plan, strategic growth planning, maximising business potential, adapting to business change, developing new ideas, producing action plans for business development, becoming more entrepreneurial, disseminating innovation in the business community, networking, using information to inform decision-making, awareness of training and development issues, delegation skills, greater awareness of strengths, weaknesses, opportunities and threats, broader perspective on key business issues, greater efficiency, more likely to take on employees, more likely to seek assistance from

- available skills (technology skills and resources such as ready access to technology)
- learning styles
- personality
- gender
- race
- geographical location
- education level
- years in business
- team playing skills
- patience
- decisiveness
- risk-taking
- comfort with technology
- interpersonal skills
- mentee and mentor motivations
- mentee's career aspirations
- relationship with host organisation
- relationship with facilitator
- professional/non-professional
- belief that job performance and events which occur in a work setting are contingent on personal behaviour and under personal control (locus of control)
- identification with work or importance of work to self-image (job involvement)
- extent to which individual engages in career planning
- extent to which individual values work relationships (relationship importance)
- preparedness to invest time and money in program
- learning orientation of the entrepreneur or whether

approach (outcomes-based approach or looking to improve program or both?)

External validity
- type of sample (private, public sector, other) (to assist with generalisability and replicability if needed)
- occupation of subjects (to assist with generalisability and replicability if needed)
- type of sampling (random, non-random, mix, maximum variation sampling)
- sample size, sampling frame, response rate (in small business, sample sizes can be small, large sampling frames unavailable and response rates low - how are these to be dealt with and how do they impact on representativeness and generalisability)
- whether an internal/external evaluation (even though distance may not ensure objectivity and subjectivity may not threaten it, it may, so how does this impact on the credibility of findings)
- whether program has liberal/conservative objectives (does the assistance seek to maintain or challenge the status quo eg programs which target career advancement for women in an organisation can be seen as challenging the status quo, while a program included as an induction for new staff can be aimed at transferring cultural values of an organisation)
- the level of the evaluation (policy, macro-program, individual, etc)
- issues of rigour (team-based approach, reading back to social actors who provided the information, etc)

Construct validity
- the number of data sources and impact on data quality
- the nature of data and impact on data quality (e.g. self-report data only)
- precise definition of concepts and operationalisation of construct of mentoring

professionals such as solicitor or accountant, more likely to seek an alliance with another business professional - also measures of ineffectiveness, intended and unintended outcomes (side effects)

Mentee - business outcomes/economic
- employment growth/generation, sales rates/revenue increases, GDP, earned income/wages, rate of business startups/formation rate, projected turnover, exports, taxes and sales taxes generated, payroll taxes generated, collaboration and international networking opportunities, information transfer, improved international or regional competitiveness, increased efficiency - also measures of ineffectiveness, intended and unintended outcomes (side effects)

Mentor
- career rejuvenation, praise and recognition, positive feedback, increased self-confidence, career enhancement/advancement, increased information and knowledge, recognition and respect from peers, job satisfaction, feelings of being challenged and stimulated - also measures of ineffectiveness, intended and unintended outcomes (side effects)

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there is a culture of learning by the business including innovation, product and service changes
- aspirations for growth by owner managers

- clearly identifying stakeholders to assist with identifying purpose and use of the evaluation
- whether outcomes for all parties will be measured (mentees only, mentees and mentors, host organisation)
- whether measures of both effectiveness and ineffectiveness are to be used
- whether allowance for displacement and deadweight will be made (relevant when an experimental approach is used)
- whether self and administrative selection will be accounted for (can contribute to difficulties with establishing causality)
- response bias (can contribute to difficulties with establishing causality)
- influence on or relevance to policy-makers (should evaluation be 'policy-relevant?)

3.9 Conclusions

DeLone and McLean (1992) suggest that in "searching for an IS success measure, rather than finding none, there are nearly as many measures as there are studies" (p.61). Variability in approaches to measuring mentoring effectiveness similarly marks the mentoring and e-mentoring literature and was confirmed in this review. However, as Mitroff (1984) says: "What makes something scientific is not the absence of variability but rather .. our .. ability to study why the results vary" (Mitroff cited in Wood-Harper 1984 p.173). The framework proposed in Table 16 appears to impose a justified and useful taxonomy which might assist with our ability to study how, why and for whom effectiveness may vary.

The review indicated that the mentee/mentor interaction, interaction around content, use, user satisfaction and impact were contingent upon a range of factors such as mentee and mentor attributes including personality, learning styles and other learner attributes, the mentee or entrepreneur's business attributes, and the external environment in which the business operated for which many studies did not account. The proposed framework integrates these contingencies. The framework transfers, adapts and extends the DeLone and McLean model (1992) to the e-mentoring for small business environment.

The proposed framework aggregates the relevant measures used across the multi-disciplinary informing literature identified during the review process. It offers a prompt for key methodological decisions to be considered in determining a research strategy. This, in turn, ensures researchers consider methodological adequacy in terms of internal, external and construct validity. The framework is provided as an evaluation construct with options for consideration by evaluation researchers and practitioners - not as a universal or comprehensive description of reality.

Notably, the Myers et al. model (1998) does not specify linkages between the DeLone and McLean dimensions. The DeLone and McLean model (1992), as a systems model, codifies the interdependencies between dimensions, and the antecedent and consequential characteristics of the model for evaluating effectiveness. The restatement of the model set out in Table 16 *retains* the linkages between the dimensions as critical. Whether these are in causal terms as anticipated by DeLone and McLean, or as Seddon has suggested the linkages are more appropriately described as influence, will depend largely on the paradigm location of the evaluation research.

Transferring Myers et al.'s (1998) restatement of DeLone and McLean's Information Systems Effectiveness model as a contingency model to the evaluation of e-mentoring in the context of

small business provides a basis for "imposing some order" (Seddon 1999 p.3) on structured e-mentoring effectiveness evaluation. As Milton-Jenkins suggests, "there is no one best way to conduct research. Rather best methodology for the particular research project. The selection of the best methodology must be determined within the context of the research objective" (Milton-Jenkins 1984 p.103). The review confirmed this approach as appropriate and the proposed framework as a sound and justified means of not only selecting a methodologically justified, context-specific research strategy, but for making generalisations in this emerging disciplinary area, and therefore a means of advancing research and practice.

The proposed framework will, in the next chapter, be subjected to critique by experts across the fields of mentoring, e-mentoring and small business, with a view to improving its format, value and limitations.

The aim of this chapter was using a systematic inductive process to establish whether or not the proposed adaptation of the DeLone and McLean model as respecified for the e-mentoring environment was conceptually justified as an e-mentoring effectiveness evaluation framework. The review demonstrated that the framework set out in Table 16 can accommodate the metrics used in existing effectiveness studies from the informing disciplinary areas, and when incorporated with the contextual and methodological phases of the proposed framework, draws together in a useful and sufficient abstraction the complex interdependent dimensions of mentoring, the contextual factors upon which effectiveness is contingent, and the methodological choices which will impact on the validity of the effectiveness evaluation.

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Chapter 4

Refining the contingency framework

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4 Refining the contingency framework

4.1 Chapter overview

In this chapter, the contingency framework proposed in Chapter 3 will be subject to critique by a panel with a mix of expertise across the disciplinary fields of mentoring, e-mentoring, information systems, entrepreneurial learning and small business. The aim is to refine the framework in response to their challenges to, and critique of, its structure, relevance, appropriateness and sufficiency. The chapter will comprise an outline of the Delphi methodology, an overview of the questions set out in the Delphi questionnaires used in this study, presentation of the findings arising out of the questionnaires, and an analysis of these findings in a discussion section. Quotational data from the questionnaire responses will be included in the findings in section 4.5 to substantiate the interpretation which is presented in the discussion in 4.6.

4.2 Research rationale - why a Delphi study?

4.2.1 Why a group of experts?

The rationale behind using the Delphi technique is, in the absence of alternative techniques that will yield more robust data, to access the "collective intelligence" of a panel of experts on the basis of the "ability of a group to produce a result that is of better quality than any single individual in a group could achieve acting alone" (Turoff & Hiltz 2005 p.19). The principle underlying the Delphi approach is that "several heads are better than one in making subjective conjectures … and that experts will make conjectures based upon rational judgment rather than merely guessing" (Weaver 1971).

The Delphi technique provides for experts to approach a complex problem systematically (Arditi 2006 p.2) with a view to "relating all the contributions made by the individuals in the group .. [to] produce .. a group view or perspective" (Turoff & Hiltz 2005 p.8). The outcomes therefore represent the collective judgment of the experts involved (Turoff & Hiltz 2005 p.1).

4.2.2 Aims of Delphi study

The aim of the Delphi process is to "produce detailed critical examination and discussion (Turoff & Hiltz 2005 p.2) and to "develop themes, needs, directions or predictions about a topic (Neill 2003 p.1). Turoff and Hiltz suggest that Delphi is a process which can capture

disagreements as well as agreements (Turoff & Hiltz 2005 p.15) and that this is important "since some people's assumptions are other's uncertainties" (p.10). It is a structured process for exploring ideas and producing information to support decision-making.

4.2.3 Characteristics of the methodology

The Delphi approach involves a series of questionnaires alternated with controlled opinion feedback (Adler & Ziglio 1996). The rigour and reliability of the Delphi technique in relation to generating ideas and use of participants' time was confirmed by Ulschak (1983). Reliability has been found to be greatest with a group size of 13 (Dalkey et al. 1972) but can be effective with as few as four experts (Brockhoff 1975). This Delphi study accesses the views of four experts.

Anonymity is critical to the reliability of the technique in an effort to limit or preclude biases which may be present in single-authored research, "follow the leader" tendencies in group discussions, reluctance to abandon previously stated opinions (Arditi 2006), and other biasing effects with face to face panel deliberations (Cline 1999). However divulging the identities of experts who comprise the panel at the outset of the study may assist with motivation and does not contaminate the exchange process (Turoff & Hiltz 2005). In this Delphi study, the experts were informed of the identities of those involved at the beginning of the process but views presented back to the experts in the subsequent round were not attributed. Permission was received to include the names and profiles of the participants as part of this thesis (refer to Table 17 in section 4.3.1).

The selection of experts to make up the panel is critical in maximising the value of the process. The researcher should aim for a "representative pooling of judgments" (Ludwig 2005 p.2) so selection is purposive on the basis of characteristics and qualifications of respondents (Ludwig 1997). In this case, experts were selected for their experience and eminence in the relevant disciplinary field.

The process is comprised of multiple questionnaires and can elicit both qualitative and quantitative data collection and analysis. In this study, the data was exclusively qualitative. Throughout the process, the researcher posed a series of questions, analysing the feedback and relaying the collated data and data analysis back to the expert panel, who then provided subsequent feedback. The content of subsequent questionnaires was informed by responses to the initial questionnaire. While a series of three iterations or rounds is usual (Altschuld 1993), this study involved two rounds of data collection and a final presentation of a data analysis and summary.

4.2.4 Salient characteristics of Delphi process

Asynchronous communication between the researcher and experts marks the Delphi process. Experts are able to "contribute to those parts of a complex problem for which they have both the appropriate knowledge and appropriate problem solving skills" (Turoff & Hiltz 2005 p.3). Experts do not have to respond to every question (Turoff & Hiltz 2005) and can opt not to answer one or more questions if they feel it is beyond their field of expertise. In this study, this occurred only in a limited number of cases.

4.2.5 Role of the researcher in a Delphi study

The role of a researcher in a Delphi study is to:

- summarise expert feedback based upon the breakdown of the respondents into various specialised expert subgroups or differing interests and perspectives (Turoff & Hiltz 2005);
- provide each member with new items that they have not yet seen (Turoff & Hiltz 2005);
- tally votes and make the vote distribution viewable when sufficient votes are accumulated (Turoff & Hiltz 2005) (not relevant in this context where "votes" were not sought);
- organise a pro and con list of arguments about each question (Turoff & Hiltz 2005);
- allow individuals to compare opposing arguments (Turoff & Hiltz 2005);
- point out which "maybe" votes result from true uncertainty on the part of the respondents, and which result from wide differences in beliefs between subgroups of respondents (Turoff & Hiltz 2005);
- improve the understanding of the participants through analysis of subjective judgments to produce a clear presentation of the range of views and considerations (Turoff & Hiltz 2005);
- detect hidden disagreements and judgmental biases that should be exposed for further clarification (Turoff & Hiltz 2005);
- detect missing information or cases of ambiguity in interpretation by different participants (Turoff & Hiltz 2005);
- detect critical items that need to be focused upon (Turoff & Hiltz 2005);
- determine whether people who feel a certain way about an issue feel the same way about another issue (Turoff & Hiltz 2005);
- inform the respondents about what they are really saying, and how it compares to the group as a whole (Turoff & Hiltz 2005);
- detect and expose hidden factors or relationships of which the group may not be completely aware (Turoff & Hiltz 2005); and
- provide feedback information to make the respondent aware of the range of opinions and the reasons underlying those opinions (Ludwig 1997).

4.3 Methodology - the Delphi process

4.3.1 Selection of expert panel

A shortlist of eminent experts from each of the disciplinary areas reviewed in Chapter 2 was compiled and these individuals were invited to participate in the Delphi study. The experts were selected on the basis that they had a research interest in evaluation in either the small business, mentoring, e-mentoring and/or entrepreneurial learning research areas, and were highly qualified, widely published and well respected in their respective fields. The experts were approached by email and asked whether or not they would be prepared to participate in a Delphi study which aimed to consider a framework for selecting research strategies for evaluating the effectiveness of e-mentoring in the small business context. Four out of the seven individuals approached agreed to participate and these individuals formed the expert panel for this Delphi study. The experts are listed in Table 17 below.

Table 17 – Delphi panel of experts

Name	Areas of research interest include:	Role and location
Robert Blackburn	Training and assistance for SME's, small business research	Director of Centre for Small and Medium Sized Enterprises, Associate Dean (Research), Warwick Business School, University of Warwick, UK Editor *International Small Business Journal*
David Clutterbuck	Mentoring (general)	Visiting Professor, Sheffield Hallam University, Mentoring and Coaching Research Unit, UK
David Megginson	Mentoring, e-mentoring and coaching for SME's, evaluation of e-mentoring for SME's	Professor of Human Resource Development, Sheffield Hallam University, Mentoring and Coaching Research Unit, UK
Stephen Burgess	Small business and Information Systems	Senior Lecturer, Information Systems, Victoria University, Australia

4.3.2 The iterative feedback process

The Delphi process was undertaken in 2006. The study originally comprised two rounds of questionnaires. The Delphi process adopted was a departure from the standard Delphi technique in that the first round questionnaire used a qualitative approach to data collection while the second round used a mix of data collection methods. The first round introduced the expert panel to the proposed framework and asked for comment via open questions. The second round asked for further clarification or correction of the summaries of earlier responses in the form of qualitative data, and comprised a series of closed questions using a 5-point Likert scale in an attempt to ascertain the extent of agreement and disagreement with the researcher's summaries

of the first round responses. A summary of the qualitative responses from the first round along with the responses themselves were provided back to the expert panel in the second round.

Subsequent to the first message, further clarification was requested by a member of the expert panel. In response, additional material including a definition of e-mentoring, a summary of the DeLone and McLean model, a description of how the contingency framework was intended to be used, and clarification of how the DeLone and McLean model had already been respecified was presented to all panel members. This information was provided a week after the initial message. Two of the experts did not complete the Likert responses and therefore the second round of the Delphi process which aimed to quantify the extent of agreement and disagreement around the key issues could not proceed, therefore resulting in exclusively qualitative data. However the comments made in the first and second rounds were considered sufficiently comprehensive to indicate the diversity of views and provide a reliable and sufficient indication of extent of agreement and disagreement around the issues being considered. When Panel experts responded to a question with a reference to a previous question, the quotational data was not duplicated. The expert's response was however taken into account in the interpretation.

At the conclusion of the two rounds, it was felt that a sufficient degree of understanding of the agreement, disagreement, assumptions and challenges to the framework had been provided to obviate the need for a subsequent round. Each of the two iterations was circulated via email with attachments in Microsoft Word format to minimise cross-platform difficulties. The questionnaires provided to the expert panel in the two rounds are attached as Appendices 2a and 2b.

Although the group was small, the feedback was rich, detailed and highly informed. The strategy provided expert opinion across those interdisciplinary areas which inform the research area of the evaluation of e-mentoring in the context of small business.

4.4 Delphi questions

The Delphi questionnaires are attached as Appendices 2a and 2b. The questions sought expert input on the issues arising out of each of the phases of the framework. Questions then sought expert opinion on the framework (i) as a means of providing for variability in effectiveness measures and outcomes, (ii) as having utility in different contexts, (iii) as having relevance whether a positivist or constructivist stance is adopted, and (iv) for accommodating the contingential nature of effectiveness. In presenting the quotational data, the question numbers from the questionnaire have been maintained for clarity.

4.5 Findings

The following tables comprise a summary of first and second round responses to the Delphi questionnaires. The participants' responses are set out below the statement on which the experts were asked to comment.

4.5.1 Section 1 Phase 1 - E-mentoring dimensions and measures

1.1 Statement: DeLone and McLean's dimensions provide a useful and appropriate taxonomy for describing and evaluating e-mentoring effectiveness.

Table 18 – Responses to 1.1

#1	It is useful in the sense of setting out an initial framework. It is appropriate but perhaps the practical adequacy may be difficult
#2	It's only partially useful. Missing in my view are the elements of Skills (netiquette, understanding of mentoring); contractual expectations (what is the role of each party in the arrangement?), goal clarity (what are we trying to achieve?), goal commitment and relationship commitment. The DeLone and McLean dimensions seem to relate to the mechanical not the behavioural. You add these variables in your framework but it's not clear how the two link up.
#3	I agree that as a starting point the dimensions provide a useful taxonomy.
#4	This seems to over-emphasise content given by the scheme to mentor and mentee. I agree that these can be useful but they do not lie at the core of what I understand to be a mentoring relationship. What about quality of contracting between the two? Similarly with Impact statements, there needs to be space for ipsative comments about the mentee's own understandings in their own terms.

1.2 Question: If any, what do you see as the positives of borrowing from Information Systems effectiveness models such as DeLone and McLean's model in evaluating e-mentoring in the small business context?

Table 19 – Responses to 1.2

#1	The models are appropriate and relevant for evaluating e-mentoring.
#2	As part of a model, fine. They seem to be taking the term systems in a very narrow way. A true system within organisations or between organisations is heavily influenced by and includes the human factors, as you have recognised.
#3	The obvious advantage is that someone else has done a fair bit of research in a similar area to yourself. There are lessons that they have learned along the way in developing their framework and there is no point in re-inventing the wheel.
#4	It's a starting point.

1.3 Question: If any, what do you see as the negatives?

Table 20 – Responses to 1.3

#1	There may be some difficulty in transferring a general model to the specificity of the small business and particular types of small business.
#3	The major negative is that the framework may be seen as 'the' way to evaluate IS effectiveness. It is important that as a new researcher you think 'outside the box' as to what factors may influence your framework. It is also important to consider the types of systems that D&M were thinking of (large systems?) and to consider whether your framework is doing anything differently. Also – it is necessary to consider that the type of system you are evaluating is far more specific – and with that may come a series of factors that are not apparent in a more generic framework.
#4	Fails to pay attention to individual and idiosyncratic agendas.

1.4 Question: If any, what do you think are the omissions in DeLone and McLean's taxonomy when applied in the context of e-mentoring?

Table 21 – Responses to 1.4

#1	The process of learning. The process of mentoring. The taxonomy tends to be variable centred rather than process centred.
#2	Some of the factors affecting the effectiveness of small business mentoring include:

	• Clarity about whether the mentor is helping grow the entrepreneur or grow the business • The personal attributes of the mentor (motivation, skills, relevant experience) • The quality of rapport within the dyad.
#3	I think that the overall dimensions are quite good. Everything that I could think of seemed to be mentioned in the phases of your proposed framework and this matched well with the D&M 'boxes' in their framework. However – I think that there are some gaps (see response to next question).

1.5 Question: Are there any other dimensions or measures you believe should be included or made explicit in the model?

Table 22 – Responses to 1.5

#1	The process of learning by individuals should be included.
#3	It strikes me that from a small business [viewpoint] … the 'value' of e-mentoring is not emphasised enough. I find it intriguing that 'value' (as a part of user satisfaction) is not given a greater emphasis. Typically, small businesses will seriously think about the usefulness of something before they decide to devote their resources (in their case, money and time) to it. The 'cost' to small business (in money and time) of e-mentoring would be considered by them **before** they enrol in such a service. So – I would expect there would be dimension that looks at the investment that they are required to make in money and time beforehand. They would need initially to be 'sold' on its value before they were even enrolled. In assessing effectiveness, the framework should consider the value in relation to this 'investment' of money and time. Note that I have included money and time as some services that are offered for 'free' (eg govt sponsored services) will still require an investment of time from the business. An extension of this is some of type of measure as to whether small businesses would use the service again. This introduces a longitudinal aspect – but may be important. The literature has many examples of small business services offered initially for 'free' by governments that are not sustainable over time. Small businesses may be prepared to use them whilst they are free, but are not when they are required to pay a fee. In other words – the service might be useful, but if the cost is too great there may not be a business case for it! Dare I suggest that you need to build an aspect where the e-mentoring may have led to increased profit for the business? After some debate (with myself!) I have decided to include that there should be some guidelines as to how to apply your framework. Although the factors are useful, the framework (as applied by an external body or even in a self-evaluation process) would be assisted with a series of steps or stages that the evaluator can follow when applying the framework. Although specifically not part of the framework, these steps would certainly be useful and would add value to previous frameworks (such as D&M).

1.6 Kram's seminal work on mentoring developed a taxonomy for describing mentoring outcomes which explicitly or implicitly underpins much of the subsequent research (Kram 1980). Kram's taxonomy can be summarised as follows: (i) career benefits/support including sponsorship, exposure and visibility, coaching, protection and challenging assignments, and (ii) psychosocial benefits/support including role modelling, acceptance and confirmation, counselling and friendship] can be usefully transferred and extended from the organisational setting to the business context.

1.6 Question: Please comment on whether or not you think Kram's taxonomy can be usefully transferred and extended from the organisational setting to the business context.

Table 23 – Responses to 1.6

#1	It can be transferred carefully. The business context will include a need to take into account financial benefits/bottom line impact.
#2	Kram's taxonomy only applies to one very limited model of mentoring. Sponsorship mentoring is increasingly seen as a less useful model than developmental mentoring. I have attached a chapter from a new Handbook, edited by Kathy and Belle Rose Ragins. Experience in the non-executive director context suggests that relationships, where some form of sponsorship or use of networks is a fundamental element, have a very high failure rate and this may be expected to apply to small business mentoring.
#3	Yes – I believe that Kram's work would be useful. I think that it would be simple enough to include dimensions … to further extend the 'user satisfaction' portion of the framework, which I indicated earlier was underrepresented. If you do include them I look forward to seeing 'how' they will be incorporated.

#4	Organisations are businesses so I don't quite understand the question. My main concern about Kram's model is that it should not be used as a checklist. It was not designed that way and it leads to distorted outcomes if it is used in that way.

and

1.7 Question: Please comment on whether or not you think Kram's taxonomy sits consistently within DeLone and McLean's dimensions.

Table 24 – Responses to 1.7

#1	I do not know.
#2	I don't think you should be using Kram's taxonomy in a modern study of mentoring. Kathy herself now recognises a wider range of mentoring models and applications.

1.8 In "Problems with Research in Mentoring" (Clutterbuck 2003) David Clutterbuck suggests that "Recognising that mentoring is a class of phenomena and that each phenomenon needs to be investigated in its own right, would be a major step forward in research quality in this field".

Please comment on whether or not you think DeLone and McLean's dimensions set out in Phase 1 of the framework (either with or without Kram's taxonomy) provide a basis for making useful generalisations about classes of mentoring phenomena.

Table 25 – Responses to 1.8

#1	I think that it is a good starting point but I am not convinced that generalisations can be made about classes of mentoring phenomenon.
#2	They seem far too narrow, unless you want to focus on the mechanical/technical aspects of the interaction. If you want to measure the relationship, you will need to look much wider. In addition, the phases of evolution of the relationship will have influence (Kram's four-stage model, Clutterbuck's five stage model). You could usefully examine the relationship at two or three time points and explore the reasons for any changes in response pattern.
#3	I find myself thinking back to the reasons why people run small businesses. To make a profit, to earn a living, to expand, to be challenged, as a change of life (sea change or tree change). Although I am haunted by my research projects with small business counsellors – who always seemed to bring the discussion back to "will it sell more products?" – I believe that e-mentoring can be of benefit to small business owners (for the above reasons) and even for employees (who may be thinking of career development and so forth). In other words, I think that evaluation of e-mentoring is more specific than evaluating IS in general, but is still extremely diverse? For instance, is the mentoring in business coaching, time management, career development, or ?????? Each of these would lead to slightly different 'outcomes' and 'benefits' and should thus be evaluated slightly differently.
#4	I think that Clutterbuck's point is that each study needs to be customised - in my view down to the level of each individual - certainly each scheme. Therefore seeking to have a model that as it were trumps the customisations is not in the spirit of the original paper by Clutterbuck.

4.5.2 Section 2 - Phase 2 - Context - contingency variables

2.1 Statement: The effectiveness of business/entrepreneurial support, mentoring and e-mentoring in the small business context is contingent upon a wide range of factors which are usefully included as contingency variables in this framework.

Table 26 – Responses to 2.1

#1	The contingency variables are very comprehensive: both mentee and mentors. However, there appears to be no weighting or hierarchy of these variables.
#2	Yes. You could also look at the competencies (various views of) expressed in The Situational Mentor, Clutterbuck and Lane 2004.
#3	I think the key word here is 'usefully'. It's how you handle this mix that will be important.
#4	Agreed.

2.2. Statement: In the mentoring and e-mentoring for small business context, the variables upon which effectiveness is contingent can be usefully, appropriately and sufficiently summarised as external environmental, business characteristics and personal/individual.

Table 27 – Responses to 2.2

#1	I would say usefully and appropriately but not necessarily sufficient. Until data collection occurs I am not convinced of its sufficiency.
#2	Yes. For example, we know that one of the main reasons small businesses fail is because of poor learning orientation on the part of the entrepreneur. They devote so much attention to growing the business that they devote little to growing their own ability - and they fall into the hole.
#3	I agree with the statement generally, but on reflection I do not like the use of the word 'variables' as it implies (to me) a statistical research project. How about 'factors'? Also, 'variables' to me implies that you can vary them, which you can't. Another thought – it may be useful to consider classifying the 'user satisfaction' that I mentioned earlier according to your classifications. For instance, successful e-mentoring that results in improved business practices may be good for the individual (your personal/individual category), business (business characteristics) and even for the community (external environment). For instance, a successful tourism small business may benefit other businesses in the area (restaurants, hotels, transport, etc).
#4	There are others - particularly the nature of the relationship between the two parties. Also necessary are 'scheme' variables about the nature of the e-mentoring system set up.

2.3 Question: Are there any other variables you believe should be included?

Table 28 – Responses to 2.3

#1	Aspirations for growth by owner-managers. government policy content/policy incentives. A culture of 'learning' by the business, including innovation, product and service changes.
#3	Refer my answer to 1.5 (and please call them 'factors'). However, I think that you are only addressing one side of the framework here - again there is little mention of 'outcomes' or 'value' of the process.

4.5.3 Section 3 - Phase 3 - Key methodological decisions in maximising validity

3.1 Statement: The external, internal and construct validity of research studies evaluating the effectiveness of e-mentoring in the small business context will be influenced by a range of important methodological decisions and open to challenge on the basis of the methodologies used.

Table 29 – Responses to 3.1

#1	Everything hinges on the relevance and adequacy of the methodology to evaluate an initiative effectively and efficiently.
#2	That's always true of any study.
#3	Yes - in the same way as you are going to have to justify your research technique used here! I would like to see more examples of what you have in mind before commenting further on this. At the moment these may be open to question. I think that **you** could reduce the uncertainty by suggesting which techniques might be used in different circumstances (as part of the guidelines I suggested earlier).
#4	Yup.

3.2 Statement: Considering the methodological decisions summarised in Phase 3 will assist researchers and practitioners with selecting a research strategy which will potentially improve the validity of their evaluation.

Table 30 – Responses to 3.2

#1	I agree with this statement. The content of Phase 3 appears comprehensive.
#2	Again, of course. You need to consider at this point whether the study should be longitudinal or cross-sectional (mentor and mentee). If longitudinal, how will you know what stage of the relationship evolution people have reached? If single point, how will you know which point they are at? This can make a big difference in their responses!
#4	Yup.

and

3.3 Statement: Considering the methodological decisions summarised in Phase 3 will potentially assist researchers and practitioners to identify the limitations of their evaluation studies.

Table 31 – Responses to 3.3

#1	This is probably more relevant given the limitations of **any** research or evaluation.
#2	Yes.
#3	Only if you outline the limitations (and advantages) of the various approaches. You cannot assume that the people to be applying your framework will be academics!
#4	Yup.

3.4 Question: Are there any other key methodological decisions you believe should be included in Phase 3?

Table 32 – Responses to 3.4

#1	No.
#2	As above. Plus, do you want to add a short qualitative study to the quantitative?
#3	I have to be honest and state that at the moment 'Phase 3' looks like a generic grab bag of research techniques, with little (well, no) guidance to the user of the framework as to what may be appropriate.
#4	Ipsative considerations are crucial. Critiquing positivism especially as it plays out in large population questionnaire studies.

4.5.4 Section 4 - Phases 4 and 5 - Selection of research strategy and selection of measures

4.1 Question: Can you foresee any difficulties with selecting a research strategy and measures using the framework?

Table 33 – Responses to 4.1

#1	The framework will be compromised when put into practice given the practical challenges of doing research in SME's.
#2	Getting sample sizes will be more difficult if you go for both parties in the same relationship, or for a longitudinal data set (or worse, both).
#3	Yes. See 3.4.
#4	Yes. I think that you are trying to encompass all the variables up front and this is not congruent with a mentoring study.

4.5.5 Section 5 - General questions

5.1 Statement: The contingency framework will be useful in considering an examination of actual practice (a study evaluating the effectiveness of e-mentoring in the small business context).

Table 34 – Responses to 5.1

#1	Agreed to a point. As indicated the framework requires flexibility in the research setting, it is also rather 'static' and needs to be able to allow changes over time.
#2	Yes, this is a helpful approach, if you add competencies.
#3	I think that you are pre-empting things a little here. I certainly think that it has the potential for this.
#4	With the additions I suggest!

5.2 Statement: The contingency framework will assist with understanding variability in outcomes of intervention and support programs across the informing research disciplines.

Table 35 – Responses to 5.2

#1	Agreed. Variables and outcomes can be compared.
#4	Yes.

5.3 Statement: The framework will be useful to researchers.

Table 36 – Responses to 5.3

#1	The framework will be useful to researchers who have a positivist approach to understanding phenomena. It will be useful for those interested in measuring effects.

#2	Yes, this is a helpful approach, if you add competencies.
#4	Yes.

5.4 Statement: The framework will be useful to practitioners.

Table 37 – Responses to 5.4

#1	It may be useful to consultants. It will be of less use to business owners.
#2	If it is simplified, yes! That should emerge from your study - i.e. what are the significant variables to take into account. However, you may need quite large sample sizes to establish significance.
#3	Again, I think you are pre-empting things a little here. I certainly think that it has the potential for this. However - an additional consideration to think about is how the framework would be made available to practitioners.
#4	Hmmmm. It is the stories that you tell around it rather than the framework itself that is useful.

5.5 Question: Do you think the framework may have relevance and application beyond the context of evaluating e-mentoring for small business?

Table 38 – Responses to 5.5

#1	The contingency variables are not unusual. These have been used in other studies including 'business performance' factors. It can be useful in other studies of small business.
#2	Depends on the robustness of the conclusions. It's always difficult to apply research from one context to another unless you carry out similar research in the second.
#3	I do not think so. From what I gather, the entire purpose of your research is to make the framework useful for this specific group. It is why you are starting with a generic framework and refining it to a specific purpose.
#4	Yes. Evaluating other 1:1 helping interventions.

5.6 Question: Do you think the framework's relevance is affected by whether a study adopts a positivist or constructivist approach to evaluation?

Table 39 – Responses to 5.6

#1	I believe that it is rooted in a positivist approach. This is relevant and appropriate but not the only approach to evaluation.
#2	You could try to include elements of both. I have found it useful to use a constructivist approach to identify my variables, a positivist one to analyse my data and a constructivist one again to look into explanations of anomalies and to develop the story behind the data.
#3	Not necessarily. It depends upon what you claim it can do. However, and I will show some bias, I do not see how you can even mention the word 'positivist' when you are building a framework that is adaptable to many situations! (the positivist's nightmare!).
#4	Yes. You get different outcomes - constructionist approach would be different again.

5.7 Question: Do you think there are any inconsistencies or contradictions with the phases sitting alongside one another?

Table 40 – Responses to 5.7

#1	I do not see how Phase One relates directly to Phase 2 or 3. It may be problematic and aiming to achieve too much in one research project.
#2	Not sure I understand the point behind this question.
#3	I'm not sure which phases you are referring to here.
#4	No.

5.8 The framework is intended to make explicit and address some of the difficulties and disincentives inherited by this research area. Please comment on the statements in bold (disregarding the questions which don't apply to your area of expertise if you wish).

5.8.1 Statement: The contingency framework assists with providing a basis for addressing some of the difficulties of mentoring research (when evaluating e-mentoring in the small business context).

Table 41 – Responses to 5.8.1

#1	No answer provided.
#2	Yes.
#3	Not yet. You would need to adopt some of my suggestions re guidelines before I felt this was the case.
#4	Frameworks can't be separated from methodologies.

5.8.2 Statement: The contingency framework assists with providing a basis for addressing some of the difficulties of small business research (when evaluating e-mentoring in the small business context).

Table 42 – Responses to 5.8.2

#1	The framework will suffer from its practical inadequacy. It is over-complex for one project.
#2	Yes. However, one thing it doesn't seem to address is evaluation of the impact of the intervention upon the business. This is a topic obsessing European governments and other organisations, who fund small business mentoring.
#3	Similar response to 5.8.1. I feel it needs further development. I could see the framework being used for comparative studies. It is at this point I should mention a bit of confusion I feel with your research project and the fact that the framework in your research project includes research techniques. In relation to questions about 'approaches to research' it is necessary to clearly distinguish between questions about the framework (that include research techniques) and separate them from questions about your research process in the development of the framework. I have to admit that I have had to think very carefully about which 'research techniques' you are referring to at times.
#4	A key issue is How important has this intervention been in the overall experience? This is seldom asked.

5.8.3 Statement: The contingency framework assists with providing a basis for addressing some of the difficulties of e-mentoring research (when evaluating e-mentoring in the small business context).

Table 43 – Responses to 5.8.3

#1	Answer not provided.
#2	Yes.
#3	Don't know enough about e-mentoring research to answer this.

4.5.6 Section 6 - Assumptions underpinning framework

Statement:

6.1.1   Consideration of:

- process (the quality and nature of the mentoring process);
- content (the content provided by a structured support program);
- context (the context in which the mentoring occurred; and
- methodological choices suited to the evaluation task at hand

are critical to choosing a sound research strategy and selecting appropriate measures of effectiveness.

Table 44 – Responses to 6.1.1

#1	Broadly I agree with the statement. The framework is weakest in relation to the process of mentoring. It ignores the learning literature.
#2	Yes.
#3	Yes - and (sounding like a broken record) - you need to provide some guidelines to the user of the framework as to how to do this.
#4	Yes.

6.1.2 Statement: Systematically codifying the factors set out in 6.1.1 in a contingency framework is likely to be useful in advancing research and/or practice.

Table 45 – Responses to 6.1.2

#1	I would prefer a more open-ended approach to understand the mentoring process.
#2	Yes.
#3	Not sure - it depends on what you are going to do with it. I will need to see the next iteration of your

	framework if you intend to do this.
#4	In a modest way.

6.1.3 Statement: Effectiveness evaluation in the context of e-mentoring for small business should not be methodologically prescriptive, nor should it privilege a quantitative over qualitative approach, or experimental over non-experimental approaches.

Table 46 – Responses to 6.1.3

#1	I agree. The methodological approach should be influenced by the objective of the mentoring exercise. This will influence whether a positivist or constructionist approach is more appropriate.
#2	Yes ... and so?
#3	I agree, but (broken record) you do not want people using the framework to vary too much in approaches. For instance, would you be comfortable with two separate people using the framework to evaluate the same e-mentoring system to use entirely techniques? I do not think I would be. It would certainly not 'reduce uncertainty' as you indicated earlier.
#4	Yes.

6.2 Please detail any other views you have on the framework's structure, relevance, appropriateness and/or sufficiency.

Table 47 – Responses to 6.2

#1	Generally, the framework is very comprehensive but I would have some concern about the practicality of implementing the framework. A framework should be fine-tuned to suit the specific objective of the mentoring programme or research. Hence, if measuring outcomes is important then this needs a positivist approach. If raising the efficiency of the mentoring process is the objective I would advocate a qualitative approach focused on the actual transfer of knowledge, experience etc which in the small firm is not codified but tacit.

4.6 Discussion

This discussion will be divided into three sections. The first section will contain a thematic discussion of the responses of the expert panel to the issues and questions raised in the Delphi study in line with the three major phases of the framework (Phases 1, 2 and 3). The second section will highlight particular areas of concern in light of the research challenges set out in Chapters 1 and 2. The third section will detail the revised framework in conjunction with framework guidelines comprising a summary of the effectiveness evaluation process, and guidelines on using the framework.

4.6.1 Discussion – Section 1 – Thematic discussion of findings in line with framework phases

4.6.1.1 Phase 1 - E-mentoring dimensions and measures

4.6.1.1.1 Need for guidelines on how to use framework

The panel indicated that the framework incorporating DeLone and McLean's model may be useful as a starting point for describing and evaluating e-mentoring effectiveness but suggested there may be a need for some form of guidance to potential users. In response to the suggestion, a set of guidelines was developed to sit alongside a process for evaluation which is intended to clarify how the framework might assist with the selection of evaluation research strategies and

describing antecedents to effectiveness. The evaluation process summary is set out in section 4.6.3.1 and the guidelines are attached as Appendix 3.

4.6.1.1.2 Emphasis of mechanical over the behavioural

One of the concerns raised by some members of the panel was that the framework emphasised the *mechanical* over the *behavioural*. The source of this concern is likely to be grounded in the assumption that evaluation of the effectiveness of information systems may be perceived as emphasising the deterministic and mechanical over human behavioural factors and this is not the case. In considering the appropriateness of transferring models of IS effectiveness to the e-mentoring context, the work of Van Steernis (cited in du Plooy 1998) is informative. As discussed in the review of Information Systems literature in section 1.12.4.2, human factors rather than deterministic or mechanical factors are fundamental to Information Systems evaluation.

In considering e-mentoring in the context of IS research, this thesis suggests that a structured e-mentoring program can be usefully regarded as a non-deterministic information system, and that research strategies should be aimed at capturing the infinite possible responses which comprise participants reactions to and adaptations of the structured program content, in conjunction with the social interaction with the e-mentoring partner around this content. In these ways, the framework does not emphasise the mechanical over the behavioural.

4.6.1.1.3 Gaps and omissions

Feedback from the expert panel indicated that the elements of skills (netiquette, understanding of mentoring); contractual expectations (what is the role of each party in the arrangement?), goal clarity (what are we trying to achieve?), goal commitment and relationship commitment were missing from the framework in its initial iteration. These were major omissions in the first iteration of the framework which have been added to the framework in the subsequent iteration under the dimension of System quality - the nature and quality of the Mentee/Mentor interaction (refer Table 48).

The extent of time and/or money invested by a business owner/manager was suggested as a factor which should be included in the framework and this item was added under individual mentee/mentor variables (preparedness to invest time and/or money) and under the heading of Evaluative referent (effectiveness in some circumstances can be considered comparing outcomes with extent of time and/or money invested by small business owner/manager) in the next iteration of the framework (refer Table 48).

Similarly the monetary value participants would ascribe to the program, and whether or not a small business owner/manager would use the mentoring service again may be relevant and useful measures of perceived value. They have been added to the framework under the dimension of User Satisfaction. One of the Panel members noted that that profit may not be a reliable measure of current or future business performance, and while this is acknowledged, it does not preclude its inclusion in the framework, so it is included in the framework (refer Table 48).

Another Panel member suggested the importance of promoting the potential value of a program to those considering participating in a structured e-mentoring program. While of course this is necessary, it can be seen as important to keep effectiveness research separate from the marketing of a program to possible participants. As Tom Reeves (2003) says of computer-based education (CBE): "..the dominant strategy of the business interests that underwrite the development of CBE has been and continues to be investing much more money in marketing CBE than in evaluating it" (Reeves 2003). The researcher concurs with this statement and maintains that evaluation should be a separate exercise. In a subsequent round of the Delphi, the expert clarified the distinction between establishing the potential value of a program to participants and marketing the program, and while this distinction is accepted, the researcher maintains that establishing potential rather than actual value is a separate or tangential exercise to effectiveness evaluation.

4.6.1.1.4 Emphasis of content over the mentoring process
The Panel suggested that the evaluation framework emphasised content provided by the scheme to the mentor and mentee over the mentoring process. The panel believed that the dimension of System Quality (or the nature and quality of interaction between mentee and mentor) should be ranked more highly than Information Quality. This framework is intended to be specific to structured e-mentoring which provides content adapted by participants to their own needs, thereby creating individualised learning pathways. As such, Information quality is an important dimension to consider in looking at the learning process and evaluating effectiveness. As set out in the redefinition of the DeLone and McLean dimension of System quality according to Collins and Berge's definition of learning in section 3.2.1, it is essential to consider the process of interaction with content alongside the interaction between mentee and mentor around the content. Having said this, there is nothing in the framework which prevents differential weighting of the dimensions to suit the particular purpose of an evaluation.

4.6.1.1.5 The value of drawing on DeLone and McLean's model for evaluating structured e-mentoring in the small business context

While there was a level of consensus around the relevance and appropriateness of drawing on IS effectiveness models such as DeLone and McLean's in evaluating the effectiveness of structured e-mentoring, there was concern that the model standing alone may be limited in reflecting human and contextual factors. The contingency framework aims to address the need to make explicit the linkages between processes, content and context in the framework that the model standing alone lacked. It is recognised that as a stand-alone model, DeLone and McLean's taxonomy would be insufficient as a basis for selecting a research strategy.

The incongruence of referring to (i) an Information Systems model and broad framework which by definition abstracts, simplifies and generalizes and (ii) a phenomenon or process with a multitude of human factors, with individualised outcomes occurring in highly specific or particular small business settings is highlighted in the responses of all Panel members. This contradiction is acknowledged as one of the key research challenges in advancing evaluation research around the effectiveness of structured e-mentoring.

4.6.1.1.6 A prescriptive approach?

One of the Panel members suggested that the framework may be regarded as prescriptive or limit different approaches to e-mentoring research. The guidelines should go some way to clarifying that the framework is intended to guide the selection of an evaluation research strategy and measures rather than to be directive or prescriptive. It is intended to represent the results of a literature review collated against a proposed taxonomy in an attempt to impose some order and coherence on the research which has been conducted to date but not to preclude effectiveness being evaluated or measured with reference to other factors using other methodologies. It is the intention of the researcher to provide neither a universalising nor situation-specific model and precisely to avoid a prescriptive approach by developing a framework which is contingential.

4.6.1.1.7 Processes of learning and mentoring central to evaluating effectiveness

One member of the Panel suggested that the processes of learning and mentoring should be more central to a framework for evaluating e-mentoring, while another suggested that the content of a structured e-mentoring program should be seen as peripheral to the more central mentoring relationship. As clarified in section 4.5.1.1.4, the focus of this framework is evaluating the effectiveness of *structured* e-mentoring - that is, assistance programs which provide a structure to participants. The respecified dimension of Information Quality encompasses the issue of the implementation of a structured program - that is, how the

mentoring partners adapt the program structure provided to meet their particular needs and to construct their own learning pathways. Program structures are generic only in the fact that they are uniformly and universally provided to participants; the range of adaptations to the particular needs of individuals in highly specific contexts is, of course, infinite. While the primacy of the mentee/mentor relationship to an evaluation of the effectiveness of a structured e-mentoring program is agreed, the way the program has been adapted to the particular context in which it has been offered is critical to understanding how learning pathways are individualised by each mentoring partnership - a major issue in small business where the target group is characterised by heterogeneity and the particularity of learning needs.

There is however, as stated earlier, nothing to prevent a researcher weighting the nature and quality of the mentee/mentor relationship (System quality) over the nature and quality of the implementation and adaptation process (Information quality). To disregard the process of adaptation of the content in the context of structured e-mentoring however would be to ignore the importance of the process (or antecedents) to outcomes (and effectiveness) in the structured e-mentoring setting.

4.6.1.1.8 Clarification of intended application

Restructuring the framework in line with Owen and Rogers "three P's approach " (evaluation at the big "P" policy development level, the big P program provision or small "p" program level - Owen and Rogers 1999 p.90) has clarified that the level at which the framework is likely to be most useful is evaluation at the individual and "small 'p'" program level (refer to section 2.4.4.1 for discussion).

4.6.1.1.9 Hard and soft measures

Some Panel members suggested that hard measures such as bottom line impact should necessarily be included in any evaluation of effectiveness in the small business context. Whether or not profits, financial benefit and bottom line impact should be measures of effectiveness depends on whether these are goals of a particular program. If, for example, the aim, as Panel member # 2 expressed it in 1.4, is to "grow the entrepreneur" rather than the business or to increase the likelihood that the business will employ others, measures other than profit and bottom line impact may be appropriate. Without exception, the particulars of a program should drive the choice of research strategy and measures in an evaluation of that program. These alternative measures should not be regarded as less legitimate than a so-called hard measure such as profit.

4.6.1.1.10 Career and psychosocial benefits - a useful conceptual split?

There was little consensus amongst the Panel around whether or not Kram's taxonomy could be usefully transferred to the context of the framework.

Panel members # 1 and 3 suggested that Kram's taxonomy might be transferred with modification, Panel member # 2 suggested that Kram's taxonomy will not usefully transfer because her work relates to the sponsorship model of mentoring, and Panel member # 4 suggested that to transfer Kram's taxonomy to the business context would be to use it as a checklist which is problematic. Panel member # 2, in the second round of the study, clarified that the career/psychosocial functions may be quite helpful but that the functions described by Kram are specific to the particular model of mentoring she was studying at the time and that the use of these functions could distort outcomes.

The literature review indicated widespread resonances with Kram's taxonomy in mentoring contexts other than those employing sponsorship models in terms of a conceptual separation between career and psychosocial benefits. On this basis and because the career/psychosocial separation appears to have been accepted by the research community, and in spite of the opposing views of Panel members # 2 and # 4, Kram's taxonomy will be maintained in the iteration of the framework arising out of the Delphi review (refer Table 48). Kram's taxonomy is presented as an option to researchers and practitioners looking to the framework to select a research strategy.

4.6.1.1.11 Generalizing around classes of mentoring phenomena

In responding to the question about whether or not DeLone and McLean's model provides a useful basis for making generalisations around classes of mentoring phenomena, Panel members # 1, 3 and 4 again raise the contradiction between specificity and generalisability in mentoring research (similarly raised in responses to question 1.3). This is re-confirmed as a key research challenge shared by e-mentoring, mentoring and small business research because of the particularity, diversity and heterogeneity of the experiences of those being assisted by a program.

4.6.1.2 Phase 2 - Context - contingency variables

The responses to this section seem to indicate general agreement that the contingency variables included in the framework as Phase 2 are comprehensive but also that the "mix" or how the variables are selected and weighted will be critical in an evaluation study which utilises the framework.

4.6.1.2.1 Inclusion of competencies?

Panel member # 2 suggests that competencies should be included in the contingency variables. There is a view that a competency-based approach to learning for entrepreneurs is flawed because of their generic nature which is contradictory to the specificity of the learning needs of entrepreneurs (Sullivan 2000) (refer to discussion of competency-based approaches to small business training under the small business literature review in Chapter 1). However evaluation of effectiveness against specified external competencies may be relevant to particular programs, and therefore management and business competencies have been included under the heading "Evaluative referent" in the next iteration of the framework (refer to Table 48).

4.6.1.2.2 External environmental, business characteristics and personal/individual variables.

There appears to be agreement that the variables upon which effectiveness is contingent can be summarised usefully and appropriately grouped as external environmental factors, external mentee business factors and/or internal mentee and mentor factors. There appears to be agreement that the framework may not be sufficient in that there may be other contextual factors which influence effectiveness, and there was consensus that a judgement about this can only be made further to data collection.

4.6.1.2.3 Gaps and omissions

Further to the comment of Panel member # 2, the learning orientation of the entrepreneur has been added as a variable to the iteration of the framework set out in Table 48.

Further to the comment of Panel member # 3, the variables have been renamed 'factors' in the subsequent iteration of the framework to firstly correct the implication that they can be varied, and secondly to try to moderate the positivist paradigmatic assumptions which underpin the framework.

Further to the suggestion of Panel member # 1, (i) aspirations for growth by owner/managers, (ii) government policy content/policy incentives, and (iii) a culture of learning by the business including innovation, product and service changes, have been added to Phase 2 in the next iteration of the framework presented in Table 48.

4.6.1.3 Phase 3 - Key methodological decisions in maximising validity

4.6.1.3.1 External, internal and construct validity

There was unanimous consensus that the external, internal and construct validity of research studies evaluating the effectiveness of structured e-mentoring in the small business context will be influenced by the relevance and adequacy of the methodological decisions made. There

appeared to be general agreement that Phase 3 lists a range of methodological issues which, if appropriately considered while selecting a research strategy, will potentially impact positively on the validity of effectiveness evaluation, and which may therefore assist evaluators to identify the limitations of various approaches.

4.6.1.3.2 Gaps and omissions

Panel member # 4 suggests that the importance of ipsative measures in evaluating effectiveness in mentoring and e-mentoring research should be reflected in the framework. The researcher concurs with this view and so a reference to ipsative (self-referencing) measurements, norm-referenced measurement and measurement with reference to external standards have been added to Phase 3 of the next iteration of the framework.

4.6.1.3.3 Inconsistencies or contradictions within or across the Phases

Panel member # 1 noted that the relationship between the phases was not explicit in the framework. At the point of application, it is likely to become clearer that there is no temporal progression implied between the phases - rather the phases are conceptually distinct aspects of a systems approach to selecting a research strategy. Like any systems approach, ultimately the framework is compromised by the fact that while comprehensive, it remains a simplified abstraction of the complex process of selecting an evaluation research strategy that involves a creative process of going back and forth between "phases" to settle on an appropriate research strategy. As discussed in section 2.7.4, developing an evaluation is an exercise of the dramatic imagination (Cronbach 1982 p.239 cited in Patton 1990). The framework is intended to support this design stage of an evaluation.

While the framework will inevitably be compromised in practice, it can be suggested that most if not all frameworks are compromised in this way in the actual research setting. This is indicative of the complexity of the reality being abstracted and the nature of the accumulation of scientific knowledge, rather than the usefulness and sufficiency of the framework.

4.6.2 Discussion – Section 2 – Findings in relation to research challenges of the informing disciplinary areas

4.6.2.1 Framework limitations

Panel member # 1 suggests that the usefulness of the framework will be limited to researchers operating from within a positivist paradigm. A comment by Panel member # 4 that "our methodologies embed our frameworks" suggests that approaching e-mentoring research using this framework may necessarily impose a positivist paradigm on research. If this is the case, and

the selection of research strategies not based on the positivist paradigm cannot be accommodated or reconciled with the use of the framework, this would be a significant limitation.

In commenting on the framework's relevance to a research approach other than one grounded in positivist assumptions, the Panel responses indicated mixed views. Panel members # 1 and 4 suggest that the framework is grounded in a positivist approach while Panel member # 3 believed that any framework adaptable to many situations is the antithesis to the positivist approach. Panel member # 2 suggests that a "mixed methods" approach is appropriate to mentoring research and not inconsistent with the framework. This Panel member subsequently indicated that, given the complexity of what is being attempted by the framework, a constructionist approach might yield more usable results. There was a lack of consensus on whether or not adopting a non-positivist approach would impact on the usefulness of the framework.

While the framework which includes DeLone and McLean's model and the contingency variables is obviously grounded in a positivist approach, the researcher believes that modifications can make it useful to those adopting a constructivist approach. As discussed in section 2.5, at worst, it is a "crude mix" of paradigms (Curran & Blackburn 2001 p.123) but the framework can also be accepted as a construction with "lawlike attributions" (Lincoln & Guba 1989 p.86) and provide a basis for advancing the field for those using a constructivist approach to evaluation research. In Chapter 2, Seddon (Seddon et al. 1999) suggested that the relationships between DeLone and McLean's dimensions could be called 'influences' rather than being characterised as causal relationships. In item 2.3, Panel member # 3 suggested calling the variables 'factors' which again 'softens' the positivist stance underpinning the framework. The application of the framework to an examination of actual practice will test this potential limitation in the actual research setting. It is the intention of the researcher to provide empirical support for the usefulness of the framework for research not grounded in positivist assumptions.

4.6.2.2 Useful in considering an examination of actual practice?

There was consensus across the Panel that the contingency framework is likely to be useful in selecting a research strategy for considering an examination of actual practice. There was however also unanimous agreement that there will be difficulties in developing a research strategy and selecting measures using the framework. Panel member # 1 suggested that the framework needed to be applied with flexibility in the research setting. In the second round of

questioning, this was confirmed by Panel member # 2 who noted that the framework needed to be flexible to reflect different program purposes and dynamics.

Panel member # 1 suggested that the framework is 'static' and needs to be able to accommodate changes over time. This was confirmed by other Panel members in the second round of the Delphi process. It is acknowledged by the researcher that it would be a useful exercise to periodically review the literature and update the framework to reflect further methodological approaches and different measures being used - that is, to update the framework to reflect the contestation, appropriation, synthesis and challenges that characterise any developing discourse but particularly in an emerging research area.

4.6.2.3 Understanding variability in outcomes

There appears to be unanimous agreement on the capacity of the framework to assist with understanding variability in outcomes. The guidelines and second iteration of the framework clarify the aim of the framework as providing a basis for understanding variability in effectiveness.

4.6.2.4 Establishing the significant variables

The guidelines clarify that no single study will determine the significant variables or influences in structured e-mentoring evaluation research - especially in view of the fact that undertaking an experimental approach and establishing causality is a key research challenge inherited by, and a characteristic of, the research discipline. Theory-building and testing is likely to occur over time. The framework may help point to the research possibilities - the strategies, methodologies and measures available and used by previous researchers - which may either advance or in fact limit effectiveness evaluation. Panel member # 2 commented that it may be possible to pull together a broad picture of what does and does not work in usefully evaluating e-mentoring.

4.6.2.5 Relevance and application beyond the context of evaluating e-mentoring for small business

Opinion was divided on whether the framework may have relevance and application beyond the context of evaluating structured e-mentoring for small business. The focus of this study however was on, as Panel member # 3 suggests, refining the framework for this specific purpose and deciding whether or not it had relevance and application in the context of evaluating structured e-mentoring in the small business context.

4.6.2.6 Value of framework in addressing some of the difficulties of mentoring research

There was no agreement on whether or not the contingency framework would assist with addressing some of the difficulties of mentoring research. One of the mentoring experts on the Panel indicated that he thought the contingency framework may address some of the difficulties inherited by the research area. Panel member # 3 indicated that, without guidelines, he did not consider the framework a useful basis for addressing the difficulties. Panel member # 4 suggested and confirmed in the follow-up round of the study that the framework would not, of itself, address the methodological difficulties of mentoring research.

4.6.2.7 Value of framework in addressing some of the difficulties of small business research

There appears to be general agreement that there will be problems in the application of the framework in the small business context. The inclusion of the option for use of econometric measures as effectiveness indicators under the heading of Impact will in part address the concern highlighted by Panel member # 2 in relation to maximising the value of the framework and addressing some of the difficulties of small business research.

4.6.2.8 Value of framework in addressing some of the difficulties of e-mentoring research

While the primary mentoring expert (Panel member # 2) indicated that he was of the view that the framework would provide a basis for addressing some of the difficulties of e-mentoring research, the responses to this item were not sufficiently detailed to provide significant insight into this question.

4.6.2.9 Selecting a sound evaluation strategy

The responses suggested that there was broad agreement from the Panel that consideration of the mentee/mentor system (the quality and nature of the mentoring partnership), content (the content provided by a structured support program), context (the context in which the mentoring occurred); and the methodological choices suited to the evaluation task at hand, were critical to choosing a sound research strategy and selecting appropriate measures of effectiveness. There was broad agreement that the framework may be useful in this regard.

4.6.2.10 Gaps and omissions - general

Panel member # 1 suggested that the framework ignores the body of research on entrepreneurial learning. It is the contention of the researcher that the framework accommodates the entrepreneurial learning literature. The process of learning in the context of a structured e-mentoring program is explicitly included in the re-specified DeLone and McLean model under the dimension of Information quality. The nature and process of adaptation of the program's

content and structure to create individualised learning pathways is the most critical way in which the framework's structure accommodates the entrepreneurial learning literature, most importantly, the highly particularised learning needs of small businesses.

4.6.2.11 Value of systematically codifying process, content, context and outcomes in the framework

Responses from the two mentoring researchers (Panel members # 2 and # 4) suggest that systematically codifying the factors of process, content, context and outcomes in the framework may be useful. Panel members # 1 and 3 expressed reservations about whether or not this process was likely to be useful. Panel member # 2 suggested further to the second round of questioning that the framework needed to make it easier for a researcher to analyse data. The usefulness of the framework in this regard was considered in the examination of actual practice.

4.6.2.12 Avoiding creating or carrying through research orthodoxies from informing disciplinary areas

Responses indicate that there was unanimous agreement that effectiveness evaluation in the context of e-mentoring for small business should not be methodologically prescriptive, nor should it privilege quantitative over qualitative, or experimental over non-experimental approaches. In this way, the framework assists with avoiding "impoverishing" research in the informing disciplinary areas (Lyytinen & Klein in Mumford et al. 1984).

4.6.3 Discussion – Section 3 – Respecified framework

In response to the comments made by the panel of experts, the following three items represent a revised version of the framework. Items (i) and (ii) form a preamble to accompany the revised framework.

(i)   Framework guidelines - the effectiveness evaluation process

(ii)   Framework guidelines - guidelines

(iii)   Revised framework

Items (i) and (iii) are presented in this Chapter, however because the guidelines largely restate the rationale for inclusion of criteria used in the review set out in Chapter 3, they are included as Appendix 3 of this thesis.

The DeLone and McLean model (1992) is described by Rolden and Leal (2003) as having gained some acceptance by the IS community. In the same way, acceptance of this framework by the Panel would be desirable and support the credibility of the framework itself, and the researcher proposing the framework. The Delphi study established a level of tentative

acceptance by expert researchers as well as documenting legitimate concerns about how the framework could be compromised when practically applied.

4.6.3(i) Framework guidelines - the effectiveness evaluation process

The following outline was developed as a brief guide to be consulted in conjunction with the contingency framework to aid selection of a situationally-responsive evaluation strategy. It may or may not be appropriate to the evaluation research to be conducted. It is presented as part of these guidelines to assist evaluators apply the contingency framework. Proceeding through this guide with reference to the guidelines and framework will result in a multi-dimensional set of indicators of effectiveness which is (i) driven by methodological decisions based on maximising validity, (ii) foregrounds contextual influences on effectiveness, and (iii) is underpinned by a basis for proposing linkages between antecedents and effectiveness. Design of an evaluation strategy is not intended to be described in linear terms - items 1, 2 and 3 below may form part of an iterative approach to designing the evaluation before proceeding to items 4 and 5.

The evaluation process

This process was derived, synthesised and adapted from Owen and Rogers (1999), Stufflebeam's program standards (1999) and Patton's Qualitative Evaluation and Research Methods (1990).

> **1. Methodology - referring to Phase 3 of the framework**
> - *Consider how the program was intended to function*
> - *Adopt value position for the evaluation. Make the value base explicit because any conclusions made will follow from the value position taken.*
> - *Identify and rank stakeholders and prioritise their information needs*
> - *Consider purpose of evaluation*
> - *Decision support, relativistic, rich description, social processes or constructivist, also formative or summative, to describe and categorize observations, to test an hypothesis, to propose and test alternative definitions or taxonomy further to anomalies in previous descriptive or normative studies being identified, etc.*
> - *Scope evaluation*
> - *Define evaluation questions*
> - *Consider time frame, the variety of data collection methods, sampling issues, evaluative referent, issues of rigour and ways to account for bias to maximise data quality*
> - *Make relationship between evaluator and program explicit*
> - *Consider strengths and weaknesses of different research approaches and how methodological decisions may impact on internal, external and construct validity*
>
> **2. Context - referring to Phase 2 of the framework**
> - *Define key characteristics of the sample with reference to external environmental factors, external mentee business factors and/or internal mentee and mentor factors - discuss representativeness and generalisability if relevant*
> - *If using experimental or quasi-experimental approach, detail variables which will be controlled for*
>
> **3. Mentoring processes, content/structure, user satisfaction, use and outcomes - selecting indicators of effectiveness - referring to Phase 1 of the framework**
> - *Define and operationalise construct of e-mentoring effectiveness with reference to evaluation criteria set out in the framework*
> - *Depending on the evaluation purpose and goals of program, select or develop effectiveness indicators/measures from across each of the five DeLone and McLean dimensions*

4. Revisit Phases 1, 2 and 3 until an appropriate strategy is decided upon
- *Consider how the design can be appropriately matched to the evaluation situation ... and the priority information needs of primary stakeholders*

5. Referring to Phases 1, 4 and 5 of the framework
- *Finalise research strategy and measures*

6. Collect data
- *Obtain information from a variety of sources*
- *As appropriate, employ a variety of data collection methods*
- *Document and report information sources*
- *Document, justify and report data collection techniques and information sources*
- *Include data collection instruments in a technical appendix to the evaluation report*

7. Make findings
- *Present observations, descriptions, classification, categorisation, analysis and interpretation of data according to relevant framework or taxonomy*
- *Describe the program and its relevant pedagogical, technical, social, political, organisational and economic features/context*
- *Describe how the program actually functioned against how it was intended to function and discuss discrepancies*
- *Discuss issues of rigour*
- *Document and report any biasing features in the obtained information*
- *Report on reliability and validity - assess and report factors that influenced both*
- *Estimate and report the effects of validity and reliability in the data on the overall judgment of the program*
- *Make judgements about the program with reference to evaluative referent*
- *Consider alternative ways of interpreting evaluation findings*
- *Report limitations of the referenced information, analyses and inferences*
- *If appropriate, make recommendations*
- *Derive conclusions and demonstrate their meaningfulness*

4.6.3(ii) Guidelines

The guidelines were developed by combining observations from a review of the literature, the exercise of considering the sample of multi-disciplinary studies reported on in Chapter 3, and the comments of the expert panel further to the Delphi study. They are intended to be used by those undertaking an evaluation study in conjunction with the framework set out under 4.6.3(ii). As stated earlier, these guidelines largely replicate the rationale for the criteria used in the review described in Chapter 3 and are therefore attached as Appendix 3.

4.6.3(iii) Respecified DeLone and McLean model

This section presents the DeLone and McLean model set out in Figure 2 respecified further to the literature review, the review of a selection of effectiveness studies, and critique by the expert panel in Chapters 1, 2, 3 and 4 of this study set out as Figure 2a. As set out in section 3.2.1.2, the nature and quality of mentee and mentor interaction, the nature and quality of the program structure and content, including the technology supporting it, together form the antecedents to use, user satisfaction and impact. This model is integrated within Phase 1 of the contingency framework set out in Table 48.

Figure 2a – Model of structured e-mentoring effectiveness as derived from DeLone and McLean's 1992 model of IS success
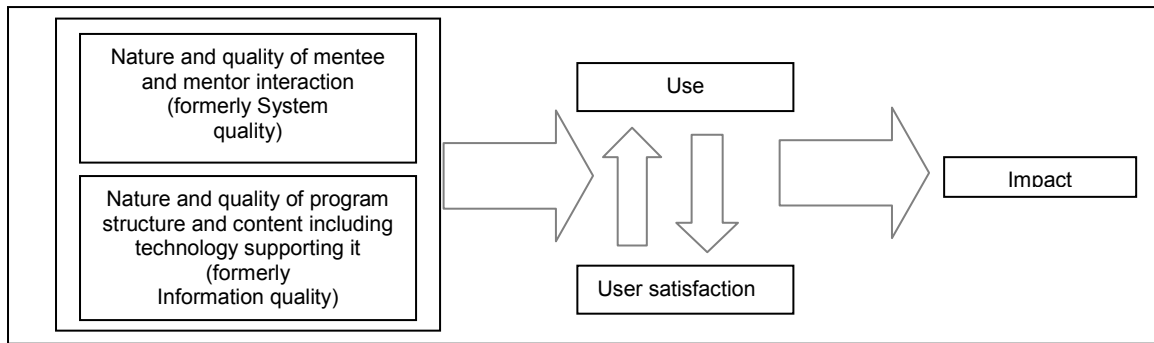
4.6.3(iv) Respecified contingency framework

This section presents the contingency framework as respecified further to the comments of the expert Panel presented in the preceding sections of this Chapter.

Phase 1 - E-mentoring processes - dimensions and measures or indicators	Phase 2 - Context – contingency factors	Phase 3 - Key methodological decisions in maximising validity	Phase 4	Phase 5
System Quality – nature and quality of engagement with e-mentoring partner – considered or measured with reference to: Nature and quality of engagement between mentee and mentor ▪ nature and quality of career and psychosocial support provided including (career) sponsorship, exposure and visibility, coaching, protection and challenging assignments, (psychosocial) role modelling, acceptance and confirmation, counselling and friendship ▪ nature and quality of business skills support provided ▪ quality of the rapport within a dyad ▪ quality of the contracting between the mentoring partners ▪ skills (netiquette, understanding of mentoring) ▪ contractual expectations (what is the role of each party in the arrangement?) ▪ goal clarity (what are we trying to achieve?) ▪ goal commitment ▪ relationship commitment ▪ quality and development of mentoring engagement in terms of phases or developmental dynamics ▪ whether and how mentor used as sounding board ▪ level of respect for e-mentoring partner ▪ duration of e-mentoring partnership ▪ perceived importance of guidance and/or advice received ▪ perceived difference in mentee's ability to achieve ▪ perceived quality of the relationship ▪ most positive aspects of mentoring partnership ▪ most difficult aspects of mentoring partnership ▪ whether willing and active collaboration occurred ▪ use of mentor as a sounding board ▪ diversity of types of support and advice provided **Information Quality – nature and quality of and interaction with content and structure (process of adaptation/implementation) – considered or measured with reference to:** ▪ quality and nature of program ▪ adaptation of generic content ▪ integration of mentoring program with business activities ▪ setting of personal program goals ▪ whether assigned/self-selecting mentoring partnerships ▪ nature and frequency of engagement with facilitator ▪ nature and quality of program features ▪ quality of match provided by program ▪ quality of pre-program training provided ▪ satisfaction with matching process ▪ relevance and timeliness of support/content ▪ value of structured web-based exercises ▪ level of system security ▪ experience with email as delivery system **Use – extent of engagement with content, mentoring partner and host** ▪ interaction frequency between mentor/mentee ▪ level of engagement with content ▪ interaction frequency with facilitator	**Research strategy considered with reference to:** **External environmental factors** ▪ industry ▪ sector ▪ competitive environment ▪ culture ▪ economy ▪ availability of resources ▪ climate ▪ government policy content/policy incentives **External mentee business factors** ▪ age of business ▪ stage of business life cycle ▪ size of business as defined by turnover, number of employees and/or profit ▪ qualifications and experience of business owner/manager ▪ deployment of technology ▪ socio-cultural background ▪ products and services produced ▪ business structure/business type ▪ previous business success ▪ type of clients served ▪ business location ▪ business home or office-based ▪ level of technology used by business ▪ geographical location **Internal mentee and mentor factors (also factors relating to host/facilitator)**	**Research strategy considered with reference to:** **Internal validity** • time frame – cross-sectional (to capture levels of improvement, short-term outcomes or establish outcomes with reference to pre- and post-assistance states) or longitudinal (to capture long-term behaviour change, evolving benefits, and development of mentoring phases) • experimental/non-experimental approach (if evaluator does or does not seek to establish causal relationships between antecedents or outcomes, or rather, to explore and expand understanding, or suggest influences) • which, if any, contingency variables are controlled for (in experimental context) ▪ evaluative referent – basis of comparison - effectiveness measured against outcomes for matched non-assisted group, against program goals or fitness for purpose, against the extent of time and/or money invested by small business owner/manager, against external business and management competencies, actual compared with intended implementation, evaluation in terms of pedagogical structure of program • nature of assessment of learning outcomes or development - referenced normatively, ipsatively or against external criteria (development of mentee may not usefully be measured against other program participants or with reference to, for example, external competencies) • qualitative/quantitative/combined approach (which approach or combination of approaches will capture outcomes in a form which is useful and relevant in the context of the purpose of the evaluation of the assistance program and in detailing individualised outcomes) • summative, formative or combined approach (outcomes-based approach or looking to improve program or both?) • reliability and confirmability issues if an interpretivist stance is taken dependability is the stability of the data over time and confirmability relates to ensuring that data, interpretations, and outcomes of inquiries are rooted in contexts and persons apart from the	**Selection of research strategy**	**Selection of evaluation criteria - "measures" or ways of understanding each dimension**

- ease of access

User satisfaction – user perceptions of value and effectiveness
- whether mentoring partnership was positive/negative experience, whether program would be recommended to others, satisfaction with mentee/mentor interaction, nominated monetary value of program, perceived value and significance of intervention, perceived value of the experience of mentor, satisfaction with program duration, obstacles, inhibitors or deterrents to effectiveness (dissatisfaction/ineffectiveness indicator)

Impact
Personal measures
Mentee – career
- promotion, salary growth, intrinsic job or work satisfaction, future prospects, career progression, career mobility, opportunities, overcome discrimination, ability to overcome obstacles to progression, career planning - also measures of ineffectiveness, intended and unintended outcomes (side effects)

Mentee – psychosocial
- feelings of pride, enjoyment and self-achievement, flexible and adaptable leadership, self-worth, ability to achieve objectives, ability to cope with problems, ability to learn and manage, ability to cope with change, sense of competence, sense of professional identity, self-development, validation and emotional support - also measures of ineffectiveness, intended and unintended outcomes (side effects), feelings of being challenged and stimulated

Mentee - business skills development
- improved skills in areas of finance, marketing, pricing and costing, bookkeeping and accounts, taxation, computer skills, budgeting, credit control, stock control, company law, planning, decision making, record keeping, cash flow planning, preparing a business plan, strategic growth planning, maximising business potential, adapting to business change, developing new ideas, producing action plans for business development, becoming more entrepreneurial, disseminating innovation in the business community, networking, using information to inform decision-making, awareness of training and development issues, delegation skills, greater awareness of strengths, weaknesses, opportunities and threats, broader perspective on key business issues, greater efficiency, more likely to take on employees, more likely to seek assistance from professionals such as solicitor or accountant, more likely to seek an alliance with another business professional - also measures of ineffectiveness, intended and unintended outcomes (side effects)

Mentee - business measures
- employment growth/generation, sales rates/revenue increases, GDP, earned income/wages, rate of business startups/formation rate, projected turnover, exports, taxes and sales taxes generated, payroll taxes generated, collaboration and international networking opportunities, information transfer, improved international or regional competitiveness, increased efficiency - also measures of ineffectiveness, intended and unintended outcomes (side effects)

Mentor
- career rejuvenation, praise and recognition, positive feedback, increased self-confidence, career enhancement/advancement, increased information and knowledge, recognition and respect from

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- socio-economic background/class
- learning attributes
- available skills (technology skills and resources such as ready access to technology)
- learning styles
- personality
- gender
- race
- education level
- years in business
- team playing skills
- patience
- decisiveness
- risk-taking
- comfort with technology
- interpersonal skills
- mentee and mentor motivations
- mentee's career aspirations
- relationship with host organisation
- relationship with facilitator
- occupational group
- belief that job performance and events which occur in a work setting are contingent on personal behaviour and under personal control (locus of control)
- identification with work or importance of work to self-image (job involvement)
- extent to which individual engages in career planning
- extent to which individual values work relationships (relationship importance)
- preparedness to invest time and money in program
- learning orientation of the entrepreneur or whether there is a culture of learning by the business including innovation, product and

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evaluator

External validity
- sampling strategy - with reference to size, sampling frame, response rate, type of sampling (random/probability, non-random/non-probability, mix, maximum variation sampling)
- whether an internal/external evaluation (even though distance may not ensure objectivity and subjectivity may not threaten it, it may, so how does this impact on the credibility of findings)
- whether program has liberal/conservative objectives (does the assistance seek to maintain or challenge the status quo eg programs which target career advancement for women in an organisation can be seen as challenging the status quo, while a program included as an induction for new staff can be aimed at transferring cultural values of an organisation)
- the level of the evaluation (policy, macro-program, individual, etc)
- issues of rigour eg strategies to overcome bias or limitations of data
- transferability rather than generalisability - if interpretivist stance is taken claims made in relation to specific context and method rather than being generalisable to a broader population, onus on other researchers to establish transferability of findings in different setting

Construct validity
- the number of data sources and impact on data quality
- the nature of data and impact on data quality (e.g. self-report data only)
- precise definition of concepts and operationalisation of construct
- clearly identifying stakeholders to assist with identifying purpose and use of the evaluation
- whether outcomes for all parties will be measured (mentees only, mentees and mentors, host organisation)
- whether measures of both effectiveness and ineffectiveness are to be used
- whether allowance for displacement and deadweight will be made (relevant when an experimental approach is used)
- whether self and administrative selection will be accounted for (can contribute to difficulties with establishing causality)
- response bias (can contribute to difficulties with establishing causality)

peers, job satisfaction - also measures of ineffectiveness, intended and unintended outcomes (side effects) Other ■ whether engagement continued beyond program ■ whether mentees and mentors would use service again	service changes ■ aspirations for growth by owner managers	■ influence on or relevance to policy-makers (should evaluation be 'policy-relevant?')		

4.7 Summary of key respecifications to date

As set out in Chapter 3, based on the work of McLaughlin (1976) and Collin and Berge (1996), the dimensions of System and Information quality were redefined to transfer them from the Information Systems to the structured e-mentoring for small business context.

As stated in section 1.13.2.2, Seddon's redefinition of the causal relationships between the DeLone and McLean dimensions as "influence" will be adopted, thus moderating the positivist epistemological assumptions underpinning the model. Further to the comment of Panel member # 3 presented in Tables 27 and 28, the variables have been renamed 'factors' in the subsequent iteration of the framework to firstly correct the implication that they can be varied, and secondly to try to again moderate the positivist influences which underpin the framework.

Further to the work of Myers et al. (1998) the DeLone and McLean model of IS success (1992) as adapted has been repositioned within a contingency framework. As set out in 4.5.1.1, a set of guidelines and a guide to the evaluation process has been developed to assist potential users of the framework. As detailed in 4.5.1.1.8, the intended application of the framework is limited to evaluation at the individual level, and to the extent that effectiveness at the individual level can be extrapolated to program effectiveness, to effectiveness evaluation at the "small 'p'" program level (Owen and Rogers 1999 p.90).

The measures suggested by the expert panel have been added to the framework and are summarised as follows:

Table 49 – Summary of measures added to contingency framework

Section	Measure added
4.5.1.1.3	Skills (netiquette, understanding of mentoring), contractual expectations (what is the role of each party in the arrangement?), goal clarity (what are we trying to achieve?), goal commitment and relationship commitment, mentee's preparedness to invest time and/or money, monetary value participants would ascribe to the program, whether or not a small business owner/manager would use the mentoring service again, profit as a measure of current or future business performance
4.5.1.2.1	Management and business competencies
4.5.1.2.3	Learning orientation of the entrepreneur, aspirations for growth by owner/managers, government policy content/policy incentives and culture of learning by the business including innovation, product and service changes
4.5.1.3.2	Ipsative measurement (self-referencing measurement)

4.8 Next chapter

The input of the expert Panel has allowed for the refinement of the proposed framework, and served to make the researcher more informed about the possible limitations and difficulties of applying the framework in the research setting. The contingency framework is proposed in an effort to provide a basis upon which it is possible for researchers and practitioners to use the understanding of evaluation of effectiveness in the parent disciplines to inform the understanding of evaluation of effectiveness in the structured e-mentoring context.

In the next Part of this study, the respecified framework integrating the DeLone and McLean taxonomy will be applied to a case of actual practice.

Part III – Application and testing of translated model and framework - examination of actual practice

Part III involves an examination of a case of actual e-mentoring practice. The objectives of this examination are twofold - firstly, to test the adequacy of the proposed framework, and secondly to explore the determinants of effective structured e-mentoring in an applied research setting.

More specifically, Part III will focus on testing the adequacy of the proposed framework as a basis for selecting an evaluation strategy, and for developing quantitative and qualitative measurement instruments in an actual research setting. It will then test the usefulness of the framework for classifying, describing and interpreting data.

Exploring effectiveness using the respecified DeLone and McLean dimensions as an interpretive tool will provide a basis for proposing a set of linkages between effective e-mentoring outcomes for mentees and "classes of mentoring phenomena" (Clutterbuck 2003) - an intepretation of effectiveness which is able to be substantiated and confirmed by empirical data.

5 Examination of actual practice – research rationale and methodology

5.1 Introduction

> *When one examines and judges accomplishments and effectiveness, one is engaged in evaluation. When this examination of effectiveness is conducted systematically and empirically through careful data collection and thoughtful analysis, one is engaged in evaluation research (Patton 1990 p.11).*

Chapters 6, 7 and 8 of this study will report on evaluation research in Patton's terms - the objective is to conduct an examination of the effectiveness of structured e-mentoring systematically and empirically through careful data collection and thoughtful data analysis.

In the broader context of the thesis, the purpose of Part III is to apply and test the usefulness and sufficiency of the proposed framework, which incorporates the DeLone and McLean IS success model, by undertaking an examination of actual e-mentoring practice.

The purpose of the evaluation within the context of Part III is to evaluate the effectiveness of an e-mentoring program delivered annually to self-employed contractors by a professional association between 2002 and 2006, and to explore some of the determinants of effectiveness. Part III will comprise this chapter which includes a detailed outline of the evaluation strategy to be used, Chapter 6 which sets out a description of the pedagogical structure of the program, followed by Chapters 7 and 8 detailing the evaluation itself broken into a quantitative analysis of the program's effectiveness (Chapter 7) and a qualitative analysis of the program's effectiveness (Chapter 8). The evaluation was undertaken with reference to the contingency framework incorporating the DeLone and McLean model, the evaluation process summary set out in Chapter 4 and the framework guidelines attached as Appendix 3.

The chapter will begin with an overview of the rationale behind the evaluation design. It will be followed by an outline of the parts of the framework being applied in this chapter, the aims and purposes of the evaluation, and the specific questions to be addressed. A detailed description of the data collection and analysis techniques will then be presented. The chapter will conclude with the final operationalisation of the e-mentoring effectiveness construct to be used in the quantitative and qualitative sections of the evaluation.

5.2 Evaluation design

Wood-Harper (in Mumford et al. 1984) suggests that a methodology should be selected which best facilitate(s) the researcher attaining his/her research objective. Along similar lines, Patton (1990) suggests that an evaluation design should be "appropriately matched to the evaluation situation .. [and] .. and the priority information needs of primary stakeholders" (p.479). This evaluation considered the effectiveness of an e-mentoring program by undertaking a comparative analysis of effective and ineffective e-mentoring partnerships. The research methodology adopted in this evaluation will provide the means of addressing the research questions and be aligned with evaluation purpose. The methodology for the evaluation reflects a recognition that, at this stage, it is necessary to "relinquish the burden of proof" and approach effectiveness evaluation research as exploratory (Halcolm's Evaluation Laws cited in Patton 1980). The research strategy was designed to be appropriate to the questions being asked, to adopt a variety of approaches (Denzin 1978), and to serve the information needs of researchers and practitioners in the area. Patton's competing inquiry paradigms (1990) involving pragmatism and a paradigm of choices based on methodological appropriateness will guide the research design.

5.2.1 Methodological rationale

What data and methodologies would be most useful to these evaluation imperatives?

Most critically, methodologies must explore and capture uniqueness (Patton 1990), provide a basis for the description, categorisation and interpretation of data, and an empirical and systematic means of linking effectiveness with its antecedents.

Patton (1990) suggests evaluation research involves a "tradeoff between breadth and depth" (p.165). He suggests that "[t]he design issue is how much time and effort we are willing to invest in trying to increase our understanding about any single person's experience" (p.165). In an effort to balance breadth and depth, this evaluation will provide a qualitative and quantitative analysis which will, in Patton's terms, involve a significant investment in understanding the experiences of the mentees who participated in the study.

On the basis that there is a "lack of proven quantitative instrumentation" (Patton 1990 p.130), a new quantitative e-mentoring effectiveness instrument will be tested for validity and reliability.

On the basis that there is "a need for confirmatory and elucidating research adding depth, detail and meaning to quantitative analysis" (Patton 1990 p.131), quantitative methods were used in

conjunction with qualitative methods. Kent et al. (2003) recommend a methodology combining semi-structured survey questionnaire with interviews to achieve a balance between scheme-wide information and data around personal experiences (p.443-444). In line with the approaches advocated by Patton (1990) and Kent et al. (2003), this evaluation adopted a combined quantitative and qualitative approach.

The qualitative evaluation adopted a process of naturalistic inquiry to capture variability or differences in outcomes in line with Patton's suggestion that: "Where you're looking for differences (Patton 1990 p.110), where very small differences are very important, a strategy of naturalistic inquiry is particularly appropriate" (Patton 1990 p.107). Qualitative approaches were used to "capture differences in outcomes and elucidate … connections" (MacDonald & Coffield 1991 pp.9-10).

Patton (1990) suggests that "[i]nterpretation, by definition, involves going beyond the descriptive data. Interpretation means attaching significance to what was found, offering explanations, drawing conclusions, extrapolating lessons, making inferences, building linkages, attaching meanings, imposing order, and dealing with rival explanations, disconfirming cases, and data irregularities as part of testing the viability of an interpretation" (p.423). The qualitative section of this examination of actual practice will attempt to go beyond observation, description, categorisation to interpret the data in these terms.

5.2.2 Sample size

There are a number of reasons for the small sample sizes in this study. Factors intrinsic to the characteristics of small business which potentially impacted on sample size include:

- the general resistance of small business to formal training programs (small business owner/managers prefer learning from peers, learning on the job, etc.);
- the geographic dispersal of small businesses across rural and regional locations. While communications technology facilitated participation, geographic dispersal and dispersal across industries is still likely to result in lower participation rates with a resultant impact on research populations available;
- time constraints on small business owner/managers which act as a disincentive to their participation in formalised training programs; and
- the diversity, heterogeneity and uniqueness of small business which leads to the difficulty of developing targeted training intervention programs. This impacts on participation rates and the availability of research populations.

As initially discussed in section 1.12.3.3, factors endemic to the structure of the e-mentoring program likely to have impacted the research population size and availability of data include:

- interventions are based on one-on-one mentoring partnerships with a rigorous matching and selection process. While this is critical for maximising positive outcomes and program experience, this selectivity necessarily impacts on participation rates;

- with mentors acting in a voluntary capacity, mentors are in short supply and the number of mentees applying to participate each year outnumbers the availability of mentors. This reduces participation rates and in turn the size of the available sample;

- the confidentiality of exchanges between mentees and mentors can make mentoring partners justifiably reluctant to surrender their email exchanges to analysis by a third party;

- the lack of institutional mechanisms in place to provide training to non-standard workers including self-employed contractors (Hall et al. 2000). This means a range of community and other training providers may step in to host training programs. The Australian program considered in this part of the thesis was offered as a member-only training intervention for a special interest group within a professional association (with the exception of the pilot program which was offered publicly to professionals because it was publicly funded). The fact that training providers are not necessarily related to established institutionalised training mechanisms means they may be smaller community-based organisations with reduced reach, and this is again likely to impact on participation rates and the size of the sample available for research.

These factors have impacted on the size and availability of research populations in this area. In this evaluation, sample sizes for both the qualitative and quantitative parts of the evaluation were not sufficient to establish statistical significance. Curran and Blackburn (2001) suggest in relation to qualitative studies that "[t]he validity of [qualitative] … interpretations is established not on any statistical adequacy ... but on revealing the actors logics and the situational constraints influencing their attitudes and behaviour" (p.18). Because the examination of actual practice takes into account the small sample size by combining quantitative and qualitative methodologies, sample size may limit the generalisability of inferences drawn from the qualitative part of the study but will not overall compromise this exploratory evaluation research.

5.2.3 Description of sample for qualitative and quantitative parts of evaluation

A list of Australian Bureau of Statistics definitions was provided in the Productivity Commission research paper, Self-Employed Contractors in Australia: Incidence and Characteristics (Waite & Will 2001 pp.viii-ix). The following definitions are important in

defining the sample used in the quantitative and qualitative parts of this examination of actual practice.

Dependent contractors

Persons employed on a commercial contract but with work arrangements consistent with them being an employee

Incorporated enterprise

An enterprise that is registered as a separate legal entity to its members and owners. Also known as a limited liability company (ABS Cat. no. 6359.0)

Independent contractors

Persons employed on a commercial contract and with work arrangements inconsistent with them being an employee

Own-account workers

Persons who operate their own unincorporated enterprise, including those who draw a wage or salary from that enterprise (ABS Cat. no. 6359.0)

Owner-managers of incorporated enterprises

Persons who operate their own unincorporated enterprise, including those engaged independently in a trade or profession (ABS Cat. no. 6359.0)

Self-employed contractors

Employed persons who operate their own business without employees and supply labour services to clients on an explicit or implicit commercial contract basis. This includes dependent and independent contractors

Unincorporated enterprise

A business entity in which the owner and the business are legally inseparable, so that the owner is liable for any business debts that are incurred (ABS Cat. no. 6359.0)

The key definition for the purposes of this evaluation is that of self-employed contractors. All the participants share status as self-employed contractors but may also be defined as own-account workers, owner-managers of incorporated or unincorporated enterprises, or dependent or independent contractors within this shared category.

5.2.4 Self-report data

Quantitative approaches using econometric analysis dominate small business research (MacDonald & Coffield 1991, Hytti & Kuopusjarvi 2004, Curran & Blackburn 2001). In contrast, predominantly self-report data characterises much of the mentoring literature (refer to Table 12c in Chapter 3). These contradictory approaches represent a key research challenge to e-mentoring effectiveness evaluation in the small business context.

In an effort to provide a data source not based on self-report data to account for these limitations, the self-report data arising from the questionnaire and in-depth interviews were supplemented with alternative data in the form of actual exchanges between mentoring partners and, where appropriate, the views of mentors. There were however a limited number of mentoring exchanges made available to the researcher because of the largely confidential nature of the relationship between mentee and mentor. The exchanges that were made available may however assist particularly with the ideal/actual comparison of how the program was intended to function and how it actually functioned (see discussion of this below in section 5.2.8). While the methodological approaches of questionnaire and in-depth interviews were selected for their appropriateness in capturing individualised outcomes, the fact that the data was predominantly self-report and did not include econometric analysis was simultaneously a strength and limitation of the evaluation.

5.2.5 Surfacing anomalies or disconfirming cases

Carlile and Christensen (2005) suggest that surfacing anomalies is considered a means of bettering theory development. They say:

> *Anomalies are valuable in theory building because the discovery of an anomaly is the enabling step to less ambiguous description and measurement, and to identifying and improving the categorization scheme in a body of theory* (p.19).

In line with this approach, the examination of e-mentoring practice will attempt to surface any anomalies in the form of instances which do not comfortably sit within the DeLone and McLean taxonomy (1992).

Confirming and disconfirming cases can be seen as the qualitative equivalent of anomalies or outlying data in quantitative approaches. They are instances in which the data does not fit the existing identified patterns. They are, as Patton (1990) suggests in line with Carlile and Christensen's (2005) view on theory development, an opportunity to propose rival interpretations or to place boundaries around findings (Patton 1990). They add credibility and rigour to the process of qualitative data analysis. This evaluation sought out confirming and

disconfirming cases. Where there were instances of data not sitting appropriately within the DeLone and McLean taxonomy, they were highlighted and considered anomalies or particularities which would assist with further refining the proposed linkages between the respecified DeLone and McLean dimensions and e-mentoring effectiveness.

5.2.6 Administrative and self-selection

The process of participating in the e-mentoring program involved both self-selection by participants and administrative selection by the host organisation. Inevitably this creates, as Seibert (1988) describes it, "ambiguity around causal direction" in relation to claims made about the factors that influence effectiveness (p.485). High levels of effectiveness may be, in Seibert's terms, a factor leading to participation rather than its result. The failure to control for administrative and self-selection is acknowledged as a limitation of this research, a potential source of bias and error, and an obstacle to establishing causal direction.

5.2.7 Response bias

This study does not account for response bias - that is, where those who respond may have had a more positive experience than those who do not (Curran & Blackburn 2001 p.61). This is acknowledged as a potential source of bias and error in this evaluation.

5.2.8 Ideal/actual comparison

Argyris (1982) emphasises the importance of differentiating "espoused theories" from "theories-in-use". He suggests that espoused theory is the official version of how the program or organisation operates while the "theory-in-use" is what happens in actuality. Interviewing supervisory or managerial staff and administrators and analysing official documents, Argyris suggests, "reveals the espoused theory while interviewing participants and frontline staff, and directly observing the program, reveals the theory-in-use. The resulting analysis can include comparing the stated ideals (espoused theory) with real priorities (theory-in-use) to help all concerned understand the reasons for and implications of the discrepancies" (Argyris 1982 cited in Patton 1990). This ideal-actual comparison is a way of checking veracity and consistency of data and was a strategy for enhancing data quality used in this evaluation. In this study, Chapter 6 will comprise the "official" version of how the program was intended to operate, while Chapters 7 and 8 will describe what happens in actuality.

5.2.9 Methods and data triangulation

Denzin defines methodological triangulation as the use of multiple methods to study a single problem. Triangulation addresses the problem of relying too extensively on a single data source

or method, thereby undermining the validity and credibility of findings because of the weakness of a single method (Denzin cited in Patton 1990). It is the process of checking inferences drawn from one set of data sources by collecting data from other sources (Trauth & O'Connor 1991). This evaluation used questionnaire, in-depth interviews and actual email exchanges to maximise data and methods triangulation as much as was feasible in the context of the resources and personnel available to the study. This, in turn, provided a more broadranging basis for interpreting and validating the data collected (Kaplan & Duchon 1988) than an interpretation which did not utilise data and methods triangulation.

Some of the standard strategies for ensuring rigour in qualitative research such as using a team-based approach to standardise interpretation, and reading interpretations back to those who provided the information, were not able to be implemented in this evaluation and this is acknowledged as a limitation and potential source of bias and error in the qualitative study.

5.2.10 Data collection

Data collection was conducted over two phases including a quantitative and qualitative phase. This approach was used to good effect in MacDonald and Coffield's evaluation research study "Risky Business" (1991) whereby questionnaires were used to establish possible associations, and interviews to elucidate the identified connections as a basis for considering influences and linkages with effectiveness.

5.2.11 Delivery mode

In the case of both quantitative and qualitative data collection, the data was sought and provided by email. Online methods of qualitative data collection offer the advantages of, in Mann and Stewart's (2004) terms, reach, speed and economy. Online delivery provides increased reach and collapses boundaries of time and space.

5.2.12 Unit of analysis

The unit of analysis was determined by the identification of mentees as key stakeholders on whose behalf effectiveness was evaluated. The data were collected from individual mentees and mentors, and effectiveness evaluated for mentees as identified primary stakeholders. While the input of mentors was critical to this study, evaluating the effectiveness of the program for mentors was placed outside the study's scope. This evaluation was conducted at the level of effectiveness for individual mentees.

5.3 Application of framework to evaluation aims and evaluation questions

In line with the need for values identification as part of evaluation (Stufflebeam 1991, Patton 1990, Owen & Rogers 1999 et al.), the rationale used to define the evaluation questions, and subsequently to select the methodologies and measures to explore these evaluation questions are set out in this section. This will provide the basis for the operationalisation of the e-mentoring effectiveness construct, and selection of the specific evaluation strategy to be adopted. This process was supported by items 1-5 of the research process set out in the framework guidelines in Chapter 4 and restated here for convenience:

Extract from Framework guidelines, Chapter 4:

1. Methodology - referring to Phase 3 of the framework
- *Consider how the program was intended to function*
- *Adopt value position for the evaluation. Make the value base explicit because any conclusions made will follow from the value position taken.*
- *Identify and rank stakeholders and prioritise their information needs*
- *Consider purpose of evaluation*
- *Decision support, relativistic, rich description, social processes or constructivist, also formative or summative, to describe and categorise observations, to test an hypothesis, to propose and test alternative definitions or taxonomy further to anomalies in previous descriptive or normative studies being identified, etc.*
- *Scope evaluation*
- *Define evaluation questions*
- *Consider time frame, the variety of data collection methods, sampling issues, evaluative referent, issues of rigour and ways to account for bias to maximise data quality*
- *Make relationship between evaluator and program explicit*
- *Consider strengths and weaknesses of different research approaches and how methodological decisions may impact on internal, external and construct validity*

2. Context - referring to Phase 2 of the framework
- *Define key characteristics of the sample with reference to external environmental factors, external mentee business factors and/or internal mentee and mentor factors - discuss representativeness and generalisability if relevant*
- *If using experimental or quasi-experimental approach, detail variables which will be controlled for*

3. Mentoring processes, content/structure, user satisfaction, use and outcomes - selecting indicators of effectiveness - referring to Phase 1 of the framework
- *Define and operationalise construct of e-mentoring effectiveness with reference to evaluation criteria set out in the framework*
- *Depending on the evaluation purpose and goals of program, select or develop effectiveness indicators/measures from across each of the five DeLone and McLean dimensions*

4. Revisit Phases 1, 2 and 3 until an appropriate strategy is decided upon
- *Consider how the design can be appropriately matched to the evaluation situation ... and the priority information needs of primary stakeholders*

5. Referring to Phases 1, 4 and 5 of the framework
- *Finalise research strategy and measures*

5.3.1 Evaluation aims and purpose

In defining the aims of this evaluation, it is necessary to adopt a value position in a number of areas. This will involve a process of (1) identifying program goals, (2) identifying and ranking key stakeholders and the audience for the evaluation, (3) considering the evaluation purpose and

evaluation approach, and (4) positioning the research. This will in turn provide a basis for (5) defining the scope and identifying the limitations of the evaluation.

5.3.1.1. Identify program goals

The stated aim of e-mentoring program was:

> *to develop a learning framework which effectively provides business skills, career and personal support to self-employed contractors through mentoring* (Rickard 2002).

The general goals of Small Business Enterprise Culture Program (SBECP) through which the e-mentoring program was funded were identified as follows:

> *The Small Business Enterprise Culture Program aims to develop and enhance the business skills of small business owner-managers and demonstrate the contribution that such skills can make to business viability and growth. It will achieve this by providing competitive grants for initiatives designed to enhance small businesses access to skills development and mentoring* (SBECP website, 2002).

This study will evaluate effectiveness in terms including, but not limited to, these goals.

5.3.1.2. Identify and rank stakeholders and audiences for the evaluation research

To establish a value position, it is also necessary to identify and rank the major stakeholders and audiences for the evaluation (refer to discussion of Seddon's position on the need to identify stakeholders in section 3.2.2.1). The stakeholders were identified and ranked as follows: (a) mentees as primary stakeholders and mentors as critical stakeholders to the extent that they contribute to the effectiveness of the program for mentees but secondary in rank to mentees, (b) the research community, (c) other practitioners, (d) the host organisation, and (e) the SBECP program.

The primary focus of this evaluation was outcomes for mentees. The evaluation questions will also be underpinned by the information needs of the research community and other practitioners.

5.3.1.3. Consider purpose of evaluation

The purposes of the evaluation research to be undertaken are as follows:

- to evaluate anticipated outcomes;
- to capture unanticipated outcomes or side effects;
- to capture outcomes or activities which were expected but did not eventuate;
- to link outcomes arising from identified antecedents;

- to describe and categorise observations in line with DeLone and McLean's model of IS effectiveness, and to examine the linkages between the dimensions with a view to identifying factors which are likely to have influenced effectiveness;
- to establish whether the program met the needs of primary stakeholders; and
- to address the research questions posed in this thesis.

In line with the intended program function, identified goals of the program, the purposes of the evaluation, the primary stakeholders and the audience for the evaluation research, a summative rather than formative or combined summative and formative approach will best serve the research objective.

5.3.1.4 Positioning of the evaluation approach - DeLone and McLean's model of Information Systems effectiveness

Lincoln and Guba (1989) state that it is the "responsibility of the evaluator to provide a context and a methodology … through which different constructions, and different claims, concerns, and issues, can be understood, critiqued, and taken into account" (p.72). This evaluation will attempt to understand e-mentoring effectiveness using the proposed contingency framework, in Lincoln and Guba's terms (1989), as a context and methodology through which the DeLone and McLean's IS success construct and other claims, concerns and issues around effectiveness can be explored.

5.3.1.5 Define scope and identify limitations

In line with the program aims and evaluation purposes, it is necessary to explicitly identify what is beyond the scope of the study further to the value position adopted. The following section outlines issues or investigations which are beyond the scope of this study including time-frame, learning models, effectiveness at the level of the host organisation and effectiveness at the level of the Small Business Enterprise Culture Program.

5.3.1.5.1 Time-frame

The effectiveness of the program in producing long-term behaviour change was unfortunately beyond the scope of this evaluation. Time constraints preclude a longitudinal engagement in the field in favour of a cross-sectional approach and this is a limitation of the study. The evaluation only superficially and speculatively addresses whether or not there is evidence of long-term effectiveness.

5.3.1.5.2 Learning models – or how people learn

The evaluation of program effectiveness in terms of the learning models utilised was necessarily limited in scope and detail. The research questions are framed in general terms. It was seen as important to undertake a basic exploration of how the program functioned in terms of the integration of learning models into the program even if it was necessarily simple. There is much scope for further investigation into this critical area of analysing the content of email exchanges between mentee and mentor to show how and what type of learning occurred.

5.3.1.5.3 Effectiveness for the host organisation

A comprehensive evaluation specific to the information needs of the host organisation would involve exploring the questions outlined below rather than those set out in the Evaluation questions section. Evaluation in this form is beyond the scope of this study. An evaluation conducted on behalf of, and for the use of, the host organisation would consider questions such as:

- To what extent did the host organisation build the capacity to develop and deliver mentoring services to a segment of small business?
- Was the program effective in terms of cost/benefit?
- Are the potential benefits for the host organisation being realised in the short and long term?
- What are the evaluation processes in place and do they balance rigour and relevance?
- What is the bottom line impact of the program for the host?
- What are the implications for other services in the organisation?
- How are security issues managed?
- How is risk attached to the mentoring program being managed, including management of liability?
- How can the program be improved? A formative analysis, inquiring into and providing evidence of how the program might be improved, would be critical to an evaluation primarily considering the information needs of the host organisation. This form of analysis is beyond the scope of this study.

5.3.1.5.4 Effectiveness of the SBECP initiative

Similarly, an analysis specific to the information needs of the SBECP would involve evaluation against, not only the programs specific aims, but also in terms of the objectives of the policy under which the SBECP provided the mentoring grants. Such an evaluation would consider questions such as:

- To what extent did host organisations collectively build the capacity to provide mentoring to small business owner-managers?

- How effective is the policy in terms of contributing to small business viability and growth?

- Is the policy and SBECP funding initiative effective in terms of cost/benefit and increasing employment?

- Was any displacement or negative impact on other individuals or groups evident as a result of the SBECP initiative?

- Does the SBECP policy initiative meet the needs of small business owner-managers? (While the evaluation will consider the outcomes in relation to the stated needs of the participants and will outline how the e-mentoring program was developed further to a review of the literature in the area of the learning needs of small business owner-managers, a detailed needs analysis of the specific cohort is beyond the scope of this evaluation.)

- What are the evaluation processes in place and do they balance rigour and relevance?

- Is there a better way of achieving these outcomes?

5.3.1.6 Summary - evaluation aims and purpose

The aims of this evaluation were established by adopting a value position in relation to a range of factors including the intended program functions described in terms of the program's pedagogical structure, the major program goals, the identification of mentees and mentors as the primary and secondary stakeholders respectively, the information needs of the research community and practitioners as the audiences or consumers of this evaluation and thesis, the evaluation purposes, and the scope of the evaluation. Having adopted a value position in relation to each of these, it was possible to develop the specific questions the evaluation would address.

5.3.2 Evaluation questions

The evaluation questions set out below are aligned with the evaluation aims in terms of evaluation purpose, the intended program function, and program goals. The evaluation purpose section is comprised of two sections – Sections A and D in line with the dual purpose of this evaluation for firstly, testing the adequacy of the proposed framework, and secondly, assisting with exploring the determinants of effective structured e-mentoring in the small business context (refer to 5.1 Introduction for discussion) and the effectiveness of the program. The evaluation questions set out in Section B are aligned with intended program function, and in Section C with major program goals.

The questions are set out in tabular form for the sake of brevity and clarity (Miles & Huberman 1994).

5.3.2.1 Questions by purpose, program function and program goals

Table 50 – Evaluation questions by program function, program goals and evaluation purpose

Evaluation purpose for broader purpose of thesis	Section A – Evaluation questions
To describe, categorise and interpret observations in line with DeLone and McLean's model of IS effectiveness and the proposed framework. This includes examining the linkages between the dimensions with a view to establishing associations which may influence effectiveness To link outcomes arising from identified antecedents To explore any other issues which may be relevant to an understanding of effectiveness	Do the relationships between the dimensions proposed by DeLone and McLean hold when transferred to the structured e-mentoring context? Does the proposed taxonomy adequately represent the construct of structured e-mentoirng effectiveness in this research setting? Does the proposed taxonomy sufficiently accommodate the data, and if not, how? Does this evaluation research suggest the existence of linkages between the dimensions of the DeLone and McLean model and effectiveness?
Intended program function	**Section B - Evaluation questions**
Program's major pedagogical functions - Learner control - Learning in terms of interaction with and around content - Learning models - Flexibility	How effective was the program in supporting mentees to construct their own learning pathways? Did the interaction around content and with the mentor and host support learning for the mentee? Did the program accommodate individual differences? Was the program integrated into the day to day activities of the mentee? Did mentees and mentors modify the program to their particular needs? How did email delivery impact on effectiveness? What types of advice and support do mentees receive? Did mentees set their own goals?
Major program goals	**Section C - Evaluation questions**
Host organisation - To develop a program which effectively provides a learning framework for self-employed contractors through mentoring	Was there evidence to suggest learning by mentees?
SBECP - To develop and enhance the business skills of small business owner-managers	Was there evidence to suggest enhancement of business skills for the target group? How and to what extent did the quality of the match impact on the effectiveness of the program for mentees? How does interaction frequency impact effectiveness?
Evaluation purpose for exploring the determinants of structured e-mentoring effectiveness	**Section D - Evaluation questions**
To consider the program in the context of how it was intended to function To evaluate anticipated outcomes	How were the mentoring partnership, program structure, user satisfaction, use and impact linked to effectiveness? Is there evidence of any linkage between Use and User satisfaction? Is there any evidence of any linkage between System and Information quality? What benefits including indicators of any long-term benefits were gained by mentees? What were the major obstacles to obtaining benefit from the program identified by mentees? How is e-mentoring effectiveness defined and evaluated by the participants themselves? What were the antecedents to effectiveness?
To capture unanticipated outcomes or side effects To capture outcomes or activities which were expected but did not eventuate	If program goals suggest that certain things ought to happen or are expected to happen and they don't, or conversely, if program goals suggest that certain things occurred which were not anticipated, what are the implications? Is there evidence to suggest that the use of a mentor as a neutral sounding board or to gain a different perspective was linked to effectiveness for mentees? Is there evidence that structured e-mentoring involves diversity in the range of supports and advice provided to

	mentees?
	Is there evidence of a link between the range of supports and advice provided to mentees and effectiveness?
To link outcomes arising from identified antecedents	What factors were important in influencing positive outcomes?
To establish whether the program met the needs of primary stakeholders	To what extent did the program meet the needs of the mentees?

5.3.2.2 How questions were addressed

5.3.2.2.1 Questions addressed by quantitative data

The evaluation questions set out in section A were considered using predominantly quantitative data.

5.3.2.2.2 Questions addressed by qualitative data

The evaluation questions set out in sections B. C and D were grouped and addressed under the DeLone and McLean dimensions as follows:

System quality

How did the nature and quality of the mentoring partnership impact effectiveness?

Did the mentor act as a neutral sounding board?

What types of support did the mentor provide to the mentee?

Information quality

Quality of matching

 Did the quality of the match influence effectiveness?

Value of program structure

 Did the program structure influence effectiveness?

How effective was the program in supporting mentees to construct their own learning pathways?

 Did mentees set their own goals?

 Did mentees integrate the mentoring with their business activities?

 Did mentees and mentors modify the program to their particular needs?

 Did the program accommodate individual differences?

System quality and Information quality combined

How do mentees assess the relative importance of the mentee/mentor interaction and program content/structure in structured e-mentoring?

Did the interaction around content and with the mentor and host support learning for the mentee?

Use

What evidence is there for a link between interaction frequency and effectiveness?

How did email delivery impact effectiveness?

User satisfaction

How is e-mentoring effectiveness defined and evaluated by the participants themselves?

Were the effectiveness scores found in the quantitative analysis borne out by the qualitative data?

Use and user satisfaction

Was there evidence to suggest that the dimensions of Use and User satisfaction were interdependent?

Impact

Was there evidence to suggest learning by mentees?

Was there evidence of benefits?

     Was there evidence of long-term benefits?

     Was there evidence to suggest enhancement of business skills for the target group?

     Did the program meet the needs of the mentees?

     Did outcomes other than those anticipated result?

     What factors were important in influencing positive outcomes?

     What were the antecedents to effectiveness?

5.4 Quantitative analysis

5.4.1 Introduction

The quantitative analysis will utilise the DeLone and McLean (1992) dimensions as a basis for classifying degrees of effectiveness for mentees. This study utilises secondary data which was, subsequent to its delivery by the host organisation, organised thematically by the researcher according to the DeLone and McLean dimensions. When responses were scored, a rating for each of the dimensions and a total score were produced. The aims of this analysis were firstly to determine whether or not there were relationships between the "total effectiveness score" and each of the dimensions, and secondly, to establish whether the relationships within the DeLone and McLean model held - that is, whether or not the relationships between impact and each of the other dimensions in this new context were substantiated. The relationships were represented using scatterplot graphs, and correlation coefficients calculated for each of the associations being measured. Correlation coefficients were calculated using the Statistical Package for the

Social Sciences (SPSS) program. Representation of the data in the form of scatterplot graphs with reference to a correlation coefficient will give an indication of the direction (positive or negative) and strength of the relationships.

If associations between effectiveness and each of the dimensions are found, and the relationships within the DeLone and McLean model hold, the questionnaire can be regarded as having claim to being a valid and legitimate basis for classifying mentee effectiveness outcomes.

5.4.2 Threats to validity in the quantitative part of evaluation
5.4.2.1 Conceptual limitations of the quantitative study
The approach used in the quantitative analysis is open to challenge on a range of bases. Firstly, the methodology may be tautological in that it explored effectiveness presuming a definition of effective and ineffective before these constructs were validated. Secondly, the scoring approach used was inappropriate to the extent that it was used alongside self-referencing questions rather than referring to a normative or external standard where a comparison or ranking of scores would be more meaningful. Thirdly, the researcher's judgement which comprises part of the means of classifying the effective and ineffective partnerships is not independent and may be subject to bias and error. Fourthly, the measurement instrument has not been formally validated using a sample upon which claims of statistical significance can be based. The lack of methodological sophistication arising out of small sample size and the failure to establish statistical significance leaves the legitimacy of the evaluative conclusions drawn from the quantitative analysis open to challenge. Fifthly, as previously discussed, because the outcomes arising from mentoring programs can be difficult to quantify, a quantitative approach is likely to be inadequate in sufficiently determining both tangible and intangible impacts. These limitations are acknowledged and the methodology aimed, as much as was possible, to account for the difficulties.

While the limitations outlined above are acknowledged, the scores of mentees were nonetheless used as the basis for dividing the sample into two groups - those with scores between 98 and 156 were defined as very effective or effective, and those with scores between 0 and 97 were defined as partly effective or ineffective.

5.4.2.2 Limitations with correlation analysis
There is an inadequacy in the calculations regarding effectiveness because the variables of effectiveness and the other dimensions were not measured independently - that is, the scores for the individual dimensions were components of the effectiveness score. For this reason, whether

or not the associations between dimensions proposed by DeLone and McLean hold when transferred to this new context was also carried out in relation to Impact (refer to Chapter 7 for a more complete discussion).

5.4.2.3 Limitations with the use of secondary data in quantitative analysis

Using secondary data brings with it certain limitations in that the instrument used may not exactly fit the purpose to which it is being applied. In this case, because the researcher shares the dual role of practitioner, the data collection instrument used to collect the data was not inconsistent with the research intent.

Recalibration exercise

Because there were minor changes to the format of the questionnaire which established the scores of participants, a process was undertaken whereby the scores allocated against questions were standardised for consistency.

In a limited number of cases, questions were left unanswered by respondents. In these cases, the answer was coded at zero. The maximum number of scoring units (questions not answered) was one (1) in the cases of Participant 1 and Participant 12 so the impact on validity of the findings was not regarded as sufficient to compromise the inferences drawn from the data.

Differences in questionnaires used over the period 2002-2006 and how scoring was adjusted for consistency

In the case of the question asking respondents to rate the value of the content of the facilitation messages, the scale was changed from nominal in 2002 and 2003 to ordinal in 2004, 2005 and 2006. The question was changed from being framed as "helpful/not helpful" to rating the value on a Likert scale scored from 0-4 (0 not helpful to 4 very helpful). The "not helpful" values were recalibrated to the numerical value of zero (0) and "helpful" to the maximum value of 4. While this created a possibility of over or understating the "degree of helpfulness", it was seen as the most objective way of carrying out the calibration.

Similarly a recalibration was required in relation to the question "Did you develop skills in the areas you nominated in your registration form?" In 2004 the questionnaire was amended to provide, in addition to the "Yes/No" options (scored at one (1) and zero (0) respectively), an option for "Partly" which was coded at a half-point.

In the questionnaire of 2004 and subsequent years, a question asking respondents to rate their level of satisfaction with the advice, assistance and support provided by their mentor was

amended to provide a 5 rather than 4-point Likert scale. The method of scoring was amended to accommodate this change by allocating a zero (0) value to both dissatisfied and very dissatisfied responses in 2004, 2005 and 2006. So in 2002 and 2003 a 4-point scale was used and the scoring was allocated as very satisfied (3), satisfied (2), less than satisfied (1), dissatisfied (0), and in 2004-2006 the scoring was allocated as very satisfied (3), satisfied (2), neither satisfied nor dissatisfied (1), dissatisfied (0) and very dissatisfied (0).

From 2002-2006, the questionnaire included a question asking respondents to rate the value of the mentoring program as a service to self-employed professionals. In 2002 and 2003, the answer provided for response according to a 3-point Likert scale (very valuable, valuable, not very valuable). In 2004 to 2006, the questionnaire was amended and the answer to this question provided for response according to a 5-point Likert scale (excellent, very good, good, poor, very poor). In 2002 and 2003, scoring was allocated from 0-2 (0 not very valuable, 1 valuable, 2 very valuable). In an effort to maintain consistency, in 2004 to 2006, scoring was allocated from 0-2 (0 very poor, 0.5 poor, 1 good, 1.5 very good and 2 excellent).

In 2004, the question asking participants to rate their level of satisfaction with the matching process changed from a 4-point Likert scale (very satisfied, satisfied, not satisfied, dissatisfied) to a 5-point Likert scale (very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, very dissatisfied). To take account of this change to ensure that scoring was made as consistent as possible, both the very dissatisfied and dissatisfied responses were coded at zero (0) in questionnaires including and subsequent to 2004.

In 2005 and 2006, the question asking the respondent to detail contact frequency with their mentor offered four possible responses rather than five as was the case with questionnaires used in 2002 to 2004. The responses in 2002 to 2004 were scored as follows:

Table 51a – Interaction frequency – 2002 to 2004

Contact frequency	Score
More than twice a week	4
Around twice a week	3
Around once a week	2
Around once a fortnight	1
Less than once a fortnight	0

In 2005 and 2006, the responses were scored as follows:

Table 51b – Contact frequency – 2005 and 2006

Contact frequency	Score
More than twice a week	4
Twice a week	3
Once a week	2
Less than once a week	0

These difficulties are acknowledged as a limitation of using secondary data but the recalibration exercise aimed to address the inconsistencies.

5.4.2.4 Construct underrepresentation as a limitation of quantitative analysis

The most critical inadequacy of a quantitative approach is that the effectiveness construct is not likely to be adequately explored and described in quantitative terms. As such, the relevance/appropriateness of this quantitative analysis is open to challenge as an inadequate means of exploring the e-mentoring effectiveness construct. For this reason, the quantitative analysis set out in Chapter 7 was supplemented with a detailed qualitative analysis in Chapter 8.

5.4.3 Data collection instrument

The survey questionnaire is attached as Appendix 4.

5.4.4 Sampling strategy

Surveys were sent to all participants in the e-mentoring program from 2002-2006 and all returns were included to maximise the data available for the study. However making this decision means that the evaluator used a non-probability *convenience* sample. No form of selection or active construction of the sample was undertaken by the evaluator. This was only combined with quota sampling to determine the extent to which respondents were represented in proportion to their incidence in the self-employed contractor population (Curran & Blackburn 2001). The decision to utilise all the responses of those returning the survey while maximising the response rate and diversity of data available to the study, also compromises the data to the extent that the sample may not be representative.

5.4.5 Response rate

Curran and Blackburn (2001) discuss the factors which lead to generally low response rates in small business research. They suggest that a satisfactory response rate of 30 or more percent would be regarded as satisfactory in small business research. The response rate was noted in these terms in the quantitative analysis.

5.5 Qualitative inquiry

5.5.1 Data analysis - general

Because e-mentoring effectiveness is difficult to measure quantitatively, a qualitative approach was utilised as a methodologically appropriate means of capturing and evaluating effectiveness. The qualitative evaluation research was based on the analysis of in-depth semi-structured

interviews conducted by email, in conjunction with open questions included in the questionnaires, the text of email exchanges between e-mentoring program participants copied to the researcher, and email exchanges between the participants and the facilitator.

5.5.2 Data collection - in-depth semi-structured interview

In-depth interviews using open questions and providing for interaction between researcher and respondents were delivered by email to a total of 30 mentees and mentors who participated in the e-mentoring program. The interviews were semi-structured as a strategy for minimising interviewer bias. The interview questions were developed in line with Tatnall's (1993) comment that: "... all the interviewer can do is … take as much care as possible not to lead the subject into making particular responses (p.46).The interview questions were structured in sufficiently broad terms to minimise the disadvantage of this approach which can be that the instrument is rigid and the data arising lacking richness. The email-based approach also has the advantage of necessarily putting into practice the imperative to "record the language" (Patton 1990 p.229). The responses of interviewees are provided directly to the researcher in the form of quotational data. While the disadvantage of using a text-based interviewing approach is that it may compromise the depth and/or breadth of data, the advantages are that it can minimise interviewer effect and obviates the need to record and transcribe fact to face interviews.

5.5.2.1 Data collection instrument

The interview sheet is attached to this thesis as Appendix 5.

5.5.3 Data analysis

Analysis of the quantitative data will involve adopting a grounded theory approach (Glaser & Strauss 1967). Curran and Blackburn (2001) outline this approach as follows: "... a project commences with loose definitions of the key concepts and some speculative initial hypothesis/propositions. Observations are then made and where these do not fit with the initial hyotheses/propositions, these are either restated to encompass the contrary observations and/or the initial definitions are adjusted" (p.41). The aim of the qualitative analysis was to systematically and inductively advance understanding around e-mentoring effectiveness using interview and participant email exchange data.

More specifically, the qualitative evaluation will comprise a comparative analysis across the dimensions for mentees classified as effective and ineffective - that is, it will compare System quality, Information quality, Use and Impact for those with effective and ineffective scores.

Quotational data indicating degree of User Satisfaction will be presented in line with mentee effectiveness scores.

5.5.3.1 Interpretive approach

Walsham (1993) suggests that:

> *Interpretive methods of research start from the position that our knowledge of reality, including the domain of human action , is a social construction by human actors and that this applies equally to researchers. Thus there is no objective reality which can be discovered by researchers and replicated by others, in contrast to the assumptions of positivist science* (p.5).

In the context of this study, a constructivist approach accorded primacy to the mentee and mentor participants' construction of reality – that is, their expression, perceptions and understanding of value of structured e-mentoring. These perceptions were presented in the language of the participants themselves (Blaikie 2000). Blaikie suggests: "[t]he researcher has to enter their world in order to discover the motives and reasons that accompany social activities. The task is then to redescribe these motives and actions, and the situations in which they occur, in the technical language of social scientific discourse" (p.25). All the supports, processes and activities which are undertaken in the name of e-mentoring *as defined by the participants* are accepted whether or not they are "in fact" mentoring supports. The evaluation of mentoring is therefore necessarily mediated by the participants' definitions of the mentoring construct.

Cognisant of the contradictory tension between abstracting from individual motives up to "typical motives for typical actions in typical situations", Blaikie (2000) suggests that "[t]hese social scientific typifications provide an understanding of the activities, and may then become the ingredients in more systematic explanatory accounts" (p.25).

This study aims to use the contingency framework and DeLone and McLean's model as a basis for, in Blaikie's terms, abstracting typical antecedents to effectiveness.

5.5.3.2 Analytic strategy for qualitative data

Tesch (1990) suggests that analysis of qualitative data involves an initial step of establishing themes, patterns and/or consistencies in items of narrative text, followed by what she refers to as data interpretation involving "determination of its essential features" (Tesch 1990).

The data analysis process will involve firstly reading through the responses and, in most cases, making several passes of the documents or sections of the documents. Tesch suggests that data

analysis operates simultaneously at the conceptual and concrete level (Tesch 1990 p.99). This process was undertaken with the assistance of the word-processing function of the computer whereby segments of text (Tesch 1990) were copied and pasted into a new document alongside other text which appear to have some form of commonality or divergence. The segments of text were recorded under effective or ineffective, and formed the basis of the systematic comparative analysis and data interpretation.

5.5.4 Findings - presentation of data

Quotational data were described and categorised in the form of matrices as suggested by Patton (1990). The matrix became a "way of asking questions of the data" (p.421) and in this way, the interpretation was directly linked with the data, and the interpretation explicit and confirmable.

5.5.5 Sampling strategy

The qualitative part of the evaluation study aimed to capture individualised outcomes (Patton 1990) while also identifying patterns. Sample sizes, however, were small and the sample was characterised by heterogeneity. These factors informed the selection of the sampling methods. The evaluation will use a non-probability sampling method to support the qualitative enquiry. As Patton suggests, the power of purposeful sampling is in selecting information rich cases for in-depth study (Patton 1990).

Maximum variation sampling

Because of the characteristics of the sample, a form of purposeful sampling called maximum variation sampling as described by Patton (1990) was used.

> *For small samples a great deal of heterogeneity can be a problem because individual cases are so different from each other. The maximum variation sampling strategy turns that apparent weakness into a strength by applying the following logic: Any common patterns that emerge from great variation are of particular interest and value in capturing the core experiences and central, shared aspects or impacts of a program.*
>
> *... Data collection will yield: (1) high quality, detailed description of each case which are useful for documenting uniqueness, and (2) important shared patterns that cut across cases and derive their significance from having emerged out of heterogeneity.*
>
> *By including in the sample individuals the evaluator determines have had quite different experiences, it is possible to more thoroughly describe the variation in the group and to understand the variation in experience while also investigating core elements and shared outcomes.*
>
> *The evaluator is not attempting to generalize findings but rather to gather information that elucidates individual variation and significant common patterns within that variation* (p.172).

Using this sampling approach and methodology inevitably compromised the external validity of the evaluation study, but also aimed to maximise internal and construct validity. The methodology aims to provide a basis for establishing linkages between antecedents and outcomes and to infer, on the basis of patterns identified in the data, the factors which the evidence suggests influence effectiveness.

Deviant case sampling

As described by Patton (1990), extreme or deviant case sampling will also be incorporated into the sampling strategy in an effort to identify factors which may contribute to effectiveness and ineffectiveness. This will involve comparisons of highly effective outcomes with those mentees for whom the e-mentoring process was ineffective.

Characteristics of the sample for quantitative part of evaluation

The characteristics of the sample used in the quantitative part of the evaluation are set out in Table 74 in Chapter 8.

Construction of the sample for the qualitative part of the evaluation

The sample was constructed as the basis of the effectiveness scores arising out of the quantitative analysis. The scores are presented in Table 70 in Chapter 7.

5.6 Summary of operationalisation of effectiveness construct for this evaluation

With reference to the contingency framework, and further to the identification of program goals, evaluation purpose and specific research questions, the following evaluation criteria have been selected to define and operationalise the construct of e-mentoring effectiveness.

The evaluation criteria or measures selected against the phases of the contingency framework are again set out in tabular form for the sake of brevity and clarity (Miles & Huberman 1994).

Table 52 – Summary of evaluation criteria selected from contingency framework for examination of actual practice

Measures selected from Phase 1 - DeLone and McLean dimensions	
System quality (further to respecification, defined as the nature and quality of the relationship between mentee and mentor)	• types of career, business and personal support provided • goal clarity • quality and nature of rapport between e-mentoring partners • quality and nature of development of partnership • most positive aspects of the mentoring partnership • most difficult aspects (ineffectiveness indicator)
Information quality (further to respecification, defined as the nature and quality of the program content and the adaptation of the generic structure to the needs of participants)	• how program was adapted by the parties • quality of matching • quality of pre-program training and orientation • assigned/self-selecting • use of and satisfaction with program features • nature and quality of support from facilitator

	• relevance and timeliness of structured content
	• problems with email (ineffectiveness indicator)
	• problems with facilitation (ineffectiveness indicator)
	• level of system security
Use	• frequency of interaction with e-mentoring partner
	• frequency of interaction with facilitator/host organisation
User satisfaction	• recommend program to others
	• level of satisfaction with mentee/mentor
	• mentees' and mentors' perceived value of experience
	• obstacles, inhibitors or deterrents to effectiveness (ineffectiveness indicator)
Impact	• career - professional development and networking outcomes
	• business - business skills improvement in areas including business planning, opportunities and threats to business, whether referred to further resources, assistance with identifying and analysing critical incidents
	• personal - role modelling/setting an example, acceptance and confirmation, counselling and friendship, sounding board
	• whether participants would use service again (ineffectiveness indicator)
Measures selected from Phase 2 - Context	
External environmental factors	• sector
	• relevant Government policy initiative/s
	• business or community environment
External mentee business factors	• stage of business life cycle
	• geographical location
Internal mentee and mentor factors	• gender
	• age
	• education level
	• profession/qualifications of business owner
	• area of specialisation
	• professional association membership
	• estimated annual profit and turnover
	• level of technology used
	• number of employees or sub-contractors used
	• home/office-based
	• business structure used
Decisions made to inform Methodology from Phase 3 - Methodology	
With reference to Internal validity	• primary stakeholders - mentees and secondary stakeholders mentors
	• audience - research community and practitioners
	• time frame - cross-sectional
	• non-experimental approach
	• evaluative referent - comparison of effective and ineffective mentee outcomes, effectiveness in terms of the program's pedagogical structure
	• learning outcomes assessed normatively (quantitative part of evaluation) and ipsatively (qualitative part of evaluation)
	• mixed methods - survey questionnaire, in-depth interviews and email exchanges
External validity	• sampling strategy - for survey, all participants, and for qualitative study, maximum variation and deviant case sampling
	• "internal" study in that researcher is also developer and facilitator of the program being evaluated
	• program to be evaluated at the level of outcomes for particular program including but not limited to host and SBECP goals
	• strategies used to maximise rigour and minimise bias determined and documented
Construct validity	• three data sources
	• limitations of self-report data acknowledged
	• construct of e-mentoring effectiveness determined as precisely as possible
	• measures of effectiveness and ineffectiveness included

5.7 Summary of process of evaluation strategy selection according to Items 1-5 of the framework

The evaluation process set out in the Framework guidelines and the refined framework arising out of the Delphi study guided the evaluation design process. The following is a summary of how the process detailed in Chapter 4 was applied in developing the research strategy.

1. Methodology - referring to Phase 3 of the framework
- *Value position adopted according to aims of program, how program was intended to function, purpose of evaluation, audience for evaluation and key stakeholders*
- *Location of evaluation discussed including emphasis on summative approach*
- *Scope of evaluation and specific evaluation questions defined*
- *Situationally-responsive and methodologically appropriate data collection methods established - survey questionnaire, text-based interviews and documented email exchanges between facilitator and participants and between mentees and mentors*
- *Sampling methods established for qualitative and quantitative approaches*
- *Evaluative referent made explicit - comparative analysis of effective and ineffective outcomes in terms including but not limited to program goals, and pedagogical structure*
- *Relationship of researcher/evaluator to program made explicit*
- *Strategies for maximising rigour and minimising bias documented and discussed*
- *Impact on internal, external and construct validity considered*

2. Context - referring to Phase 2 of the framework
- *Key characteristics of the sample defined with reference to external environmental factors, external mentee business factors and/or internal mentee and mentor factors*

3. Mentoring processes, content/structure, user satisfaction, use and outcomes - selecting indicators of effectiveness - referring to Phase 1 of the framework
- *Construct of mentoring effectiveness defined and operationalised with reference to evaluation criteria detailed in the framework and value positions adopted*

4. Revisit Phases 1, 2 and 3 until an appropriate strategy is decided upon
- *Iterative process of evaluation design undertaken*

5. Referring to Phases 1, 4 and 5 of the framework
- *Research strategy and evaluation criteria finalised*

An analysis of the application of Phases 1, 2 and 3 of the framework is set out in sections 9.2.2.3, 9.2.2.5 and 9.2.2.2 respectively.

Having used the contingency framework, guidelines and evaluation process summary to establish the evaluation strategy, the next chapter will describe the pedagogical characteristics of the program. This will provide a basis for evaluating the effectiveness of the program in terms of its intended operation, and to document the program structure as an antecedent to effectiveness.

6 Program description

6.1 Introduction

This chapter will describe the e-mentoring program's structure and intended function as a basis for considering them as antecedents to effectiveness. The chapter will include a brief description of the program's context within a broader range of services offered by a professional association, and will outline the content and structure of the e-mentoring program including the program website. It will then outline in some detail the program's pedagogical characteristics. The aim of the Chapter will be to address the question: "Was the program implemented as intended?" That this program description constitutes, in Argyris's terms (Argyris 1982 cited in Patton 1990 p.107), "espoused theory" which he defines as the "official version of how the program operates" is acknowledged. Chapter 7 of the examination of actual practice will provide for, in Argyris's terms, "theory-in-use" or evidence around what happens in actuality in the form of participant perceptions of the program's operation.

6.2 Program context

The e-mentoring program is one of a range of services provided to self-employed contractors through a special-interest group within an Australian professional association. Other services include access to discounted professional indemnity insurance, advice on self-managing a superannuation fund, a professional development scholarship, an online networking tool, regular newsletters, advice on drafting contracts for service, taxation advice, information on the relative merits of different business structures, information on quality accreditation, advice on what to charge, and assistance with finding work.

6.3 Structure of the program

Many professionals who opt for self-employment, while having high-level technical skills, lack relevant business skills. Professionals are dispersed throughout industry, are time-poor, have a high level of internet access and generally good information technology skills. These characteristics informed the choice of e-mentoring as a learning mode. The e-mentoring program was designed to provide professionals with access to an individualised learning experience which would allow them to develop the particular skills they needed to transition to self-employment. The e-mentoring program structure comprised detailed fortnightly facilitation messages from the program host which provided guidance and suggestions on introductions, establishing rapport, reminders, topics for discussion, referral to further resources, referral to the

website exercises, and a mid-program checklist to ensure that program goals and a communications schedule were in place. The fortnightly messages continued throughout the program with the program host providing guidance during the establishment, development, consolidation, main discussion and concluding phases of the partnerships. While the program duration of three months may be considered limited, it was felt that effective mentoring partnerships could be sustained independently beyond this point. The program assisted with the redefinition of roles at the conclusion of the three-month program if the partnership was continued. A range of support materials were available from the program website. The researcher was directly involved in the program in the role of program developer and facilitator/host. The email technology of the host organisation which supported the program is protected by standard network firewalls and is password-protected to ensure restricted access. The email technology itself will be included in the evaluation in terms of how it supported flexibility and program access in line with the pedagogical needs of the target group.

6.3.1 Structured e-mentoring website

Figure 3 is a representation of the structure of the e-mentoring website. The home page provides access to updates for program participants, the facility to register an expression of interest in a future program, and access to participant feedback on the program. It also provides a gateway to the five main sections of the website which are as follows: (1) *To register* which contains links according to the basic steps of registration alongside the registration forms, (2) a *Sitemap*, (3) T*he Program* which is divided into three further sections called Program basics, Background and Charter and Guidelines, (4) *Resources* which refers back to the originary website outlined in section 6.2 and is intended to set the e-mentoring framework in the broader context of support and information, and (5) *To Participate* which includes the online learning tutorials, and tools to assist with the process. The mentoring process was supported by four web-based structured exercises. These included preparation and discussion of a business plan, a SWOT analysis (to consider the strengths, weaknesses, opportunities and threats to the self-employed contractor's business), a networking exercise and a professional development exercise.

The website, containing the registration forms, web-based exercises, pre-program online training tutorials on open access, is available at http://www.apesma.asn.au/mentorsonline.

Figure 3 – Diagram setting out the structure of e-mentoring website

Register an expression of interest in next program

Progress updates

Feedback

Steps Mentees
Mentors

Registration form
Mentees
Mentors

Parent website

Connect program of services to self-employed professionals

Sitemap

To register

Home page

To participate

The Program

Resources

Online training
Core module and mentee and mentor modules

Tools
Business plan
Startup questionnaire
Online learning agreement
Action plan
Journal template
Visual exercise
Business diagnostics tool

Program basics

Who can participate?
Opening and closing dates for applications
Eligibility
Cost
Duration
What if there are problems?
What role does the host take?
Confidentiality and security

Background

Funding
Why mentoring?
Mission, goals and vision
Diversity and the participation of women
Program evaluation and feedback
Acknowledge-ments
Program endorsements
Staffing

Charter and general guidelines

Release from liability
Electronic communication – pros and cons
Guidelines for effective online communication

Online Business information

Networking and finding work

Association support and information services

Links

Newsletters

Professional development

Join professional association

6.3.2 The matching process

Upon registration, mentees are asked to rank their learning needs against a set of pre-determined personal and business skills development areas. Against the same set of pre-determined personal and business skills development areas, mentors are asked to nominate the areas in which they are experienced and/or qualified. Mentees and mentors were matched on this basis with the aim of pairing a mentor who is qualified and experienced in the areas ranked as the highest priorities by a mentee. In Noe's terms (1988), the matches were assigned rather than self-selected (refer to section 1.3.2 for a discussion of the need to adequately define the type of matching which occurs with e-mentoring).

6.3.3 Pre-program training

The completion of online training tutorials was a pre-requisite of participation for both mentees and mentors, and comprised a core module for both mentees and mentors, supported by mentee and mentor training tutorials. The core module takes participants through what mentoring is, attitudes which support effective mentoring, the phases of the mentoring process, and expectations of the program. The mentee module takes mentees through the roles of the effective mentee, improving their awareness of how learning styles and preferences might impact upon their mentoring partnership, how to establish rapport, how to establish program goals, how to generate discussion topics, and some of the common pitfalls for mentees. The mentor module similarly takes mentors through the roles of the effective mentor, how the learning preferences of the mentee and mentor may impact upon the mentoring partnership, ways to establish rapport, how to agree on learning outcomes, how to create discussion topics, and also provides comprehensive information on how to provide feedback to a mentee, and a detailed section on the range of important competencies for mentors.

6.4 The program's pedagogical basis and features
6.4.1 Background

As stated in Chapter 1, one of the major difficulties with creating a cumulative research tradition around mentoring and e-mentoring is an adequate definition of the mentoring construct in light of the myriad of supports and advice provided in its name (O'Neill 1998, Clutterbuck 2003 et al.).

One of the many factors upon which structured e-mentoring effectiveness is contingent is the way mentoring partnerships *adapt* the program structure and content to their own needs. In these terms, effectiveness evaluation involves not only analysis of the outcomes arising from

individualised adaptation of the program content, but also adequate description of the program structure which provided the framework for the adaptation process and effectiveness outcomes.

The importance of the provision of sufficient detail about program structure and how a program is intended to function therefore cannot be overstated when evaluating antecedents to effectiveness. The validity of comparisons with other programs and their effectiveness outcomes, and the accumulation of a coherent body of research around structured e-mentoring is compromised when such detail and analysis are not provided. On this basis, this evaluation will include a comprehensive outline of how the program was intended to function.

In describing how this e-mentoring program is intended to function in the small business context, it is necessary to describe the program with a level of sophistication sufficient to provide for an understanding of the program's structure and content. Descriptions of mentoring programs in the literature vary widely in terms of detail and approach. This program was intended to provide a computer-based learning framework for business, personal and career development. Structured content was provided as a basis for the subsequent adaptation of that content to the needs of the individuals involved. The adaptation process comprised the formation of individualised learning pathways. In light of this imperative, the structure of this e-mentoring program can best be described with reference to its pedagogical structure.

Adult learners

The development of the e-mentoring program was based on the understanding that it was targeted at adult learners. Brookfield (1990) identified six principles which characterise effective adult learning. Firstly, adult learners are voluntary participants, and are highly motivated provided tasks are regarded as relevant. The fact that participation is voluntary means that withdrawal is possible when learners do not find the learning process relevant. Secondly, adult learning involves mutual respect for the contributions of participants and teacher/s. Thirdly, adult education is generally characterised by collaborative activity with the teacher participating as facilitator rather than exclusively as an instructor. Paul Freire's work (Freire 1970) informs the fourth element which characterises adult learning - that of praxis - the process of engagement, activities and reflection. Fifthly, the object of education involving adult learners is the assumption that a learner is critically aware rather than passively receiving instruction and assimilating skills and knowledge. Sixthly, adult learning is characterised by the learner's control of their learning with the object being to create self-directed and empowered learners. Each of these principles underpinned the program's development and informed the pedagogical characteristics of the program.

6.4.2 Pedagogical dimensions as a descriptive tool

In his "Evaluating what really matters in computer-based education" (Reeves 2000), Reeves uses fourteen pedagogical dimensions as descriptive criteria. The program description set out in this chapter builds on Reeves' work which foregrounds the discourse of pedagogy in describing computer-based learning programs. Combined with a detailed summative analysis, Reeves considered such an approach a viable way to evaluate the effectiveness of computer-based learning frameworks. Reeves' approach has been transferred and adapted to the structured e-mentoring for small business context.

The program description set out in this chapter adapts Reeves' model for e-mentoring by weighting, expanding and/or collapsing the dimensions according to the experience of this particular program in a way that provides a basis for describing how the e-mentoring program was intended to function.

Reeves lists the following pedagogical dimensions for consideration:

(1) epistemology;

(2) pedagogical philosophy;

(3) underlying psychology;

(4) goal orientation;

(5) experiential value;

(6) teacher role;

(7) program flexibility;

(8) value of errors;

(9) motivation;

(10) accommodation of individual differences;

(11) learner control;

(12) user activity;

(13) cooperative learning; and

(14) cultural sensitivity.

In adapting Reeves' model to better describe an e-mentoring program, dimensions 1, 2 and 11 will be collapsed under a general heading of theoretical background with reference to learner control. Dimensions 3, 4, 5, 8 and 10 will be subsumed under a second category of learning models. Dimensions 6 and 13 will be included under a third expanded category of interaction and learning, and dimension 7 will stand but be expanded into the important fourth dimension of flexibility. While not intrinsically of lesser significance than other dimensions, dimensions 9, 12 and 14 were regarded as less important to this particular program description because they

were not specifically designed into the e-mentoring program. A summary of the adaptation to Reeves' model is set out in Table 53.

Table 53 – Reeves' model setting out "What really matters in computer-based education" adapted to describe the pedagogical dimension of an e-mentoring program as a computer-based learning framework

Reeves' model	Adaptation of Reeves' model	Incorporating Reeves' dimensions
(1) Epistemology		Epistemology
(2) Pedagogical philosophy	Theoretical background	Pedagogical philosophy
(3) Underlying psychology		Learner control
(4) Goal orientation		Underlying psychology
(5) Experiential value		Goal orientation
(6) Teacher role	Learning models	Experiential value
(7) Program flexibility		Value of errors
(8) Value of errors		Accommodation of individual differences
(9) Motivation		
(10) Accommodation of individual differences	Interaction and learning	Cooperative learning
		Mentor role**
(11) Learner control		Role of host/facilitator**
(12) User activity	Flexibility	Flexibility/modifiability
(13) Cooperative learning		
(14) Cultural sensitivity		Cultural sensitivity*
		Motivation*
		User activity*

* Dimensions not specifically designed into the-e-mentoring program so not included in this discussion.
** from Reeves' teacher role

6.4.3 Pedagogical characteristics of the e-mentoring program

The following discussion outlines the pedagogical characteristics of the e-mentoring program.

6.4.3.1 Theoretical background - epistemology, pedagogical philosophy and learner control

The dimension described by Reeves as "learner control" was fundamental to the epistemological grounding of the e-mentoring program with its basis in a constructivist theoretical approach. The learning process was intended to be non-directive with mentees provided with a range of learning options which they could control; the process was then driven by these choices.

6.4.3.1.1 Developing individualised learning pathways

The program was structured to provide for and support the learning choices of mentees in a variety of ways. Mentors were trained to be responsive to the needs of their e-mentoring partner and were asked to encourage mentees to develop their own responses rather than advising directly on what they should do. Mentors were prompted by the host to "provide the mentee with options, work with the mentee to define the parameters of the mentoring relationship, to listen carefully and to ask open questions which evoke responses" (Introductory message, Week 1). This was in addition to the requirement for mentors, prior to registration with the program, to

undertake an online training tutorial which took them through issues such as learning styles and a range of flexible learning options.

The e-mentoring program was presented to participants as a means of providing a "scaffolding" which mentees could use to direct their mentoring partnership. The program provided participants with the option of accepting, modifying or ignoring the basic program goals.

> *It is absolutely at your discretion whether or not you wish to set personal program goals which replace or are in addition to those provided via the structure of the program, or whether you want to disregard the structured exercises altogether* (Message 2, Week 3).

Previous research indicates that highly individual learning pathways often characterise training interventions for this cohort (Devins & Gold 2000, Stokes 2001). In line with this research, the program was structured to provide assistance with establishing these critical individualised learning pathways. The host provided a link to an online questionnaire called Business Diagnostix, a tool designed to assist mentees identify particular areas of their business operation which might benefit from review with a more experienced professional.

The explanation on the Business Diagnostix (BD) home page sets out how it was is intended to work as a business assessment exercise:

> *Business Diagnostix is a simple self-assessment tool which aims to assist you with an overview of where you and your business operation stand now, and to identify the key areas in which you may benefit from investing some further time. BD will also signpost you to resources to follow up in each of the identified areas. The tool is designed for professionals operating as sole traders or with fewer than five employees, and is appropriate for both those just starting up a business and those whose business operations have been running for a period of time.*

> *BD involves completing a straightforward 8-point questionnaire to help pinpoint the areas requiring attention, and provides you with access to a range of toolboxes for use as needed. The BD tool is an excellent way of identifying areas on which you might focus your discussions with a mentor. Complete the questionnaire to find out your current business competencies and capabilities.*

So, in this way also, the program was intended to assist mentees with developing their individualised learning pathways.

6.4.3.1.2 Goal setting

Previous research has indicated a correlation between program benefits and setting program goals (Boyle & Boice 1998, Murray 1991). In line with this research, the program was structured to assist mentees with goal-setting by prompting them as follows:

> *In setting your program goals you may want to consider working on some of these possibilities: a marketing plan, a basic website, a plan for introducing e-business into*

your business operation, arranging to present to a conference as an expert in a particular area, registering with a relevant professional body to provide expert advice in court cases in particular areas of expertise, a plan for diversifying your client base, a plan for getting non-paying or slow-paying clients to pay, arranging to modify the way your business is conducted to comply with the Australian Taxation Office results test as part of the Personal Services Income measure, undertake a risk analysis, work on a cash flow projection for the coming 12 months, etc. etc. etc. Some additional goals to consider are set out in your Manual under the Getting the Most out of Being Mentored section (Message 2, Week 3).

General input from potential participants prior to the program indicated that these discussion topics were possible areas of interest, and they were provided back to mentees as possible discussion and learning points.

The program reassured participants that its structure could form minimum goals as a fallback position if needed, that is, the program also provided specific learning objectives and guided learning pathways if the mentee preferred not to actively control their mentoring learning pathway. This is exemplified in this excerpt from the program host's message:

Remember that by participating in the program and undertaking the four basic exercises attached to the program, the minimum outcomes you will have achieved will be to have:

- *undertaken a SWOT (strengths, weaknesses, opportunities, threats) analysis of your business operation;*
- *considered possible future professional development activities;*
- *reviewed your business plan;*
- *considered ways of networking more effectively;*
- *engaged in a one-on-one professional development activity;*
- *engaged in work-integrated learning process to develop targeted business skills; and*
- *engaged in a process of peer review with a colleague* (Message 2, Week 3).

In these ways, the program was structured to provide guidance with self-constructed individual learning pathways, but also to offer the option of structured learning pathways if the learning preferences of the particular participant required it. In keeping with a constructivist approach, the approach to goal-setting viewed the learner or mentee, in Reeves' terms, not as an "empty vessel" but "an individual replete with pre-existing knowledge, aptitudes [and] motivations" (Reeves 2003 p.5) - a view consistent with the andragogical model of learning used widely in adult education (refer to section 6.4.1). These adult learning principles largely informed the choice of, in Reeves' terms, a constructivist as opposed to an instructivist pedagogical approach. Mentors were encouraged by the host to build on and work with the individual strengths of mentees and reminded throughout the program to avoid any tendency to be directive or instructive.

It should also be noted that because of the relationship between setting program goals and effectiveness, the program provided a checkpoint comprising a self-assessment checklist for both mentees and mentors to help identify partnerships which had not, amongst other things, set program goals.

> ***Short self-assessment***
> *In an effort to ensure that the basics are now in place, we ask that you complete this short self-assessment checklist to check the status of your mentoring partnership at present. You need to contact Mentors Online if the answer to **<u>any</u>** of the questions is No.*
>
> * *Have you introduced yourselves?*
> * *Have you agreed on some program goals OR decided to do exercises in place of setting personal goals?*
> * *Are you communicating regularly with your Mentor?*
> * *Have you pinpointed some discussion topics?*
> * *Are you satisfied with the match to your mentoring partner?*
> * *Are you still available and committed to completing the program?*
>
> *If you answered yes to each question, you simply need to keep doing what you're already doing.*
>
> *If you answered **No** to any of these questions, you need to contact Mentors Online as a matter of urgency. It may be possible to get the partnership back on track but all these areas should be well underway for the program to function effectively* (Message 4, Week 7).

While only a small number of partnerships have been closed down further to this checklist, its inclusion provides an opportunity for the mentor and mentee to assess their progress and ensure the fundamentals are in place before proceeding, or a basis for closing down the partnership should the basics not be established.

6.4.3.1.3 Mentor as sounding board

Devins and Gold's article "Cracking the tough nuts" (2000) provides an interesting example of how a constructivist approach to learning, education and mentoring can be complicated by the specific learning needs of the SME sector. They suggest that the success of mentoring based on constructivist learning theory which uses a "sounding board" or "mentee doing the agenda-setting" approach is dependent upon the manager/mentee having an agenda to pursue, and note that this may not always be the case (Devins & Gold 2000). The program therefore included the sounding board approach as a learning option, but also integrated into the program assistance for participants to facilitate the agenda-setting process and to help identify the issues that mentees would "bounce off" their mentors.

In looking at Reeves' learner control dimension further, it is interesting to consider Devins and Gold's observations about learning pathways in mentoring programs. Devins and Gold (2000) take the position that learning pathways which occur within many mentoring programs in the

SME sector are characterised by "their unpredictable path and their lack of connection to the predicted package of resources and activities" (p.254). They suggest that mentoring must necessarily be constructed mutually by the participants, and that the learning pathways are therefore as diverse as those participating in such programs. The program is structured around, in Reeves' terms, "unrestricted learner control".

Interestingly, Devins and Gold (2000) go on to suggest that mentoring programs which depend largely on mentee-directed learning pathways may "meander" and in fact be less likely to produce positive outcomes than an approach whereby the mentor takes a leadership and instructor role by driving the discussions (Devins & Gold 2000). Clearly whether or not mentoring programs must necessarily be constructivist in approach is contested but the weight of the literature suggests that this approach is currently favoured by most practitioners.

6.4.3.2 Learning and interaction - teacher role and cooperative learning - and the role of host/facilitator

As set out in the Definitions section of Chapter 2, Collins and Berge's definition of learning and interaction in computer-mediated courses offers a useful basis for considering Reeves' dimensions of teacher role and cooperative learning in relation to e-mentoring. They say:

> *There are essentially two kinds of interaction with regard to learning. One is a student individually interacting with content. The other is social activity: a student interacting with others about the content. Both types of interaction are necessary for efficient, effective and affective learning. In distance education, it is particularly important to provide an environment in which both kinds of interaction can occur* (Interaction and learning section).

In Collins and Berge's terms, both content and interaction are critical to the online learning process. In the case of this e-mentoring program, the host provided the basic content with limited interaction, and the mentor provided the vast majority of the social interaction around the provided content. In Reeves' terms, the program provided a mentor/teacher in tandem with support for cooperative learning. Reeves' "cooperative learning" and Collins and Berge's "interaction with content as a social activity" was integral to the program.

The socially interactive nature of learning has a direct impact on consideration of Reeves' sixth dimension - that of teacher role - when considering an e-mentoring program. Devins and Gold (2000) point out that social interaction in the form of development of rapport and trust with a mentor in the initial stage of a program is critical to all subsequent activities which constitute an e-mentoring partnership. The Devins and Gold view of the teacher role in mentoring for small business suggests that the mentee's interaction with the mentor is *the* central activity of the program which grounds all learning, and that establishment of this relationship - this social

interaction - should be the first priority of an e-mentoring program. They suggest that it is the mentor's primary role to establish this social interaction around the content of the program – especially in an online environment. In line with this thinking, the e-mentoring program was designed to provide a relationship-building phase in an effort to underpin the subsequent phases of the program. Mentors were encouraged to be facilitative in their approach (interacting with the mentee to mutually construct and facilitate learning and learning pathways on the basis of a soundly established relationship) rather than taking a didactic approach (instructing on pre-arranged content *without the dimension of social interaction*) on Reeves' continuum.

In her "Using telementoring to deliver training to SME's", Stokes (2001) implicitly considers this social interaction between mentee and mentor when she outlines the need for a mix of delivery methods when designing training programs for the small business sector. She reports that a "multi-faceted approach" was preferred by those accessing the Distance Learning Advisory Service pilot program - that is, an approach which provides for a range of different interactions around content. Consistent with this view, a multi-faceted approach was encouraged by this e-mentoring program. This also points to the fact that describing e-mentoring programs, simply in terms of them being facilitative *or* didactic, rather than a combination of both, could be problematic.

In "Building business success" (Porter 2000) Porter similarly complicates Reeves' facilitative/didactic approach to teacher role. She suggests that her program experience indicated that a business coach can move from initially being fairly prescriptive or didactic through to a facilitative role as the program progresses. This approach is confirmed by Clutterbuck (1991) who suggests that the role of mentor changes from coach, coordinator, supporter, monitor and organiser depending on the needs of the mentee at the particular stage of the mentoring process. This movement and change was accepted and integrated into the e-mentoring program with the initial focus on technical and access issues, then on encouraging involved and personal exchanges between participants, through to introducing more complex topics for discussion when the mentee became comfortable with the email medium and their mentor in the middle to later stages of the program. Both Stokes' (2001) and Porter's (2000) experience suggest that considering the teacher role in facilitative/didactic terms could be problematic because such an approach may fail to adequately describe the diversity and changing nature of the interaction between mentors and mentees in e-mentoring for small business.

In addition to the difficulties raised by Devins and Gold (2000), Stokes (2001) and Porter (2000), the program experience indicates that looking at e-mentoring programs solely in terms of teacher/mentor role potentially excludes the important role of the e-mentoring host, also

known as facilitator or moderator. When considering teacher role in the context of third-party managed e-mentoring programs, it is imperative that the dimension of teacher role provides not only for interaction of the mentee with the mentor but also with the host/facilitator. The role of host/facilitator as e-mentoring program moderator is a growing area of the literature and a discourse relevant to a discussion of the role of teacher in a third-party managed program.

In "Participating from the sidelines, online" (Harris & Figg 2000), Harris and Figg consider the role of facilitator in relation to a text-based email-supported program. They suggest that computer-based facilitation should involve medium-specific strategies in relation to facilitation and detail the three key roles of a host/facilitator in a third-party managed program as (1) facilitator as tour guide (coordinating the learning event), (2) facilitator as tutor (complementing the expertise of the mentor and modelling the style of communication appropriate to online mentoring) and (3) facilitator as jovial nag (reminding participants of mandatory program requirements, deadlines and prodding participants into communicating in a timely and consistent manner). Other roles identified in the literature for e-mentoring facilitators include playground monitors, gentle guide, listener, technician, prompter, referee and compliance monitor. In "E-moderating: the key to teaching and learning online" Salmon (2000) discusses the positive correlation between completion of training and active e-moderation. The weight of evidence currently available suggests that in third-party managed programs, the role of the host/facilitator involves social interaction which contributes to the learning process and impacts on program effectiveness.

As demonstrated in this program description, it may be expedient to split Reeves' teacher role dimension into two separate dimensions to better describe e-mentoring programs - that of (1) mentor role and (2) host/facilitator role.

6.4.3.3 Learning models - underlying psychology, goal orientation, experiential value, value of errors and accommodation of individual differences

The learning needs of entrepreneurs in small business are fairly widely documented. In summary, there is a requirement for learning models which support learning by doing, learning from peers, learning from mistakes, learning from the "real world" and learning by reflection. For professionals, learning opportunities must also be within a framework of shared professional values (Cascio & Gasker 2001).

The training needs of this cohort suggest that an e-mentoring program is most appropriately based on situated or experiential learning models (Hartshorn & Parvin 1999). The weight of the literature suggests that e-mentoring programs for small business need to, in Reeves' terms,

accommodate individual difference, affect future action or behaviour, combine achievement of goals defined mutually by mentee and mentor with discovery-based learning, be grounded in concrete experiential value, and provide learning opportunities which value "errors" in order to assist mentees to learn from their own and their mentor's experience.

In line with the weight of the literature around the training needs of entrepreneurs and small business managers, the e-mentoring program was based on an experiential learning model. The program was experiential in that it, in Kolb's (1984) terms, engaged the mentee in a process continuously modified by experience. The program was structured to provide opportunities for mentees to learn and experiment within the protected mentoring relationship and then modify their actions in terms of their own and their mentor's experience. As an example, participants were prompted to review their business plans with their mentor with a view to moving forward to the next stage of business development. The mentor was simultaneously encouraged to assist their mentee with blind spots or to discuss alternative approaches to business planning, and to review the mentee's business operation in light of their experience. They were also encouraged to engage, in Hartshorn and Parvin's (1999) terms, in the "zone of proximal development" (p.9) whereby the mentee develops their level of understanding just beyond its current level by utilising their own and the mentor's experience. Mentors were instructed as follows:

> *When you've begun to establish your partnership, you may be able to assist with pinpointing some of the mentee's blind spots, or to help uncover areas of hidden potential. You may be able to assist the mentee with advice on how to face similar challenges or remove obstacles to achieving their goals* (Message 2, Week 3).

Mentors Online was based on a situated learning model in that it encouraged mentees to integrate the mentoring process with their day-to-day business activities. In Hartshorn and Parvin's (1999) terms, the program took a "naturalistic" approach which draws on this situated learning theory (Hartshorn & Parvin 1999 p.8). Mentees were advised by the host/facilitator as follows:

> *Try to avoid the tendency to make the mentoring activity separate to your current business activity - integrate your mentoring discussions with your current business projects. This maximises the chances of developing your skills and improving your business practices in areas which are directly relevant - integrating the learning process with your work is the way to obtain maximum benefit from the e-mentoring program* (Message 5, Week 9).

Deakins and Freel (Deakins & Freel cited in Sullivan 2000) also subscribe to an experiential and situated approach to entrepreneurial learning, and detail the particular importance of learning from critical incidents within this model. The opportunity for mentees to consider learning from past mistakes by considering critical incidents which occurred as their business developed was designed into the e-mentoring program:

This may also be an appropriate stage of the program to consider a "critical incident" - that is, an incident which either directly or indirectly helped or hindered you in moving your business in the direction you intended. You might find it useful to work through such an incident with your mentor with the benefit of hindsight. Your mentor may be able to help you step back and talk the relevant issues through, and to bring forward learning from past incidents to help avoid their recurrence (Message 4, Week 7).

Hartshorn and Parvin (1999) locate the experiential critical incident approach within a broader behavioural model. The mentor, they suggest, can support the [mentee] to review and reflect on their activities and deconstruct their experience, identifying critical incidents and associated learning outcomes, to affect future action or behaviour. This form of engagement between mentor and mentee was encouraged by the program host/facilitator to encourage practices and behaviours which would move the mentee's business operation forward.

The e-mentoring program can also be described as located within experiential and situated models of learning in that it provided an option for learning from peers. While providing consolidation of a link with their professional association, the program also provided access to an online networking tool, both of which provided opportunities to network and engage with professional colleagues.

6.4.3.4 Flexibility

Reeves defines the flexibility of a computer-based education program in terms of its modifiability and this is particularly salient and useful in evaluating outcomes in terms of their implementation. In Reeves' terms, the program was designed to be flexible in that it was intended to be easily modifiable. With individual modifications and departures from the basic program structure difficult to track, Reeves is no doubt correct in cautioning that flexibility may not necessarily always correlate with effectiveness. However the weight of the literature suggests that a modifiable program, especially for a heterogenous group such as is the case in this case of actual practice, is likely to contribute to effectiveness.

The importance of the choice of email as the instructional technology utilised is also relevant in considering flexibility. The selection of this particular form of delivery was in line with the pedagogical needs of the target group (as detailed in section 1.12.2.1).

6.5 Conclusion

Utilising these program features and content, and underpinned by these pedagogical characteristics, in conjunction with interaction between mentees, mentors and the program host, the program was delivered as intended.

7 Examination of actual practice – quantitative analysis

7.1 Chapter overview

This chapter presents and discusses the findings of a quantitative examination of the effectiveness of a case of e-mentoring practice. The chapter undertakes an assessment of the validity and reliability of the quantitative measuring instrument and, having established that there is initial evidence for the instrument's reliability and validity, addresses the evaluation questions set out in Section A. The process is informed and supported by items 6-7 of the research process set out in Chapter 4 and re-stated below. The chapter investigates whether the data provide empirical support for the DeLone and McLean (1992) dimensions as analysis categories appropriate to the quantitative measurement of the e-mentoring effectiveness construct, potentially providing a valid basis for constructing the sample of effective and ineffective mentee-mentor partnerships to be used in Chapter 8. **The small size of the sample being considered means that the analysis set out in this chapter is intended for the purposes of establishing initial linkages, and the triangulation of qualitative effectiveness data explored in Chapter 8.** That the sample is limited and insufficient for establishing statistical significance is acknowledged, and the findings are explicitly qualified by this limitation. **The chapter is not intended to stand alone, but to be considered in conjunction with the qualitative analysis set out in Chapter 8.**

Specifically, it will undertake each of these steps as follows:

1. using a selection of items from the survey questionnaire, undertake an initial assessment of its validity and reliability properties. This will in turn address the evaluation questions set out below:

Evaluation purpose for broader purpose of thesis	Section A – Evaluation questions
To describe, categorize and interpret observations in line with DeLone and McLean's model of IS effectiveness and the proposed framework. This includes examining the linkages between the dimensions with a view to identifying factors which are likely to influence effectiveness, and exploring the influence of context on outcomes	Does this evaluation research confirm or disconfirm the existence of linkages between the dimensions of the DeLone and McLean model and effectiveness? Does the proposed taxonomy sufficiently accommodate the data, and if not, how? How were the mentoring partnership, program structure, user satisfaction, use and impact linked to effectiveness? Is there evidence of any linkage between Use and User satisfaction? Is there any evidence of any linkage between System and Information quality?
To link outcomes arising from identified antecedents To explore any other issues which may be relevant to an understanding of effectiveness	

2. using the effectiveness score, classify the sample into very effective, effective, partly effective and ineffective partnerships.

The data collection and analysis will be guided by the process set out in items 6-7 set out Framework guidelines, Chapter 4 and restated here for convenience:

> **6. Collect data**
> - *Obtain information from a variety of sources*
> - *As appropriate, employ a variety of data collection methods*
> - *Document and report information sources*
> - *Document, justify and report data collection techniques and information sources*
> - *Include data collection instruments in a technical appendix to the evaluation report*
>
> **7. Make findings**
> - *Present observations, descriptions, classification, categorisation, analysis and interpretation of data according to relevant framework or taxonomy*
> - *Describe the program and its relevant pedagogical, technical, social, political, organisational and economic features/context*
> - *Describe how the program actually functioned against how it was intended to function and discuss discrepancies*
> - *Discuss issues of rigour*
> - *Document and report any biasing features in the obtained information*
> - *Report on reliability and validity - assess and report factors that influenced both*
> - *Estimate and report the effects of validity and reliability in the data on the overall judgment of the program*
> - *Make judgements about the program with reference to evaluative referent*
> - *Consider alternative ways of interpreting evaluation findings*
> - *Report limitations of the referenced information, analyses and inferences*
> - *If appropriate, make recommendations*
> - *Derive conclusions and demonstrate their meaningfulness*

7.2 Introduction

On the basis of the systematic classification of mentee experiences into degrees of effectiveness, a comparative analysis of the more effective and less effective mentee experiences will be undertaken and reported in Chapter 8 using qualitative inquiry. This will involve description and classification of quotational data arising from semi-structured interviews. The qualitative data will provide a basis for a detailed analysis and interpretation of the linkages between the mentoring process, the content or structure provided, use, user satisfaction, impact and effectiveness, against the correlations indicated by the quantitative inquiry. In this way, the associations explored in the qualitative analysis will be aligned with the associations suggested by the quantitative inquiry.

A validated measuring instrument provides a standardised evaluation mechanism (Scott 1995. Instrument validation helps "build a cumulative research tradition, provides improved measurement of research variables, helps improve the clarity of research questions and results in more meaningful variable relationships" (Scott 1995 p.44). This phase of the research, in Scott's terms, required a standardised means by which the e-mentoring experiences of participants

could be classified into very effective, effective, partly effective and ineffective and to establish possible relationships between the dimensions of the construct of structured e-mentoring effectiveness as a precursor to the second qualitative phase. A search of the literature provided no published examples of validated reliable measurement instruments previously used in the context of evaluating structured e-mentoring effectiveness in the small business context. To advance research, the decision was made to rely on a newly developed instrument.

The survey instrument used in the quantitative analysis was based on the questionnaire used by the researcher in her role of practitioner evaluating the effectiveness of the e-mentoring program on behalf of the host organisation. The researcher mapped the questions and operationalised the effectiveness construct in line with the DeLone and McLean model of IS effectiveness to define a set of quantitative measures of effectiveness.

7.3 Limitations of quantitative analysis

As set out in Chapter 5, the lack of methodological sophistication arising out of small sample size and the failure to establish statistical significance means that it is not possible to generalise on the basis of these findings.

7.4 Findings - general

7.4.1 Response rate

The quantitative study was based on the survey questionnaire developed and administered by the program manager. A total of 32 mentee questionnaires were sent out by email over the course of the five years of the program's operation. A total of 20 mentee questionnaires were returned and form the basis of this quantitative study. The response rate was 62.5 per cent. A response rate of 30 per cent is generally regarded as acceptable in small business research (refer Curran & Blackburn 2001 in section 5.4.5). This response rate while acceptable in these terms, remains small therefore limiting the generalisability of the findings. Because this is an exploratory study seeking an understanding of influences on effectiveness which will focus on theory-building rather than theory-testing, the sample is regarded as adequate for making initial exploratory investigations.

7.4.2 Characteristics of the sample for the quantitative study

This section sets out the characteristics of the sample and considers how the sample compares with self-employed contractors generally - it defines the characteristics of the sample which are shared by self-employed contractors as a group.

7.4.2.1 Gender and age of mentee respondents

Table 54 - Comparison of percentage distribution of self-employed contractors and self-employed contractors working as Professionals by gender characteristics for Australian population at August 1998 compared with those participating in e-mentoring program, 2002-2006

Gender	Self-employed contractors in Australian population (per cent)	Professionals operating as self-employed contractors (per cent)	Self-employed contractors in Mentoring program (per cent) (n=20)
Male	70.7	65.0	65.0 (n=13)
Female	29.3	35.0	35.0 (n=7)

As set out in Table 54, in terms of gender breakdown, women professionals operating as self-employed contractors appeared to be slightly over-represented in the sample of mentoring program participants when compared with self-employed contractors in the general Australian population. However, when compared with self-employed contractors working as professionals, there was no difference.

Table 55 - Comparison of percentage distribution of self-employed contractors and self-employed contractors working as Professionals by age characteristics for Australian population at August 1998 compared with those participating in e-mentoring program, 2002-2006

Age	Self-employed contractors in Australian population (per cent)	Professionals operating as self-employed contractors (per cent)	Self-employed contractors in Mentoring program (per cent) (n=20)
15-44	59.2	57/0	70.0 (n=14)
45 and over	40.8	43.0	30.0 (n=6)

(Source of Australian population information set out in Tables 54 and 55: ABS data derived from Productivity Commission Report, 2001, p. 41 and data specific to Professionals provided to Professional Association by L. Will, Productivity Commission report co-author, 2002)

The age of participants was recorded when they began the mentoring program, and the age ranges of participants compared with Self-employed contractors I the Australian population generally, and Professionals as a specific occupational category is set out in Table 55. The data indicate that for those in the 15-44 age range, the participation rate in the mentoring program was higher than their incidence in the Professionals operating as self-employed contractors (70 per cent compared with 57 per cent) and slightly higher than their incidence in the Self-employed casuals in the Australian population generally (70 per cent compared with 53.9 per cent). ABS data for professionals was used to compare the age range of participants in the mentoring program with the age distribution of Professionals operating as self-employed contractors. Those in the 45 and over range participating in the mentoring program were underrepresented in the sample compared with Professionals operating as self employed contractors (30 per cent compared with 43 per cent) and Self-employed contractors in the Australian population (30 per cent compared with 40.8 per cent).

7.4.2.2 Geographical location of mentee respondents
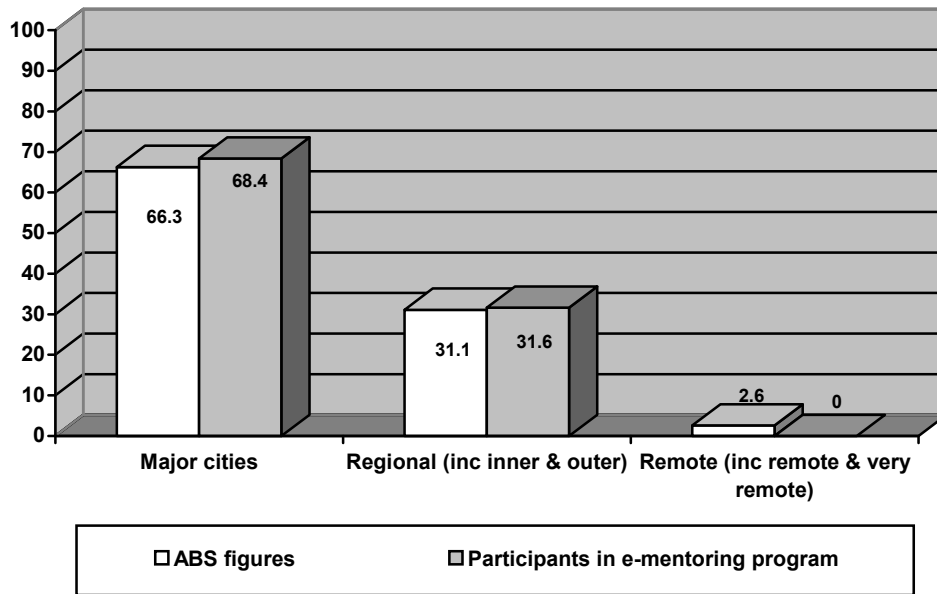
Figure 4 – Geographical location of e-mentoring program participants
(Source of Australian population information: ABS data derived from ABS Cat. No. 1379.0.55.001 (National Regional Profile, Proportion of population in remoteness area)

31.6 per cent of the sample were located in rural or regional areas. 68.4 per cent were located in rural or regional locations. There is no significant difference between the distribution of those participating in the e-mentoring program according to their geographical location compared with the Australian population more generally (Note n=19 as one mentee was located overseas and this mentee was not included in the remote category). Again, the small number of data points under consideration limits this comparison.

7.4.2.3 Profession groups

The ABS uses the Australian Standard Classification of Occupations (ASCO) (ABS Cat. No. 1221.0 to define occupations.

Table 56 - Summary of ASCO minor group occupations eligible for professional association membership (n=20)

ASCO minor group classification	Profession	Number of professionals participating in mentoring program
2124, 2125, 2126, 2127, 2129	Professional Engineers	9
2111, 2113, 2114 & 2119	Scientists	5
2121	Architects	0
2231	Computing Professionals	3
2382	Pharmacists	1
2392	Veterinarians	1
Other	eg Managers	1
Total		20

As set out in Table 56, mentees who participated in the mentoring program were drawn from the membership of a special interest group for self-employed contractors. As set out in Table 55, they were predominantly professional engineers and scientists, but included a pharmacist, veterinarian and information technology professionals. The pool of mentors was drawn from both within and outside the Association's membership, all held tertiary qualifications in their specialist areas and had themselves run a consultancy for a minumum of three years.

The evaluation may be limited in being a sample of predominantly engineers. Data on how these individual professions may generalise to professionals operating as self-employed contractors more generally is not available.

7.4.2.4 Education level of mentee respondents

ABS data on post-graduate education level of self-employed contractors is not available meaning a comparison of the education level of the sample with the population of self-employed contractors is not possible. This information is nonetheless provided to define the sample. (Note: Professionals eligible to join the professional association must have a minimum Bachelor degree.)

Table 57 – Education level

Education level	Number of participants in the sample (n=20)
Bachelor degree	9
Post-graduate diploma or certificate	2
Masters degree	3
Doctorate level	6
Total	20

As set out in Table 57, of the sample, 9 had a Bachelor degree, 2 also had a post-graduate diploma, 3 had a Masters degree and 6 had a PhD or doctorate.

7.4.2.5 Representativeness of sample

On the basis of the data set out in Tables 54, 55, 56, 57 and Figure 3, it is possible to make claims as to its representativeness in terms of gender and geographical location and in terms of these characteristics, the sample potentially provides a basis for generalising findings to professionals operating as self-employed contractors. It should again be noted however that claims of representativeness are limited by small sample size. The sample's representativeness in terms of age, profession, post-graduate education, membership of a professional association and stage in the business life cycle cannot be established. As a minimum, these factors threaten the generalisability of the evaluation findings, and the external validity of claims made in relation to self-employed contractors. However because this is an exploratory study and the

sample is small, the decision was made to include all the questionnaires returned by respondents rather than further reducing the sample size by using stratified sampling. This means that the external validity of the evaluation was compromised in favour of maximising the size and diversity of the sample.

Eligibility requirements of the mentoring program

Two other significant characteristics comprised the eligibility requirements for the program and therefore the demographic characteristics of the sample. The first was the requirement (beyond the pilot program) to be a current financial member of the professional association hosting the program, and the second was to be within the first three years of business startup. Both these factors further particularise the sample. Claims made will therefore be largely in relation to this sample rather than to Professionals operating as self-employed contractors or self-employed contractors.

Heterogeneity and representativeness

As stated previously, the small business sector is characterised by the uniqueness of each business in terms of size, profit and turnover, whether home or office-based, the type of business engaged in, the industry sector in which they operate, in the products and services produced, in the processes and level of technology used, and in the specific community and business environment in which they are located (Tolentino 1998 p.3, Devins & Gold 2000 p.251). To accommodate such diversity would require a very large sample. Obtaining sufficiently large samples is of course a difficulty in this research as it is with much small business research (Curran & Blackburn 1994). This heterogeneity potentially compromises inferential power and the capacity to make generalisations to self-employed professionals, and this is acknowledged as a limitation of this study as it is in much small business research.

7.5 Main findings

The questionnaire responses were coded, scored and are summarised in Table 60 – Participant scores. The complete responses of each participant according to the questions under each of the dimensions is included as Appendix 6. As stated in Chapter 5, Patton considers evaluation research to involve a "tradeoff between breadth and depth" (Patton 1990 p.165) and suggests that "[t]he design issue is how much time and effort we are willing to invest in trying to increase our understanding about any single person's experience" (Patton 1990 p.165). To reflect each person's experience in the data presentation, the decision was made to present an aggregate summary of the numerical data arising from the questionnaire alongside a descriptive summary of effectiveness for individual participants which is presented in Table 61.

7.5.1 Data summary

Table 58 sets out the key to the scoring system. In the case of each of the dimensions, the thresholds were set with reference to what were regarded as appropriate minima in the particular program setting. Key indicators were selected according to the program goals and the thresholds were in some cases subject to review and realignment.

In the case of the dimension of System quality (or Quality of mentee/mentor interaction), a mentee's experience would be rated as poor if they indicated that they failed to have experiences in common with their mentor, did not build a good relationship with their mentor, were not satisfied with the advice offered by the mentor and saw their mentor as having limited competencies. Conversely, the scoring system was designed that the mentee's experience would be regarding as excellent if they indicated that they had experiences in common with their mentor, built a good relationship with their mentor, were satisfied or very satisfied with the advice and assistance provided by the mentor, and indicated that their mentor had broadranging quality mentoring competencies.

In the case of the dimension of Information quality (or Program support quality), a mentee's experience would be rated as poor if they did not value the content of the facilitator's messages, did not set program goals, did not develop the skills they nominated in their registration form, found the program's duration inappropriate, found the pre-program training unsatisfactory or limited, did not find that the email-based nature of the program facilitated their participation, and were not satisfied with the matching process or access to further resources. Conversely, a mentee's score was regarding as appropriately high if they indicated broadranging high-level satisfaction in each of these areas.

In the case of the dimension of User satisfaction, the scoring system was designed so that a mentee's experience was rated as poor if they indicated that they did not find the program useful or relevant, would not participate again nor recommend the program to a colleague, did not feel they developed personally or professionally, rated the value of the service as poor or very poor and did not use the opportunity to ask questions or bounce ideas off their mentor. Conversely, the mentee's score was graded as high if they indicated high levels of satisfaction in each of these areas.

Because the previous literature indicated that regular contact was critical to effectiveness, as a minimum, the scoring system was designed so that satisfaction with the level of contact from the program host or the mentor was required for the mentee's experience to be scored as reasonable or above. Where a mentee was satisfied with the level of contact from both the

program host and mentor, the scoring system was designed to grade the mentee's user satisfaction as high.

The thresholds for the Impact dimension were set with reference to questions in which mentees described on nominated outcomes against a pre-set list. Where a mentee nominated broadranging outcomes and indicated that they reviewed their business plan, kept in contact with their mentor beyond the three-month program, and felt they benefited from the program, the scoring system was designed to grade Impact as reasonable or above. Conversely, where the mentee did not nominate positive outcomes in the specified areas, the scoring system was designed to reflect the fact that outcomes were limited.

It is important to note when considering the rationale for scoring systems that the process of setting thresholds is an iterative one necessarily involving the judgement of the program developer. It is also a process which should be guided by the particular goals and anomalies of a program and one which should be regarded as legitimately discretionary mindful of the need for an open, accountable and ethical approach by the program developer.

The summary score sheets attached in Appendix 6 provide explicit detail on the practical implementation of the rational behind the scoring system.

Table 58 - Key to scoring system – E-mentoring Scoring Scale

System quality – quality of relationship between mentee and mentor	
Excellent	18-21
Good	15-17
Reasonable	12-14
Poor	0-11
Information quality – engagement with and adaptation of program structure and content	
High	53-92
Reasonable	31-52
Limited	0-30
User satisfaction	
High	10-12
Reasonable	6-9
Low	3-5
Use	
High	6-7
Reasonable	4-5
Low	0-3
Impact	
Positive	17-24
Reasonable	8-16
Limited	0-7
Total score range	**Description**
0-45	Ineffective
46-97	Partly effective
98-129	Effective
130-156	Very effective

Table 59 sets out an overview of the nature of scores in quantitative terms.

Table 59 – Summary of scores

Maximum score	141
Minimum score	37
Mean	97.8
Standard deviation	33.2

The mean as the measure of central tendency was 97.8. Scores ranged from 37 to 141. The standard deviation as a measure of dispersion was 33.2. This indicates that two-thirds of respondents' scores lie between 64.6 and 131.0.

Table 60 sets out the scores for each dimension and the total effectiveness score by participant in ascending order. The scoring sheets from which this data is derived are set out in Appendix 6.

Table 60 – Participant scores

Participant number	Year of participation	System quality	Information quality	User satisfaction	Use	Impact	Total score
9	2002	4	27	3	2	1	37
17	2005	20	6.5	8.5	1	7	41
12	2003	15	8	9	4	5	41
5	2002	16	23	11	2	12	64
8	2002	19	31	11	1	9	71
19	2005	19	38.5	6.5	1	7	72
1	2002	13	61	11	4	3	92
15	2004	6	82	3	2	3	96
4	2002	9	60	11	5	12	97
7	2002	19	51	11	5	14	100
10	2003	20	53	11	2.5	17	103.5
6	2002	14	80	8	0	7	109
14	2004	20	74.5	12	3	10	119.5
11	2003	20	74	10	6	12	122
2	2002	20	61	12	6	25	124
13	2004	21	74.5	10.5	5	17	128
18	2005	19	79	12	6	13	129
3	2002	16	82	12	5	17	132
16	2005	21	79	12	6	18	136
20	2006	21	91.5	9.5	5	14	141

Summary of effectiveness for participants

Table 61 represents an interpretation of effectiveness for individual participants in descriptive form. The qualitative descriptions are defined in the key outlined in Table 58. The data is set out in ascending order from lowest effectiveness score to highest.

Table 61 – Data summary - description of effectiveness across the DeLone and McLean dimensions

Participant number	System quality	Information quality	User satisfaction	Use	Impact
9	Poor quality relationship between mentee	Limited engagement with the program	Low level of user satisfaction	Low level of regular interaction	Limited outcomes

	and mentor	structure and content			
17	Excellent relationship between mentee and mentor	Limited engagement with the program structure and content	Reasonable level of user satisfaction	Low level of regular interaction	Limited outcomes
12	Reasonable relationship between mentee and mentor	Limited engagement with the program structure and content	Reasonable level of user satisfaction	Reasonable level of regular interaction	Limited outcomes
5	Good relationship between mentee and mentor	Limited engagement with the program structure and content	High level of user satisfaction	Low level of regular interaction	Reasonable outcomes
8	Excellent relationship between mentee and mentor	Reasonable engagement with the program structure and content	High level of user satisfaction	Low level of regular interaction	Limited outcomes
19	Excellent relationship between mentee and mentor	Reasonable engagement with the program structure and content	Reasonable level of user satisfaction	Low level of regular interaction	Limited outcomes
1	Reasonable relationship between mentee and mentor	High level of engagement with the program structure and content	High level of user satisfaction	Reasonable level of regular interaction	Limited outcomes
15	Poor relationship between mentee and mentor	High level of engagement with the program structure and content	Low level of user satisfaction	Low level of regular interaction	Limited outcomes
4	Poor relationship between mentee and mentor	High level of engagement with the program structure and content	High level of user satisfaction	Reasonable level of regular interaction	Reasonable outcomes
7	Excellent relationship between mentee and mentor	Reasonable level of engagement with the program structure and content	High level of user satisfaction	Reasonable level of regular interaction	Reasonable outcomes
10	Excellent relationship between mentee and mentor	Reasonable level of engagement with the program structure and content	High level of user satisfaction	Low level of regular interaction	Positive outcomes
6	Reasonable relationship between mentee and mentor	High level of engagement with the program structure and content	Reasonable level of user satisfaction	Low level of regular interaction	Limited outcomes
14	Excellent relationship between mentee and mentor	High level of engagement with the program structure and content	High level of user satisfaction	Low level of regular interaction	Reasonable outcomes
11	Excellent relationship between mentee and mentor	High level of engagement with the program structure and	High level of user satisfaction	High level of regular interaction	Reasonable outcomes

		content			
2	Excellent relationship between mentee and mentor	High level of engagement with the program structure and content	High level of user satisfaction	High level of regular interaction	Positive outcomes
13	Excellent relationship between mentee and mentor	High level of engagement with the program structure and content	High level of engagement with the program structure and content	Reasonable level of regular interaction	Positive outcomes
18	Excellent relationship between mentee and mentor	Excellent relationship between mentee and mentor	High level of user satisfaction	High level of regular interaction	Positive outcomes
3	Good relationship between mentee and mentor	High level of engagement with the program structure and content	High level of user satisfaction	Reasonable level of regular interaction	Positive outcomes
16	Excellent relationship between mentee and mentor	High level of engagement with the program structure and content	High level of user satisfaction	High level of regular interaction	Positive outcomes
20	Excellent relationship between mentee and mentor	High level of engagement with the program structure and content	Reasonable level of user satisfaction	Reasonable level of regular interaction	Reasonable outcomes

The following figure sets out a frequency distribution of scores for the ranges 0-45, 46-97, 98-129 and 130-141.
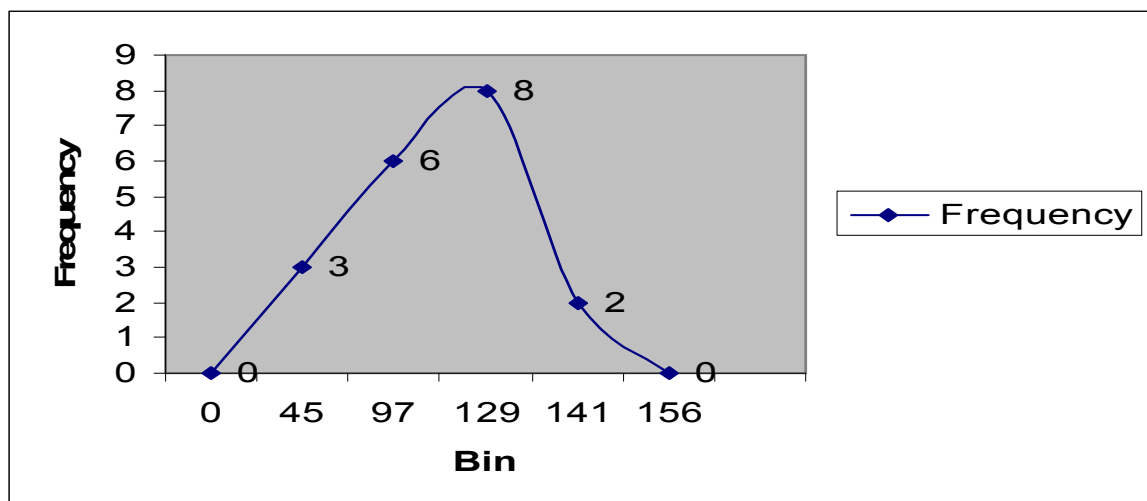
Figure 5 – Spread of effectiveness scores

Figure 5 shows a reasonable spread of total effectiveness scores between the minimum value of zero and the maximum value of 156 indicating the measurement instrument has, as a whole, appropriately measured variance in responses. Responses are skewed to the right showing a potential measurement bias, but again, the small number of data points limits the claims which can be made about the data. The ranges are based on the ranges set out in Tables 58 and 70.

7.5.2 Data analysis – validity and reliability of survey instrument

Because of the sample size, it is not possible to statistically establish whether or not the instrument has validity and reliability. Because the survey instrument was developed and used for the first time to evaluate the effectiveness of this e-mentoring program, its properties have not statistically been rigorously assessed. The tests and discussion of the instrument which follow do not assess conclusively the reliability and validity of the instrument. For such claims to be maintained with any confidence, each item and then each dimension of the survey instrument would need to be subjected to statistical procedures with a larger sample. The validity and reliability of the scores are therefore open to challenge on the basis of measurement error and/or measurement bias.

However, the following discussion and rudimentary statistical analyses of a selection of the questionnaire items used to determine the effectiveness score provide preliminary evidence of the validity and reliability of the instrument, and provided a basis for identifying some of its possible limitations or sources of invalidity and unreliability.

The validity of the quantitative measurement instrument will be considered in relation to the level of agreement between scores and the judgements of the program manager and mentors and with reference to inter-item Pearson correlations between the DeLone and McLean dimensions. The reliability of the measurement instrument will be considered with reference to Cronbach alpha and comparing the use of the measurement instrument in an international context. The main sources of validity and unreliability will then be discussed.

To assist with clarity in section 7.5.2, the following sets out the structure of section:

7.5.2 Data analysis – validity and reliability of survey instrument

    7.5.2.1 Evidence of validity
        7.5.2.1.1   Level of agreement between scores and judgements of program manager and mentors
        7.5.2.1.2   Rating of mentors
            7.5.2.1.2.1 Instances of disparity
        7.5.2.1.3   Inter-item correlations
            7.5.2.1.3.1   Aim of inter-item correlations
            7.5.2.1.3.2   Limitations with correlation analysis
            7.5.2.1.3.3   Scatterplot graphs
                7.5.2.1.3.3.1   Relationships between effectiveness and the DeLone and McLean dimensions
                7.5.2.1.3.3.2   Relationships between Impact and other DeLone and McLean dimensions
                7.5.2.1.3.3.3   Discussion of relationships found in scatterplot graphs
            7.5.2.1.3.4   Conclusions about inter-item correlations

    7.5.2.2 Evidence of reliability
        7.5.2.2.1   Cronbach alpha

7.5.2.1 Evidence of validity

This section will consider whether or not the evidence supports the claim that the quantitative measurement instrument measures what it is intended to measure.

7.5.2.1.1 Level of agreement between scores and judgements of program manager and mentors

Brualdi (1999) suggests that "[e]mpirical evidence in support of criteria-related validity may include a comparison of performance on the test against performance on outside criteria" (p.1). In order to test the validity of the effectiveness score, the score was compared with data from additional sources. Table 62 sets out the effectiveness of the program for the participant against the program manager and mentor's rating of the effectiveness of the program. These ratings are in qualitative form rather than in the form of numerical criteria. A discussion of the disparities follows.

7.5.2.1.2 Rating of mentors

The judgements of mentors were provided to the researcher further to an email specifically asking mentors to nominate the degree of effectiveness for the partnership or partnerships in which they had participated. No current contact details were available for the mentor of Participants 5, 7 and 8 so the judgement was recorded as unavailable.

Table 62 – Triangulation of data around effectiveness

Participant	Score	Mentee's perceived level of effectiveness	Program facilitator's judgement	Mentor's judgement
Participant 1	92.0	Partly effective	Partly effective	Partly effective
Participant 2	124.0	Effective	Effective	Effective
Participant 3	132.0	Very effective	Very effective	Partly effective
Participant 4	97.0	Partly effective	Effective	Partly effective
Participant 5	64.0	Partly effective	Ineffective	Data unavailable
Participant 6	109.0	Effective	Effective	Ineffective
Participant 7	100.0	Effective	Effective	Data unavailable
Participant 8	71.0	Partly effective	Ineffective	Data unavailable
Participant 9	37.0	Ineffective	Ineffective	Ineffective
Participant 10	103.5	Effective	Very effective	Very effective

Participant 11	122.0	Effective	Effective	Effective
Participant 12	41.0	Ineffective	Effective	Very effective
Participant 13	128.0	Effective	Effective	Effective
Participant 14	119.5	Effective	Effective	Ineffective
Participant 15	96.0	Partly effective	Partly effective	Partly effective
Participant 16	136.0	Very effective	Very effective	Effective
Participant 17	41.0	Ineffective	Ineffective	Very effective
Participant 18	129.0	Effective	Very effective	Very effective
Participant 19	72.0	Partly effective	Effective	Partly effective
Participant 20	141.0	Very effective	Very effective	Partly effective

7.5.2.1.2.1 Instances of disparity

Participant 12

Participant 12's score indicates that the mentee found the mentoring partnership ineffective. In contrast, the program manager's view was that the partnership was effective. The program manager's view was informed by the knowledge that an ongoing business strategic alliance between the mentee and mentor arose out of the mentoring partnership which has continued since the mentee's participation in the program in 2003: "My previous mentee and I are planning joint consultancies together in the asset management field" (email July 2006) and "[t]he mentorship was very effective, and [the mentee] is now a very successful consultant who I work in alliances with [interstate]" (email January 2007). Interestingly the mentor, as well as the program host, judged the mentoring program to be effective. This is the clearest example of a disparity between the mentee's score and the views of the program manager and mentor. Time constraints and competing priorities, which led to a failure on the mentee's part to engage with the program structure during the course of the program as reflected in the questionnaire administered immediately after the program, are the most likely explanations for the low score. The mentee commented that: "Good information was provided. Unfortunately, I didn't make as much use of it due to hectic time" (response to open question on questionnaire). It is possible that, in this case, the value of the mentoring partnership may have been better measured over a longer period rather than immediately following the program to capture evolving or accruing benefits which have obviously arisen out of the program.

Participant 5

Participant 5's score indicates that the program experience was partly effective while the program manager viewed it as ineffective. The disparity in the program manager's view of the partnership as less effective than indicated by the score arose out of discussions with the mentor who indicated that the mentee had not been in regular contact and had failed to set firm program goals by the checkpoint at Week 7 (refer 6.4.3.1.2). On being prompted, the mentee did formulate a specific program goal and the mentor acknowledged this progress. The following exchange occurred in June 2002:

Prompt from Mentors Online:
Will you confirm with me as soon as possible that you are still interested in participating in Mentors Online or whether you'd prefer to withdraw at this stage. Further to the Partnership Status Checklist sent to Mentees and Mentors on Wednesday 12th, indications are that you and your mentoring partner have not yet set firm program goals - these need to be in place at this stage for the program to function effectively. You can opt to complete all four structured exercises in preference to setting your own personal goals if that is your preference. It is important to invest some time in the mentoring relationship to ensure that you get the most out of it.

You may prefer to consider participating in next year's program if other commitments are affecting your participation in the pilot program. Please be assured that a withdrawal from this year's program would in no way be seen as a reflection on your commitment to a future program.

Please arrange with your Mentor to establish some firm program goals and some discussion topics which you think will be of value. Then contact me as a priority so I know that your program is either back on track or we can close the mentoring partnership down. If I don't hear back from you by June 21st, I'll advise your Mentor that we should formally conclude your partnership (email 14.6.2002).

Mentee response (extract)
The goal of our mentoring relationship is to put together an initial website for my business. I have been working on content and have about 70% of this done. My Mentor is assisting me to get the rest together. Work is variable, and I am doing what I can when possible. I suppose the next step is registering a web address with a Host. I am still looking at who to host it" (email June 2002).

Mentor response
That is certainly great progress ... though she has not communicated with me since 4 June. I am happy to continue in this role ... I just wanted to ensure that she received some value from the mentoring relationship (email June 2002).

Participant 8

Participant 8's score indicates that the program was partly effective while the program manager viewed it as ineffective. Because there was limited engagement with the program host by this participant, the program host's summation of effectiveness was based on the fact that in spite of regular encouragement to provide feedback to and engage with the host, there was only basic communication between host and participant in the case of this partnership. This suggests that the program can be effective for the participant without regular or indeed any interaction with the program host. In turn the program manager's view of effectiveness may be subject to bias and error in these terms.

Participant 4

Participant 4's score indicated that the program was only partly effective while the program manager viewed it as effective. The disparity between the score and judgement of the program manager can be accounted for by impressions made by comments of the mentee to the host:

The exercises that you provide have really helped me. X and I had discussed my business plan quite a bit and I had been wondering 'what next'. So I mentioned networking as per the next exercise. The discussions with X really opened my eyes as to how to maximise opportunities. I've realised that this is really the area that will help my business to grow. In general, it's just been great to have someone to bounce ideas off" and *"Thanks for the prompt; your timing is impeccable. This is an excellent time to review progress and future direction"* (emails to host, June 2002).

Interestingly, the mentor suggested that the mentee would be likely to perceive the partnership as effective to very effective (email January 2007). This may suggest that the survey instrument may have led to an understatement of effectiveness for this participant.

Participant 10

Participant 10's score indicated that the mentee found the program effective while the program host and mentor classified it as very effective. The disparity between this level of effectiveness and that judged by the program host can be accounted for by comments made to the program manager: "I guess it has come at just the right time for me, which is why I am excited. And I have a couple of friends in similar positions and I will be sharing what I learn with them … so it could be an all round growing experience" (email to host, July 2003). It is possible that the program did not meet the high expectations of this mentee, and that this was reflected in the lower than expected effectiveness score.

Participant 18

Participant 18's score indicated that they found the program effective while the mentor and program manager described the partnership as very effective. The disparity between this level of effectiveness and that judged by the program manager can be accounted for by comments made by the mentee to the program manager which would suggest that the mentee found the program very effective rather than effective:

I felt the existence of a shared journey even though our areas of expertise are 180 degrees apart. My mentor had travelled the same paths as me in terms of family, demanding schedule, lots of overseas travel, working as an employee when my skill set would be more suited to running my own company. I experienced renewed interest in business and learning how to run and manage a company, had been feeling jaded and isolated, but realised these feelings were experienced by others who had similar energy levels and drive but were not in the optimum work situation.

I also experienced a major and long overdue shift in my perception of my working life and realised I had been stuck and become disinterested due to a work environment which is based on micro-management, bottom line and politics. My enthusiasm is for the top line. I am also involved in a pre-seed research project which meant I was effectively working 1½ jobs – with the accompanying tiredness. My interactions with [my mentor] renewed my energy and enthusiasm and the courage to persist.

Her advice on time and financial management was spot on and I am still integrating her suggestions into my daily activities. The fact that she had experienced almost identical

workplaces, life experiences and challenges established an immediate and strong rapport, without which I think I would have not had so much trust and confidence in her advice (response to open question on evaluation questionnaire, November 2005).

This suggests that, as was the case with Participant 10, the evaluation instrument may have understated the level of effectiveness for this participant.

Participant 14

In this case, the mentor considered the program for the mentee to be ineffective because the partnership was concluded prior to the end of the program. In spite of the fact that the program was concluded early, the mentee via the questionnaire indicated that the program was effective and this was also the view of the host. The score in this case appeared to be a better indicator of effectiveness than the mentor's judgement.

Participants 6 and 17

Participant 6

In this case, the mentor considered the program for the mentee to be ineffective while the score and host indicated that the program was effective. Of note in this instance was the high level of engagement with the program structure alongside only a reasonable relationship with the mentor.

Participant 17

In this case, the mentor considered the program for the mentee to be very effective while the score and the host indicated that the program was ineffective. Of note in this instance was the limited level of engagement with the program structure alongside an excellent relationship with the mentor. This instance of disparity more than any other suggests an inadequacy of the instrument to sufficiently capture the extent of the System quality – the nature and quality of relationship between mentee and mentor - where the program structure is essentially disregarded in the program structure adaptation process.

The most significant disparities between the judgements and score occurred in the cases of Participants 6 and 17. The disparity in the case of Participant 17 suggests that effectiveness can be marked by a very strong relationship with the mentor (where the mentor indicates that they believed the partnership was very effective for the mentee) alongside a very low level of engagement with the program structure. This was mirrored by the disparity in the case of Participant 6 which was marked by only a reasonable relationship with the mentor (where the mentor indicates that they believed the partnership was ineffective for the mentee) alongside a

high level of engagement with the program structure. The scores failed to adequately capture the complexity of effectiveness in these areas.

7.5.2.1.4 Summary – evidence of validity

The general convergence of the program manager and mentors' perceptions of the effectiveness of the program for the mentee with the effectiveness score arising from the measurement instrument confirms that there is a level of convergence and agreement between the judgements and the effectiveness score arising out of the questionnaire.

The process of data triangulation established instances where the effectiveness score was confirmed and disconfirmed by the judgements of mentor and program manager and the disparities were discussed. Most critically, the instrument failed to adequately capture the very effective relationship between mentor and mentee in the case of Participant 17 suggesting that the instrument was limited as a means of quantifying effectiveness in the area of the relationship between mentee and mentor. Analysis of this initial data also suggested that while there was a relationship between System quality and effectiveness, and Information quality and effectiveness, positive outcomes in *both* these areas was not necessarily required for the program to be effective for the mentee. There was also some evidence to suggest that the threshold score ranges set out in Table 70 could be revised downward to better concord with the stated views of mentees on their perceptions of effectiveness. This evidence is, however, in contrast to the possible bias indicated in the spread of effectiveness scores set out in Figure 5. Overall, there is some empirical support for the validity of the survey questionnaire in measuring what it is intended to measure.

7.5.2.1.3 Data analysis - inter-item correlation
7.5.2.1.3.1 Aim of inter-item correlation
Pearson correlations between each of the DeLone and McLean (1992) dimensions and effectiveness will be computed to confirm or disconfirm the strength and direction of relationships between each of the DeLone and McLean dimensions. If positive inter-item correlations are found between each of the dimensions and effectiveness, the proposition that the effectiveness score is a measure of the dimensions of the construct of effectiveness would be confirmed.

7.5.2.1.3.2 Limitations with correlation analysis
There is an inadequacy in the calculations regarding effectiveness in the correlation analysis because the variables of effectiveness and the other dimensions are not measured independently. The scores for the individual dimensions are also components of the effectiveness score. While

this means the integrity of the data is compromised, the inferences made on the basis of the data still have some resonance and basis in empirical data. To investigate the relationships between the DeLone and McLean dimensions and confirm or disconfirm whether the data supports the relationships in the e-mentoring effectiveness context, the correlation analysis was therefore also conducted on the DeLone and McLean dimensions alone measuring the dimensions separately to establish internal consistency and relationships without this limitation or error factor. This is a means of demonstrating that the interdependent relationships set out in the DeLone and McLean model hold in the e-mentoring context without the limitation outlined above.

7.5.2.1.3.3 Scatterplot graphs
7.5.2.1.3.3.1 Relationships between Effectiveness and the DeLone and McLean dimensions
The aim of this data analysis was to test the validity of the questionnaire and scoring system as a basis for assessing and quantifying effectiveness for respondents. The question this analysis sought to answer was: "With reference to the dimensions set out in DeLone and McLean's model of IS effectiveness, was effectiveness appropriately represented by the total effectiveness score?"

If there are strong relationships between effectiveness and each of the dimensions, it would be appropriate to draw the inference that the measurement of the construct of e-mentoring effectiveness was appropriately and validly measured with reference to the five DeLone and McLean dimensions.

If there are no relationships between the e-mentoring effectiveness variable and the DeLone and McLean dimensions as measures of association, it would be reasonable to infer that the construct was not appropriately measured with reference to the DeLone and McLean dimensions.

The correlation coefficient was calculated to provide a preliminary understanding of the strength and direction of each of the bivariate relationships.

The following figures present scatterplot graphs in an effort to establish whether the data indicated that there was a positive linear relationship between effectiveness and the particular dimension being considered. If the relationships between effectiveness and each of the dimensions exist, this would be regarded as an indication of the relationship between the effectiveness score and scores for the particular dimensions, and confirm that the effectiveness score was an appropriate (though not necessarily adequate) measure of effectiveness.

Figure 6 – Effectiveness (total score) (X axis) by Impact (Y axis) with trendline
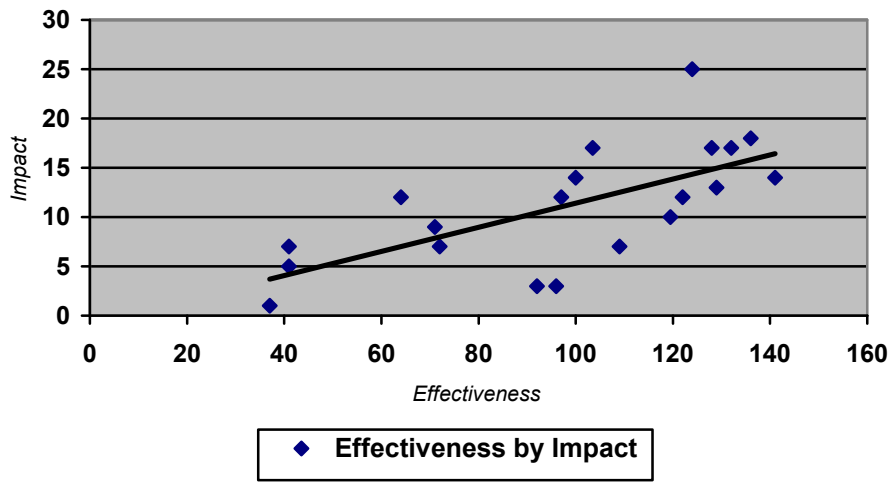
(Correlation coefficient 0.67)

Figure 7 – Effectiveness (total score) (X axis) by System quality (Y axis) with trendline
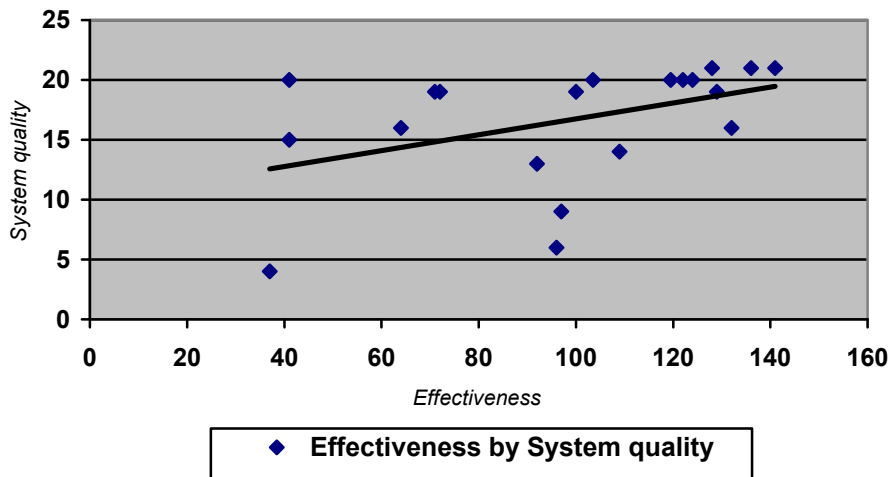
(Correlation coefficient 0.43)

Figure 8 – Effectiveness (total score) (X axis) by Information quality (Y axis) with trendline
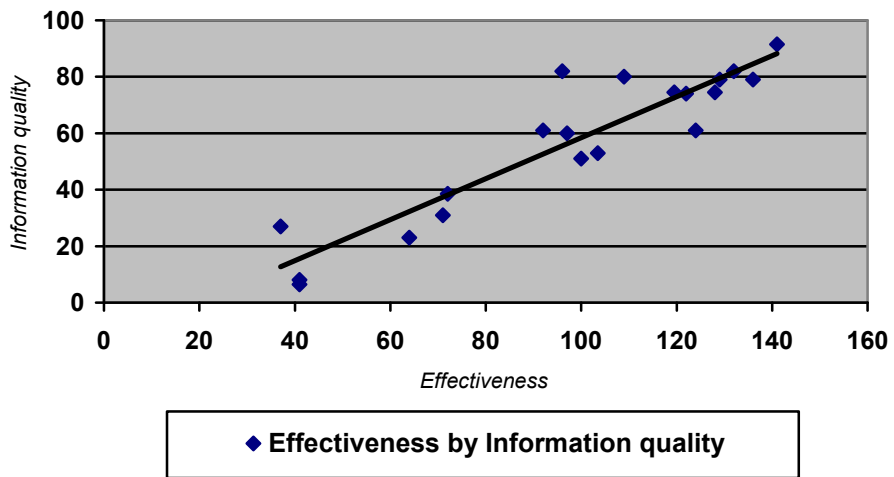
(Correlation coefficient 0.92)

Figure 9 – Effectiveness (total score) (X axis) by User Satisfaction (Y axis) with trendline
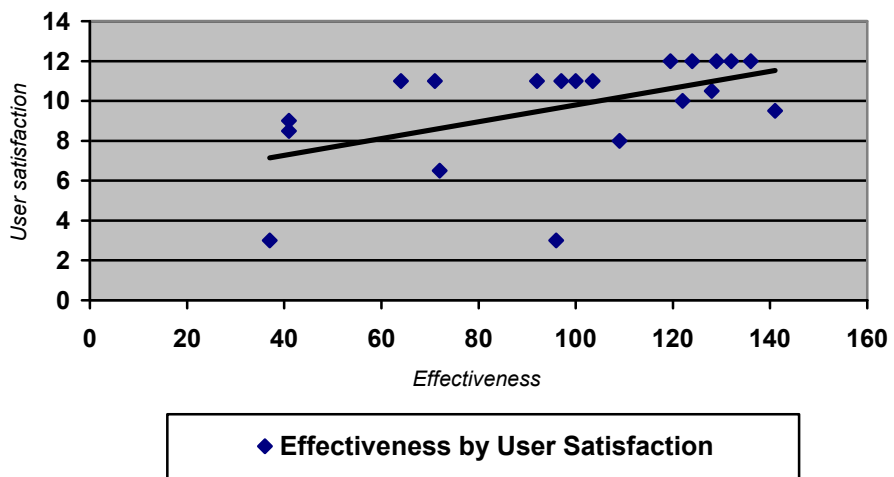
(Correlation coefficient 0.51)

Figure 10 – Effectiveness (total score) (X axis) by Use (Y axis) with trendline
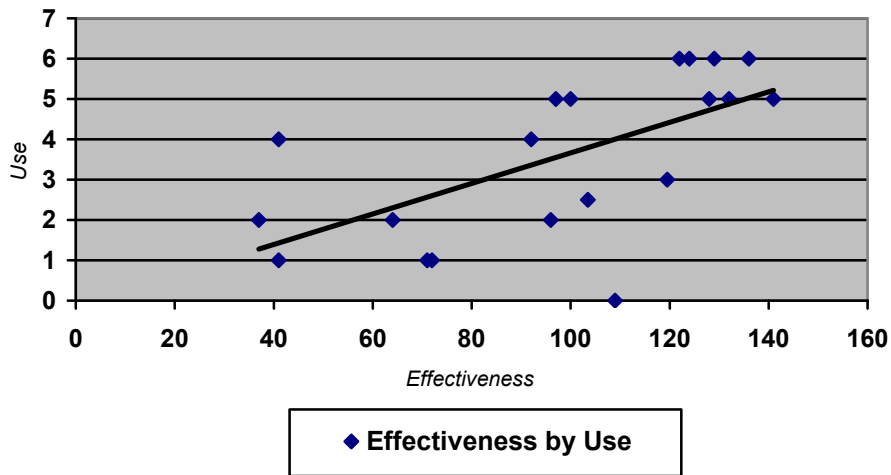
(Correlation coefficient 0.63)

7.5.2.1.3.3.2 Relationships between Impact and other DeLone and McLean dimensions

The aim of this data analysis is to establish whether the data confirms the relationships which comprise the DeLone and McLean model of IS effectiveness. The correlation coefficient will be calculated to provide a mathematical indicator of the strength and direction of each of the bivariate relationships.

The question this analysis seeks to answer is: "Does the data suggest that the relationships between the DeLone and McLean dimensions hold in the e-mentoring context?"

If there are strong relationships between impact and the other dimensions, it would be appropriate to draw the inference that the measurement of the construct of Impact is appropriately measured with reference to the other four DeLone and McLean dimensions in the e-mentoring context.

If there are no positive relationships between the Impact variable and the other DeLone and McLean dimensions, it would be reasonable to infer that the Impact construct is not appropriately measured with reference to the DeLone and McLean dimensions in the e-mentoring context.

The following figures present scatterplot matrices in an effort to establish whether the data indicates that there is a positive linear relationship between impact and the other DeLone and McLean dimensions. If the relationships between impact and each of the dimensions exist, this

will be regarded as an indication that the DeLone and McLean dimensions are an appropriate (though not necessarily adequate) measure of Impact in this particular context.

Figure 11 – Impact (X axis) by System quality (Y axis) with trendline
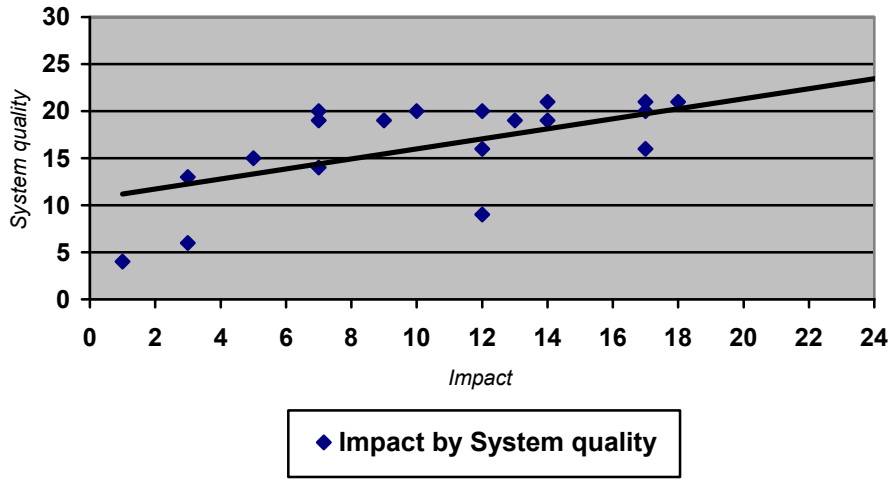
(Correlation coefficient 0.63)

Figure 12 – Impact (X axis) by Information quality (Y axis) with trendline
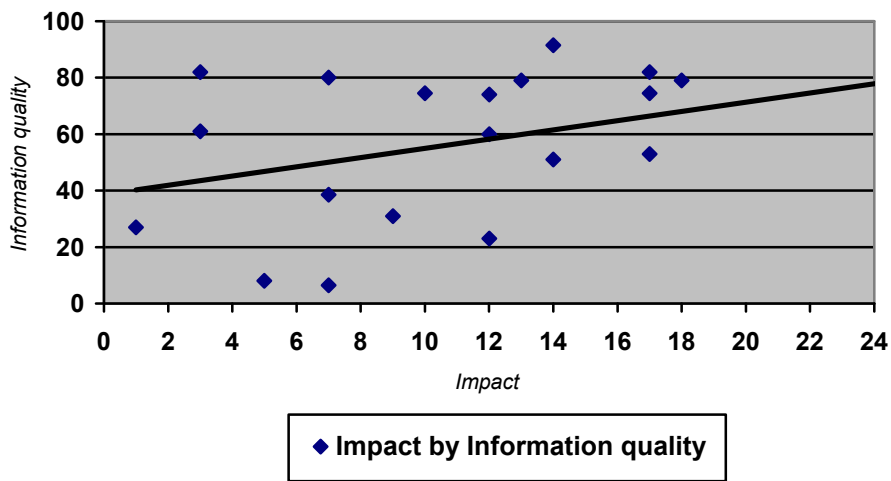
(Correlation coefficient 0.37)

Figure 13 – Impact (X axis) by Use (Y axis) with trendline
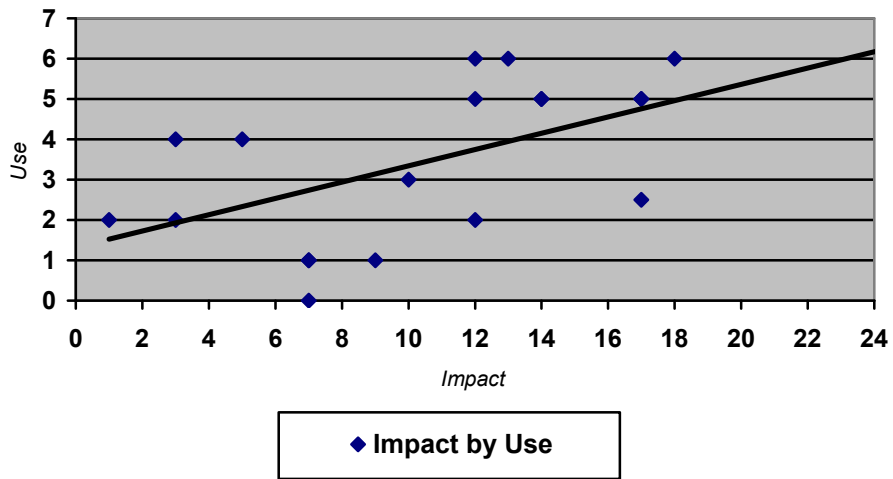
◆ **Impact by Use**

(Correlation coefficient 0.61)

Figure 14 – Impact (X axis) by User Satisfaction (Y axis) with trendline

◆ **Impact by User satisfaction**
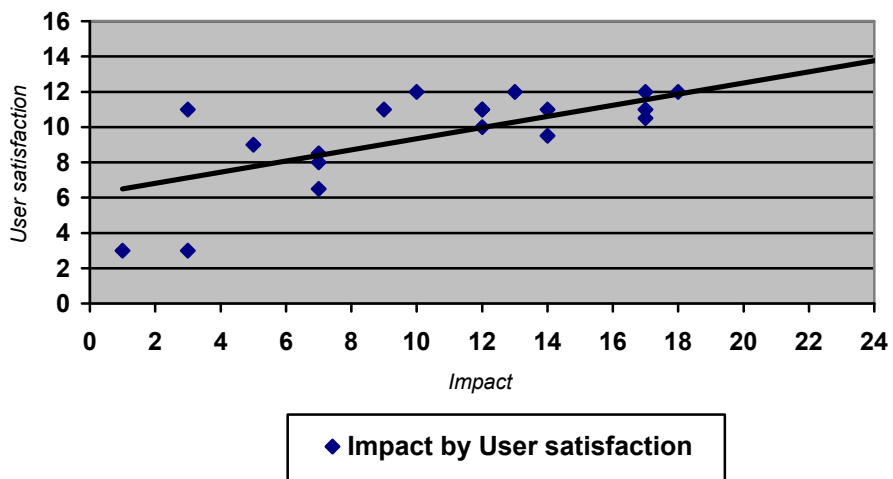
(Correlation coefficient 0.70)

Figure 15 – Use (X axis) by User Satisfaction (Y axis) with trendline
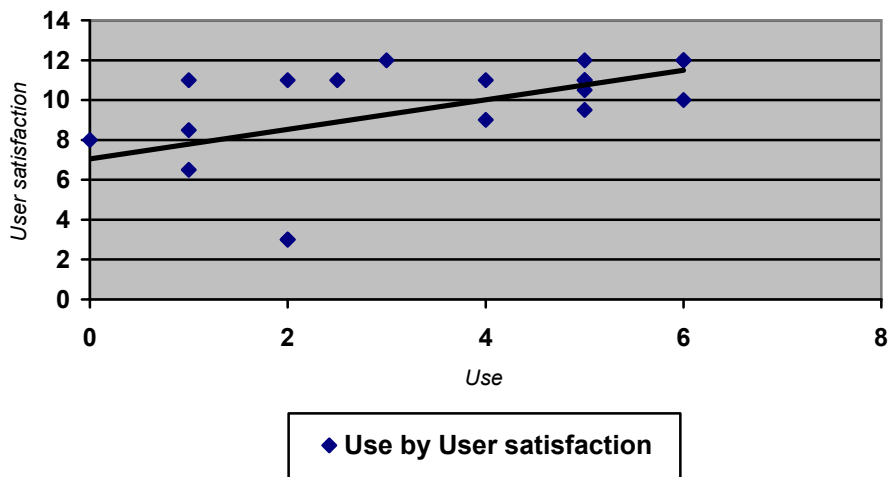
(Correlation coefficient 0.54)

Figure 16 – System quality (X axis) by Information quality (Y axis) with trendline
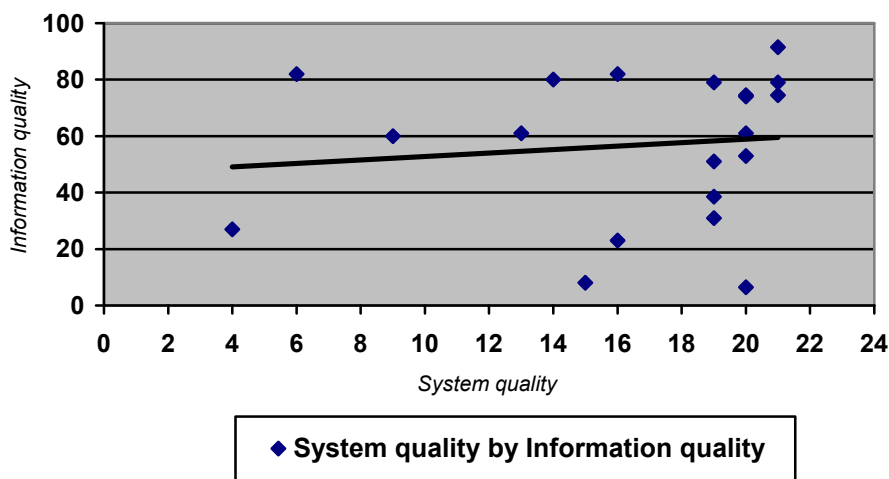
(Correlation coefficient 0.12)

7.5.2.1.3.3.3 Discussion of relationships represented in scatterplot graphs

The following section discusses the relationships represented in the scatterplot graphs. It should be noted that p-values are not reported due to sample size.

Effectiveness by Impact

The data and wide scatter around the line suggest a reasonable positive correlation between Effectiveness and Impact scores. The correlation coefficient is 0.67.

Effectiveness by System quality

The data and wide scatter suggest a weak positive correlation between Effectiveness and System quality scores. The correlation coefficient is 0.43.

Effectiveness by Information quality

The data and small scatter suggest a strong positive correlation between Effectiveness and Information quality scores. The correlation coefficient is 0.92.

Effectiveness by User satisfaction

The data and wide scatter suggest a weak positive correlation between Effectiveness and User Satisfaction scores. The correlation coefficient is 0.51.

Effectiveness by Use

The data indicate a reasonable positive correlation between Effectiveness and Use scores. The correlation coefficient is 0.63.

Impact by System quality

The data suggest a reasonable positive correlation between Impact and System quality. The correlation coefficient is 0.63.

Impact by Information quality

The data suggest a very weak positive correlation between Impact and Information quality. The correlation coefficient is 0.37.

Impact by Use

The data suggest a reasonable positive correlation between Impact and Use. The correlation coefficient is 0.61.

Impact by User satisfaction

The data suggest a reasonable positive correlation between Impact and User satisfaction. The correlation coefficient is 0.70.

Use by User satisfaction

The data suggest that there is a weak positive correlation between Use and User satisfaction. The correlation coefficient is 0.54.

System quality by Information quality

The data suggest that there is no positive correlation between System quality and Information quality. The correlation co-efficient is almost zero at 0.12. This suggests that while effectiveness may be influenced by both system quality and information quality there is not necessarily a relationship between the two – that is, the existence of high scores in both areas is not required for a partnership to be measured as effective for the mentee.

This confirms the findings of the analysis of the judgements of mentees, mentors and program manager set out in the earlier section of this chapter (refer to section 7.5.2.1.2.1) which found that while System quality and Information quality were both related to effectiveness, there was not necessarily a relationship between the two, and positive outcomes in both areas were not necessary antecedents to an effective e-mentoring partnership.

7.5.2.1.3.4 Conclusions to inter-item correlation analysis

For the interpretation of the effectiveness score to be considered indicative of the level of effectiveness of a mentoring partnership for a mentee, relationships between effectiveness and the five DeLone and McLean dimensions would need to be confirmed by the data. The data represented in Figures 6-10 above suggest positive relationships between each of the five DeLone and McLean dimensions and effectiveness. There is some support for the claim that the selection of questions from the questionnaire classified and scored according to the DeLone and McLean dimensions, on the basis of the data analysis undertaken above, appropriately represents the construct of e-mentoring effectiveness.

For the DeLone and McLean dimensions to be considered a sound and appropriate means of evaluating effectiveness in quantitative terms, the relationships as set out in DeLone and McLean's model of IS effectiveness would need to be confirmed by the data. The relationships between the dimensions held in all but one case (System and Information quality) as set out in Figures 11-14.

The inter-item correlation analysis provides some support for the e-mentoring effectiveness scale to be considered a valid initial measure of the e-mentoring effectiveness construct in this setting.

7.5.2.2 Evidence of reliability

7.5.2.2.1 Cronbach alpha

The reliability of any new scale should be tested by establishing the Cronbach alpha. Bryman and Cramer (1990) suggest that Cronbach alpha of 0.8 or over indicates an acceptable level of reliability while Nunnally (1978) suggests that a figure of 0.6 may be satisfactory in the

case of an initial investigation (Bryman & Cramer and Nunnally in Cavana et al. 2000 p.320). Cronbach alpha of greater than 0.6 would confirm the reliability of the measuring instrument in relation to the proposition being considered. The alpha coefficient was calculated using the Cronbach alpha formula (Cavana et al. 2000) and with the aid of Statistical Package for the Social Sciences (SPSS) software.

While sample size (n=20) compromises the confidence in any claim made arising out of this data analysis, it is nonetheless an important step to be undertaken when considering the reliability of a measuring instrument which has not be used previously.

The Cronbach alpha coefficients will firstly be calculated to test the reliability of the items which together measure each dimension. The Cronbach alpha coefficients were computed as follows:

Table 63 – Correlation matrix – reliability for the five effectiveness dimensions

	Cronbach alpha
System quality	0.81
Information quality	0.55
User satisfaction	0.87 (see Note)
Use	0.67
Impact	0.77

Note: Because there was no variance in responses to Item 4 (all respondents indicated that they would recommend the program to another professional), this item was deleted from the computation of the Cronbach alpha. In any future redraft of the questionnaire, this item would either be amended so that responses better capture variance in the opinions of respondents or deleted as an item measuring User satisfaction.

This analysis demonstrates an alpha coefficient of over 0.6 in each of the dimensions with the exception of Information quality which had an alpha coefficient of 0.55. Based on Nunnally's (1978) suggested minimum coefficient of 0.6 for an initial study, this provides some tentative evidence that measurement of at least four the five dimensions of the effectiveness construct is internally consistent and has a satisfactory level of reliability.

Cronbach alpha will also be calculated to investigate the following propositions:
Proposition 1
The dimensions measuring effectiveness as operationalised by the DeLone and McLean dimensions of System quality, Information quality, User satisfaction, Use and Impact reliably measure the construct; and

Proposition 2

The Effectiveness score reliably represents Effectiveness as comprised by the DeLone and McLean dimensions.

Table 64 – Correlation matrix – summary of five inter-item correlations

	System quality	Information quality	User satisfaction	Use	Impact
System quality	1				
Information quality	0.22	1			
User satisfaction	0.67	0.18	1		
Use	0.29	0.35	0.54	1	
Impact	0.63	0.33	0.70	0.61	1

Mean inter-item correlation = 0.453

Cronbach's alpha = 0.81

Table 65 – Correlation matrix – summary of six inter-item correlations

	System quality	Information quality	User satisfaction	Use	Impact	Effectiveness
System quality	1					
Information quality	0.22	1				
User satisfaction	0.67	0.18	1			
Use	0.29	0.35	0.54	1		
Impact	0.63	0.33	0.70	0.61	1	
Effectiveness	0.43	0.81	0.51	0.63	0.67	1

Mean inter-item correlation = 0.51

Cronbach's alpha = 0.86

Proposition 1

Cronbach's alpha was 0.81 in relation to Proposition 1. This result indicates that there is some support for the items selected to measure Impact, as operationalised with reference to the dimensions of DeLone and McLean's model of IS success, to be considered as measuring the e-mentoring Impact construct with a degree of reliability. Proposition 1 is therefore supported.

Proposition 2

Cronbach's alpha was 0.86 in relation to Proposition 2. This result indicates that there is some support for the items selected to measure Effectiveness, as operationalised with reference to the dimensions of DeLone and McLean's model of IS success, to be considered as measuring the E-mentoring Effectiveness construct with a degree of reliability. Proposition 2 is therefore also supported.

7.5.2.2.2 Use of survey questionnaire in international context

The survey instrument was applied in a similar context in the United Kingdom on behalf of Business Link Surrey, and the evaluation reported on a selection of the results (Megginson et al. 2003).

7.5.2.2.2.1 Definition of the effectiveness construct

The Megginson et al. (2003) taxonomy for evaluating effectiveness can be represented as follows:
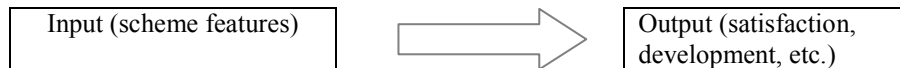
The Megginson et al. (2003) taxonomy set out above does not include the temporal or process characteristics of the DeLone and McLean model (refer to section 1.13.2.2) nor the interdependent nature of the dimensions of effectiveness (refer to section 1.13.1). The rationale behind the taxonomy adopted by Megginson et al. as the effectiveness construct, and how input and output were operationalised, is not explicitly set out in the study. The variables referred to development, whether the mentee would recommend the program to others and satisfaction. Given the correlational analysis presented, program benefit, willingness to participate in a similar program again, professional development and contribution to professional identity were also regarded as indicators of effectiveness.

7.5.2.2.2.2 Formative emphasis

The emphasis in this study is on identifying trends in respondents' perceptions of the scheme features and their links to "key output variables". The approach is founded on establishing antecedents to outcomes or "input" to "output". The focus on identifying factors which influence effectiveness, on "lessons for the scheme to be learned" and the identification of critical success factors suggest that a formative approach underpins this study. In this way, the study attempts to pinpoint factors which influence effectiveness with a view to informing program development and maximising program effectiveness. This is in contrast to the focus of the quantitative and qualitative phases of this thesis which, while similarly attempting to understand the relationships between the dimensions of the effectiveness construct, is ultimately a summative analysis of effectiveness.

7.5.2.2.2.3 Comparison with data arising from use of quantitative instrument in international setting

As a means of testing the reliability of the measurement instrument, the correlations proposed in the international context will be compared with the correlations arising from the data from the

Australian study outlined in this thesis. If correlations of similar strength and direction are found, this would indicate that the measuring instrument has some reliability and is measuring the same way across the different settings. If correlations of similar strength and direction are not found in the Australian context, this lack of reliability must be accounted for as a threat to the reliability of the measurement instrument.

While not including correlation coefficients, the Megginson et al. (2003) study reported the following correlations significant to the .01 level (p.33):

1. Program benefit and Contact frequency
2. Program benefit and Supplementing email contact with other modes of communication
3. Program benefit and Self-managed learning
4. Willingness to participate in a similar program again and Addressing the skills nominated in the registration form
5. Professional development and Value of online tutorial
6. Professional development and Mentors providing mentees with options
7. Contribution to professional identity and Integration with day to day business activities

The results of comparative data analysis for the same bivariate relationships in the Australian context is set out in Table 66 as follows:

Table 66 – Summary of correlation coefficients and strength of relationship between nominated variables in Australian context

	N (number of responses in data set)	Correlation coefficient for variables in Australian context	Strength of relationship in Australian context	Strength of relationship in UK context	Relationship confirmed?
Program benefit and contact frequency	20	0.28	Weak	Strong	No
Program benefit and Supplementing email contact with other modes of communication	20	0.07	No relationship	Strong	No
Program benefit and Self-managed learning	12 (Question not included in 2004, 2005 and 2006)	0.63	Reasonably strong	Strong	Possibly
Willingness to participate in a similar program again and Addressing the skills nominated in registration form	19 (Question not answered by one participant)	0.34	Weak	Strong	No
Professional development and Value of online tutorial	20	0.49	Weak	Strong	No
Professional development and Mentors providing mentees with options	20	0.22	Weak	Strong	No
Contribution to professional identity and	18 (Question not answered	0.50	Reasonable	Strong	Possibly

Integration with day-to-day business activities	by two respondents)				

The disparities in correlation should therefore be accounted for and will be discussed in sections 7.5.2.2.2.4 and 7.5.2.2.2.5 and summarised in 7.5.2.2.2.6.

7.5.2.2.2.4 Testing

The UK research population was involved in pre and post-testing while the Australian group undertook post testing only. Because of this, it is possible that pre-tests sensitised the respondents to the post test (Cavana et al. 2001). This is a variable which may also impact on the validity of the comparison between UK and Australian data.

7.5.2.2.2.5 Program implementation

The UK and Australian programs differed in implementation in relation to the frequency and nature of contact with the program host. While the Australian program provided fortnightly emails to mentees and mentors, the report on the UK program indicates that "[o]ngoing communication was kept at a minimum throughout the program" (Megginson et al. 2003 p.15). While based on the Australian program, the absence of regular contact with the program host as part of the program structure is a critical difference between the programs. It compromises the validity of the comparison between the programs and highlights the need to adequately define the construct of structured e-mentoring.

7.5.2.2.2.6 Summary of evidence of reliability in international setting

The strong correlations found in the UK study are confirmed in the Australian context in only two instances, that between Program benefit and Self-managed learning, and between Contribution to professional identity and Integration with day-to-day business activities. The other relationships were either weak or non-existent. It is possible to conclude that the different contexts, different testing procedures, differences in program implementation and definition of the construct of structured e-mentoring, or the unreliability of the measuring instrument, are all potential sources of these disparities. There is therefore evidence of the potential unreliability of the measurement instrument, much scope for further comparative research and, most critically, grounds for caution in relying on the measurement instrument as the sole means of measuring effectiveness.

7.5.2.2.3 Does the measurement instrument behave as expected and do the results confirm previous research findings?

Brualdi (1999) suggests that a means of establishing validity of a measurement instrument is to determine whether the test behaves as one would expect a measure of the construct to behave, and whether or not the internal structure of the test is consistent with what is known about the internal structure of the construct. So did the data arising out of the survey confirm or disconfirm what is known about e-mentoring effectiveness?

The importance of program structure to the effectiveness of structured e-mentoring programs is widely acknowledged in the literature (Single & Single 2005). The data analysis confirmed a strong relationship between effectiveness and the program structure or Information quality. In particular, satisfaction with program features was correlated with program effectiveness for mentees (correlation coefficient of 0.90).

The mentoring literature however indicates that in the small business context there is limited value in providing generic program content because of the heterogeneity which characterises the small business population (Atterton 2002, Tolentino 1998). Megginson et al. also point to this in their analysis of the UK e-mentoring program citing Garvey (1995 cited in Megginson et al 2003) who emphasise the importance of voluntarism and uniqueness in mentoring relationships and cautioned against "being too prescriptive and standard-driven about … advice given" (Megginson et al. 2003 p.35). The intention of the Australian program was to provide a basic structure which the participants would adapt to their own purposes rather than to be prescriptive or standard-driven. It would therefore be reasonable to expect a correlation between effectiveness and those who indicated that they adapted the generic content to their own purposes. The study however found only a low positive correlation between effectiveness and participants setting their own program goals with a correlation coefficient of 0.25. When considered in relation to the strong link between program structure and program effectiveness discussed previously, it may be that respondents found provision of structure and informal adaptation of the generic content more important than setting their own program goals at the outset of the program in this form of e-mentoring. The data would suggest that these questions need to be considered together for the measuring instrument to return the results which the informing literature would lead us to expect, and that there is further scope for research into how participants in e-mentoring programs adapt generic content to their own purposes.

The relationship between use and effectiveness is widely acknowledged in the e-mentoring literature. Single and Single (2005) refer to a study in which ready access to technological hardware in the form of provision of portable keyboards rather than limited hardware

dramatically improved the quality of e-mentoring relationships and the skills of proteges because it provided for more regular contact (Friedman 2004 in Single & Single 2005). This study is supported by a range of other studies which discuss the link between contact frequency and improved outcomes. Single and Single refer to a range of studies which confirm that involvement operationalised as frequency and duration of e-mentoring interactions was a variable related to positive e-mentoring outcomes (Single & Single 2005) while Bierema and Merriam (2002) suggest that "successful mentoring involves frequent and regular interaction" (p.214). Single and Muller (2001, p.118) problematise the relationship between effectiveness and use suggesting that causal direction has not been clearly established – that is, do effective partnerships lead to greater email exchange frequency?, or does a higher rate of email exchange bring about an effective partnership? The data, while not providing any clarification on this particular issue, confirmed a positive correlation between use and effectiveness and in this way demonstrates the relationship between the two dimensions which would be expected based on previous studies.

Studies of face-to-face mentoring have shown that failure to meet is one of the key reasons for mentoring partners not developing or maintaining their partnership (Noe 1988, Dickey 1997). The measurement instrument showed that all but one participant indicated the email-based structure of the program facilitated their participation. In this way the measuring instrument behaved as expected and in line with previous research.

The test or application of the measurement instrument conforms with previous research which found information and psychosocial benefits as outcomes of the mentoring process. The test confirmed that most respondents were referred to further useful information and resources (15 out of 20 respondents), and that they experienced psychosocial support and reinforcement in the form of personal and/or professional development (15 out of 20 respondents). In this way then, the measurement instrument performs in the way it could be expected to perform in the context of previous research.

The literature indicates that the value of impartiality is important as a benefit of structured e-mentoring. Rather than being mentored within an organisation which may lead to a reluctance to discuss personal or professional weaknesses, the literature indicates that participants in e-mentoring programs value the opportunity to discuss issues with a neutral party outside their existing network. The data arising from the measurement instrument confirmed that most participants valued the opportunity to bounce ideas off a neutral third party and discussed issues which they would not normally do within their existing network.

Table 67 – Mentor as sounding board (n=20)

	Yes	No	Total
Opportunity to bounce ideas off a neutral third party?	18	2	20
Opportunity to discuss issues which they would not normally discuss within existing network	15	5	20

The data arising out of the test therefore confirmed the results which could be expected in line with previous research.

This discussion demonstrates that there is some support for the claim that the test can be considered to behave, in Brualdi's (1999) terms, as one would expect a measure of the construct to behave, and that the internal structure of the assessment is consistent with what is known about the internal structure of the construct.

7.5.2.3 Limitations or sources of invalidity

7.5.2.3.1 Construct underrepresentation

Brualdi (1999) defines construct underrepresentation as when "tasks which are measured in the assessment fail to include important dimensions or facets of the construct" (p.3). Such a failing in a measurement instrument would mean that an effectiveness score arising from the test may not reveal the extent of effectiveness indicated by that score or that a dimension is inappropriately weighted within the total score. The data arising from the quantitative analysis, while indicating a correlation between effectiveness and the quality of the mentee/mentor relationship, failed to measure this relationship with any degree of depth or complexity. It is proposed that this is however not only of this particular measurement instrument but of any attempt to measure this dimension of the structured e-mentoring experience in quantitative terms. The literature indicates that the nature and quality of this relationship is central to outcomes and effectiveness (Devins & Gold 2000 et al). The numerical data arising from the use of this measurement instrument confirm that the inferences which can be drawn from the data lack complexity and do not provide a basis for exploring linkages between effectiveness and the dimensions with any depth, sophistication or meaning. The data in this context are useful in confirming a relationship between effectiveness and the nature and quality of the relationship and a possible preliminary basis for classifying the extent of effectiveness; however obtaining richer and more useful data requires a different methodological approach using qualitative data to adequately represent the complexity of this dimension of the construct.

7.5.2.3.2 Aim of the survey instrument – to measure or rank

Another limitation of the quantitative analysis arises out of the inclusion of both ordinal and nominal items included in the items selected to operationalise the dimensions. While ordinal

items can be counted and ordered, they cannot be measured as such. To therefore describe the instrument as a measure of e-mentoring effectiveness is in part misleading.

7.5.2.3.3 Contextual analysis

Because of the difficulty of controlling for contextual variables, the validity of the findings are potentially compromised by the multitude of contextual variables which potentially impact on the effectiveness of the program. While investigating all of the Phase 2 variables (refer Table 48) set out in the proposed framework is not feasible, the available data provides a basis for exploring whether or not a selection of variables impact on effectiveness. The two factors selected from the proposed framework for preliminary investigation are the "Internal mentee factor" of gender and the "External mentee business factor" of geographical location. These were the two contextual factors established as being representative in the sample.

7.5.2.3.3.1 Gender

A comparison of the mean effectiveness scores for males and females will be undertaken to determine whether or not there is evidence of differential outcomes by gender.

Table 68 – Mean effectiveness scores by gender

Gender	Mean score
Female	91.8
Male	93.9

The mean score for females was 91.8 (n= 7) and the mean score for males was 93.9 (n=13). On the basis of this data, and in view of the small numbers involved, there are no grounds for making the claim that gender impacts on effectiveness.

7.5.2.3.3.2 Geographical location

A comparison of the mean effectiveness scores for city and regional/rural location will determine whether or not there is evidence of differential outcomes by geographical location.

Table 69 – Mean effectiveness scores by gender

Geographical location	Mean score
City	91.08
Rural/regional	107.17

The mean score for respondents in city locations was 91.08 (n= 13) and the mean score for those located in rural or regional areas was 107.17 (n=6). On the basis of this data, and in view of the small numbers involved, there are no grounds for making the claim that regional location impacts on effectiveness.

Conclusion

The immaturity of structured e-mentoring effectiveness as a field of evaluation research is evident with extensive scope for further investigation of the myriad of contextual factors which may impact effectiveness. Such analysis will form part of the theory-building stage of the cumulative research process in this emerging area, and establishing, in Carlile and Christensen's (2005) terms, how and for whom any generalised statements of effectiveness apply.

7.6 Extrapolating to program effectiveness

The process of extrapolating from effectiveness for individual mentees to program effectiveness must be defined by the evaluator in conjunction with the program host. As an example of how quantitative measures of effectiveness can be extrapolated to program effectiveness, the effectiveness pentagon set out in Figure 17 visually represents program effectiveness by plotting the mean mentee scores for each of the dimensions against total possible scores (total possible scores set out in brackets following axis label).
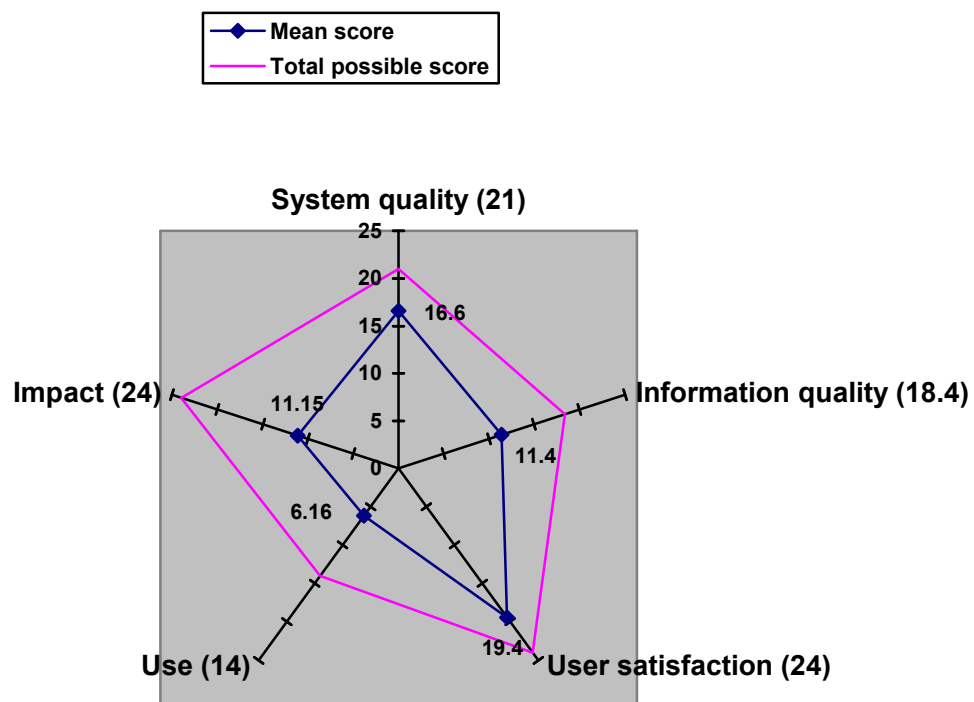
Figure 17 - Effectiveness pentagon

The pentagon is useful in that it represents effectiveness holistically and the dimensions are presented relative to the other dimensions. Using the quantitative data arising out of this survey was problematic because of the varying scales of the data which arose from the secondary data was utilised. To facilitate representation in this format, a subsequent iteration of the scoring scales would amend the scale for Information quality. To facilitate representation for the Information quality scores in this instance, the Information quality scores were reduced by a

factor of 5, and the Use and User satisfaction scores were doubled to better align the scales for those dimension with the other dimensions. As a secondary step, the data around each of the dimensions could be expanded to present individual scores. The program host would make decisions about the scores for each of the dimensions they would judge the program to be effective, and this could be imposed on the Effectiveness pentagon as a means of quantitatively evaluating program effectiveness.

Detailing how effectiveness for individual mentees and program effectiveness are related, suggesting further how practitioners might extrapolate from individualised data to making generalisations around program effectiveness, and in turn, how program effectiveness relates to policy effectiveness, is beyond the scope of this study. The construction of Figure 5 simply demonstrates one way that quantitative data could be used for making evidence-based judgements around effectiveness.

7.7 Conclusions

The immaturity of this field is reflected in the limitations of the measurement instrument. The limited basis upon which the validity and reliability of the instrument have been assessed is acknowledged. There is irrefutably a need for continuing development, refinement and testing and re-testing of quantitative measures of effectiveness in different contexts alongside the use of methodologies which will more adequately represent the construct of effectiveness, chiefly in relation to the quality of the mentee/mentor relationship.

As detailed in the discussion relating to Table 58, the setting of these thresholds involved the qualitative judgement of the researcher as informed by practice and experience in the field. The frequency distribution of effectiveness scores set out in Figure 5, the concordance between scores and judgements of the mentee, mentor and program host set out in Table 62, and the tests relating to validity and reliability set out in this chapter in sections 7.5.2.1 and 7.4.2.2 confirm the credibility of the thresholds supporting the effectiveness classification scheme.

The purpose to which the data arising from a measurement instrument is put is widely acknowledged as underpinning the validity of its use (Brualdi 1999). While it is recognised that caution should be exercised in relying upon the quantitative measures of effectiveness used in this study, it is proposed that there is sufficient empirical data and argument, as outlined above, to suggest that there is some validity to the inferences drawn about effectiveness in this context for the purposes of constructing the sample for the qualitative analysis to be presented in Chapter 8. It is proposed that the measurement instrument forms a basis on which the mentees'

experiences can be classified according to levels of effectiveness with a degree of validity and credibility to be used for this purpose.

In the analysis to be undertaken in Chapter 8, effective and very effective will be compared with the ineffective and partly effective mentee program experience. Total effectiveness scores will therefore be used to classify participants into four groups – Ineffective, Partly effective, Effective and Very effective. This will form the basis for the qualitative comparative analysis of Very effective and Effective with Partly effective and Ineffective partnerships to be undertaken in the next Chapter.

The participants will, on the basis of the quantitative analysis set out above, be classified as follows:

Table 70 – Summary of classification of degree of effectiveness

Score range	Description	Participant number	Frequency
0-45	Ineffective	9, 17, 12	3
46-97	Partly effective	5, 8, 19, 1, 15, 4	6
98-129	Effective	7, 10, 6, 14, 11, 2, 13, 18	8
130-156	Very effective	3, 16, 20	3

The inter-item correlation analysis of this evaluation research confirms the existence of general patterns between the dimensions of the DeLone and McLean model and confirmed the DeLone and McLean dimensions as antecedents to effectiveness. While there is scope for further research into how the proposed taxonomy fails to accommodate or underrepresent the data, the data analysis confirmed as a minimum, modest positive relationships between each of the DeLone and McLean dimensions with the exception of that between System and Information quality. The comparison of correlations between factors influencing effectiveness in the UK program found only tentative confirmation of factors influencing effectiveness in the Australian program. The differences may be attributed to the different program context, differences in program implementation and testing, or of more concern, the unreliability of the measurement instrument. The reliability and validity testing showed grounds for caution in using the survey instrument as the sole means of measuring effectiveness

While the implementation of the proposed framework did not attempt to control for contextual variables, the framework nonetheless provided a basis for considering, selecting and at least acknowledging the impact of the contextual factors of gender and regional location on the validity of the inferences set out in the Findings section, and provided a basis for evaluation researchers to consider, as theory-building is planned and undertaken. Overall, this preliminary process of quantitative analysis provides some empirical support for claiming that effectiveness

scores can be regarded as preliminary though not sufficient measures of effectiveness, and that the DeLone and McLean dimensions were validated as appropriate quantitative analysis categories in the structured e-mentoring context.

An in-depth analysis of factors influencing effectiveness will be undertaken in Chapter 8 with reference to qualitative data.

8 Examination of actual practice – qualitative analysis

8.1 Chapter overview

The objective of the chapter is to investigate whether or not the data provides further validation of the DeLone and McLean dimensions as analysis categories appropriate to the measurement of the e-mentoring effectiveness construct. The chapter extends the examination of the effectiveness of a case of e-mentoring practice undertaken in Chapter 7, and will comprise an analysis and interpretation of predominantly qualitative data to address the evaluation questions set out in Chapter 5 and restated below. The process will be informed and guided by items 6-7 of the research process set out in the framework guidelines in Chapter 4.

The chapter will classify quotational data into the analysis categories of the DeLone and McLean dimensions. It will then undertake a comparative analysis of very effective and effective partnerships with partly effective and ineffective partnerships. Where possible and appropriate, qualitative data will be used to support or disconfirm the findings obtained using quantitative methods in Chapter 7. The objective of the chapter is twofold - to establish whether or not the links between the DeLone and McLean dimensions and effectiveness found in Chapter 7 are supported, and if the application of the proposed framework set out in Chapter 4 assists with evaluating effectiveness using qualitative data.

The Chapter will address the evaluation questions as follows:

Intended program function	Section B - Evaluation questions
Program's major pedagogical functions - Learner control - Learning in terms of interaction with and around content - Learning models - Flexibility	How effective was the program in supporting mentees to construct their own learning pathways? Did the interaction around content and with the mentor and host support learning for the mentee? Did the program accommodate individual differences? Was the program integrated into the day to day activities of the mentee? Did mentees and mentors modify the program to their particular needs? How did email delivery impact on effectiveness? What types of advice and support do mentees receive? Did mentees set their own goals?
Major program goals	Section C - Evaluation questions
Host organisation - To develop a program which effectively provides a learning framework for self-employed contractors through mentoring	Was there evidence to suggest learning by mentees?
SBECP - To develop and enhance the business skills of small business owner-managers	Was there evidence to suggest enhancement of business skills for the target group? How and to what extent did the quality of the match impact on the effectiveness of the program for mentees? How does interaction frequency impact effectiveness?
Evaluation purpose for exploring the determinants of structured e-mentoring	Section D - Evaluation questions

effectiveness	
To consider the program in the context of how it was intended to function	How were the mentoring partnership, program structure, user satisfaction, use and impact linked to effectiveness?
To evaluate anticipated outcomes	Is there evidence of any linkage between Use and User satisfaction? Is there any evidence of any linkage between System and Information quality? What benefits including indicators of any long-term benefits were gained by mentees? What were the major obstacles to obtaining benefit from the program identified by mentees? How is e-mentoring effectiveness defined and evaluated by the participants themselves? What were the antecedents to effectiveness?
To capture unanticipated outcomes or side effects	If program goals suggest that certain things ought to happen or are expected to happen and they don't, or conversely, if program goals suggest that certain things occurred which were not anticipated, what are the implications?
To capture outcomes or activities which were expected but did not eventuate	Is there evidence to suggest that the use of a mentor as a neutral sounding board or to gain a different perspective was linked to effectiveness for mentees? Is there evidence that structured e-mentoring involves diversity in the range of supports and advice provided to mentees? Is there evidence of a link between the range of supports and advice provided to mentees and effectiveness?
To link outcomes arising from identified antecedents	What factors were important in influencing positive outcomes?
To establish whether the program met the needs of primary stakeholders	To what extent did the program meet the needs of the mentees?
To explore any other issues which may be relevant to an understanding of effectiveness	What else is worth knowing about the program?

8.2 Introduction to qualitative enquiry

As in Chapter 7, the emphasis in this inquiry will be on, in Patton's (1990) terms, ".. illumination, understanding and extrapolation rather than causal determination, prediction and generalization" (p.424). The process of applying the proposed framework to a qualitative examination of actual practice is intended as a way of exploring and understanding the evaluation of the effectiveness of structured e-mentoring in this context, and providing confirmatory evidence for the initial linkages proposed in Chapter 7.

In this way, the associations explored in the qualitative analysis will be aligned with the associations found by the quantitative inquiry as a form of triangulation.

The chapter will present quotational data set out by the DeLone and McLean dimensions of System quality, Information quality, Use, User satisfaction and Impact. In line with Patton's (1990) proposed approach to recording the language of those participating in qualitative inquiries (p.229) data matrices will be used as organising tools for this data. The matrices present the DeLone and McLean dimensions as analysis categories against data arising from partnerships classified as very effective/effective and ineffective/partly effective partnerships.

The evaluative referent or basis of comparison in this study will be the effective with ineffective partnerships (refer to section 3.2.2.3 for discussion of evaluative referent).

An interpretation of effective and ineffective structured e-mentoring will be presented alongside the classification and description of the data.

The quotational data were provided by mentees and mentors in in-depth semi-structured interviews, email messages between mentee and mentor, email messages sent to the program host, and open questions included in a survey questionnaire. It comprises data from five mentees for whom, according to the quantitative data analysis reported in Chapter 7, the program was very effective or effective, and three for whom the program was ineffective or partly effective. The data set also includes comments from five mentors. The first mentor partnered Participants 11 and 13, both of whom were involved in effective partnerships, and the data are therefore included under the effective data classification. The second mentor partnered Participants 3, 6, 10, 16, 17 and 20 all of which were involved in effective partnerships with the exception of Participant 17; so the comments of this mentor were included under the effective data classification. The third mentor partnered Participant 2 and this was an effective partnership so comments were also included under the effective data classification. The fourth mentor was partnered with Participant 7 and as this was an effective partnership, comments were allocated to the effective data classification. The fifth mentor was partnered with Participants 5 and 8 and as both of these partnerships were considered ineffective, comments of this mentor were included under the ineffective data classification. Participant 13 participated in the program as a mentee in 2004 and then subsequently in 2005 and 2006 as a mentor so the comments may relate to both these roles but were included predominantly as an indicator of his experience as a mentee. Email logs were not a major part of the dataset for this study which may be considered unusual in research on email-based mentoring. While requests were made to mentoring partnerships to provide copies to the researcher, only two partnerships provided them. This was not unexpected because of the confidential nature of discussions between mentee and mentor (refer section 5.2.2). The decision was made not to "capture" the emails in spite of the technology allowing it in order to respect the privacy and confidentiality of these exchanges.

8.3 Limitations of data collection method

The data were weighted in favour of information provided by those for whom participation was very effective and effective over that provided by those for whom participation was ineffective and partly effective. When seeking quotational data in this format, any problems participants have communicating using email will be reflected in their willingness or capacity to respond to

semi-structured interviews provided by email. The lack of richness of the data from the ineffective partnerships points to a possible relationship between ease of communication in this format and effectiveness but does not determine the ambiguity in relation to causal direction; that is, it does not clarify whether the mentee's lack of comfort and competence with communication in the email format influenced the effectiveness of the partnership, or arose out of the fact that the partnership was ineffective.

In light of these concerns, it is clear that the data collection method may reproduce and/or further exaggerate any error arising out of response bias; not only are participants for whom the partnership was less effective less likely to respond to the invitation to participate in a semi-structured interview by email, their responses may also be marked by less rich or detailed data. This is clearly a limitation with the data collection method.

For the quantitative study, 32 mentee questionnaires were sent out, and 20 were returned. Of the 20, 11 were classified as very effective or effective, and 9 as ineffective or partly effective. For the qualitative study, 32 interview sheets were circulated and 8 were returned. Of these, 5 were classified as very effective or effective, and 3 were classified as ineffective or partly effective. These figures confirm that very effective and effective responses were potentially overrepresetned in the samples considered.

Another of the unanticipated limitations of the qualitative analysis of the examination of actual practice was that indicators of both effectiveness and ineffectiveness were present for most of the interviewees. The experiences of mentees could simultaneously and/or over time move from effective to ineffective and this was difficult to capture using the methodology of comparative analysis. Where appropriate, these instances will be analysed as possible anomalies potentially providing a basis for a more detailed understanding and more refined specification of the dimensions and linkages to effectiveness.

8.4 Operationalisation of the effectiveness construct

Phase 1 of the contingency framework was referred to in selecting measures to operationalise the construct of effectiveness as follows:

Table 71 – Operationalisation of effectiveness construct – qualitative study

Dimension of e-mentoring effectiveness	Metrics selected to operationalise
System quality	• Nature and quality of mentoring relationship • Mentor as impartial or neutral sounding board • Types of advice and support provided
Information quality	• Quality of matching • Nature and quality of program structure • Development of individualised learning pathways - Adaptation of program structure and content

	- Personal goal setting
	- Integration of program with business activities
Use	• Interaction frequency
	• Impact of email delivery on use
User satisfaction	• Mentee's perception of value
Impact	• Learning by mentees
	• Benefits – including long-term
	• The degree to which mentees' needs were met
	• Unexpected as well as anticipated outcomes

8.5 Methodology summary (refer to Chapter 5 for more detailed discussion of research rationale and methodology)

The quotational data will be classified using a grounded theory approach (Glaser & Strauss 1967). Curran and Blackburn (2001) outline this approach as follows: "... a project commences with loose definitions of the key concepts and some speculative initial hypothesis/propositions. Observations are then made and where these do not fit with the initial propositions, these are either restated to encompass the contrary observations and/or the initial definitions are adjusted" (p.41). This is consistent with the idea that data analysis and data collection cannot be separated when using a grounded theory approach (for example, as adopted and outlined by Kram 1980). The application of the grounded theory approach used in this qualitative inquiry however departs from "classic" naturalistic inquiry in not being essentially inductive. As this process is testing the "fit" of the data with the DeLone and McLean dimensions as analysis categories and applying an interpretive construct from another context, the quotational data was classified into pre-existing categories rather than recurrent themes which emerged from the data.

The qualitative data will be supplemented by quantitative data where appropriate to refine the issues associated with the questions under consideration.

The decision was made not to use qualitative data analysis software such as Atlas/ti or Nudist because of the potential for the software to impose taxonomies on the data other than that being tested as a description, classification and interpretive tool.

8.6 Characteristics of the sample

Sample for qualitative study

The description of the characteristics of the sample will provide a basis for understanding the diversity of the sample to be used in the qualitative phase in line with Patton's (1990) maximum variation sampling technique.

Key	
Participant number	#
Industry	Ind
Business or community environment	Bus env

Area of specialisation	Spec
Annual profit	Profit
Annual turnover	Turnover
Gender	Gend- M = Male, F = Female
Regional location C = City, R = Regional/rural, M = Remote	Reg – C, R or M
Level of technology	Tech
Number of employees	# Empl
Home of office based	H/O
Business structure	Bus struct Co = Company, Cons = Consultancy
Number of clients in 5 year period	# clients

Table 72 – Characteristics of the sample

#	Ind	Bus env	Spec	Profit	Turn-over	Gend	Reg	Tech	# Empl	H/O	Bus struct	# clients
12	Local govt	Not provided	Asset M'ment	$40K	$180K	M	C	PC notebook	1	Both	Co	5
10	Power, meat supply, teaching	Govt, private comp/s	Env eng, power	Usually nothing	$140K	F	C	Average	1	H	Co	8
11	Soft-ware devt	Property owners	Facilities & property m'ment	$100K	$1.2M	F	C	High	10	O	Co	30
15	Env consulting	Govt, private comp/s	Coastal & marine env	$250K	$1.2M	M	C	High	7	O	Co	30
9	Concrete repair	Building owners	Concrete repair diagnosis	Nil	$100K	M	C	High	1.3	H	Cons	Not prov-ided
13	Bio-tech products	Global	Contract research	$0.2M	$1M	M	M	Moderately sophisticated	4 plus out-sourcing	H	Virtual, LLC (USA) B@B, B2C	10-15
20	Soft-ware devt	Non-profit, small business	Software devt, project m'ment	$20K	$250K	M	C	High	3	H	Co	6
16	Not prov-ided	Work alone from home	Veterinary science/nutrition	$50K	$200K	F	R	Most standard office equpment	0	H	Cons	10

This data is presented to demonstrate the diversity rather than the representativeness of the sample. No claims to representativeness are made on the basis of this sample.

8.7 Data presentation and analysis - qualitative data classification, description and interpretation

8.7.1 System quality

8.7.1.1. Introduction

System quality is defined as the nature and quality of the relationship between the mentor and mentee. The literature suggests that this is one of, if not the, critical dimension to which effectiveness is linked (Devins & Gold 2000 et al.).

This section of the evaluation aims to address the following questions:

- How did the nature and quality of the mentoring partnership impact effectiveness?
- Did the mentor act as a neutral sounding board?
- What types of support did the mentor provide to the mentee?
- What factors were important in influencing positive outcomes?
- What were the antecedents to effectiveness?

The quantitative analysis of the relationship between System quality and effectiveness indicated only a weak relationship between the two (correlation coefficient of 0.43). A preliminary analysis of the quantitative data however identified construct underrepresentation as a possible limitation of quantitative measurement of System quality. The potential for construct underrepresentation means that the numerical data arising from the use of the survey questionnaire as a measurement instrument provided only a limited basis on which to draw inferences about the relationship between System quality and effectiveness.

The following section considers whether or not a qualitative approach provided a means of collecting data which is more complex, rich and useful to explore any relationship between effectiveness and the nature and quality of the mentoring relationship, and a basis for evaluating the extent of effectiveness.

8.7.1.2 Operationalisation of dimension

In the qualitative inquiry, the System quality dimension was considered with reference to (1) the nature and quality of the mentoring relationship, (2) the mentor as sounding board, and (3) the types of support and advice sought by the mentee.

8.7.1.2.1 Nature and quality of the e-mentoring relationship

Table 73- Nature and quality of the mentoring relationship

Very effective/effective
- I found our mentoring partnership invaluable (Participant 3, email to mentor, July 2002)   - The quality of my relationship with my mentor was fundamental to the positive outcomes because she was very quick to respond to my questions, gave me her personal insights and experiences and supported these with published articles on the area which we were reviewing. Also every question and personal observation I made was addressed thoroughly and with a sense of warmth so I felt she identified with my thoughts and issues which gave me confidence in the relationship. Her answers were simple and straight to the point and she always knew exactly what I was asking, so her answers were always relevant. The articles she attached to her responses provided more depth and I could save them and read them several times. This gave me a lot of confidence that I could move forward (Participant 16, interview)   - My partner and I were geographically separated and indeed we only contacted by email. So related to that, how much of a quality relationship can you generate in cyberspace? Actually, I think you can do a lot. I run several companies with a partner who is 1500km away, and have done so successfully for 4 years. Plus I have long term friends that I developed in cyberspace .. I think that a quality relationship can be generated and it is vital – to a successful program. You have to respect the point of view of the mentor and the mentor must respect the position and circumstances of the mentee. Mutual respect leads to better communication otherwise it is dictatorial (Participant 13, interview)   - I felt that we had a very open and honest relationship (Participant 10, interview)   - I found the program to be very helpful but I suppose where it could have been a deterrent if I had not got on so well with my mentor (Participant 11, interview)   - The quality of the relationship with my mentoring partner was very important (Participant 11, interview)   - I felt .. confident about contacting [my mentor] .. and became very comfortable communicating with her. I also found her a very interesting, warm, approachable and open person (Participant 16, interview)   [The quality of the mentoring relationship was] [v]ery important: the strength of the "bond" between mentoring partners affected both the urge to give advice and the receptivity to it, as well as the potential benefits of that advice (Mentor to Participants 11 and 13, interview)
Ineffective/partly effective
From the initial telephone conversations it was apparent .. that the Mentor was keen on talking, but not too hot on listening .. [The] .. relationship would have been strengthened if [my] mentor was able to listen more and in

Comparative data analysis/interpretation

Mentees involved in effective e-mentoring partnerships described their relationship with their mentors as invaluable, important, a strong bond, fundamental to positive outcomes, open and honest, involving mutual respect, as identifying with their needs, and being comfortable to communicate with.

In contrast, mentees involved in ineffective partnerships described their mentor as not interested in listening or understanding, disregarding the needs and wants of the mentee, as having their own agenda or being the wrong choice, and the mentoring relationship as being limited in scope. In contrast to the inferences drawn from the quantitative data, the comparative analysis of the qualitative data for effective and ineffective partnerships supports the proposition that there is a strong relationship between effectiveness and System quality or the nature and quality of the mentoring relationship.

8.7.1.2.1.1 Anomalies

In considering the anomalies arising in the qualitative data, it is useful to refer to the quantitative data presented in Chapter 7 and reproduced below in Figure 7.
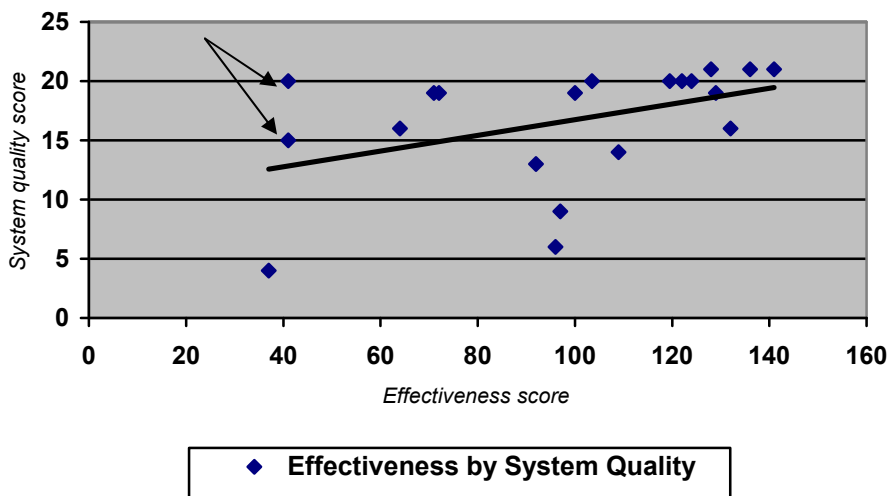
from Chapter 7 – Figure 7 – Effectiveness (total score) (X axis) by System Quality (Y axis) with trendline

The data plot of effectiveness against System quality (the quality of the mentoring partnership) in Chapter 7's quantitative analysis indicated two outliers or uncharacteristic data points. These were instances where the System quality score was higher in relation to the Effectiveness score than was the general trend in the remaining data. The outliers occurred in the cases of Participants 12 and 17. The outliers are highlighted by the directional arrows in Figure 7 above.

In the analysis of effectiveness set out in Chapter 7, Participants 12 and 17 were identified as instances of disparities, that is, the judgements of the mentors and the program host rated the program more successful than indicated by the respondents' effectiveness scores.

How does this data relate to the qualitative data set out above?

In comparing the views of mentees involved in effective and ineffective partnerships, the quotational data indicate two anomalies which are italicised in Table 75 – Nature and quality of mentoring partnership. Both Participants 12 and 17 indicated that they were satisfied with the quality of their mentoring partnership in spite of their partnership being scored as ineffective. The anomalies in the quotational data confirm the anomalies present as outliers in the quantitative data. This confirms in turn that mentoring partnerships scored as ineffective in the quantitative analysis could still be characterised by quality relationships between mentee and mentor.

8.7.1.2.1.2 Mentor as sounding board
The literature suggests that impartiality is considered one of the major advantages of e-mentoring, and on this basis, the following section will explore whether or not access to a neutral and impartial sounding board may be related to effectiveness.

This section of the evaluation will address the following question:
- Is there evidence to suggest that the use of a mentor as a neutral sounding board or to gain a different perspective was linked to effectiveness for mentees?

Of the 20 mentee questionnaire respondents, 19 mentees involved in effective partnerships indicated that the program provided them with the opportunity to bounce ideas off a neutral party or use the mentor as a sounding board compared. Only one mentee - who was involved in an ineffective partnership - did not. Of the eight mentees who participated in the semi-structured interviews, six indicated that they used their mentor as a sounding board often or very often while two stated that they did so rarely. Both mentees who did not use their mentor as a

sounding board were involved in ineffective partnerships. While this data suggests that there is some limited support for proposing a link between effectiveness and using the mentor as a sounding board, the quantitative data is not sufficiently rich or complex to provide the evidence to credibly propose such a link.

Does the qualitative data provide any evidence which would support the proposition that there is such a link between effectiveness and the mentee using the mentor as a sounding board?

Table 74 - Mentor as sounding board

Very effective/effective
• It's funny how someone else can see things just that little bit differently and can start you thinking again!!! (Participant 3, email to mentor, July 2002)
• It was fantastic to have someone to bounce ideas off who has been there before (Participant 3, email to mentor, July 2002)
• The freedom to interchange ideas without judgement and the ability to change or modify as needed. Other than that a genuine desire to provide a sounding board that has no need for rewards .. (Participant 13, interview)
• There truly needed to be a third party .. to force the individual to reappraise the big picture (Participant 13, interview)
• [To me, effective mentoring means] ..[g]iving someone the opportunity to stretch themselves, lift their focus from the road directly in front of them, and instead focus on where they want to go in the distance. I think I did achieve this .. (Participant 10, interview)
• It was a good experience at the time and it was good to have a "sounding board" .. (Participant 11, interview)
• As it was a difficult time in the business when the program started, it helped a lot in having some sound advice and a sounding board to address the issues (Participant 11, interview)
• .. it's good to have someone to bounce ideas off (Participant 11, open question, questionnaire)
Ineffective/partly effective
• Things never really got rolling due to mentor not listening (Participant 15, interview)
• I was looking for a sounding board to share ideas [but the] mentor appeared to be only interested in one way information flow (Participant 15, interview)

Comparative data analysis/interpretation

A comparison of the quotational data for effective and ineffective partnerships suggests that the qualitative data supports the inference that effective mentoring partnerships often involve the use of the mentor by the mentee as a sounding board in the structured e-mentoring for small business context. The mentees involved in effective partnerships describe their experience as involving the use of their mentor for a different perspective on their business, to bounce ideas off, to lift their focus or to see things differently. In contrast, the responses of mentees involved in ineffective partnerships describe their mentor as not listening or as interested only in one way information flow.

8.7.1.2.1.3 Types of support

The literature confirms that diversity of support and advice is a characteristic of mentoring (O'Neill 1998, Clutterbuck 2003 et al.). This section will consider whether there is evidence to this effect in the context of structured e-mentoring, and then whether or not it is possible to draw an inference about the influence of the diversity of support and advice provided to mentees on effectiveness.

As a minimum, this section of the evaluation will address the following questions:

- Is there evidence that structured e-mentoring involves diversity in the range of supports and advice provided to mentees?
- Is there evidence of a link between the range of support and advice provided to mentees and effectiveness?

Types of advice and support – aggregate data

This section presents and interprets data on the types of support provided to mentees. The data is based on information provided by eight subjects who participated in the semi-structured interview process. The power of the inferences drawn will be compromised by the small sample size, but the data will be considered firstly in terms of whether or not it supports the view that e-mentoring is characterised by the diversity in support and advice provided, and secondly, to confirm or disconfirm the proposition that effective mentoring partnerships, in particular, are characterised by a breadth and diversity in advice and support provided.

Table 75 – Types of advice and support provided to mentees (n=8)

Career	Very often	Often	Occasionally	Not very often	Never
Advice on professional development		5	1	1	1
Networking advice		3	2	2	1
Business advice					
Advice on particular business skills	1	1	3	3	
Advice on business plan	3	1	3	1	
SWOT analysis	2	2	1	2	1
Referral to further resources	3	1	2	2	
Identifying and analysing critical incidents	1	2	2	1	2
Personal and social support/advice					
Role modelling/setting an example	2	1	1	3	1
Acceptance and confirmation	2	2	1	2	1
Counselling and friendship	2	1	2	2	1
Sounding board	3	3		1	

The data set out in Table 75 confirms that advice on professional development, networking, business planning and using the mentor as a sounding board were the types of advice and support most frequently sought by mentees. Advice on critical incidents, role modelling and advice on particular business skills were the least frequently sought supports. Table 75 demonstrates the range of career, business and personal support and advice sought by mentees generally.
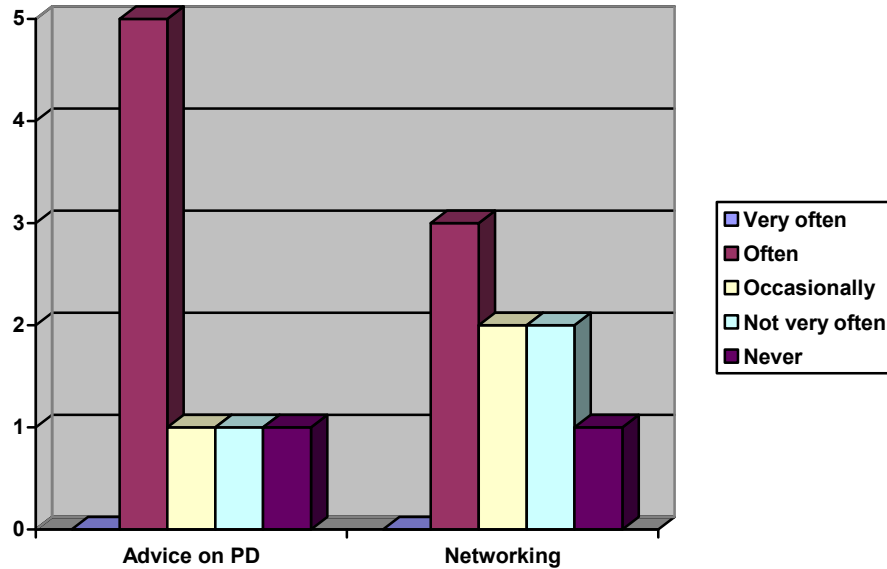
Figure 18 – Frequency of advice by sub-category– Career

The data set out in Figure 18 outlines the type of advice and support most frequently sought by mentees. The figure indicates that 5 respondents asked for advice on professional development often or very often, while 3 sought assistance with networking often.
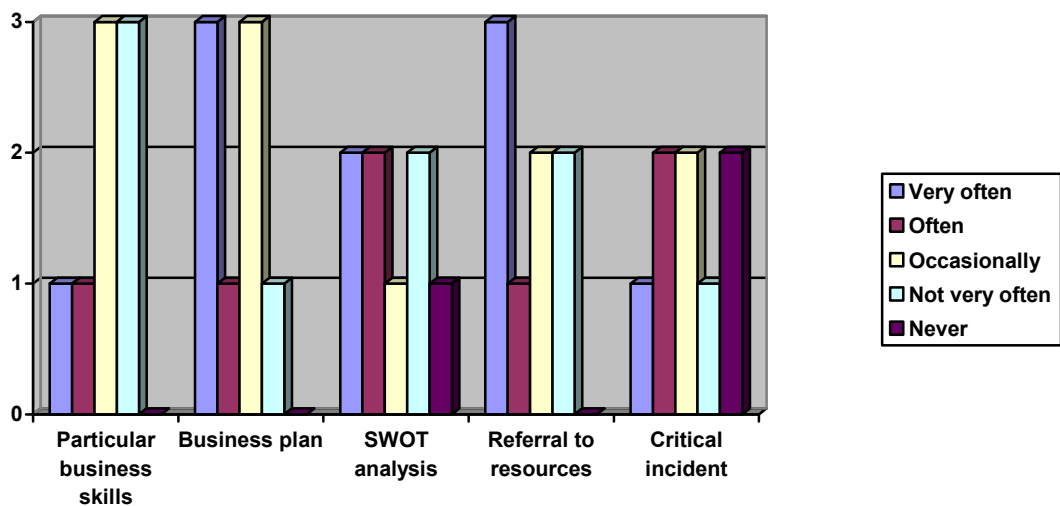
Figure 19 – Frequency of advice by sub-category – Business

The data set out in Figure 19 indicates that two respondents asked for advice on particular business skills often or very often, four respondents asked for advice on their business plan often or very often, four requested help with the SWOT analysis often or very often, while three discussed critical incidents often or very often. These data confirm some of Bisk's results who

found that the advice most sought in a business mentoring program is classified as business rather than personal or technical advice (Bisk 2002).
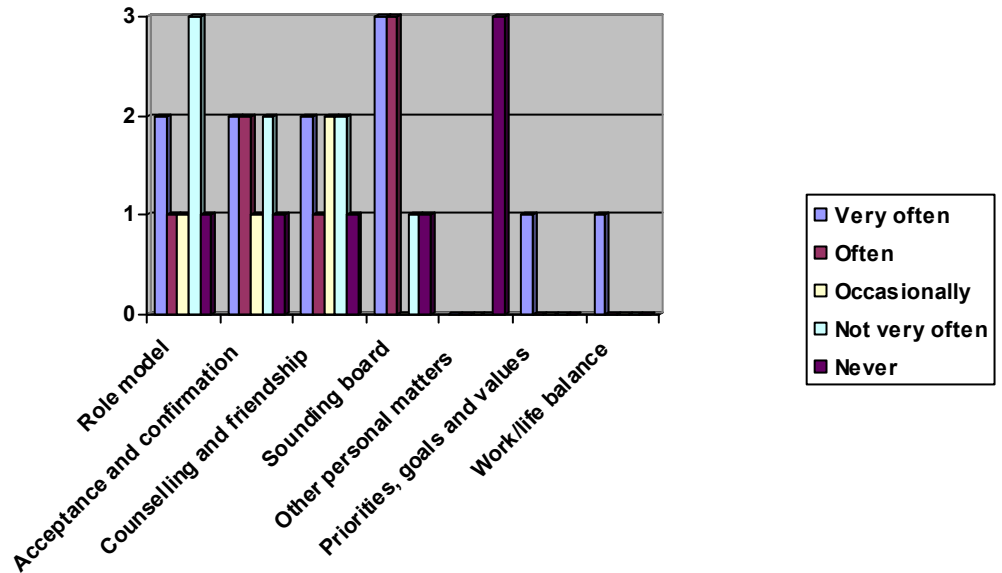
Figure 20 – Summary of frequency of advice by sub-category – Personal/social

As discussed previously in section 8.7.1.2.1.2, one of the most notable features of the personal/social data was that a relatively high proportion of respondents indicated that they sought advice from their mentor as a sounding board often or very often. Also of note was the frequency of support sought in the form of role modelling, counselling and friendship and acceptance and confirmation. Advice and support from a mentor as role model and for counselling or friendship were supports sought by three respondents often or very often, while acceptance and confirmation was sought by four respondents often or very often. The data set out in Table 77 and Figures 18, 19 and 20 support the proposition that e-mentoring in this context for these program participants was characterised by provision of a diversity of supports and advice.

Types of advice and support – comparative analysis
The following figure represents a comparison of the types of support most frequently sought by the three mentees with the highest effectiveness scores with the three mentees with the lowest effectiveness scores. The term "most frequently" is defined as seeking the type of support often or very often.
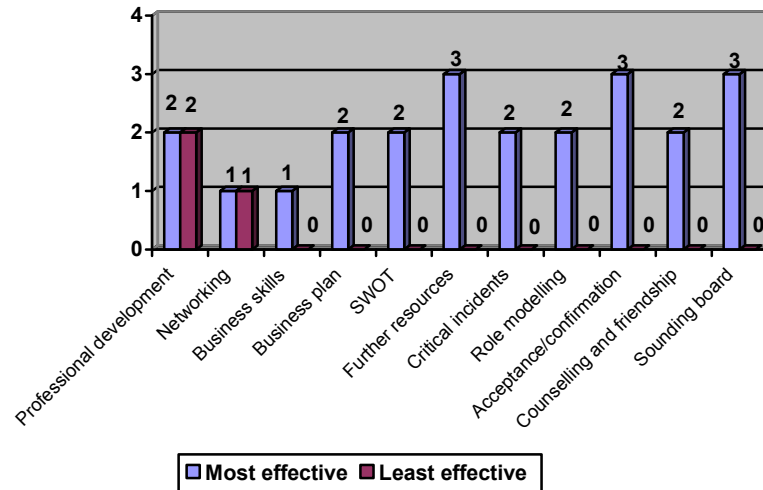
Figure 21 – Comparative analysis of advice and support sought in effective and ineffective partnerships

What is evident from Figure 20 is that ineffective partnerships only sought support and advice in the areas of professional development and networking while those involved in effective partnerships sought support and advice across the range of areas identified. These data while limited indicate the diversity of types of support and advice sought by the three respondents with the highest effectiveness scores when compared with the three respondents with the lowest effectiveness scores. While the proposed link between effectiveness and wideranging support is generally confirmed by the quantitative data set out in Figure 20, there remains an ambiguity around causal direction.

Were these findings borne out by the qualitative data?

Table 76 - Diversity of support and advice sought or provided by mentee

Very effective/effective
- I felt that .. I could ask my mentor about anything, not just about work things but also about work-life issues and how she managed (Participant 10, interview)   - It really is helping me to focus on some issues that I had been sweeping under the carpet for the time being. It's great having your input and encouragement (Participant 3, email to mentor, July 2002)   - Because [my mentor] was so tuned to my situation, the responses always covered my question and related broader issues .. every question and personal observation I made was addressed thoroughly and with a sense of warmth so I felt she identified with my thoughts and issues which gave me confidence in the relationship .. The articles she attached to her responses provided more depth and I could save them and read them several times (Participant 16, interview)   [My mentor] was helping me to get a clear picture and ideas which I needed at the time .. Effective mentoring to me is when the mentor is able to encourage the mentee to tackle other angles of problems and look at other options. The mentor should not be offering solutions, but should be helping the mentee to explore the options and see other solutions themselves. The mentor should be opening up the avenues of thought and at the same time being able to give practical advice on standard business issues such as suggested effective processes on how to lay out a business plan and conduct a SWOT analysis etc. I believe we achieved this. (Participant 11, interview)   [T]here was good back and forth with feedback and suggestions (Participant 20, interview)   - After some time I said that we should abandon the "program's structure" and just communicate and focus on "low hanging fruit", getting some achievable goals under our belt. That, combined with a conference that the mentee went to, established a clear picture of strategy (Mentor to Participant 19, interview)

Ineffective/partly effective
• .. moved onto specific issues with my business that I was trying to address (Participant 12, interview) • I had a specific set of issues .. (Participant 9, interview) • [The program] .. enabled me to have someone check my business plan, and answer many of my questions. It also enabled me to start alliancing with my mentor's firm (Participant 12, interview) • [The program was] helpful for answering specific questions (Participant 12, interview)

Comparative data analysis/interpretation

While the quotational data is limited, there is evidence to suggest that effective relationships were characterised by diversity, breadth and depth in advice and support/s provided while a degree of specificity in mentee expectations and support sought characterised the ineffective partnerships. These data support the proposition of a link between effectiveness and wideranging support sought or received but, as was the case with the quantitative data, do not clarify the ambiguity regarding causal direction. The lack of advice sought in wideranging areas in the ineffective partnerships could be either an antecedent to effectiveness or it could be the outcome of an ineffective partnership.

The quantitative and qualitative data confirm the proposition that mentoring is characterised by a diversity of advice and supports provided to mentees. The comparative analysis of types of support and advice sought by the mentee presented in Figure 20 extends these findings to suggest that the extent of the range of advice and supports provided is linked to effectiveness in this context. This is in line with Kram's (1980) findings that the greater the number of functions provided by the mentor, the more beneficial the relationship is likely to be for the protégé (Kram 1980 cited in Noe 1988 p.459).

8.7.1.2.1.4 Summary/conclusion – System quality

The preceding comparative analysis provided some initial evidence in support of the proposition that the quality and nature of the mentee/mentor relationship was critically linked to effectiveness. The comparison of data for mentees involved in effective and ineffective partnerships suggested that effective relationships were valued for their strong bond, mutual respect, a mentor's interest in the mentee's agenda and good communication. The effective mentoring partnerships were also characterised by a diversity, breadth and depth in advice and support/s provided, and the use of the mentor as an impartial and neutral sounding board. The identification of the anomalies indicated that it was possible for a mentee to have experienced a strong relationship with their mentor, and not score highly according to the quantitative survey instrument. This analysis suggests that quantitative measurement leads to construct underrepresentation or data which fails to adequately capture the complexity of the mentoring relationship, and, in order to obtain a better understanding, quantitative approaches should be supplemented by qualitatively richer and more complex data.

The proposed framework including the DeLone and McLean (1992) dimensions provided a basis for usefully exploring the relationship between mentee and mentor. In contrast to the quantitative data, quotational data provided the basis for making valid inferences and extrapolations about linkages.

The qualitative analysis suggests a strong relationship between System quality and effectiveness. This confirms most importantly the small business mentoring literature which suggests that the mentee/mentor interaction "formed the cornerstone of subsequent activities .. and is .. most significant" (Devins & Gold 2000 p.254).

The data provided support for Single and Single (2005), and Bierema and Merriam's (2002) findings that the use of the mentor as a neutral and impartial sounding board is linked to effectiveness and that exchanges in effective relationships are egalitarian in nature.

It also substantiated O'Neill's findings (1998 p.32) that e-mentoring is characterised by diversity in the types of support and advice and extends O'Neill's work by providing evidence linking diversity in support to effectiveness in the structured e-mentoring for the small business context.

There is considerable scope for further research to address the ambiguity in causal direction between effective partnerships and particular activities and behaviours of mentees and mentors in the email environment. There is clearly ambiguity in Seibert's (1998) terms whereby "high levels of performance or commitment may be a factor leading to participation in a .. mentor relationship, rather than its result" (p.485). The validity of the findings in relation to System quality and claims of a linkage between effectiveness and the nature and quality of the mentoring relationship are open to challenge on the basis that the study failed to "control for the extraneous influences of self and administrative selection" (Seibert 1988 p.485). In Seibert's terms, it is possible that the qualities which led to the individuals nominating or being selected for participation in a program rather than the assistance program itself may have led to the effectiveness outcomes. Neither the quantitative nor qualitative arms of this study confirm that System quality was an antecedent to effectiveness in Seibert's temporal terms.

The investigation into System quality did provide a basis for a definition of, in Noe's terms (as discussed in section 3.2.2.10), some of the major functions provided by e-mentors which evaluation researchers in other contexts may wish to reference.

8.7.2 Information quality – nature and quality of program structure and features and adaptation of program content

Information quality is defined as the nature and quality of a structured e-mentoring program content and structure. The literature suggests that this is a critical dimension to which effectiveness is linked. Boyle and Boice 1998 (cited in Boyle-Single and Muller 2001 p.109) suggest that structured e-mentoring practitioners have attempted to address many of the problems experienced by unstructured mentoring to ensure that participants receive assistance and support from the host organisation, and that such a structure impacts directly on effectiveness:

> *Proper program structure and personnel improve participant involvement and increase the benefits associated with mentoring programs* (p.109).

This section of the evaluation will aim to address the following questions:

- How did the program content and structure impact on effectiveness?
- What factors were important in influencing positive outcomes?
- What were the antecedents to effectiveness?

In the quantitative analysis, the Information quality dimension was measured with reference to the value of facilitation messages, setting of program goals, business skill development, program duration, pre-program training, whether the fact that the program was email-based facilitated participation, email infrastructure, level of satisfaction with the match between mentee and mentor, and referral to further resources.

The quantitative data suggested a strong relationship between Information quality and effectiveness (correlation coefficient of 0.92). However this data provides only a limited basis for understanding in detail how the program structure operated to support (or otherwise) the mentoring partnerships, and for making valid and credible inferences about the linkages between effectiveness and Information quality.

8.7.2.2 Operationalisation of dimension

In this analysis of qualitative data, the Information quality dimension was considered with reference to (1) the quality of the match made by the program host, (2), the nature and quality of the program structure, and (3) whether the program supported mentees in constructing individualised learning pathways. Item 3 will be operationalised or considered with reference to (3a) adaptation of program content, (3b) personal goal setting and (3c) integration of the program into mentees' business activities. Questions around these issues were posed in the semi-structured interview on the basis of how the program was intended to operate, so these

were the themes which recurred in the quotational data rather than "emerging" out of an inductive process.

8.7.2.2.1 Quality of matching

This section will consider whether or not the qualitative data provides any evidence that perceived similarity between mentee and mentor influenced effectiveness.

As discussed in section 8.7.1, using qualitative inquiry in relation to System quality and effectiveness yielded data which contributed to a better understanding of the relationship between effectiveness and the mentoring partnership than quantitative approaches alone. Similarly, adopting qualitative rather than quantitative inquiry in looking at the quality of the match between mentor and mentee is likely to yield data which provides basis for a complex understanding of the match.

The following section will consider whether the qualitative data provided a basis for making evidence-based judgements about the link between the quality of the match and effectiveness, and whether the inferences drawn from the quantitative data are supported or disconfirmed. As a minimum, the analysis will consider the question:

- How and to what extent did the quality of the match impact on the effectiveness of the program for mentees?

Table 77 - Quality of match

Very effective/effective
- We were so well-matched because she had a family and had needed to travel extensively, so immediately understood the demands and I never had to overly explain my lack of contact or delayed responses. If I mentioned some of the anxieties I had about travelling, demanding schedules and leaving one's children, she always had a similar story and injected a sense of humour in the telling, which eased my stress (Participant 16, interview)   - I felt the existence of a shared journey even though our areas of expertise are 180 degrees apart. My mentor had travelled the same paths as me in terms of family, demanding schedule, lots of overseas travel, working as an employee when my skill set would be more suited to running my own company (Participant 16, open question, questionnaire)   - We had a similar outlook to business and the same type of sense of humour which was useful in building rapport and understanding of each other (Participant 20, interview)   - Match was spot on! (Participant 10, interview)   [The quality of the match] was crucial (Participant 16, interview)   - Ours was a good match – we were similar characters both in business and personality. This is very important, I would not have continued with the program if I was not happy with the person I had to deal with for 14 weeks! (Participant 11, interview)   - Her experience and wisdom meant that her responses to some of my questions re reporting and office politics were extremely professional, clear and easy to implement – she was not at all confrontational which struck a chord for me. Her sense of humour and relaxed approach combined with her fairness and logic were fantastic and I felt that her approach to these issues *matched the way I would like to handle them* [my emphasis]. I had not met anyone who had such a mature, professional, confident and easy grip on dealing with the more difficult aspects of relationships and personalities at work (Participant 16, interview)   - Being matched with someone who had a similar business, so that they had direct experience of the issues you were faced with [influenced the effectiveness of the program] (Participant 10, interview)   .. we were on the same track (Participant 11, interview)   .. my mentor was from a technical background but now in more an entrepreneur focus and business leader

which is where I would like to be in the future (Participant 20, interview)
• The feeling of relevance of the mentoring partner's work/life experience to one's own and the synchronicity of the personalities involved .. affected [the outcomes] (Mentor to Participants 11 and 13, interview)
• Extremely pleased with the Mentor matchup. Very forthright and directly to the point .. Knew what needed to be done and helped us find the path of discovery .. Excellent choice of match (Participant 2, open question, questionnaire)
Ineffective/partly effective
• I am .. extremely disappointed with the .. matching process; I communicated that I was willing to offer my services/advice to somebody that was passionate about developing their business or at least was struggling and needed help (Mentor comment to Participant 9, August 2002)
• Was bad match at interpersonal level and had major impact. Skill set and background of mentor was reasonable match (Participant 15, interview)
• Bad match (Participant 9, interview)
• Bad [match] (Participant 15, interview)
• *[The quality of the match was] [v]ery good (Participant 12, interview)*
• *I could not imagine a better match! Thank you so much (Participant 17, email to host, August 2005)*

Comparative data analysis/interpretation

Those mentees involved in effective partnerships described the quality of the match in terms of a shared journey, having travelled the same path, having a similar outlook or character, being on the same track and there being a synchronicity of personalities. In contrast, mentees involved in ineffective partnerships described the match in terms which indicated less or no such similarity or synchronicity.

Anomalies

In comparing the views of mentees involved in effective and ineffective partnerships, the quotational data indicate two anomalies which are italicised in Table 77 – Quality of match. Both Participants 12 and 17 indicated that they were satisfied with the quality of the match with their mentoring partner in spite of their partnerships being scored as ineffective. The anomalies in the quotational data for Participants 12 and 17 confirm the findings in relation to anomalies previously discussed under the comparative quotational data for effective and ineffective partnerships under System quality above (section 8.7.1.2.1.1). These anomalies identified in the quality of the match between mentee and mentor, when considered in conjunction with those previously identified in relation to the quality of the mentee/mentor relationship, provide support for the proposition that construct underrepresentation is a problem with the quantitative measurement of effectiveness of matching. A qualitative approach yielded richer data on which to base inferences about the relationship between effectiveness and the quality of the match.

It is also worth noting that the experience of effectiveness for Participants 12 and 17 is that the quality of the matches made in these cases may have redeemed what would quite feasibly have been an otherwise ineffective program. This highlights how important exploring the quality of the match in qualitative terms is to effectiveness evaluation.

The comparative analysis using qualitative data provided a basis for suggesting a strong positive link between the quality of the match and effectiveness.

8.7.2.2.2 Nature and quality of program structure

This section sets out and assesses the general data provided on how the program structure influenced the mentees' program experience and will consider the question:

- How does the nature and quality of the program structure, in general, influence effectiveness?

Table 78 – Nature and quality of program structure

Very effective/effective
- It was great to have a structure within which to work – that included timelines/deliverables, because this sort of structured program so rarely happens (Participant 10, interview)   - The .. program structure was critical in the beginning as I had no idea of what to expect or how I should approach the role of mentee. It gave me guidelines on what to expect – I had not expected the amount of support and material provided and was anticipating having to do a lot more research to find answers (Participant 16, interview)   .. it provided a framework for us and also assisted us in identifying possible areas on which to work and clarifying what my needs were and what wasn't relevant (Participant 16, interview)   [The facilitation messages] were good to keep the momentum, energy and enthusiasm .. Not all the messages were relevant as our relationship was a little less formal and I did sometimes feel that I wasn't doing it properly as we hadn't done everything mentioned in the messages. At other times they were great to help me refocus my attention on the importance and also the finite amount of time we had (Participant 16, interview)   - The facilitation messages were a little long at times but mostly were useful (Participant 20, interview)   - I welcomed the continued input and interest the host showed (Participant 16, interview)   - Thanks for the prompt; your timing is impeccable (Participant 4, email to host, June 2002)   - The structure was related to the value of the program [..] it guided us and gave us a clear understanding of the roles and responsibilities – and time commitment required (Participant 20, interview)   [The host's] reminders were more critical than the structure of the program as they served as little jolts to get back into action. It nearly always provoked an action and a desirable response.   - The email reminders are critical – they spur action, maybe motivated by guilt, maybe just a reminder. Sometimes they direct you back to a structure when it is becoming unstructured and that is useful (Participant 13, interview)   - The structure provided was good to remind us of what was best practice but we needed to define identity and purpose, and that was achieved (Participant 13, interview)   - Structure was important, but it can drag down a mentee if they link it to success. For example if they think that UNLESS they achieve it all then it is not successful. Then it is an exercise and not real life (Participant 13, interview)   - The messages and reminders are excellent as they provoke action and a point of discussion (Participant 13, interview)   - The setup of the program and the open channel of communication with [the host were factors which influenced the effectiveness of the program] (Participant 11, interview)   [Program structure] is very important. Had it been necessary to fill out a lot of information, I would not have done it. However, the task was not too onerous when it came to the exercises, and the email facilitation messages [were] very important to its success .. Without the guidance we were supplied, I would not have known where to begin! Or where to end! The structure was totally relevant ..(Participant 11, interview)   - It was good to know there was someone to refer to for any questions (Participant 3, open question, questionnaire)   - LOVED what [the host] did – [messages] seemed to arrive perfectly on time and appropriately (Mentor to Participants 3, 6, 10, 16, 17 and 20, open question, questionnaire)   - It is often a scary thing going into this and the email support and info was invaluable (Mentor to Participants 3, 6, 10, 16, 17 and 20, open question, questionnaire)
Ineffective/partly effective
- Have you ever thought of structuring your emails and add titles. This way we could choose what to read. I am sure I am not the only 'busy' person. If I didn't know it was in regards to the program and I had to read it there would be no way I would. I am sure you are aware that most busy people like specific and succinct messages (Participant 17, email to host, August 2005)   - It was a good start to make sure we started focusing on key elements (Participant 12, interview)   - The … organizers need to get their act together and convey relevant information to both parties involved (Mentor comment to Participant 9, August 2002)

- Was happy with the level of facilitation (Participant 15, interview)
- Resources provided by [the host] .. were very good (Participant 15, interview)
- I found the messages too wordy. I simply didn't have time to fully read and digest them. Shorter more succinct messages would have been better. Also the messages seemed to simply add more load. They made me feel a bit guilty that my mentor relationship was not progressing fast enough – that I wasn't quite up to the task (Participant 1, open question, questionnaire)
- .. very helpful to keep on track (Participant 4, open question, questionnaire)
- [The most frustrating part of the mentoring experience was] long emails from [the host] (Participant 17, open question, questionnaire)

Comparative data analysis/interpretation

The importance of differentiating "espoused theories" from "theories-in-use" in evaluation was emphasised by Argyris (1982 cited in Patton 1990 p.107). Comparing the stated ideals (espoused theory) with real priorities (theory-in-use), Patton (1990) suggests,will help elucidate the reasons for the discrepancies. Because in this evaluation the participants can provide their perceptions of real priorities against the stated ideals of the program host, the ideal-actual comparison is potentially relevant to effectiveness evaluation in this context.

Common experiences – effective and ineffective

The comparative analysis indicates that mentees involved in both effective and ineffective partnerships found the structure useful in similar ways, but also shared some concerns about the format.

There were indications that the email facilitation messages had some unintended consequences which operated to the detriment of mentees' program experience. While overall the email facilitation messages operated as intended, there was some evidence to support the proposition that facilitation messages "dragged down" mentees or made them feel that they weren't completing the program as expected if they didn't address all of the issues set out in the email messages. The views are exemplified in the following comments:

> *I did sometimes feel that I wasn't doing it properly as we hadn't done everything mentioned in the messages;*
> *Structure was important, but it can drag down a mentee if they link it to success. For example if they think that UNLESS they achieve it all then it is not successful. Then it is an exercise and not real life; and*
> *The .. [email messages] made me feel a bit guilty that my mentor relationship was not progressing fast enough – that I wasn't quite up to the task.*

The quotational data indicate that the email facilitation messages in some cases may have negatively impacted on the effectiveness of the program for mentees. The understanding gained by accessing mentees' perceptions of the program (theory in use) rather than exclusively relying on the program manager's outline of how the program functioned (espoused theory) is highlighted by this data.

Comparison of divergent experiences – effective and ineffective

In comparing the quotational data for mentees involved in effective with ineffective mentoring partnerships, there is some evidence to suggest a link between effectiveness and mentees' positive experience of the program content and structure.

Mentees generally indicated that they found the program useful in that it provided a structure with timelines/deliverables and prompts for action, and helped manage expectations, provided a framework, assisted with identifying possible areas on which to work, maintained momentum, focused on the finite amount of time available, provoked discussion, and defined where to begin and end. In these ways, the program operated as intended in accordance with "stated ideals".

In contrast, the quotational data suggest that those mentees involved in ineffective partnerships may have disproportionately experienced difficulty with the length and "wordiness" of the email facilitation messages.

The comparison of quotational data indicate that a mentee's response to the program content and structure may be critical not only to facilitating effectiveness, but may also be a factor in program ineffectiveness. This provides support for the strong link between the program structure and effectiveness found in the quantitative analysis in Chapter 7.

8.7.2.2.3 Construction of individualised learning pathways

The program structure and content was intended to assist participants with constructing their own learning pathways in the form of adaptation of content, goal-setting and integration of the program with the mentees' business activities.

As a minimum, this section of the evaluation will address the following questions:

- How effective was the program in supporting mentees to construct their own learning pathways?
- Did the program accommodate individual differences?
- Did mentees and mentors modify the program to their particular needs?
- Was the program integrated into the day to day activities of the mentee?
- Did mentees set their own program goals?
- Was the program integrated into the day to day activities of the mentee?

8.7.2.2.3.1 Adaptation

Participants in the program were encouraged to adapt the program to meet their own needs and to disregard exercises or activities which were not relevant to them as follows:

Always remember that the idea of this program is not just to work through a series of prepared exercises provided by Mentors Online, but to adapt the program to your own needs - if what's being suggested by Mentors Online doesn't work in your circumstances, then you and your mentor should talk about adapting the exercise to something that IS relevant and useful. Challenging the given program structure and testing it for personal and business relevance is part of the process which will make the program worthwhile (Pre-program email from host to mentees and mentors).

This section will undertake a comparison of the quotational data around the theme of adaptation of program structure and content to explore whether or not mentees involved in effective partnerships took a different approach to those involved in ineffective partnerships.

Table 79 – Adaptation of program content and structure

Very effective/effective
• We selected the parts that were relevant to my situation at the time and ear-marked others for the future (Participant 16, interview)
• We did not follow the classical format. In part due to geography but also personalities (Participant 13, interview)
• Didn't follow some parts because we focused on other areas (Participant 20, interview)
• After some time I said that we should abandon the "program's structure" and just communicate and focus on "low hanging fruit", getting some achievable goals under our belt. That, combined with a conference that the mentee went to established a clear picture of strategy. With a renewed focus the mentee chose to look at achievable goals, simplify everything, reduce risk and anxiety. This was an epiphany for him and he was very thankful for it. He is now in a much happier place and delighted with the outcome. So simply put there was a lot of stress before hand, and the programs nature added time constraints and pressure. By abandoning the "compulsory" nature of the steps so as to not appear behind – we developed a freedom to think and prioritise (Participant 13, interview)
• The structure is excellent but like an ideal world it is hard to stick with it especially when there is so little time. But we can pick from it, essential elements and use them as catalysts for improvement .. It varies so much between the demands of individual cases that it needs flexibility (Participant 13, interview)
• When it was seen as too demanding of time and effort it was not used (Participant 16, interview)
• I enjoy the reminders of structure, even if they are not used all the time. Finding the blend between structure for success and a process for a process sake, with the demands of the real world is challenging. Finding that blend and the TRUE needs of the mentee is enjoyable (Participant 13, interview)
• .. with experience I know that adaptability is key (Participant 13, interview)
• At a point where there was too much stress being experienced by the mentee I suggested that we abandon structure and just chat, just communicate, sort things out and reflect. This led to a new direction, less angst and a successful outcome. It was a much needed provocation as we needed to view it all from a new place. The routine was strangling the vision (Participant 13, interview)
• [We] [c]hanged the timing and regularity of correspondence if the circumstances were urgent (Participant 11, interview)
Ineffective/partly effective
• [The mentor's] .. input seemed to be very "potted" and not well tied to the actual conditions/issues facing myself and my company (Participant 15, interview)
• .. the mentor wanted to follow his pre-conceived plan of action so things went from bad to worse (Participant 9, interview)
• Mentor not adaptable (Participant 9, interview)
• No [I don't think we adapted to each other's learning styles] (Participant 15, interview)
• [Effective mentoring means] [a]dvising mentee on difficulties presented to mentor (Participant 15, interview)
• *Used [the program] .. as a starting platform (Participant 12, interview)*
• *Yes [I think we adapted to each other's learning styles] (Participant 12, interview)*

Comparative data analysis/interpretation

The qualitative data suggests a strong link between effectiveness and adaptation of program structure and content. The mentees involved in effective mentoring partnerships reported that they were selective in their use of content, used only relevant content, followed some parts and

not others, picked essential elements, found the right blend, changed the timing and regularity of communications to suit their needs, and in some cases abandoned the structure altogether.

In contrast, mentees involved in ineffective partnerships generally reported that they did not adapt the program to the extent evident in the quotational data arising from effective partnerships. These mentees described their mentor's input as "potted", and the mentor as not adaptable, having a pre-conceived plan, and mentoring partners as not adapting to each others' learning styles.

Anomalies

There was an instance in which a mentee involved in an ineffective partnership did report that they adapted to the program to some extent by using it as a starting platform, and that he and his mentor did adapt to each others learning styles. This data is italicised in Table 79 - Adaptation. The data arose in the case of Participant 12 whose "ineffective" status was identified as an instance of disparity in section 7.5.2.1.2.1.

Rather than a basis for challenging the proposition that adaptation of program content is linked to effectiveness, it is proposed that it is more likely that this anomaly provides further evidence to suggest that the effectiveness score for this participant does not accurately or meaningfully reflect the actual and/or perceived extent of effectiveness.

In spite of this anomaly then, the quotational data is interpreted as supporting a positive link between effectiveness and whether participants adapted the program structure to their own needs. There is evidence to suggest that this process of active adaptation is useful and likely to contribute to maximising effectiveness.

The link between effectiveness and the extent to which mentees and mentors changed or adapted the generic content and activities provided by the program host, supported by the quotational data, confirms McLaughlin's (1976) view (refer 3.2.1.2) and suggests that an analysis of the adaptation process is critical to an understanding of effectiveness of structured e-mentoring.

8.7.2.2.3.2 Personal goal setting

Participants in the e-mentoring program were encouraged to set program goals to work towards throughout the program:

> *Research indicates that a mentoring relationship operates most effectively where participants set specific tasks or milestones to be reached by the end of the program so that progress against these tasks can be gauged. You may want to take the opportunity*

*to discuss setting tasks at the outset or you may wish to continue without formalising
your program in this way at this stage - it's up to you and your mentoring partner to
decide* (Facilitation message, Week 1).

This section will consider whether the quotational data confirms a link between setting program
goals and effectiveness.

Table 80 – Goal-setting

Very effective/effective
- I had no "goal" list, but through the program my mentor may have picked up on areas that needed her attention (Participant 16, interview)   [Developing a range of goals was] .. a critical function, and then with a lack of progress we redefined the goals and got back on track (Participant 13, interview)   - I am sure that many enter the program unclear as to what the goals are. It is sort of well, maybe something good will happen if not what have I lost. Trust comes with time. Trust leads to motivation and execution so it does improve with time as the relationship develops (Participant 13, interview)   - It was good to be clear on what I wanted so I think [setting goals] .. helped (Participant 10, interview)   [We didn't set goals] as such – we really just named some outcomes we'd like to achieve which were fairly focused on the business plan and then worked towards them (Participant 11, interview)   - We didn't formalise the goals but did work towards reviewing and updating the business plan as an informal goal (Participant 20, interview)   - Need to establish a regular ongoing schedule with specific issues and targets ... AND STICK TO IT! (Mentor to Participants 11 and 13, interview)   - Where there were specific issues established and discussed, the results were greater than when there was just a free-wheeling concept of what a mentor is for (Mentor to Participants 11 and 13, interview)   - We jumped around a bit but ended up summarising and coming back to goals and deliverables (Mentor to Participants 3, 6, 10, 16, 17 and 20, open question, questionnaire)
Ineffective/partly effective
- Right from the outset I have not been able to understand why it has been so hard to develop a set of goals for this program based on your needs .. [b]ased on your latest response, it is much clearer. You have no interest in developing your business at the moment (extract from Mentor email to Participant 9, August 2002)   - We didn't [set goals] but if relationship continued this would have been good (Participant 15, interview)   - No [we didn't set goals] (Participant 12, interview)

Comparative data analysis/interpretation

The quotational data indicate a link between goal-setting and effectiveness. Mentees involved in
effective partnerships generally reported developing a range of goals. The goals were not always
formalised, well-defined or maintained but mentees generally suggested that they were
important to getting the most out of the program. In contrast, the ineffective partnerships were
fairly clearly characterised by the failure to set goals.

8.7.2.2.3.3 Integration

As discussed in Chapter 5, the program was based on a situated learning model and encouraged
mentees to integrate the mentoring process with their day-to-day business activities. In
Hartshorn and Parvin's (1999) terms, the program took a "naturalistic" approach which drew on
this situated learning theory. Mentees were advised by the host/facilitator as follows:

*Try to avoid the tendency to make the mentoring activity separate to your current
business activity - integrate your mentoring discussions with your current business
projects. This maximises the chances of developing your skills and improving your
business practices in areas which are directly relevant - integrating the learning
process with your work is the way to obtain maximum benefit from the e-mentoring
program* (Email message 5, Week 9).

This section will undertake a comparison of the quotational data to explore whether mentees involved in effective partnerships integrated the program in a different way to those involved in ineffective partnerships.

Table 81 - Integration of program with business activities

Very effective/effective
• During the day I would jot down issues and thoughts to discuss, but communication with my mentor did not happen every day (Participant 16, interview)
• Highly integrated because it mostly used email to communicate which I use daily (Participant 20, interview)
• I am still integrating her suggestions into my daily activities (Participant 16, open question, questionnaire)
• In .. [the host's] last email it said to talk about a critical incident … I think I just had mine this morning!!! (Participant 3 - email to mentor)
• All is progressing very well. [My mentor's] input and advice on my Business Plan has been invaluable - more importantly his input on day to day matters has been extremely helpful. Since starting the program I have had some staffing problems and issues which X has helped me with, plus general day to day issues which he has been helping with too (Participant 11, email to host, September 2003)
• I set time aside for it – it was integrated with my day to day business, but it didn't take a lot of my time off my actual business (Participant 11, interview)
Ineffective/partly effective
• Once I was putting in a fee submission and I was able to ask my mentor about fee rates (Participant 12, interview)
• Didn't get special time, just had to fit in around work (Participant 10, interview)
• Work commitments were often main priority over mentoring (Participant 15, interview)
• Added to work load (Participant 15, interview)

Comparative data analysis/interpretation

The comparative analysis of the quotational data indicate that mentees involved in effective partnerships integrated the program with their business activities. These mentees reported integrating their mentor's suggestions into daily activities, considering critical incidents in terms of daily business activities, and getting help from the mentor on day-to-day issues. In contrast, mentees involved in ineffective partnerships only rarely asked questions directly related to day-to-day business activities, and fitted mentoring around rather than making it part of their business activities. The quotational data provided some initial evidence to support the proposition that integration of the mentoring program with business activities is linked to effectiveness in this context.

8.7.2.2.4 System quality and Information quality combined

- How do mentees assess the relative importance of the mentee/mentor interaction and program content/structure in structured e-mentoring?

- Did the interaction around content and with the mentor and host support learning for the mentee?

As set out in Table 84, when asked whether or not they found the combination of (i) structured content, (ii) mentor support and (iii) contact with the host useful as a framework for the mentoring program, participants involved in effective partnerships all answered in the

affirmative while each of those involved in ineffective partnerships answered in the negative. In spite of the small sample size, these data suggest a strong positive link between effectiveness and the combination of program structure and content, mentor support and interaction with the program host.

Table 82 – Summary of responses to the question "Was the combination of structured content, mentor support and contact with host useful?"

Participant	Effective/ineffective	Combination useful?
Participant 16	Effective	Yes, a very good balance
Participant 13	Effective	Yes especially if used with perspective and practical application
Participant 10	Effective	Yes
Participant 11	Effective	Yes
Participant 20	Effective	Yes
Participant 15	Ineffective	No
Participant 12	Ineffective	No
Participant 9	Ineffective	No

Comparative data analysis/interpretation - Links between System quality and Information quality

While the inter-item correlation in Chapter 7 found no evidence of an interdependent relationship between System quality and Information quality, the data presented in Table 84 above suggests that the two are related in a way the quantitative data may not have adequately captured.

The comparative analysis indicates that there is evidence to support the proposition that while there is an interdependent relationship between System and Information quality, this is not necessarily so in all cases. The instances of disparity and the qualitative data suggest that it is possible for the program to be effective where there is a strong relationship with the mentor and little interaction with the program structure or content, and conversely, for the program to be effective where there is a high level of satisfaction with the program structure and content and only a poor or reasonable relationship with the mentor.

8.7.2.3 Summary/conclusion – Information quality

The preceding comparative analysis provides evidence in support of the proposition that those involved in effective partnerships were involved in matches where mentees perceived some similarity with their mentor.

In contrast to mentees participating in ineffective partnerships, those involved in effective partnerships generally found the program content and structure useful. Mentees in effective partnerships adapted the content and structure, and integrated the program into their business activities. There was evidence to support the proposition of a link between effectiveness and

adaptation of the program's structure and content to the mentees' needs, and support for the proposition of a link between effectiveness and goal-setting throughout the program. There was also quotational data which suggested a link between integration of the program with business activities and effectiveness. Mentees involved in effective and ineffective partnerships expressed some concerns about the length of, and demands imposed by, fortnightly facilitation messages from the host which potentially impacted on effectiveness.

The quotational data therefore provided a basis for exploring, with a degree of detail and complexity, the dimension of Information quality, and validating the link between Information quality and effectiveness in the context of structured e-mentoring.

The literature indicates that the quality of the match between mentee and mentor will be critical to the effectiveness of the partnership. Single and Single (2005) refer to research which suggests that perceived similarity rather than demographic similarity is an important variable to match e-mentoring partners (Ensher et al. 2004 in Single & Single 2005). The interviewees' views on the quality of the match presented in Table 79 confirms support for these previous findings.

Lincoln and Guba suggest that "[i]nterventions are not stable. When they are introduced into a particular context, they will be at least as much affected (changed) by that context as they are likely to affect the context (Lincoln & Guba 1989 p.451). McLaughlin makes this position more explicit when he comments that "Where implementation was successful, and where significant change in participant attitudes, skills and behaviour occurred, implementation was characterised by a process of mutual adaptation in which project goals and methods were modified to suit the needs and interests of the local staff and in which the staff changed to meet the requirements of the project" (1976 p.169). The relevance of such an approach in the context of the adaptation of mentoring was confirmed in the cases observed by the quotational data, with initial support for proposition of a link between the nature and quality of adaptation of program content and effectiveness.

As discussed in Chapter 6, the e-mentoring program was based on a situated learning model. It encouraged mentees to integrate the mentoring process into their day-to-day business activities based on Hartshorn and Parvin's findings in relation to the need for a "naturalistic" approach in entrepreneurial training which draws on situated learning theory (Hartshorn & Parvin 1999). Deakins and Freel (cited in Sullivan 2000) also detail the need for an experiential and situated approach to entrepreneurial learning. The effectiveness of the application of a naturalistic, experiential and situated learning model was investigated with reference to participants' individual responses to the program structure, and creation of individualised learning pathways

by way of their adaptation of generic content, integration of mentoring activities and personal goal-setting, In each case, the quotational data provided support for previous research findings for the structured e-mentoring context.

As discussed in section 1.3.2, Harris et al. (1996), O'Neill et al. (1996) and Single and Muller (2001) suggest that the maintenance of mentoring relationships across email would benefit from the use of structure or support. The quotational data provides support for these findings in this context.

There is scope for further research into the specific programmatic features which influence the effectiveness of structured e-mentoring. There is also much scope for investigating the influence of contextual variables to refine the link between effectiveness and Information quality found in this qualitative study, and to further explore for whom and why effectiveness is linked to aspects of Information quality.

8.7.3 Use
8.7.3.1 Introduction
The dimension of Use is generally defined as involvement and considered with reference to the frequency and duration of e-mentoring interactions. It is regarded as being directly related to effectiveness (refer to discussion in section 7.5.2.2.3 – Does the measurement instrument behave as expected and confirm previous research findings?).

As a minimum, this section of the evaluation will address the following questions:
- How does interaction frequency impact effectiveness?
- How does email delivery impact the mentoring process?

The quantitative data indicated a reasonable positive correlation between effectiveness and Use scores with a correlation coefficient of 0.63.

The presentation of this data and the discussion of findings which follows considers whether the qualitative data confirms or disconfirms this relationship, and whether the quotational data provide a basis for interpreting the ways in which they may be related.

8.7.3.2 Operationalisation of dimension
The dimension of Use will be considered with reference to (1) reported interaction frequency, and (2) email delivery of program.

8.7.3.2.1 Interaction frequency

This section considers the link between effectiveness and interaction frequency.

Table 83 - Interaction frequency

Very effective/effective
- I was surprised at how emotionally attached I got to the program and would really look forward to emails. So I guess I found regular contact really important (Participant 3, email to host, July 2002)   - The frequency was not as important as the fact that her replies were so rapid and the matching of her responses in terms of length, amount of information and relevancy of the information was fundamental to the success (Participant 16, interview)   - My mentee was not a poor communicator, because when he did communicate it was detailed and thoughtful, it just did not happen very often. The lack of repeated contact worried me (Participant 13, interview)   - Well frequency was less than I wanted, but it was successful so I guess you MUST say that quality won over quantity (Participant 13, interview)   - I think it is important to follow the guidelines set out on contact, but I also believe it is important to understand and respect the others schedule. In our case, we had some pressing matters that we were dealing with and when they peaked, we corresponded regularly and at speed. When the matters were not so pressing, we communicated as when we could but always within a couple of days. The frequency of interaction is important but it should be directly related to the topic's urgency (Participant 11, interview)   - The frequency was good – enough to learn from each other and communicate on a regular basis but not too often to put too much of a time burden on us (Participant 20, interview)   [Interaction frequency was] [v]ery important: can replace some quantity by quality, but not all! (Mentor to Participants 11 and 13, interview)   - Regular interaction is needed to build the relationship, to explore issues and to integrate the mentorship into the mentee's life. For the mentor as well, it is hard to keep up the momentum if the mentee doesn't respond or puts the mentorship last priority (Mentor to Participants 11 and 13, interview)
Ineffective/partly effective
- The mentoring relationship only lasted about two weeks (Participant 15, interview)   - Contact with Mentor was limited to several emails and 2-3 telephone conversations (Participant 15, interview)   - I could "talk" [via email] when it suited me. However when I finally had a telephone conversation with my mentor, it really opened up our relationship. I think that voice communication is critical to developing the relationship (Participant 1, open question, questionnaire)   - Dialogue was too slow – 2 days turnaround (Participant 5, open question, questionnaire)   - We never established a schedule for regular communication .. The communication we did have was very valuable though (Participant 19, open question, questionnaire)   [I] was unable to elicit commitment to regular communication from my mentees (Mentor to Participants 5 and 8)

Comparative data analysis/interpretation

A comparative analysis of the quotational data indicate a link between effectiveness and reported interaction frequency with all those involved in effective partnerships acknowledging that regular contact was important. Many of those involved in effective mentoring partnerships however qualified their statements about the importance of regular interaction with comments about the importance of the quality of interactions as well as their frequency:

> *The frequency was not as important as the fact that her replies were so rapid and the matching of her responses in terms of length, amount of information and relevancy of the information was fundamental;*
> *.. when [the mentee] .. did communicate it was detailed and thoughtful, it just did not happen very often;*
> *.. quality won over quantity;*
> *The frequency was good – enough to learn from each other and communicate on a regular basis but not too often to put too much of a time burden on us; and*
> *[Interaction frequency was] [v]ery important: can replace some quantity by quality, but not all.*

The link between effectiveness and Use found in the quantitative data was supported by the qualitative data. However the quotational data provided additional information which allowed for the qualification of that finding. The qualitative data provided a basis for problematising and refining the dimension of Use in the context of structured e-mentoring by emphasising that the frequency of the exchanges should be considered alongside their content and quality. This confirms DeLone and McLean's proposition that the dimension of Use is often too simplistically measured. They suggest that "[s]imply saying more use will yield more benefits, without considering the nature of this use, is clearly insufficient. Researchers must also consider the nature, extent, quality, and appropriateness of the system use" (DeLone & McLean 2003 p.16). There is therefore scope to further refine the definition and operationalisation of this complex dimension.

8.7.3.2.2 Email program delivery

This section considers the link between effectiveness and email delivery of the program.

Table 84 - Email program delivery

Very effective/effective
- I .. became aware of a feeling of excitement whenever during the course of my day, I identified an area where I needed input or a sounding board, because I knew [my mentor] was just an email away and that she would respond so quickly (Participant 16, interview)   - It is quicker than face to face because you miss a lot of the polite chat (Participant 11, open question, questionnaire)   - Face-to-face would be much harder to fit in because of distance apart and time commitments whereas e-mentoring is always available and because it is written it helped me enormously in clarifying the problems and assistance I required. It also allows the sending of extracts, printed notes and published material that I would have had to source or my mentor print and hand to me. Also e-mentoring allows you to write down and clarify the issues immediately they arise, so you don't forget things. My visual memory is much better than aural, so it really worked well for me. While face-to-face mentoring would have advantages, the time and geographical limitations mean it would be much less likely to happen and to maintain the meetings. Also I think visual communication cues are more complicated and if both mentor and mentee can express themselves well in the written form, there is no loss of meaning or feelings. E-mentoring also allows a written record of the communications, which can be revisited at any time (Participant 16, interview)   - I run several companies by distance .. and have global customers. This is business in the 21st century, get used to it, develop those skills and go for it. Cyberspace affords time, thought and the opportunity to be frank and reflective (Participant 13, interview)   - We only ever corresponded by email and a couple of phone calls which meant that it was very flexible in terms of time (Participant 10, interview)   - I am really comfortable with email, and in some ways it probably meant I could be more frank because I didn't have to face my mentor. Face-to-face mentoring would be different, but not necessarily better (Participant 10, interview)   - The fact that [the program] was done via email was far preferable for us both as we didn't need to answer right away and being busy business people, this was necessary for it to go smoothly and amicably (Participant 11, interview)   - If you have specific issues that could be personal and relate to some of your colleagues, you would be better off talking to someone face to face rather than trying to explain it on the email. There is also emotion involved which is better dealt with when seen and can be misinterpreted via email. If you are looking for business mentoring to progress your business where there are no obvious or apparent problems or obstacles, then I believe email is a better form of communication. It's good to be able to re-read and digest business matters (Participant 11, interview)   - E-mentoring is useful given geographical and time constraints (Participant 20, interview)   - Some find face-to-face too confronting and feel more able to discuss things with the "anonymity" of email. The tyranny of distance and time encourages email mentoring by allowing matches interstate/overseas (Mentor to Participants 11 and 13, interview)   - Allowed the participants to communicate at the most convenient times (Participant 6, open question,

- Time constraints in running a small business and managing other responsibilities would mean face-to-face mentoring not an option. The fact that we were both busy and email allowed us access at any time of the day or night and even by remote if we had to travel away from base (Participant 7, open question, questionnaire)
- [Email provided] flexibility. Also less threatening (Participant 3, open question, questionnaire)
- [Email provided] [f]lexibility, interactive-ness and cost-effectiveness (Participant 14, open question, questionnaire)
- Suited needs based on time zone differences (USA v Australia) (Participant 13, open question, questionnaire)
- I [could] write whenever I had the time – it was very flexible (Participant 18, open question, questionnaire)
- Email contact is not the most efficient form of communication but given our time constraints was the most appropriate (Participant 20, open question, questionnaire)
- Allowed scheduling of responses into timeframes that was less interruptive and manageable (Mentor to Participants 3, 6, 10, 16, 17 and 20, open question, questionnaire)
- [Email-based mentoring provided for] concise information .. clear instructions, able to schedule contact to suit other commitments. Gradual unfolding of information and ability to cut and paste questions/situations and then respond to them and KNOW that you have addressed what was asked (Mentor to Participants 3, 6, 10, 16, 17 and 20, open question, questionnaire)
- [Email-based mentoring was] [c]onvenient for those with busy schedules, and "anonymity" can be liberating for mentees asking questions .. [but there is] [n]o visual contact and non-verbal reassurance (Mentor to Participant 11 and 13)
- [Email-based mentoring offered] flexibility and convenience (Mentor to Participant 2, open question, questionnaire)
- Flexibility regarding timing and the opportunity to consider and carefully weigh issues and responses/questions before sending them (Mentor to Participant 7, open question, questionnaire)

Ineffective/partly effective

- Would have been better if mentor was available .. for face-to-face meetings I suspect (Participant 15, interview)
- Face-to-face is crucial element of ensuring good mentoring relationship. I am very comfortable with IT, but the mentoring relationship is in many respects a very personal connection and is significantly enhanced by direct contact (Participant 15, interview)
- [Email-based mentoring offered] [t]iming [and] flexibility (Participant 9, open question, questionnaire)
- Response time could be fitted in with other work commitments. Email provides written record of interaction (Participant 15, open question, questionnaire)
- [The problem with email-based mentoring is that it is] [e]asier to put off when other work commitments weigh heavily (Participant 19, open question, questionnaire)
- When long answers are required, [they are] time consuming to type (Participant 12, open question, questionnaire)

Comparative data analysis/interpretation

The convenience and flexibility of email communication was acknowledged by those involved in effective and ineffective partnerships alike. The advantages were seen by participants as fast turnaround on messages, the avoidance of polite chat and focus on the main issues, the provision to reflect on, review and consider suggestions and responses, the tendency for the process of writing responses to clarify the issues for the mentee/writer, the capacity to make use of the asynchronous nature of email communication to juggle other commitments, and the cover of anonymity providing a less threatening or confrontational way of raising and discussing issues.

The suitability for those with busy business schedules and the decreased likelihood of participating in any form of mentoring program if it were not email-based is widely commented on by interviewees involved in both effective and ineffective partnerships. As Single and Single (2005) suggest, "E-mentoring practitioners and researchers have not suggested that e-mentoring replace face-to-face mentoring, but have viewed it as a way of providing mentoring opportunities that otherwise would not exist" (p.305). The fact that difficulties with the e-

mentoring format were common to mentees involved in both effective and ineffective partnerships suggests that not only will e-mentoring not replace face-to-face mentoring, but that the e-mentoring format can impact negatively on those involved in both effective and ineffective partnerships. E-mentoring may in fact not be suitable for some even when other mentoring options do not exist.

Similarly, mentees involved in both effective and ineffective partnerships detailed the disadvantages of text-based computer-mediated communication. Email was described as less appropriate in some circumstances, and as a less efficient form of mentoring than face-to-face.

As observed previously under Limitations of data collection method in section 5.8.3, the interview data overall was weighted in favour of effective partnerships. While the lack of richness of the data from the ineffective partnerships points to a possible relationship between ease of communication in this format and effectiveness, there remains an ambiguity in causal direction. The quotational data set out in this section does not resolve the question of whether a mentee's level of comfort and competence with communication in the email format influences the effectiveness of mentoring partnerships, or simply reflects the fact that the partnership was ineffective.

The quotational data suggests that those involved in effective and ineffective partnerships did not experience the advantages and disadvantages of email-based communication differentially. It is acknowledged that the data collected and presented in this section is not sufficiently comprehensive to make credible inferences about how the use of email-based communication impacted effectiveness in relation to the content and quality of exchanges. What it did establish, however, was that the choice of email as the technology underpinning this structured e-mentoring program was a facilitative factor for many participants involved in both effective and ineffective partnerships. A linkage between effectiveness and the use of email as an instructional technology was established in these terms.

8.7.3.3 Summary/conclusion – Use

In line with Bierema and Merriam's review (2002) which found frequent interaction to be critical to the success of a mentoring partnership, the preceding comparative analyses provided evidence in support of the proposition that those involved in effective partnerships engaged in regular contact with their mentor providing initial evidence of a link between effectiveness and interaction frequency. The quotational data however provided a basis for the dimension of Use being problematised to consider quality and content of the email exchanges alongside interaction frequency as critical to effectiveness.

The advantages and disadvantages of email delivery of mentoring were acknowledged by participants and the data analysis confirmed that there is scope for further research to establish more precisely how the characteristics of email impacted communication and effectiveness.

The advantages and disadvantages of using email as the primary means of communication between mentee and mentor were largely confirmed in this context in the cases observed. Disadvantages included the lack of cues associated with face-to-face communication, and negative impact on communication and learning compared to face-to-face mentoring in some instances.

The advantages identified in the literature were confirmed as the egalitarian nature of exchanges, the capacity for email-based communication to remove obstacles such as geographic dispersal and time constraints, email providing a basis for sophisticated exchanges between participants thereby improving the chances of higher learning (Kanuka 2005, Bates 1995, Garrison & Anderson 2003, McGreal 1998). The quotational data provided support for the additional benefits identified in the research such as the value of an impartial sounding board (Single & Single 2005 p.301).

On the basis of the quotational data, it is possible to infer that the framework provided a basis for exploring the dimension of Use, for assessing the impact of email delivery of mentoring, for confirming the findings of the relationship between Use and effectiveness in the quantitative analysis, and validating the link between Use and effectiveness in the context of structured e-mentoring.

8.7.4 User satisfaction

8.7.4.1. Introduction

The dimension of User satisfaction is defined primarily with reference to mentee perceptions of value. The literature refers to user satisfaction as a relevant and appropriate, though not always reliable, measure of effectiveness when used as the only indicator.

As a minimum, this section of the evaluation will address the following questions

- How did mentees rate the effectiveness of the program?
- How is e-mentoring effectiveness defined and evaluated by the participants themselves?

The analysis of quantitative data found only a weak positive correlation between effectiveness and User Satisfaction scores with a correlation coefficient of 0.51.

8.7.4.2 Operationalisation of dimension

Table 85 sets out quotational data which provides an indication of the level of user satisfaction by participants. The level of effectiveness of the partnership found by the quantitative analysis is also noted. A double line marks the separation of the partnerships into effective and ineffective arising out of the quantitative analysis of effectiveness in Chapter 7. The data is presented in order of effectiveness scores from most to least effective as found by the quantitative analysis.

For the quotational data to confirm the findings of the quantitative analysis, there would be evidence of mentees' descriptions of their level of satisfaction to be aligned with their effectiveness score. For the quotational data to disconfirm the findings in the quantitative analysis, there would be evidence to suggest that user satisfaction was not aligned with effectiveness scores.

Table 85 – Matrix of quotational data indicating level of User satisfaction

Participant number	Effectiveness level as found by quantitative analysis	Quotational data indicating level of user satisfaction
20	Very effective	Was great to be in contact with [my mentor] (email to host, November 2006) Receiving feedback and advice from an experienced industry professional [was the most valuable part of the program] (open question, questionnaire, November 2006) I found this a very useful and interesting experience (email to host, February 2007)
16	Very effective	This is one of the best things I've ever ever done … a thousand thankyous (email to host, August 2005), It really was magic to be able to share such similar experiences (interview)
3	Very effective	I've got SO MUCH out of the program .. I have grown so much both professionally and personally through my participation in the .. mentoring program (email to host, July 2002) I found the experience really enlightening (email to host, July 2002) This was a fantastic program that I am so glad I had the chance to participate. It gave me the opportunity to connect with someone [which] it may have been otherwise not possible. It really helped me to fast-track lots of aspects of my business (Participant 3, open question, questionnaire)
18	Effective	[There were [n]o problem[s] with email-based mentoring - I loved it (open question, questionnaire) I am having such a good time I do not want it to end (email to host, September 2005)
13	Effective	Basically I got affirmation that I was on the right track and that was important (interview)
2	Effective	The scheme is an excellent one and I hope it continues (email to host, August 2002) I feel we are all richer for the experience and [my mentor] has been a delight to work with… we hope to maintain some form of contact even if it is coffee on a fly by! (email to host, August 2002)
11	Effective	I found the programme to be very helpful .. it was a good experience .. and it was good to have a 'sounding board' (interview)
14	Effective	I have developed a good relationship with [my mentor] .. I think we will each get something out of this in the long run. I have given the first draft of my business plan to [my mentor] for his comments. [He] is currently

		overseas .. I look forward to continuing interactions with him (email to host, August 2004)
		Many thanks for running the program. I am sure I will continue my interaction with my mentor (email to host, November 2004)
6	Effective	The main problem that caused me not to get the best .. out of the program was the fact that both myself and my Mentor became very busy (open question, questionnaire)
10	Effective	It gave me a sense that I could control the direction of my business (interview)
7	Effective	I thank my Mentor for his appreciation of the need for balance and that fact that we could both say we needed time out for a few days to reconnect with ourselves and our families whilst remaining aware of the need for direction and focus (open question, questionnaire)
4	Partly effective	[My mentor's] input has been invaluable (email to host, June 2002)
15	Partly effective	.. the mentoring relationship did not work particularly well (email to host, November 2004)
1	Partly effective	.. just as you get into the swing of things, the program is over ..
		I struggled a bit because there seemed to be so much to cover (open questions, questionnaire)
19	Partly effective	[Communication was limited but] [t]he communication we did have was very valuable .. (open question, questionnaire)
8	Partly effective	I work full-time and .. found it hard to commit the time needed to the program (open question, questionnaire)
5	Partly effective	Didn't know how to fit into business – where to start – what problem to address (open question, questionnaire)
12	Ineffective	Good information was provided. Unfortunately I didn't make .. use of it due to hectic time (open question, questionnaire)
17	Ineffective	[The most valuable part of the mentoring experience was] [t]he mentor [herself] and her generosity .. [The least valuable part of the mentoring experience was] emails from [the host] [and the most frustrating part of the experience was] .. more long emails from [the host] (responses to open questions, questionnaire)
9	Ineffective	Waste of time and effort (Participant 9, interview)

Note: In the cases of Participants 5, 6, 7, 8, 9 and 12, very limited quotational data was provided in response to open questions, in communications with the host, and/or interviews which sought qualitative data, so this data interpretation is limited by the paucity of data and open to challenge on this basis.

Comparative data analysis/interpretation

The quotational data indicate that there is some evidence to suggest that mentee descriptions of their level of satisfaction becoming progressively less satisfied in line with declining effectiveness scores. This disconfirms the findings of the quantitative analysis and supports the proposition that there is a link between User satisfaction and effectiveness.

8.7.4.3 Summary/conclusion – User satisfaction

As discussed in Chapter 3, while user satisfaction alone is an insufficient measure of effectiveness, there is support for the relationship between user satisfaction and information systems effectiveness (Gatian cited in Myers et al. 1998 p.97). The preceding comparative analysis provides confirmation for such a link in the context of structured e-mentoring, and its utility as an indicator of effectiveness to be used in conjunction with other indicators. The

analysis also provides evidence largely in support of the validity of effectiveness scores in the quantitative analysis in Chapter 7.

8.7.4.4 Use and User satisfaction

The quantitative data suggested that there was a weak positive correlation between Use and User satisfaction with a correlation coefficient of 0.54.

The quotational data provided no conclusive evidence to confirm or disconfirm a link between Use and User Satisfaction. While it appears self-evident that in temporal terms levels of engagement or use is an antecedent to User satisfaction, there is scope for further research into the relationship between Use and User Satisfaction as interdependent and linked dimensions in the context of e-mentoring.

8.7.5 Impact

8.7.5.1 Introduction

The dimension of Impact is defined for the purposes of this evaluation as the benefits or outcomes arising out of the structured e-mentoring program.

8.7.5.2 Operationalisation of dimension

The dimension of Impact will be considered in this section with reference to (1) evidence of learning (2) obstacles to benefit, and (3) benefits or outcomes including (3a) general benefits, (3b) long-term benefits, (3c) meeting mentees' needs and (3d) unanticipated outcomes. Questions around these issues were posed in the semi-structured interview on the basis of how the program was intended to operate.

In addition to specific questions in each of the above areas, this section of the evaluation will also aim to address the following questions:

- What factors were important in influencing positive outcomes?
- What were the antecedents to effectiveness?

The quantitative data indicated reasonable positive correlation between effectiveness and Impact scores with a correlation coefficient is 0.67.

The presentation of the quotational data and the discussion of findings which follows considers whether the qualitative data confirmed or disconfirmed this relationship, and whether the quotational data provided a basis for interpreting the ways in which effectiveness and Impact may be related.

8.7.5.3 Evidence of learning

The following discussion considers evidence of learning for those involved in effective partnerships compared with those involved in ineffective partnerships.

The following evaluation questions will be considered:

- Was there evidence to suggest perceived learning by mentees?
- To what extent did the program provide a learning framework for self-employed contractors participating as mentees?
- Was there evidence to suggest enhancement of business skills for the target group?

Table 86 – Learning by mentees

Very effective/effective
- Mentoring should ideally allow the mentee to make quantum leaps re insights and options available and assist them in seeing alternatives. It should also tackle areas in which the mentee may need more confidence. [The program] prompted me to become more business-like and professional and to value my contribution more highly. Practical, down-to-earth solutions suddenly seemed clearer and I have changed to more productive methods (Participant 16, interview)   - My commitment increased as the program progressed because when I felt the benefits I wanted the program to have a high priority instead of something that fitted in around everything else (Participant 16, interview)   - I believe the benefits are enormous. For people who work alone and have no formal business training, it is an efficient, rewarding and very satisfying way to obtain support and receive encouragement (Participant 16, interview)   [I judged effectiveness] [f]rom the new skills and knowledge and mindset that I developed from the program (Participant 20, interview)   - I learnt a lot, particularly that I could do whatever I put my mind to, so it gave me a sense of confidence that I hadn't previously had in terms of business management (Participant 10, interview)   - It was important to have a mentor who could address the skills development that you required and I believe my mentor did (Participant 11, interview)
Ineffective/partly effective
- I was looking for [a] sounding board to share ideas [but the] mentor appeared to be only interested in one way information flow (Participant 15, interview)   - No [we didn't adapt to each other's learning styles] (Participant 15, interview)   [The mentor's] input .. was "potted" and not well tied to the conditions/issues facing .. my company (Participant 15, interview)   [The mentor] answer[ed] many of my questions .. (Participant 12, interview)   - No [I did not find the combination of structured content, mentor support and contact with the host useful as a framework for learning] (Participant 12, interview)   - No {I did not find the combination of structured content, mentor support and contact with the host useful as a framework for learning] (Participant 9, interview)

Comparative data analysis/interpretation

A comparison of the quotational data for mentees involved in effective and ineffective partnerships provided initial support for the proposition that there was a link between effectiveness and positive learning outcomes.

The mentees involved in effective mentoring partnerships described their learning in terms such as seeing alternatives, providing insight, clarifying solutions to problems, and a way of developing new skills, knowledge and an enhanced mindset.

In contrast, those involved in ineffective partnerships described the type of learning on offer as different to what was expected or desired, that advice was "potted" rather than collaborative, and that the learning was limited in nature such as answering specific questions. In two cases of ineffective partnerships, the mentees indicated that they did not find the combination of structured content, mentor support and contact with the host useful as a framework for learning, and two mentees indicated that the mentor and mentee did not adapt to each other's learning styles.

This contrasting data would suggest that the presence or absence of positive learning outcomes was fundamentally linked to program effectiveness for mentees.

8.7.5.4 Benefits

This section will consider the benefits of the program to mentees by evaluating major obstacles, evidence of benefits including long-term and unexpected benefits arising from the program and the extent to which the needs of mentees were met by the program.

As a minimum, the following evaluation questions will be addressed:

- What were the major obstacles to obtaining benefit from the program identified by mentees?
- Was there evidence of benefits?
- Was there evidence of long-term benefit?
- To what extent did the program meet the needs of the mentees?

8.7.5.4.1 Major obstacles

The following discussion presents a comparative analysis of the major obstacles to gaining benefit from the program identified by effective and ineffective participants and will consider the question "What were the major obstacles to obtaining benefit from the program identified by mentees?"

Table 87 – Major obstacles identified by mentees

Very effective/effective
- My time was the biggest issue (Participant 10)   - Ability to meet face to face (Participant 16)   - Lack of time due to busy work and family commitments (Participant 20, interview)   - Creating time. Especially time together to maintain the flow and exchange (Participant 13)   - Lack of time, no face-to-face, no "accountability", lack of clarity of goals/specific issues, short duration of program with regard to ongoing issues to be handled (Mentor to Participants 11 and 13, interview)   - Some mentees had little or irregular time to devote to the program and I feel that had significant (negative) impact on the results (Mentor to Participants 11 and 13, interview)   - The main problem that caused me not to get the best that I could out of the program was the fact that both myself and my Mentor became very busy (Participant 6, open question, questionnaire)
Ineffective/partly effective
- Business (Participant 12, interview)   - Due to work constraints time was limited (Participant 8, open question, questionnaire)

| • Would have been better if mentor was available .. for face-to-face meetings (Participant 15, interview) |
| • Work commitments were often [the] main priority over mentoring (Participant 15, interview) |

In considering the obstacles to obtaining the most benefit from the structured e-mentoring program, the comparative analysis of the qualitative data is significant in that there are no identifiable differences between the quotational data recorded for effective and ineffective partnerships. In each case, time, competing priorities, work and family commitments impacted on participants' commitment and availability to fully participate in the program. These obstacles were experienced by those for whom the program was effective and ineffective. There is clearly scope for further research into what factors or strategies may have contributed to allowing those for whom the program was effective to cope with the obstacles identified compared with those used by those for whom the program was ineffective.

8.7.5.4.2 Business skills outcomes

The survey questionnaire included a list of possible business-related outcomes as a means of identifying particular business impacts. Respondents indicated whether or not they believed that participation in the program either directly or indirectly led to the nominated benefit:

Table 88 sets out the number of participants who nominated positive outcomes in the particular areas.

Table 88 – Outcomes for participants in specific business skills areas (n=20)

Program outcomes	Number of participants who indicated positive outcomes in this area
Reviewed and/or updated business plan	17
Greater awareness of strengths, weaknesses, opportunities and threats to business operation	15
More clearly identified business goals	14
Consideration of ways to network more effectively	14
Broader perspective on key issues	11
Better growth outlook for business operation	10
Improved skills in nominated areas	9
More likely to seek an alliance with another business professional	8
Improved self-confidence and professionalism	8
Consideration of possible professional development activities	8
Better able to act on business opportunities	8
More aware of resources available to self-employed professionals	7
Less likely to close down business	7
Greater business efficiency	7
Enhanced business knowledge or acumen	7
Increased competitiveness	6
Improved skills generally	6
Improved business practices	6
Improved professional standing	5
More likely to seek assistance from appropriate professionals such as a solicitor or accountant	3
Better bottom line	3
More likely to take on employees	2
More aware of relevant emerging technologies	2

This quantitative data indicates that the key areas of benefit or improvement were the business plan review, awareness of strengths, weaknesses, opportunities and threats to business operation, business goal identification, development of broader perspective on key issues and perceived growth outlook for business operation. This quantitative approach to quantifying the dimension of Impact was useful in identifying these key result areas across all respondents. However it was limited in providing data sufficiently rich to assist with any deeper understanding of the linkage between Impact and effectiveness.

Information and psychosocial benefits

Data was obtained around whether or not respondents were referred to further useful information and resources, and whether or not they experienced support and reinforcement in the form of personal and/or professional development. In both instances, 15 out of the 20 respondents indicated that they did experience benefits in these forms suggesting that 75 per cent of respondents experienced, in Kram's terms, information and psychosocial benefits.

Pre and post-program knowledge/skills – quantitative analysis

This section will consider benefits to mentees and will consider the following questions:

- Was there evidence of benefits?
- Was there evidence of long-term benefit?
- Was there evidence to suggest enhancement of business skills for the target group?
- To what extent did the program meet the needs of the mentees?

A question asking interviewees to estimate their knowledge and skills prior to and subsequent to the program was included in the structured interview questions. As there were a total of eight mentee respondents and one did not answer the question, the sample size for this radar plot was very small (n=6) so there is the possibility of response bias and measurement error.
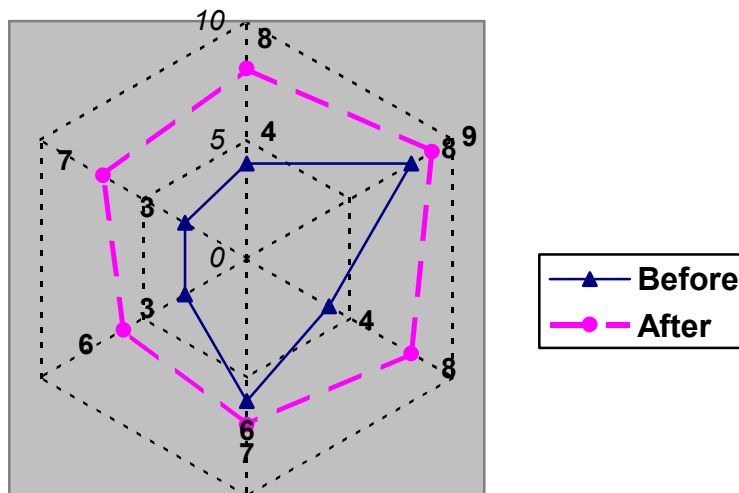
Figure 22 – Radar plot of pre- and post-program knowledge

While limited, the data set out in Figure 22 provides some initial evidence to suggest improvement in the case of each of the five participants' pre and post-program knowledge. Only one respondent indicated that they did not believe there was any difference in their knowledge, and in that case the qualitative data provided by the same participant suggests that there was some improvement which was not reflected in the quantitative data. This respondent commented on the degree of improvement as follows:

> *I don't believe that my skills changed at all as a result of the programme ... perhaps my knowledge did broaden a little but that was based on the experiences of my mentor and listening to them ... [m]ainly in the area of business planning* (Structured interview question, Participant 11).

The following discussion considers evidence of benefit in the form of qualitative data for those involved in effective partnerships compared with those involved in ineffective partnerships.

Table 89 - Benefits/outcomes

Very effective/effective
- This mentoring program has really got me focused again and got me thinking about what I want to achieve, when I want to and will be able to achieve these things. It's made me realise that the planning of my business can't be done in isolation from other aspects of my life (Participant 3, email to mentor, July 2002)   - The benefits for me were mainly in having a sounding board. I also benefited from my mentors business experience when it came to our business plan in particular. Having said that, the business plan was never completed and now we are starting to work with an external company to try and put together a one page business plan. However the work done on the original plan was useful and is going to contribute to our new plan (Participant 11, interview)   .. the program was extremely effective for me. I found some of the classic, generally male bullying behaviour distressing and one of the main insights I gained from the program, was that it is a game. This understanding allowed me to field the shots and enter negotiations without feeling intimidated (Participant 16, email to host, February 2007)   [The major benefits were] [p]ersonal growth, reminders of business best practices, problem-solving skills, relationship skills (Participant 13)   - Another huge benefit for me was that I know longer felt isolated which is the downside of working from home and on one's own (Participant 16, email to host, February 2007)

- Effective mentoring to me is when the mentor is able to encourage the mentee to tackle other angles of problems and look at other options. The mentor should not be offering solutions, but should be helping the mentee to explore the options and see other solutions themselves. The mentor should be opening up the avenues of thought and at the same time being able to give practical advice on standard business issues such as suggested effective processes on how to lay out a business plan and conduct a SWOT analysis etc. I believe we achieved this (Participant 11, interview)
- Effective mentoring means imparting courage and vision, and encouraging lateral thinking in a supportive environment, all with a sense of humour. I like to think I achieved this (Mentor to Participants 11 and 13, interview)
- I experienced renewed interest in business and learning how to run and manage a company, had been feeling jaded and isolated, but realised these feelings were experienced by others who had similar energy levels and drive but were not in the optimum work situation. My interactions with [my mentor] renewed my energy and enthusiasm and the courage to persist (Participant 16, open question, questionnaire)
- .. taking the time to think about my business strategically rather than just letting it happen – getting clear on what I want and then making it happen! (Participant 10, interview)
- Basically I got affirmation that I was on the right track from a third party. That was important (Participant 13, interview)
- [The major benefits were] [t]ime management, business plan (Participant 16)
- [The major benefits were] [p]ractical experience in business planning, practical approach to problem solving, confidence in business planning ability/market knowledge, more experienced sounding board, access to an industry leader who was a role model ie female in technology (Participant 10)
- [The major benefits were] [u]nderstanding how business operates and the financial aspects. Being more aware of the market and sales process as well. [Also] marketing, business planning and sales (Participant 20, interview)

Ineffective/partly effective

- I cannot help you if you are not interested in developing a business and in particular if you are not interested in a mentor relationship. Based on the assessment of the situation, I am extremely disappointed and consider the process to date, a waste of time (Mentor comment to Participant 9, August 2002)
- It enabled me to have someone check my business plan, and answer many of my questions. It also enabled me to start alliancing with my mentor's firm (Participant 12, interview)
- [There were] NIL [benefits] (Participant 9, interview)
- *Looks like we may work on some joint projects (Participant 12, interview)*
- *[The major benefit was] [t]he mentor [herself] and her generosity to introduce me to her network which I believe is the most important area of such a relationship (Participant 17, open question, questionnaire)*

Comparative data analysis/interpretation

The quantitative analysis indicated a reasonable correlation between effectiveness and Impact scores (correlation coefficient of 0.67).

The comparative analysis of qualitative data provided further support for this proposed link. The quotational evidence described wideranging benefits including increased focus, having a sounding board, business planning, a better understanding of business dynamics, personal growth, knowledge of business best practice, improved problem-solving skills, relationship skills, reduced feelings of isolation, lateral thinking, renewed energy and persistence, improved strategic planning skills, affirmation, better time management skills, problem-solving skills, improved self-confidence and greater awareness of business, finance, marketing and sales.

In contrast, those involved in ineffective partnerships described the mentoring program as being a waste of time with no benefits, confirming the link between lack of benefits and low effectiveness scores found in the quantitative analysis in Chapter 7.

The quotational data supports the view that, in the case of mentees involved in effective partnerships, there was considerable evidence of benefits, business skills enhancement and achievement of anticipated outcomes.

Anomalies

The quantitative analysis of the relationship between Impact and effectiveness indicated that Participants 12 and 17 both had relatively low Impact and effectiveness scores. Their data points are indicated by the directional arrows in Figure 6 below reproduced from Chapter 7.
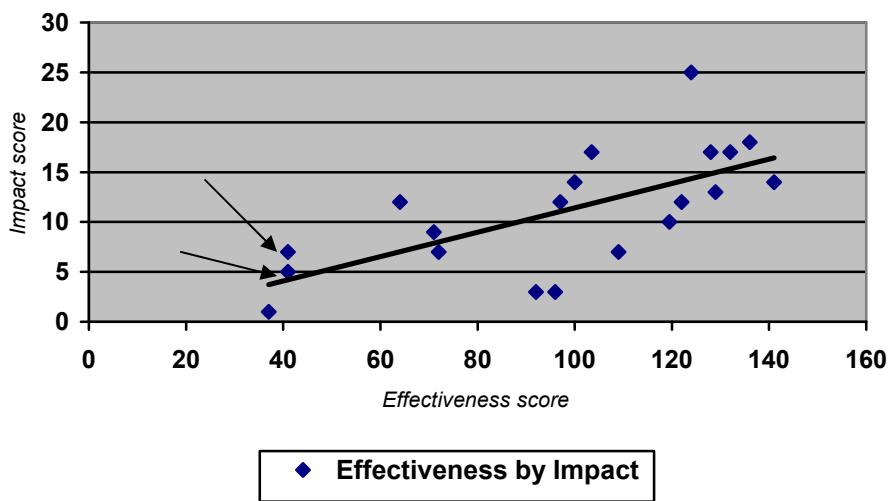
from Chapter 7 – Figure 6 - Effectiveness (total score) (X axis) by Impact (Y axis) with trendline

Participants 12 and 17 as indicated previously were identified in the quantitative analysis as instances of disparity.

In considering impact, both Participants 12 and 17 described the benefits of accessing the network of their mentor and forming a business alliance. In this way, they experienced the benefit of, in Single and Single's (2005) terms, inter-organisational connections with mentors who were outside their normal networks.

The quotational data which suggests that they both experienced some form of significant benefit from participating in the program, and the fact that both experienced the particular benefits of inter-organisational connections supports the proposition that the quantitative measuring instrument failed to adequately capture the dimension of Impact in these cases, in particular inter-organisational connections, rather than providing a basis for challenging the link between the dimensions of effectiveness and Impact.

The rich and comprehensive quotational data describing the extensive benefits for mentees involved in both effective and ineffective mentoring partnerships provides a basis for a much broader and detailed understanding of mentee benefits than that provided by the quantitative data alone. This provides support for the proposition that using a qualitative approach to describing benefits not easily quantified will assist with capturing, understanding and adequately representing the benefits and outcomes arising out of the structured e-mentoring process which are not easily quantified.

8.7.5.4.3 Long-term benefits

The importance of evaluating evolving and long-term benefits is discussed by Remenyi (1999) and Clutterbuck (2003).

This section will consider the question "Was there evidence of long-term benefits?"

Table 90 - Long-term benefits

Very effective/effective
• Thanks for all the info so far. I think it will keep me going far beyond this mentoring program .. (Participant 3, email July 2002)
• .. thank you so much for initiating the mentor program and for your guidance and assistance with it – it has changed my life in many ways ... (Participant 16, email to host, November 2005)
• Long term .. my perception of my abilities changed and expanded and I felt myself changing in my mental approach. As I work predominantly with men and am isolated professionally, it was great to have such close contact with a woman who had similar experiences re work-life balance. I have a lot more confidence and have changed the way I see my working life. I now see more opportunities and feel a lot more pro-active and excited about the options for my career (Participant 16, interview)
• [The program] gave me a sense that I could control the direction of my business – that I needed to be clear on where I wanted to go and break it down into manageable steps, but also to think of all the associated things eg speaking at conferences and how that could help.. the main goal (Participant 10, interview)
• *To be honest, not really* (Participant 11, interview)
Ineffective/partly effective
• No [no long-term benefits] (Participant 15, interview)
• No [participation in the program did not contribute to my business's long-term stability, viability or growth] (Participant 15, interview)
• No [no long-term benefits] (Participant 9, interview)

Comparative data analysis/interpretation

While the data that provided the basis for the comparative analysis was limited, it nonetheless provided sufficient indicators of long-term benefits for those mentees involved in effective and ineffective partnerships to enable some initial speculative propositions to be made about the link between effectiveness and long-term benefit. While mentees involved in effective partnerships described benefits as extending beyond the program, changing their life, providing long-term change to abilities and approach and providing a sense of control in the long-term, mentees involved in ineffective mentoring partnerships indicated no long-term benefits. The comment of Participant 11 italicised in Table 90 above suggests that while there is a link, long-term benefits may not occur even for those involved in effective mentoring partnerships. This supports the

proposition that there is often, though not necessarily, a link between effectiveness and long-term benefits.

8.7.5.4.4 Meeting mentees' needs

In line with the program goal of meeting the mentees' needs, the qualitative inquiry explored whether or not the mentees' needs were met in the case of those involved in effective compared with ineffective mentoring partnerships.

This section will consider the following question:

- To what extent did the program meet the needs of the mentees?

Table 91 – Meeting mentees' needs

Very effective/effective
- The last few months of discussions with you have made a huge impact on my business and on my life. I can see opportunities where previously I didn't and feel that I can tackle any challenges and succeed (Participant 3, email to mentor, July 2002)   - I felt encouraged, enthusiastic and positive and I also addressed some of the issues about my business that I had been avoiding. Many things I didn't realise I was concerned about, became minor problems, easily solved. I developed strategies and practices that helped me in time management and business practices (Participant 16, interview)   - Change in attitude, more confidence, more relaxed, better time management, felt less isolated, greater faith in my ability to analyse and solve problems for myself (Participant 16, interview)   - I had entrenched patterns of thinking and didn't realise that I felt overwhelmed by the administrative and time-management issues. When solutions were proposed by my mentor, I felt renewed confidence, enthusiasm and energy (Participant 16, interview)
Ineffective/partly effective
- Waste of time and effort (Participant 9, interview)   - I had a specific set of issues I wanted to be addressed and the mentor wanted to follow his .. plan of action (Participant 9, interview)   - The [mentoring] relationship would have been strengthened if [the] mentor was able to listen more and .. sought to understand .. the issues we were facing (Participant 15, interview)

Comparative data analysis/interpretation

A comparison of the quotational data for mentees involved in effective and ineffective partnerships provided some support for the proposition that there was a link between effectiveness and meeting the needs of mentees.

The mentees involved in effective mentoring partnerships described the ways in which their needs were met in varied but very positive terms such as addressing issues which were being avoided, developing new strategies to deal with problems identified, finding solutions to difficulties, breaking entrenched patterns of thinking and seeing new opportunities. In contrast, mentees involved in ineffective partnerships described the mentor as not listening, not seeking to understand, not addressing their issues and wasting their time and effort.

As was the case with learning outcomes, the contrasting data would suggest that meeting the mentees' needs was fundamentally linked to effectiveness.

8.7.5.4.5 Unanticipated outcomes

Scriven (1993) suggests that side-effects should be sought and evaluated as "serious or trivial, fatal or flawed." He points out that if a program is evaluated only in terms of its program goals, the value or otherwise of side-effects is implicitly valued at zero which is unsatisfactory.

If program goals suggest that certain things ought to happen or are expected to happen and they don't, or conversely, if program goals suggest that certain things occurred which were not anticipated, what are the implications?

Table 92 - Unanticipated outcomes

Very effective/effective
• I did not expect to affect career choice and direction but it was a positive outcome (Participant 13, interview)   • Greater confidence and a different view of my working life (Participant 16, interview)   • Understanding the limitations in my knowledge and experience (Participant 20, interview)
Ineffective/partly effective
• .. to be able to work together in future (Participant 12, interview)

Comparative data analysis/interpretation

All of the "side effects" or unanticipated outcomes identified by mentees involved in both effective and ineffective partnerships were positive. They were therefore, in Scriven's terms, neither fatal to the program or participants, nor flawed.

The most significant unanticipated outcome evident in the quotational data was that identified under the Information quality dimension as an unintended consequence of the email facilitation messages. As discussed in section 8.7.2.2, the messages sometimes had the effect of making mentees feel they were not completing the program "properly". While not fatal, this unanticipated difficulty should be addressed by the host organisation because of its potential to impact on effectiveness for mentees.

8.7.5.5 Summary/conclusion - Impact

The dimension of Impact is defined as the individual benefits or outcomes arising out of the structured e-mentoring program. The dimension of Impact was considered with reference to (1) evidence of learning (2) obstacles to benefit, and (3) benefits or outcomes including (3a) general benefits, (3b) long-term benefits, (3c) meeting mentees' needs and (3d) unanticipated outcomes.

As discussed in Chapter 6, this program was intended to provide a computer-based learning framework for business, personal and career development.

The content and program structure were intended to support the diverse forms of learning required by those in small business, and to allow for, in Devins and Gold's (2000) terms, unpredictable learning pathways. Because this is exploratory work in the theory-building stage, the indicators of "evidence of learning", "meeting mentees' needs" and "general benefits" were broad to accommodate the diverse and unpredictable forms of learning, the range of needs being met (or not) and general benefits (or lack thereof). The approach ensured that interviewees were specifically asked to identify unexpected as well as anticipated benefits (Patton 1986), and to identify possible evolving (Patton 1986) and long-term benefits (Clutterbuck 2003). This approach yielded rich and complex data which provided some initial support for identifying some patterns in responses and proposing some initial linkages between Impact and effectiveness.

The description of personal and economic impacts (further to Galletta & Lederer 1989) and career and psychosocial benefits (Kram 1980) were not disconfirmed but in the context of this evaluation did not provide a particularly useful means of interpreting the quotational data. It is possible to speculate that more advanced evaluation research that builds on the exploratory work undertaken in this study may describe the nature of impacts with greater specificity, and hence be more useful.

The preceding comparative analyses provided evidence in support of the proposition that those involved in effective partnerships engaged with the program as a learning framework, and reported benefits in the form of positive learning outcomes, wideranging business and other benefits, long-term benefits, their needs being met and anticipated as well as unexpected outcomes achieved. In contrast, those involved in ineffective mentoring partnerships described more limited, if any, positive learning outcomes, fewer and less compelling benefits or outcomes, and reported that their needs were not met.

The quotational data therefore provides support for the proposition that there is a link between Impact and effectiveness, to support the reasonable correlation found in the quantitative analysis in Chapter 7, and validates the link between Impact and effectiveness in the context of structured e-mentoring in the cases observed.

There is scope for further research to establish for whom and how Impact in terms of learning outcomes, benefit and meeting the needs of mentees is related to effectiveness.

8.8 Conclusion

As set out in section 8.3, a limitation which compromised the qualitative analysis of the examination of actual practice was that indicators of both effectiveness and ineffectiveness were present for most of the interviewees. The experiences of mentees could simultaneously and/or over time move from effective to ineffective and this was difficult to reflect in this study. While sampling technique for the qualitative study attempted to accommodate this by picking deviant cases at either end of the effectiveness continuum, there were also many cases observed which were "in the middle". In some cases the instances of both effective and ineffective indicators in the one participant's self-report were analysed as possible anomalies which sometimes suggested the possibility of the need to refine categories or methodology, but the difficulties and limitations with classification in these terms also reflects the complexity of the perceptions and logics of participants that the contingency framework is attempting to abstract. The limitation of utilising this simplified binary taxonomy is that it provides a taxonomy or interpretive taxonomy on the data which, while useful in providing a basis for a comparative approach, imposes an order on the data which does not necessarily reflect the complexity of the subjective experience of the participants.

In spite of this limitation, and considering the diversity of the sample, the patterns in the responses of individuals identified in the quotational data for effective and ineffective mentoring partnerships under each of the DeLone and McLean dimensions were significant. The interpretations of linkages between effectiveness and each of the dimensions are confirmable and credible.

The qualitative data provided a basis for supporting the proposition that the DeLone and McLean (1992) dimensions are in Stufflebeam's (1999) terms "meaningful categories that are sufficient to document, illuminate and respond to the evaluation questions" (under A9 Analysis of qualitative information).

The difficulty of isolating contextual influences was everpresent in this analysis, confirming that applying the framework in the research setting - one of the key difficulties identified by the Delphi panel in Chapter 4 - is indeed problematic. It is proposed that the difficulties in relation to usefully applying Phase 2 of the framework in the research setting however reflects the broader issue of the difficulties of identifying the impact of contextual factors in this research field, rather than being a limitation specific to this framework. The framework foregrounds contextual factors as influencing effectiveness while not being prescriptive or providing a direct solution to the difficulty of isolating influence or causality in the business research setting.

Further to the quantitative data analysis undertaken in Chapter 7, the qualitative data confirmed with some qualification that, in the cases observed, the DeLone and McLean dimensions held with the exception of that between Use and User satisfaction for which there was insufficient data to support or disconfirm the relationship.

Carlile and Christensen (2005) suggest that, "[m]uch like theory, the only way we can judge the value of data is by their usefulness in helping us understand how the world works, identifying categories .. and surfacing anomalies" (p.19). Along similar lines, Lincoln and Guba (1989) suggest that it is the "responsibility of the evaluator .. to provide a context and a methodology (the hermeneutic/dialectic) through which different constructions, and different claims, concerns, and issues, can be understood, critiqued, and taken into account" (p.72).

While it is agreed that "the process of getting the categories right is an ever-challenging but always important step in theory-building (Carlile & Christensen 2005), it is proposed that the application of the contingency framework integrating the DeLone and McLean dimensions, provided a taxonomy and interpretive tool which has, in this examination of actual practice, provided a basis for a valid interpretation of factors influencing effectiveness.

The open questions yielded data which could be accommodated by the framework and while there were instances in which quotational data could be classified under more than one dimension, this is regarded as consistent with the interdependent nature of the dimensions rather than being a basis for challenging the validity of the model and framework.

The qualitative study enabled inferences to be drawn about the determinants of effective structured e-mentoring. The use of the term "determinant" is qualified to denote influence or linkage rather than direct causality in this context. Linkages between each of the factors used to operationalise the DeLone and McLean dimensions were empirically established. In the cases observed, the quality of the mentee's relationship with the mentor, the diversity of supports and advice, the use of the mentor as a sounding board, the quality of the match and program structure, the creation of individualised learning pathways, the nature, quality and frequency of interaction, email delivery, perceived value, learning and benefits including long-term and unexpected benefits were each established as being positively linked to effectiveness. Because of the contingent nature of these linkages, and their specificity to the context in which they occurred, making generalisations, in Clutterbuck's (2003) terms, about "classes of mentoring phenomena" is problematic. However the interpretation and inferences drawn from the data can be considered "context-bound extrapolations" as set out by Patton (1990) in section 2.4.3.1 (p.491).

This examination of actual practice provided a basis for making credible inferences about the relationship between each of the dimensions and effectiveness. While a range of research difficulties which characterise the informing disciplinary areas leave the generalisability of this examination of actual practice open to challenge, the qualitative examination of e-mentoring practice nonetheless provided some preliminary insights into not only the value of the respecified DeLone and McLean dimensions as a means of describing and classifying data, but also as a basis for making an interpretation and context-bound extrapolations in relation to the possible determinants of effective structured e-mentoring. The proposed contingency framework was demonstrated to be useful as a construction through which claims, concerns and issues around effectiveness could be explored and understood in an actual research setting.

Part IV - Conclusions and implications

Part IV will discuss the findings of the examination of e-mentoring practice in relation to the research questions, present the final specification of the framework and the DeLone and McLean model within that framework, draw conclusions about the research problem, and discuss the implications of the study for structured e-mentoring effectiveness evaluation research in the small business context.

9 Conclusions and implications

9.1 Introduction

This chapter will set out the value and limitations of the proposed contingency framework according to the positions developed in the thesis, summarise the ways in which the model has been respecified, discuss the implications of the findings for theory and practice, suggest areas in which there is scope for further research, and, based on the research undertaken in this study in relation to each of the research questions, present conclusions about the research problem. The term "phase" is used throughout this chapter to refer to the five phases which comprise the framework set out in its final form in Tables 96 and Figure 23.

9.2 Conclusions about research questions and sub-questions

This study was driven by the following research questions:

- In what ways does the framework provide a coherent and sufficient taxonomy for the metrics used in the informing disciplinary areas?
- How does the framework assist with selecting an evaluation research strategy?
- How does the DeLone and McLean taxonomy provide a basis for developing quantitative and qualitative evaluation instruments?
- How does integrating the DeLone and McLean taxonomy within the framework assist with classifying and interpreting data when applied in the research setting?
- In what ways does the framework provide solutions to the research challenges inherited by the field?

Chapter 1 outlined the central proposition of this thesis which was that by contributing in each of the ways detailed in these questions, the proposed nexus between the DeLone and McLean IS success model and the evaluation of structured e-mentoring was confirmed as useful.

Section 9.2 and 9.3 will consider the ways in which each of these questions were addressed and whether or not in each instance there was support for the proposed framework, incorporating the DeLone and McLean taxonomy, assisting with evaluating effectiveness.

9.2.1 In what ways did the framework provide a coherent and sufficient taxonomy for the metrics used in the informing disciplinary areas?

The review of effectiveness studies considered how effectiveness in the informing disciplinary areas had been evaluated to date. The review was based on a search of the literature of the informing disciplinary areas for examples of studies in which an evaluation of effectiveness in some form was central to the purpose of the study – effectiveness, in whatever form comprised, in DeLone and McLean's terms, "the elusive dependent variable". In coming to conclusions about the first research question, this section addresses the following sub-questions:

- Did the proposed framework provide a coherent taxonomy for the metrics used in the informing disciplinary areas?

- Did the DeLone and McLean model take sufficient account of the shared research challenges and contextual contingencies upon which effectiveness is contingent?

- Having undertaken this initial exercise, were there grounds to justify further consideration of the framework as a useful framework for evaluating effectiveness?

9.2.1.1 Coherence

DeLone and McLean (2003) state that "[t]he primary purpose of the original DeLone and McLean paper was to synthesize previous research involving IS success into a more coherent body of knowledge .." (p.10). In the same way, the review of the selection of effectiveness studies from the informing disciplinary areas set out in Chapter 3 was intended to provide a basis for developing an integrated and coherent taxonomy for the metrics used to evaluate effectiveness across the parent disciplines. In Phase 1, the framework accommodated the metrics used across the informing disciplinary areas under the DeLone and McLean dimensions, it integrated the taxonomy of Kram in her seminal work on mentoring (Kram 1980 et al.) in describing career and psychosocial benefits, incorporated Galletta and Lederer's distinction between economic and personal benefits (Galletta & Lederer 1989), and included indicators of effectiveness and ineffectiveness further to the work of Cameron (Cameron 1984 cited in Myers et al. 1998). The framework incorporated both qualitative and quantitative measures in line with the conclusions drawn from the literature of the importance of considering non-positivist approaches to studying business phenomena (Curran & Storey 1998, Hytti & Kuopusjarvi 2004 et al.). Phase 2 drew on the work of Myers et al. (1998) and Ballantine et al. (1998) to consider context an integral part of evaluating effectiveness. Phase 3 attempted to integrate the broad range of research challenges evident in the literature into the framework. It attempted to provide coherence around the cross-disciplinary methodological issues identified by drawing on the work of Buelens et al. (2005 p.5) who discussed the ways methodological decisions would impact on the internal, external and construct validity of studies in small business research. In

doing so, the framework codified and foregrounded the research challenges of causality, generalisability and comparability. The review of the metrics, contextual issues and methodologies used in the review of the selection of existing research studies in the informing disciplinary areas provided for a process of integrating metrics, context and methodologies used in the 31 studies into a single framework, and in doing so, synthesised, systematised and abstracted the methodological issues and contextual variables observed in the studies. In these ways, it is proposed that the review of the literature, the selection of studies from the informing disciplinary areas and the Delphi panel review provided support for the claim that the contingency framework developed was a justified, integrated and coherent basis for considering structured e-mentoring effectiveness in the small business context.

9.2.1.2 Sufficiency of the contingency framework

Having established the basis for the claim that the contingency framework provided a coherent basis for evaluating structured e-mentoring in the small business context, it is necessary to consider whether or not the proposed framework was sufficient as a basis for evaluation. DeLone and McLean (2003) acknowledge in their 2003 revisiting of the model that contextual factors must be taken into account in evaluating effectiveness suggesting that "the selection of IS success dimensions and measures … [is] contingent on .. objectives and context" (p.27). However, they do not attempt to incorporate context into their model of IS success. Ballantine et al. (1998) suggest that the DeLone and McLean model may be "insufficiently complete" (p.48) and in response respecified their framework by "[drawing] a broader boundary" around the IS system to include context. This, they suggested, made the DeLone and McLean model more sufficiently complete.

At the conclusion of the review process outlined in Chapter 3, the DeLone and McLean model was respecified for the structured e-mentoring in the small business context to include Phases 2 and 3 thus accounting for the contextual variables upon which effectiveness was found to be contingent across the informing disciplinary areas, and the common research challenges evident across the parent disciplines arising out of the literature review and review of the selection of studies.

The proposed framework integrates the DeLone and McLean model within a contingency framework. The framework has been confirmed as drawing a broader boundary around e-mentoring effectiveness evaluation. Because it integrates contextual factors and the research challenges upon which effectiveness evaluation research is contingent, the framework is conceptually more sufficient than the stand-alone DeLone and McLean model of IS success in the structured e-mentoring context.

9.2.1.3 Variability

Having abstracted the basis for considering the contingent nature of effectiveness, the contingency framework then provided a congruent and sound basis for exploring and accounting for variability in effectiveness outcomes.

As stated in Chapter 1, Mitroff says: "What makes something scientific is not the absence of variability but rather .. our .. ability to study why the results vary" (Mitroff cited in Wood-Harper 1984 p.173). The examination of actual practice confirmed that the proposed contingency framework provided a useful basis for undertaking an initial exploration of why effectiveness and outcomes vary. The examination of actual practice demonstrated how the contingency framework accommodated, and provided a useful tool for contributing to an understanding of, variability in outcomes.

Whilst the difficulties of applying the framework in the research setting were acknowledged in Chapters 7 and 8, there was support for the proposition that the framework abstracted not only the contingent nature of effectiveness but also provided a tool for, in Mitroff's terms, exploring why, how and for whom effectiveness outcomes vary in the face of the heterogeneity of the target group, the multitude of contextual factors which influence effectiveness and the research difficulties which leave claims around effectiveness open to challenge.

9.2.1.4 Commonality and the "originary modes"

The review of the literature and a selection of effectiveness studies identified the synergies and intersections across the informing disciplinary areas. The framework drew together and abstracted the commonality in metrics, methodologies and contextual factors arising in effectiveness evaluation across the informing disciplinary areas. In Chapter 1, Hughes and Atwell (2003) and Childress (2000) suggest that the relationship between evaluation and practice in the "originary modes" and the "successor" disciplines in the cases of e-therapy and e-learning were not established. It is proposed that this study provides empirical data to make explicit some of the ways the related disciplinary areas inform structured e-mentoring effectiveness evaluation in the small business context. In Childress's terms, the contingency framework establishes a relationship between the originary modes of effectiveness evaluation in the informing disciplinary areas with the successor discipline of structured e-mentoring effectiveness evaluation for self-employed contractors as a segment of small business.

9.2.1.5 Limitations of contingency theory

The limitations of contingency theory are twofold. The first is the difficulty it creates in determining causal linkages between effectiveness and the antecedent factors or variables (Reyes 2000). In this sense, placing the DeLone and McLean model as a variance model within a contingency framework is internally inconsistent. While effectiveness evaluation using the DeLone and McLean model can provide a basis for making claims of causal connection, in the context of contingency theory, it is difficult to establish causal links between effectiveness and the "independent variables" or influences on effectiveness because of its foundation in the acceptance of the multiplicity of contextual variables upon which effectiveness is contingent. The second limitation follows from the first - the variables selected to represent a construct, or contextual variables selected for control, will inevitably comprise only a limited selection of the variables or factors upon which effectiveness is contingent. In DeLone and McLean's terms, not only is the dependent variable elusive but, in terms of contingency theory, the representation of the effectiveness construct will always by limited by the contingential nature of linkages between effectiveness and the DeLone and McLean dimensions, and compromised by the failure to account for all the independent variables which may influence effectiveness.

The difficulties created by grounding the proposed framework in contingency theory are recognised; the concomitant contingent nature of effectiveness and the difficulty of "proving" causality is accepted. However, it is claimed that this study demonstrates that, depending on the methodologies adopted, it is nonetheless possible to make credible extrapolations about factors linked to effectiveness. This thesis takes the view that the proposed framework, premised on contingency theory, reflects the complexity of the reality the framework is attempting to abstract, and the necessarily context-bound nature of knowledge around effectiveness. The limitations are accepted and regarded as facilitating rather than compromising exploratory research at the theory-building stage of this emerging discipline.

9.2.1.6 Summary

In summary, the process of reviewing the literature and effectiveness studies from the informing disciplinary areas provided a basis for respecifying the DeLone and McLean model within the contingency framework. This, in turn, provided a basis for understanding the measurement, contextual and methodological commonalities across the informing disciplinary areas, for accommodating the contingent nature of effectiveness, exploring variability in effectiveness, and the ways in which the historical and theoretical frameworks of the "originary modes" informed practice and evaluation.

Having undertaken this initial exercise, and considering the value and limitations of the framework, there was evidence to suggest that there were sufficient grounds to justify further consideration of the framework as a possible means of evaluating effectiveness. The framework as respecified provided a basis upon which to continue the refining and validation process which comprised Chapters 4, 7 and 8.

9.2.2 How did the framework assist with selecting an evaluation research strategy?

A member of the expert panel suggested that to be useful to practitioners, the framework should be accompanied by guidelines in some form. To this end, framework guidelines highlighting issues arising out of the literature review and an evaluation process summary drawing primarily on the work of Patton (1986), Owen and Rogers (1999) and Stufflebeam (1999) were developed to make the proposed framework clearer to those who might use it to guide their evaluation research. The framework guidelines are attached to this thesis as Appendix 3 and the evaluation process summary is detailed in Chapter 4.

In view of the respecification of the framework further to the input of experts from the informing disciplinary areas in the Delphi study reported in Chapter 4, the question "Does the framework assist with selecting an evaluation research strategy?" has therefore been revised as follows: "Do the framework, the framework guidelines and the evaluation process summary assist with selecting an evaluation research strategy?"

This section will consider how the framework, framework guidelines and evaluation process summary informed the selection of a research strategy for the examination of actual practice.

The following sub-questions will be addressed:

- Did the framework provide a non-universalising, non-situation-specific basis for designing a situationally-response effectiveness evaluation mindful of the almost contradictory imperative to explore individualised outcomes and make generalisations in the exploratory phase of the emergence of the research discipline of structured e-mentoring effectiveness evaluation?
- Did it provide a basis for operationalising the construct with reference to the metrics used in studies in the informing disciplinary areas (Phase 1)?
- Did the contextual and methodological phases (Phases 2 and 3 respectively) assist with selecting a research strategy?

- Having undertaken this exercise, were there grounds to justify further consideration of the framework as a possible means of evaluating effectiveness because it supported application in the research setting?

9.2.2.1 A non-prescriptive basis for designing an evaluation strategy?

Patton observed that designing an evaluation is as much art as science and quoted Cronbach who said:"[d]eveloping an evaluation is an exercise of the dramatic imagination" (Cronbach cited in Patton 1990 p.13).

The respecification of the DeLone and McLean model within a contingency framework draws directly on the work of Myers et al. (1998) in which they suggest that their IS Assessment Selection Model "neither dictates a universal solution ... nor advocates a situation-specific view" (p.10). "Contingency theories," they suggest, "propose that different strategies are appropriate for different settings. They differ from the universal view by emphasising 'it all depends' and they differ from the situation-specific view by asserting that there are classes of settings for which strategic generalizations can be made" (p.110). The assertion that generalisations are possible concords with Curran and Storey's view that while "the logics underlying small business owner behaviour are often highly variable, complex and not infrequently unstable over time ... it is also the case that there is still often sufficient consistency in responses to make generalizations possible" (2000 p.18).

The examination of actual practice confirmed that the framework supported, in Cronbach's terms, appropriate evaluation design, and the development of, in Myers et al.'s terms, a situation-specific evaluation. This in turn provided a basis for, in Myers et al.'s terms, a basis for generalisation around classes of settings, or in Curran and Storey's terms, contingent context-bound extrapolations around effectiveness and the DeLone and McLean dimensions as evidenced in Chapters 7 and 8.

9.2.2.2 Methodological issues and challenges (application of Phase 3 of the contingency framework and the evaluation process summary in selecting a research strategy)

Phase 3 of the contingency framework and the evaluation process summary supported the task of selecting a research strategy for the examination of actual practice. The process is summarised in numbered point form below. The numbers correspond to the numbers in brackets noted in Phase 3 on the final respecification of the framework set out in section 9.4.2 of this chapter. While the process was necessarily an iterative one, it can be represented in temporal and simplified terms as follows:

1. The need for a summative approach, identification and ranking of key stakeholders and subsequently the level of the evaluation provided a basis for establishing the evaluation purpose. Phase 3 and the guidelines informed this process;

2. Determination of the important issues around methodology was then undertaken. The decision to adopt non-experimental methods, alongside the nature of the time-frame and type of sampling which would best support these methods followed. Phase 3 and the guidelines informed this process. The codification of research challenges and choices under the categories of Internal, External and Construct validity provided for reflexivity about the impact of these choices on the validity of the evaluation at each point of selecting the research strategy. The categories highlighted the potential for methodological decisions to impact claims around generalisability, causality and comparability. This process occurred in line with the observation of Buelens et al. who suggested that "there is often a trade-off between internal and external validity when choosing a type of research strategy;

3. Phase 3 and the guidelines supported consideration of issues around the nature of the data required to support effectiveness evaluation in this context. A combined qualitative/quantitative approach was selected and, in considering evaluative referent, a comparative method contrasting effective and ineffective partnerships was adopted;

4. Issues of data quality such as the representativeness of samples available, the number of available data sources, likely sample size, likely response rate and the predominance of self-report data were considered. Issues of rigour arising out of the methodologies selected and data available such as self- and administrative selection, response bias, the problems with the study being an internal evaluation, and the difficulties with precise definition of constructs under examination were then considered with reference to Phases 2 and 3 of the framework.

5. Consideration of more specific issues of inclusion of measures of ineffectiveness as well as effectiveness, the nature of the measures (ipsative, normative or against external criteria) then occurred and informed the critical selection of measures set out under Phase 1 (refer also to next section on the value of the framework for operationalising the effectiveness construct).

The evaluation process summary provided guidance on the evaluation process in temporal terms. This guidance assisted with ensuring a systematic approach was used (refer to Patton's definition of evaluation research in Chapter 5) to develop the research strategy.

In accordance with the process summarised above, the contingency framework, guidelines and the evaluation process summary supported the selection of a research strategy in this setting.

9.2.2.3 A basis for operationalising the effectiveness construct (application of Phase 1 of the contingency framework in selecting a research strategy)?

DeLone and McLean suggest that their model of IS success is a framework for conceptualising and operationalising IS success. They state that: "Researchers should systematically combine individual measures from the IS categories .." (DeLone and McLean 1992 p.87-88). Phase 1 of the respecified framework, incorporating DeLone and McLean model, provided a comprehensive basis upon which to operationalise the effectiveness construct in the context of structured e-mentoring for small business. Measures were selected from across the dimensions set out in Phase 1 on the basis of the understanding of evaluation purpose and the kind of measures and data appropriate to the methodologies selected for the evaluation under Phase 3. The taxonomy also provided a means of identifying the limitations of the measures selected. As an example, the examination of actual practice did not include, in Galletta and Lederer's terms, any economic as opposed to personal indicators of effectiveness, and the study can be challenged on this basis.

The value of operationalising the effectiveness construct and selecting measures in this way is that it necessarily draws on research from the informing disciplinary areas while providing a basis for making "generalisations" or extrapolations in the new context. The extent to which the operationalisation of the effectiveness construct with reference to Phase 1 was useful is further considered under section 9.2.4 in considering the question of whether or not the framework assisted with classifying and interpreting data when applied in the research setting.

9.2.2.4 Limitations - implied temporal sequence

A limitation of the framework is that the phases imply a temporal sequence from Phase 1 through to Phase 5 and this was certainly not the case when the framework was applied in the research setting. As stated in section 9.2.2.2, in developing the evaluation, the phases were not referred to sequentially; rather, reference to the framework was necessarily iterative and marked by visiting and revisiting each of the phases both in and out of sequence. The limitation of the framework in this sense is that it is an abstraction rather than a direct representation of the evaluation process. While this limitation is acknowledged, it is not seen as compromising the credibility or usefulness of the framework, the evaluation process summary or the framework guidelines. Rather it confirms Cronbach's approach (refer 9.2.2.1) to evaluation design which suggests that the process is as much art as science; the examination of actual practice confirmed that the framework facilitated evaluation design in this context in these terms.

9.2.2.5 Context (application of Phase 2 of the contingency framework in selecting a research strategy)

The examination of actual practice did not investigate, make findings or control for the contextual influences set out in Phase 2 of the contingency framework. The "generalisations" or extrapolations arising out of the examination of actual practice were not explicitly tied to particular contextual factors and the impact of particular contextual variables on effectiveness was not investigated. In Carlile and Christensen's terms, the research area requires "care to figure out the circumstances in which .. statement[s] of causality would lead to success, and when it would not" (Carlile & Christensen 2005 p.7). There is a need for further research to refine the linkages proposed in this study to determine the contextual factors which may influence effectiveness. While this study confirmed that there are benefits of e-mentoring, there is a need to refine, in Murphy's terms (2004), how and for whom the potential benefits are being realised.

This study did not provide evidence to support the proposition that representation of contextual variables in Phase 2 assisted with defining the contextual influences upon which effectiveness is contingent. The suggestion by Panel Expert Number 1 in Chapter 4 that "[t]he framework will be compromised when put into practice given the practical challenges of doing research in SME's" was confirmed in this respect. The heterogeneity of the population under consideration, the difficulty of controlling for extraneous variables, the difficulty of obtaining sufficient sample sizes to ensure representativeness in some form contributed to limiting the utility of Phase 2 of the framework.

This phase of the framework was however useful in two areas. Firstly, it provided a comprehensive basis upon which to guide the selection and description of the samples in the qualitative and quantitative parts of the evaluation. Secondly, it provided a justified and comprehensive outline of the factors which constituted threats to the validity and credibility of the extrapolations made in relation to effectiveness in Chapters 7 and 8. These contributions were both modest but important in establishing the credibility of the evaluation in relation to the influence of contextual factors on effectiveness.

9.2.2.6 Summary

The application of the framework demonstrated that the DeLone and McLean dimensions within the framework supported the operationalisation of the effectiveness construct and selection of measures across the dimensions set out in Phase 1. The application of Phase 2 was problematic given the range of contextual factors which potentially impact e-mentoring effectiveness in this research context. Phase 3 was instrumental in supporting the development

of the research strategy and considering the critical issues of causality, generalisability and comparability with reference to internal, external and construct validity. The framework guidelines which were developed out of the literature review and effectiveness evaluation studies in the informing disciplinary areas highlighted and explained research challenges to be considered in selecting the research strategy and flagged the potential for these decisions to impact on the validity of inferences drawn from an evaluation study. The evaluation process summary provided a reference tool for undertaking the evaluation. This tool was actively referred to while developing the evaluation research strategy in the examination of actual practice. The process of selecting a research strategy with reference to, in particular, Phases 1 and 3 of the contingency framework, the framework guidelines and the evaluation process summary provided further validation of the utility of the framework. On the grounds outlined above, the framework was further justified as a non-prescriptive, situationally-responsive and useful basis for selecting a research strategy.

9.2.3 How did the DeLone and McLean model provide a basis for developing evaluation instruments?

DeLone and McLean suggest that "[r]esearchers should systematically combine individual measures from the IS categories to create a comprehensive measurement instrument" (DeLone & McLean 1992 pp.87-88). The respecified DeLone and McLean model was used as a taxonomy for two evaluation instruments – one a survey questionnaire containing predominantly closed questions and the other a semi-structured interview containing predominantly open questions. This section will consider the value and limitations of the measurement instruments which were applied in the research setting.

Specifically, this discussion will address the following questions:

- Did the DeLone and McLean model support the development of measurement instruments which provided for methods and data triangulation?
- Was there any support for the reliability and/or validity of the measurement instruments?
- Did the measurement instruments behave as expected?
- Do the DeLone and McLean dimensions and/or the framework have application beyond this examination of actual practice?
- Did the development of measurement instruments used in the examination of actual practice provide grounds to justify the application of the respecified DeLone and McLean dimensions as a useful taxonomy for evaluating structured e-mentoring effectiveness?

9.2.3.1 Data and methods triangulation

Curran and Storey state that an advantage of data triangulation "is that several kinds of data help produce a more complete analysis" (Curran & Storey 2000 p.16). Likewise methods triangulation or the use of multiple methods to study a single problem according to Denzin "is a powerful solution to the problem of relying too much on any single data source or method, thereby undermining the validity and credibility of findings because of the weaknesses of any single method. Using triangulation is recognition that the researcher needs to be open to more than one way of looking at things" (Denzin 1978). Data triangulation has also been described as the process of checking inferences drawn from one set of data sources by collecting data from other sources (Trauth & O'Connor 1991).

The two measurement instruments - survey questionnaire and semi-structured interview - were developed to provide for a combination of quantitative measures of effectiveness and qualitative data. The measurement instruments were supplemented by data from additional sources including discussions with mentees and mentors, email exchanges between the host and participants, and between mentees and mentors made available to the researcher.

Considering effectiveness across the five interdependent DeLone and McLean dimensions also served to embed data triangulation into the evaluation method. As discussed in section 1.12.1.4, Storey suggests in relation to small business program evaluation that the use of "happy sheets" or evaluation based solely on user satisfaction is inadequate. Myers et al. (1998) and Gatian (1994 cited in Myers et al. 1998) similarly suggest in relation to IS effectiveness research that user satisfaction as a stand-alone measure is inadequate as a means of evaluating effectiveness. This framework accommodates these views in that it codifies the evaluation of effectiveness with reference to data around the five DeLone and McLean dimensions rather than any single dimension or measure.

The examination of actual practice utilised qualitative and quantitative data across the DeLone and McLean dimensions to help produce a more complete analysis than would be produced using qualitative or quantitative methods alone, or referring to a single dimension of effectiveness. The supplementing of quantitative with qualitative data was, in Denzin's terms, shown to be a powerful solution to the problems created by relying exclusively on quantitative data, and therefore assisted with producing valid and credible findings. Most critically, for the purposes of testing the DeLone and McLean taxonomy in the structured e-mentoring context, the data and methods triangulation provided by the development of the qualitative and quantitative measurement instruments allowed for the checking of the inferences drawn from one set of data with data collected using a mix of data sources, methods and dimensions. In

these ways, utilising the DeLone and McLean model provided for data and methods triangulation, and therefore, in Denzin's terms, for the opportunity to look at the diversity and complexity of the effectiveness data in "more than one way".

9.2.3.2 Reliability and validity of the measurement instruments

9.2.3.2.1 Quantitative

The decision was made to develop and test a new and unvalidated measurement instrument for the examination of actual practice rather than measures already validated in the context of the informing disciplinary areas. This decision impacted on the validity and reliability of the findings about effectiveness but was central to providing evidence to support or disconfirm the value of the framework in the new context. Because of the size of the available sample, it was not possible to statistically establish whether or not the instrument had validity and reliability. The limited basis upon which the statistical validity and reliability of the instrument was assessed, as set out in Chapter 7, is acknowledged. There is clearly a need for testing and re-testing of quantitative measures of effectiveness in different contexts with larger samples. There was however empirical support for the proposition that the contingency framework and respecified DeLone and McLean dimensions within the framework *did* provide a basis for the development of a quantitative measurement instrument for which a limited level of reliability and validity was found.

Calculation of Cronbach alpha and the correlational analysis conducted and presented in Chapter 7 provided initial empirical support for the reliability and validity of the items selected from the survey questionnaire as measures of effectiveness. These measures were comprised of indicators across the DeLone and McLean dimensions. While there were instances of disparity between the effectiveness scores and the judgements of mentors and the program host used to corroborate the scores, these anomalies elucidated rather than threatened the validity and reliability of the quantitative measurement instrument. Significantly, there were indications that the dimension of System quality, defined as the nature and quality of the mentee/mentor partnership, was underrepresented by using this method of data collection confirming the need for more comprehensive data than quantitative approaches alone could provide. This confirmed the views indicated in the literature review (Curran & Storey 1998, Hytti & Kuopusjarvi 2004 et al.) and the expert panel: "there needs to be space for ipsative comments about the mentee's own understandings in their own terms" (Panel expert number 4, Chapter 4).

The limitations of the techniques used to test the interdependent relationships between effectiveness and the DeLone and McLean dimensions are acknowledged. Nonetheless, the application of the quantitative measurement instrument provided a basis for some initial

empirical support for the propositions that (1) the relationships between effectiveness and the dimensions held in the cases observed in this new context, (2) the DeLone and McLean taxonomy accommodated the data arising from the quantitative measurement instrument, (3) there were positive linkages between each of the dimensions and effectiveness, and (4) there was an additional linkage between Information quality and System quality in the context in which the instrument was applied.

9.2.3.2.2 Qualitative

The qualitative study provided a basis for making some preliminary extrapolations around each of the dimensions used to operationalise the effectiveness construct and for making some credible inferences about the relationship between each of the indicators used to operationalise the dimensions with effectiveness.

In doing so, the qualitative study was valuable in further validating the linkages indicated with reference to DeLone and McLean dimensions for which the quantitative analysis provided initial support. Interviews provided a means of collecting data which was rich and reflected the complexity of the motivations and understandings of the mentees. The open questions comprising the semi-structured interviews used in Chapter 8 yielded data which was usefully accommodated by the framework and, while there were instances in which quotational data could be classified under more than one dimension, this was regarded as consistent with the interdependent nature of the dimensions rather than being a basis for challenging the validity of the model and framework. Curran and Blackburn suggest that in qualitative research "[t]he validity of .. interpretations is established not on any statistical adequacy ... but on revealing the actors logics and the situational constraints influencing their attitudes and behaviour" (Curran & Blackburn 2001 p.18). Validity is in these terms a characteristic not of the instrument itself, but of the inferences and interpretation drawn from the data (Messick 1989 discussed in Chapter 5). In these terms, it is proposed that the interpretation and extrapolations provided were credibly and validly drawn from, and substantiated by, the qualitative data presented in Chapter 8.

9.2.3.3 Previous research findings – are they borne out by the data and findings arising from this study?

As discussed in Chapter 7, Brualdi suggests that a means of establishing validity of a measurement instrument is to ask the question "Does the test behave as one would expect a measure of the construct to behave and is the internal structure of the test consistent with what is known about the internal structure of the construct?"

This section will consider a small sample of the findings arising from the evaluation research in relation to previous research findings reported in the informing disciplinary areas. In this way, it will be possible to assess whether or not the test behaves as one would expect a measure of the effectiveness construct to behave and is consistent with what is known about the internal structure of the construct.

9.2.3.3.1 Use

The relationship between Use and effectiveness is widely acknowledged in the e-mentoring literature (Single & Single 2005, Friedman 2004 in Single & Single 2005, Bierema & Merriam 2002). Both the quantitative and qualitative data confirmed a positive correlation between Use and effectiveness and in this way demonstrates the relationship between the two dimensions which would be expected based on previous studies.

9.2.3.3.2 Impact

The study also conforms with previous research which confirms information and psychosocial benefits as outcomes of the mentoring process (Kram 1980 et al.). Most respondents were referred to further useful information and resources, and indicated that they experienced psychosocial support and reinforcement in the form of personal and/or professional development (refer 8.7.5.4.2). The examination of actual practice using the qualitative and quantitative measurement instruments confirmed that the mentoring process resulted in, in terms of benefits or impact, business skills development and learning for mentee participants. In these ways, the data arising out of the application of the contingency framework confirmed previous findings around the effectiveness of mentoring for small business (refer 1.6.2.1).

9.2.3.3.3 The nature and quality of the mentoring partnership – mentor as sounding board

The literature indicates that the value of impartiality is important as a benefit of structured e-mentoring. Rather than being mentored within an organisation which may lead to a reluctance to discuss personal or professional weaknesses, the literature indicates that participants in e-mentoring programs value the opportunity to discuss issues with a neutral party who is outside their existing network (Single & Single 2005). The data arising from the measurement instrument confirmed that most participants valued the opportunity to bounce ideas off a neutral third party and discussed issues which they would not normally do within their existing network. The data arising out of the test therefore yielded results which are consistent with previous research.

9.2.3.3.4 The nature and quality of the mentoring partnership - construct underrepresentation

As discussed in Chapter 7, Brualdi defines construct underrepresentation as occurring when "tasks which are measured in the assessment fail to include important dimensions or facets of the construct" (Brualdi 1999 p.3). The quantitative data arising from the test, while indicating a correlation between effectiveness and the quality of the mentee/mentor relationship, failed to measure this relationship with any degree of depth or complexity. This finding is consistent with the literature across the informing disciplinary areas which confirms the difficulty of quantifying benefits in mentoring relationships. In contrast, using a qualitative instrument provided comparatively rich data, a more adequate basis for representing this dimension of the mentoring relationship, and a more comprehensive basis for confirming the relationship between effectiveness and the nature and quality of the mentoring relationship.

9.2.3.3.5 User satisfaction

As set out in Chapter 3 (Table 6), Gatian (1994 cited in Myers, Kappelman & Prybutok 1998) found support for the relationship between user satisfaction and information systems effectiveness. Myers, Kappelman and Prybutok however point out that user satisfaction alone is an insufficient measure of effectiveness.

While the examination of actual practice found a concordance between the quantitative and qualitative data around user satisfaction, data collected around this dimension exclusively would be limited and significantly underrepresent the other important and interdependent dimensions of effectiveness. The examination of actual practice therefore confirmed Gatian and Myers et al.'s findings that user perceptions of value are legitimate only within a broader strategy to evaluate effectiveness.

9.2.3.3.6 Information quality - individualised or generic program content

While the importance of program structure to the effectiveness of structured e-mentoring programs is widely acknowledged in the e-mentoring literature (Single & Single 2005 p.305) there is a widely held position that there is limited value in providing generic program content in small business mentoring programs because of the heterogeneity which characterises the small business population (Atterton 2002, Tolentino 1998, Megginson et al. 1999 and Garvey 1995). The data analysis confirmed a strong relationship between effectiveness and the program structure known as Information quality. In particular, satisfaction with program features was highly positively correlated with program effectiveness for mentees (correlation coefficient of 0.90). The evaluation research suggested that the creation of individualised learning pathways including adaptation of program structure and content was an important program feature critical to maximising effectiveness. In this way, the findings disconfirm the position held in the small

business community, but confirm the Single and Single findings around the relationship between support and effectiveness in the e-mentoring context. The findings of this study in relation to Information quality provided for clarification of the relationship between previous findings and this new research area. In this way the test went beyond "behaving as expected" to clarifying the expectations themselves in the new context.

Summary

In Brualdi's terms (1999), the measurement instruments behaved "as one would expect a measure of the construct to behave". Findings arising out of their application in this context were not only "consistent with what [was] known about the internal structure of the construct" (pp.2-3) but also provided a basis for illuminating research findings in this particular context.

9.2.3.4 Application of the framework beyond this examination of actual practice
One of the primary findings of the 1992 DeLone and McLean study was in relation to the application of the model in the actual research setting. They suggested that: "[s]election of success dimensions and measures should be contingent on the objectives and context of the empirical investigation" (DeLone & McLean 2003 p.27). In the 2003 revisiting of their model, DeLone and McLean re-stated their earlier suggestion that "the choice of success variables is .. a function of the objective of the study .. [and] .. context" (p.17). They further clarify the role of context by saying ".. it is impossible to define .. [a dimension] without first defining the context or frame of reference" (p.22). This study demonstrates that the framework, as adapted, can be successfully applied in the context of structured e-mentoring for this group of professionals operating as self-employed contractors.

Can the framework then be regarded as useful or potentially useful in *other* structured e-mentoring contexts? Chapter 7 sets out a discussion of the application of the framework in the context of a similar program offered in the United Kingdom which while confirming validity in another setting in the form of similar correlations in relation to a limited number of program features, also provided evidence that does not support the validity of the measurement instruments in an international context. In accounting for the differences between the Australian and UK data, it is possible to draw the conclusion that comparison between programs in different settings is problematic because of the multitude of context-specific factors which may influence effectiveness, different testing procedures, differences in program implementation, and different definitions of the construct of structured e-mentoring. These factors, in addition to the possible unreliability of the measuring instrument, are potential sources of the correlational disparities found in the different contexts. As stated in Chapter 7, there is evidence of the potential unreliability of the measurement instrument, therefore grounds for caution in relying

on the quantitative measurement instrument as the sole means of measuring effectiveness, but also much scope for further research to validate or invalidate the measurement instrument in other research settings.

Chapter 5 also presents an outline of how evaluation of the same program for different stakeholders would be supported by the framework, framework guidelines and evaluation process summary, explaining how the framework informs the definition of evaluation purpose and evaluation research questions for different stakeholders. While maintaining that program effectiveness for mentees as key stakeholders will inform evaluations for other stakeholders, it is acknowledged that their ranking could change depending on the evaluation purpose. The additional questions not relevant to the evaluation purpose of the study but potentially relevant to other stakeholders were detailed.

There was limited evidence of the potential use of the DeLone and McLean taxonomy in an international setting, and speculative evidence of the usefulness of the framework in the same setting for other stakeholders. Claims around the transferability of the framework however will rely on further evaluations which apply the framework in other research settings (Lincoln & Guba 1989 p.241).

9.2.3.5 Summary

On the grounds that the DeLone and McLean model supports data and methods triangulation, that there is evidence of support for the reliability and validity of the measurement instruments used in the examination of actual practice, that there is evidence that the use of measurement instruments yielded data in line with previous research findings in the informing disciplinary areas, and the (albeit limited) evidence of the potential application of the framework in different contexts and for different stakeholders, the framework was further validated as a means of evaluating structured e-mentoring effectiveness.

9.2.4 How did the DeLone and McLean taxonomy assist with classifying and interpreting data when applied in the research setting?

Having discussed the value and limitations of the contextual and methodological phases of the framework in the previous section, to address this question this section will focus on the value and limitations of the DeLone and McLean taxonomy integrated within the proposed contingency framework as Phase 1.

This section will address the sub-questions:

- Were the DeLone and McLean dimensions appropriate categories for classifying and describing data?
- Did they provide a basis for addressing the evaluation questions?
- Did the taxonomy assist with developing more accurate and less ambiguous ways to define and measure the effectiveness construct?
- Was the DeLone and McLean taxonomy useful as an interpretive tool?
- Did the DeLone and McLean taxonomy provide a basis for evaluating individualised outcomes?

9.2.4.1 Dimensions as categories for classifying, describing and measuring data

The importance of "getting the categories right" in theory-building was highlighted by Carlile and Christensen as follows: "the process of getting the categories right is an ever-challenging but always important step in theory building" (Carlile & Christensen 2005 p.10). The validity of the categories or dimensions and interdependence of the relationships between these dimensions was borne out by the quantitative and qualitative data and findings set out in Chapters 7 and 8 respectively. Chapter 7 provided evidence of support for the proposition that the quantitative approach to measuring effectiveness utilising the DeLone and McLean dimensions was a useful though not sufficient approach to evaluating effectiveness. Chapter 8 provided further credible evidence that the DeLone and McLean categories were useful in evaluating effectiveness. The DeLone and McLean model was shown to provide for the multi-dimensional and interdependent nature of the dimensions of the structured e-mentoring effectiveness construct when tested in this research setting.

9.2.4.2 A basis for addressing evaluation questions?

Stufflebeam suggests that evaluation is dependent upon "deriving a set of meaningful categories that [are] sufficient to document, illuminate and respond to the evaluation questions" (Stufflebeam 1999). The examination of actual practice was based on a set of evaluation questions developed around the program and evaluation purpose. Chapters 7 and 8 demonstrated support for the claim that the DeLone and McLean categories provided for the classification and interpretation of the combined quantitative and qualitative data. This in turn provided a credible basis for, in Stufflebeam's terms, providing sufficiently rich and comprehensive data to document, illuminate and respond to the evaluation questions.

9.2.4.3 A basis for developing ways to define and measure effectiveness?

Carlile and Christensen suggest that surfacing anomalies and identifying relevant boundaries are key ways to refine categories: "Anomalies are valuable in theory building because the discovery

of an anomaly is the enabling step to less ambiguous description and measurement, and to identifying and improving the categorization scheme in a body of theory" (Carlile & Christensen 2005 p.11). Anomalies in the form of outliers, disparities and instances in which responses contradicted general patterns were highlighted in Chapters 7 and 8. In each case, the implications of the anomaly on the interpretations of both the quantitative and qualitative data offered in Chapters 7 and 8 were addressed. An example of how the highlighting of an anomaly led to a better understanding of the boundaries or limitations of the application of the DeLone and McLean model occurred in Chapter 8. It became evident that a low System quality score and low effectiveness score could belie a mentee's perception of a high level of effectiveness. This led to consideration of the possibility that construct underrepresentation in relation to System quality was an issue with the quantitative measurement of the nature and quality of the mentee/mentor relationship. This limitation which was evident in the literature from the informing disciplinary areas and highlighted by the expert panel was confirmed in the analysis of rich quotational data in the qualitative study, therefore providing a basis for confirming the limitation of the exclusive use of quantitative approaches to evaluating effectiveness in this context.

9.2.4.4 Useful as an interpretive tool?

Lincoln and Guba suggest that the "responsibility of the evaluator is to provide a context and a methodology … through which different constructions, and different claims, concerns, and issues, can be understood, critiqued, and taken into account" (Lincoln & Guba 1989 p.72).

The use of the DeLone and McLean taxonomy was critical to the success of the examination of actual practice because it provided a basis for offering a preliminary exploration and interpretation of possible linkages between each of the dimensions and effectiveness. In line with Clutterbuck's assertion that "[r]ecognising that mentoring is a class of phenomena and that each phenomenon needs to be investigated in its own right, would be a major step forward in research quality in this field" (Clutterbuck 2003), the DeLone and McLean model was drawn on as a construction through which claims, concerns, issues, and ultimately linkages between "classes of phenomena" in the form of the respecified DeLone and McLean dimensions could be investigated. The model provided a basis for empirically substantiating linkages between each of the DeLone and McLean dimensions and effectiveness. This exploratory approach and hypothesis-generation contributes to the theory-building and is acknowledged as critical to mentoring research (Dimock 1997, Clutterbuck 2003).

9.2.4.5 Evaluation of individualised outcomes

As outlined in Chapter 2, Patton discussed the need for evaluation to provide for both unique individualised outcomes *and* outcomes which vary along specific common dimensions (Patton 1990 p.97-99).

Chapter 7 established the validity of the categories in the context of structured e-mentoring in the cases observed. Chapter 8 validated the use of these categories as a basis for classifying the data and interpretations around effectiveness. The DeLone and McLean dimensions provided a basis for identifying patterns or commonalities arising out of the data while also reflecting the individual experiences of participants in the language of the participants themselves. The contingency framework accommodated and provided a useful interpretive tool for understanding the variability in individualised outcomes. At the same time it provided a basis for making, if not the generalisations called for by Clutterbuck (2003), context-bound extrapolations to support theory-building in this emerging research area.

In these ways, the examination of actual practice reported in Chapters 7 and 8 provided empirical support for the claim that the combined qualitative and quantitative approach using DeLone and McLean's interdependent dimensions provided for the collection of data around unique individualised outcomes and patterns along, in Patton's terms, specific common dimensions. For the purposes of this study, these dimensions are the respecified DeLone and McLean dimensions of effectiveness.

9.2.4.6 Causality

DeLone and McLean's model of IS success is a combined temporal and causal model. This study aimed to utilise the proposed framework as an interpretive tool to propose not only linkages between the DeLone and McLean dimensions but also antecedents to effectiveness, thereby developing an understanding in both causal and temporal terms (refer to Chapter 1).

Ambiguity in causal direction was identified as potentially compromising the internal validity of many effectiveness studies in the small business and mentoring research areas. The proposed framework was limited in that while it made linkages between effectiveness and the measures which operationalised the DeLone and McLean dimensions, it failed to provide a means for isolating causal direction and in temporal terms, determining antecedents to effectiveness. It did however contribute to theory-building by making an initial proposition about the development of individualised learning pathways and the adaptation of content and structure by the mentee and mentor as a temporal antecedent to structured e-mentoring effectiveness. This is a modest

but important contribution to advancing the existing understanding of the factors and processes which influence effectiveness.

9.2.4.7 Generalisability

As stated previously (refer 9.2.4.4) Clutterbuck suggests that to advance mentoring research, it will be necessary to make generalisations about classes of the phenomenon of mentoring. The literature review and application of the framework has confirmed the multiple obstacles to making generalisations around mentoring effectiveness. A particular challenge is the apparent contradiction between the imperative to capture individualised outcomes in a particular context and the pursuit of generalisations which are by definition not context-bound nor characterised by particularity. This thesis provided evidence that if approaching evaluation research from within a constructivist paradigm, it is possible to accept the "lawlike attributes" of the phenomenon as part of the research construction (Lincoln & Guba 1989). Acceptance of these lawlike attributes in this study most critically provided a basis for making credible and valid inferences in the form of extrapolations about the linkages between effectiveness and factors which influenced it in the cases observed. While not constituting generalisations around classes of the mentoring phenomenon, this enabling construction provided for exploring individualised outcomes alongside patterns in effectiveness around the respecified DeLone and McLean dimensions. The capacity to accommodate the reconciliation of a non-positivist research paradigm with empirical, systematic research which advanced the field was a key strength of the contingency framework.

9.2.4.8 Summary

The DeLone and McLean dimensions were validated as appropriate categories for classifying and describing data, provided a basis for data collection which appropriately and sufficiently addressed the evaluation questions, assisted with surfacing anomalies therefore contributing to more accurate and less ambiguous ways of defining and measuring the effectiveness construct, and provided a basis for evaluating individualised outcomes as well as a means of identifying patterns and commonality thereby supporting the making of initial "generalisations" or extrapolations around factors influencing effectiveness according to the DeLone and McLean dimensions.

On these grounds, there was empirical support for the proposition that the DeLone and McLean taxonomy assisted with describing, classifying and interpreting data when applied in this research setting.

9.3 Conclusions about the research problem

Based on the literature review, the review of the selection of e-mentoring studies which evaluated effectiveness, the views offered by experts from related disciplinary fields in the development of the contingency framework, and the application of the framework to an examination of actual practice using qualitative and quantitative approaches to data collection and interpretation, it is possible to draw some conclusions about the research problem. This section addresses the final question "In what ways does the framework provide solutions to the research challenges inherited by the field?" and summarises the framework's contribution to providing solutions to some of the research challenges identified, sets out the problematisation of the ways Perren (2002) proposed to advance research, outlines the contribution to of the study to theory-building, the repositioning of the mentoring/e-mentoring debate, and to providing a framework for evidence-based effectiveness evaluation.

9.3.1 Key research challenges, implications and solutions

Further to the literature review of the informing disciplinary areas in Chapter 1, the review of the evaluation research literature, and the identification of research challenges in Chapter 2, the refinement of the framework in Chapter 4, and the application of the framework in the research setting in Chapters 7 and 8, the matrix presented in Table 5 in section 2.5 can be extended to summarise how the contingency framework provided solutions to some of the field's key research challenges.

Table 93 – Commonalities, research challenges, implications and solutions

Commonalities *The field is at present or by nature characterised or informed by:*	Research challenge *Key research challenges for structured e-mentoring research in the small business context*	Implications *Implications of the key research challenges*	Solution *How does the framework provide solutions to and address the implications of the research challenges*
Elusiveness of the dependent variable (effectiveness)	How to usefully operationalise the construct of effectiveness evaluation	Require a taxonomy which provides for comparability and generalisability, or confirmability and transferability, which draws on effectiveness studies in the informing disciplinary areas	Offers a taxonomy which provides a basis for operationalising the construct of effectiveness and making extrapolations around patterns according to the DeLone and McLean dimensions which is founded on effectiveness studies in the informing disciplinary areas
Involvement of human actors in assistance programs	Evaluation research should be "human-centred" and capture the perceptions of participants	Research should develop beyond hard or technical data to acknowledge the importance of human/social actors in evaluating effectiveness Paradigm location – the need to provide for theoretical pluralism Require methodologies which move beyond quantitative measures of	Evaluation instruments provide for capturing the opinions and logics of the human actors Evaluation instruments provide for exploration beyond the positivist paradigm using qualitative as well as quantitative measures of effectiveness

		effectiveness	
Complexity of the phenomena	Adequate representation of construct of effectiveness to address construct underrepresentation Complexity an obstacle to understanding	Require methodologies which reflect the richness of the phenomenon under study Need for modelling/abstraction to deal with complexity Need for multi-dimensional construct for effectiveness evaluation to accommodate complexity and interdependent nature of the dimensions of the e-mentoring phenomenon	Development of multi-dimensional framework which abstracts the complexity of the e-mentoring phenomenon and variability of effectiveness outcomes as well as providing a basis for adequate representation, understanding and interpretation in the face of complexity Multi-dimensional construct to provide for interdependence between dimensions of effectiveness Data collection methods which provide rich complex data on which to ground and substantiate interpretation of effectiveness
Practice at the centre of research and evaluation	Doubt as to the legitimacy of research tied to problems defined in practice Issues of robustness	Research should establish how it is legitimately tied to practice with considerations of use Researchers involved in practice should be explicit and reflexive about their relationship to the evaluand	E-mentoring research tied to practice conducted empirically and systematically and published in public domain Framework guidelines highlight that the evaluation researcher should be explicit about relationship to evaluand (internal or external study)
Unique and elusive nature of outcomes	Methodology – measurement difficulties	Effectiveness evaluation should explore the diversity and uniqueness of the responses of those engaging with the assistance program or system Effectiveness evaluation should explore benefits which may be intangible, difficult to quantify and may be incidental or additional to those intended – that is, benefits that would be effectively valued at zero using a quantitative approach	Framework is not prescriptive around choice of measurement instrument/s Guidelines highlight difficulties with using quantitative methods alone
Context-dependent nature of effectiveness	Difficulty in establishing causality	Evaluation requires an understanding of the difficulties of controlling for multiple contextual or extraneous variables and how the choice of paradigm affects claims of causality Evaluation researcher needs an awareness of ambiguity re causal/influence direction - difficulties around establishing linkages between antecedents and consequences Calls for a situationally-responsive effectiveness evaluation construct highlighting relevant contextual influences or variables upon which effectiveness is contingent	Respecification of DeLone and McLean model within contingency framework acknowledges the multiple contextual variables upon which effectiveness is contingent Framework provides a comprehensive basis for understanding factors or influences which could threaten validity Provides for selection of an evaluation strategy which is situationally-responsive and not necessarily grounded in positivist assumptions

			Acceptance of lawlike attributes of construction provides a basis for proposing linkages between effectiveness and factors which influence effectiveness - that is, for making initial confirmable inferences around causality
Central constructs characterised by problematic definitions	Problems with construct definition, and therefore comparability and generalisability	Require an understanding of definitional problems –inadequate, tautological or (often necessarily) non-standardized definition of central constructs To advance research, may need to accept lawlike attributes to enable comparability	Effectiveness construct operationalised according to framework Provides for a level of generalisability based on acceptance of lawlike attributes of effectiveness construct
Data quality	Compromises rigour and robustness but also generalisability	Require an understanding of problems with quality of data including the fact that data: ○ is necessarily at individual level; ○ needs to be ipsative but is therefore necessarily self-report; ○ may not be the result of multiple lines of evidence; ○ may not arise from a variety of methods and sources (lack of data triangulation); ○ may arise from heterogenous samples; ○ may be subject to error in that research does not account for self and administrative selection bias; ○ may arise from small samples; and ○ may not arise from longitudinal engagement in the field.	Framework provides for data and methods triangulation Framework provides for methodological options in selecting a research strategy Framework guidelines highlight issues of data quality and how methodological choices may impact the validity of an effectiveness study

9.3.2 Proof of the influence of e-mentoring?

As outlined in Chapter 1, in his Review of the Literature, Perren (2002) called for research to prove or disprove the influence of e-mentoring to advance the field. He suggested that the Deakins et al. (1998), Devins and Gold (2000) and Graham and O'Neill (1997) studies were compromised by issues of data quality, specifically the fact that their data was predominantly self-report. He further suggested that qualitative methodologies were less reliable than approaches which quantify the effect of e-mentoring and argued for the use of some form of control group or quantification of the mentoring influence. Perren then directed the reader to "the wider mentoring literature [which] provides some helpful advice on how such … [a quantitative] evaluation might be conducted" (Perren 2002).

This section will address the following sub-question:

- Did the examination of actual practice using the contingency framework which integrated the respecified DeLone and Model of IS success shed any light on the way Perren proposed to advance the field, and in doing so, how did it provide a basis for addressing some of the research challenges inherited by the field?

In the examination of actual practice, the framework was tested using qualitative and quantitative data collection methods. The quantitative study tested a survey questionnaire as a means of quantifying effectiveness in terms of the DeLone and McLean dimensions. The interpretation of quantitative data measuring the nature and quality of the mentoring relationship was shown to underrepresent the construct of effectiveness, most critically in relation to the dimension of System quality or the nature and quality of the mentoring partnership. The quantitative data was also notable for its lack of richness in relation to the dimension of Impact, confirming the difficulty of adequately capturing and quantifying the intangible benefits of e-mentoring using quantitative methods alone as found in the review of the literature in the informing disciplinary areas. The richness of the qualitative data around Impact confirmed the limitations of exclusively using quantitative methods of evaluation as advocated by Perren because of the potential to devalue that which cannot be quantified.

The contingency framework drew a broader boundary around e-mentoring effectiveness research by not only integrating contextual influences into the framework to support exploration of the contingent nature of effectiveness, but also by providing for research strategies which were outside the positivist paradigm in an effort to provide for the multiplicity of approaches and paradigm locations needed in the theory-building stage of the development of this discipline. Exclusively pursuing quantitative approaches underpinned by positivist assumptions at this stage was demonstrated to have the potential to produce data with *limited* reliability rather than providing for data which adequately, sufficiently and reliably represented and measured the construct of effectiveness. Qualitative methodologies alongside quantitative approaches in contrast provided for exploration and theory-building, for understanding individualised outcomes in the language of the participants themselves alongside making initial "generalisations" or extrapolations across common dimensions. While the use of control groups may become important at the theory-testing stage, and in further refining the circumstances under which particular linkages between effectiveness and the dimensions of e-mentoring hold, the adoption of such a methodology at this stage was shown to have the potential to "impoverish" the field (refer to section 1.12.1.4.1).

Rather than the wider mentoring literature supporting the exclusive use of quantitative methodologies, a review of the mentoring literature in conjunction with the small business and

entrepreneurial training literature indicated a need to advance the field in ways which were contrary to those proposed by Perren. While the review of the literature highlighted some of the research challenges involved, it also indicated the appropriateness of advancing the field by using exploratory and naturalistic enquiry within a constructivist paradigm rather than grounding research exclusively in positivist assumptions. The review also indicated that problems with, for example, data quality were inherited by the field of structured e-mentoring from the mentoring and small business research fields. As Curran and Blackburn suggest, methodologies using qualitative data which "reveal the actors logics influencing their attitudes and behaviour" (Curran & Blackburn 2001 p.18) while representing a limitation, are simultaneously the field's greatest sources of reliability and validity.

Because of the difficulties of examining and measuring e-mentoring effectiveness, advancing the field, in the theory-building stage at least, requires the considered and self-conscious abandonment of "proof" in favour of exploration based on an understanding that effectiveness is "relative, subjective and mediated by the perceptions of stakeholders" (Halcolm's Evaluation Laws cited in Patton 1980 p.7), and contingent upon multiple contextual factors. As indicated by Patton, such research will still need to be systematic and empirically-based (refer to introductory quotation in Chapter 5) and may involve the acceptance of lawlike attributes of the constructivist paradigm through which understanding can be explored (Lincoln & Guba 1989).

As set out in Chapter 2, contributing research in the initial stages may include particular as well as generalisable knowledge, alongside refinement of the categories used to assist in accounting for not only the variability in individualised outcomes but patterns and commonalities in pursuit of extrapolations. It will need to demonstrate a commitment to description and categorisation, provide for substantiated interpretation, the examination of rival explanations, and the surfacing of anomalies to make measurement and categorisation more refined and less ambiguous. In Carlile and Christensen's terms, such research will necessarily precede the generation of propositions or hypotheses in the theory-building stage of the research cycle. Rather than proving the influence of e-mentoring, this study demonstrated the need for exploration, understanding and theory-building in these terms.

9.3.3 Contribution to theory-building

The study contributed to building theory in this emerging discipline in the following ways:

1. the respecified DeLone and McLean model integrated within the contingency framework was confirmed as a valid and reliable classification and interpretive tool. The framework assisted with exploring effectiveness in relation to the dimensions of System quality redefined as the nature and quality of the mentee/mentor relationship, Information quality

redefined as the nature and quality of the program structure and content, Use, User satisfaction and Impact, and the interdependent relationships between these dimensions;

2. the contingency framework was confirmed as a valid and reliable means of evaluating the multidimensional and contingent nature of structured e-mentoring effectiveness when qualitative and quantitative data collection techniques were used;

3. the contingency framework was confirmed as a basis for positioning research in the theory-building stage. However,its capacity to provide a basis for developing a comparative and cumulative research tradition on the circumstances under which the extrapolations hold was compromised by the methodological challenges inherited by the field, in particular the difficulty of controlling for extraneous variables, isolating causal linkages and resolving ambiguity in causal direction;

4. structured e-mentoring as defined provided a means of including generically-based content as in competency-based approaches to small business training. It also a means of adapting, extending and making relevant that content to individual small business owner-managers by interacting with the mentor around the content in line with Collins and Berge's definition of learning (Collins & Berge 1996). The examination of actual practice provided some initial support for the proposition that structured e-mentoring is a learning model which can effectively provide for the development of individualised learning pathways within such a learning framework.

9.3.4 Confirming and extending the legitimacy of the mentoring/e-mentoring debate

As Single and Single (2005) suggest, "E-mentoring practitioners and researchers have not suggested that e-mentoring replace face-to-face mentoring, but have viewed it as a way to provide mentoring opportunities that otherwise would not exist" (p.305). In the examination of actual practice, the comments of participants acknowledged both the potential advantages and disadvantages of e-mentoring. That these comments were common to mentees involved in both effective and ineffective partnerships suggests that while e-mentoring may be the only form of mentoring available, it is nonetheless unlikely to be effective where face-to-face mentoring options are not available.

This thesis suggests that the focus should not be on providing e-mentoring where face-to-face options do not exist, nor on whether face-to-face mentoring is intrinsically better or worse than e-mentoring. Rather it suggests firstly that the pedagogical needs of the target group should inform the structure and delivery mode of a mentoring assistance program, and secondly, explores and identifies factors linked to effectiveness using effective mentee outcomes as the

evaluative referent to ineffective mentee outcomes as the basis of comparative research rather than "traditional" and e-mentoring outcomes.

9.3.5 Framework for evidence-based evaluation

Evaluation researchers such as Cronbach maintain that the primary role of evaluation is not to ensure accountability or support decision-making (Cronbach in Scriven 1993) (refer to discussion of the role of the evaluator in 2.4.4.2). In contrast, Storey suggests that effectiveness evaluation research in the small business context should be "policy-relevant" (refer 3.2.2.3). In line with Storey's approach, the framework proposed in this thesis provides a potential basis for evidence-based evaluation of taxpayer-funded assistance programs should this be the evaluation purpose. The contingency framework has been shown to provide a means of selecting an evaluation strategy, measuring and/or interpreting data which can provide a substantiated evidence-base for making judgements about program effectiveness to justify, or conversely, provide an evidence base for discontinuing investment with the limitation that its intended use is for evaluating effectiveness for mentees at the individual level. To the extent that the proposed approach to evaluation at the individual level (refer 4.5.1.1.8) supports extrapolation to the program and policy level, this form of evaluation supports accountability and decision-making at those levels.

9.3.6 Summary

In these ways then, the contingency framework assisted with highlighting and providing solutions to some of the research challenges inherent to evaluation research in this field. The development and application of the framework provided a basis for justifying and legitimising evaluation research located in a non-positivist paradigm, for contributing to theory-building, for repositioning the e-mentoring debate to focus on factors which make e-mentoring effective by drawing on the informing and new research disciplines and the pedagogical needs of the target group rather than proposing e-mentoring as an alternative to traditional mentoring practice, and for evidence-based effectiveness evaluation which can potentially be applied in a decision-support and policy-relevant context.

9.4 Model respecification
9.4.1 Respecification of the DeLone and McLean model

In order to transfer the DeLone and McLean model of IS success to the structured e-mentoring effectiveness evaluation context, the model was subject to respecification further to the literature review, the review of effectiveness studies and the Delphi panel review.

Clarity around the definitions of the effectiveness construct was fundamental to transferring the model to the new context. Based on the work of McLaughlin (1976) and Collins and Berge (1996), the dimensions of System and Information quality were redefined to transfer them from the Information Systems to the structured e-mentoring for small business context. This redefinition is detailed in section 3.2.1. The respecification of the model redefined these key dimensions to acknowledge the nature of e-mentoring as a particular type of non-deterministic IS system which provided for provision of program content and the adaptation of and interaction between mentee and mentor around that content.

As described in section 1.13.2.2, Seddon's redefinition of the causal relationships between the DeLone and McLean dimensions as influence was adopted, thus moderating the positivist epistemological and ontological stance which underpins the original DeLone and McLean model. Further to the comment of Panel member # 3 presented in Tables 27 and 28, the variables in Phase 2 were renamed 'factors' in the subsequent iteration of the framework to correct the implication that contextual factors can necessarily be varied, and in this way again moderate the positivist influences which underpin the framework.

Further to the work of Myers et al. (1998), the DeLone and McLean model of IS success as adapted has been repositioned within a contingency framework. As set out in 4.5.1.1, a set of guidelines and a guide to the evaluation process were developed to assist potential users of the framework. As discussed in 4.5.1.1.8, the intended application of the framework was limited to the individual level.

The measures indicated by the literature review across the informing disciplinary areas, and those suggested by the expert panel have been added to the framework and are summarised as follows:

from Chapter 4 - Table 49 – Summary of measures added to contingency framework

Section	Measure added
4.5.1.1.3	Skills (netiquette, understanding of mentoring), contractual expectations (what is the role of each party in the arrangement?), goal clarity (what are we trying to achieve?), goal commitment and relationship commitment, mentee's preparedness to invest time and/or money, monetary value participants would ascribe to the program, whether or not a small business owner/manager would use the mentoring service again, profit as a measure of current or future business performance
4.5.1.2.1	Management and business competencies
4.5.1.2.3	Learning orientation of the entrepreneur, aspirations for growth by owner/managers, government policy content/policy incentives and culture of learning by the business including innovation, product and service changes
4.5.1.3.2	Ipsative (self-referencing measurement)

In addition to the changes set out in section 4.6, the following additional changes were made subsequent to the examination of actual practice.

The exploration of the linkages between the respecified DeLone and McLean dimensions found that the process of adaptation of generic program structure and content by the mentee and mentor was linked with effectiveness. This adaptation in both temporal and causal terms has been included in the respecified DeLone and McLean model set out in Figure 22 between the dimensions of System and Information quality.

DeLone and McLean's assumption that the information or temporal flow is in the same direction as causal direction was not supported by conclusive empirical data in this study. Indeed, ambiguity in causal direction, which characterises research in the mentoring and small business field, remains one of the key methodological challenges in the theory-building stage of structured e-mentoring research. The only temporal relationship established with empirical data was the development of individualised learning pathways and the adaptation of program content and structure as an antecedent to effectiveness in temporal terms as well as influencing effectiveness. This study confirms that the combined temporal and causal characteristics of the DeLone and McLean model remain problematic when applied in this research setting. It therefore provides initial support for linkages, and proposes context-bound extrapolations around possible determinants of effectiveness, but resiles from claims of direct causality between the DeLone and McLean dimensions and effectiveness. The arrows have therefore been respecified using dashes to denote this ambiguity.

Summary of the respecifications to the DeLone and McLean model
In summary, the DeLone and McLean model has been respecified in the following ways:

- redefinition of causal linkages between dimensions as influences, and redefinition of variables as factors to moderate the positivist assumptions which underpin the original DeLone and McLean model;
- redefinition of System and Information quality and renaming of these dimensions to apply in the mentoring context;
- additional linkage between system and information quality by including the adaptation process; and
- integration of the model within a broader contingency framework.

Figure 23 represents the final respecification of the DeLone and McLean model. It includes the metrics used to operationalise each dimension in the examination of actual practice. Each of the metrics can be extrapolated in this context as proposed determinants of structured e-mentoring effectiveness for which the examination of e-mentoring practice provided credible empirical support.
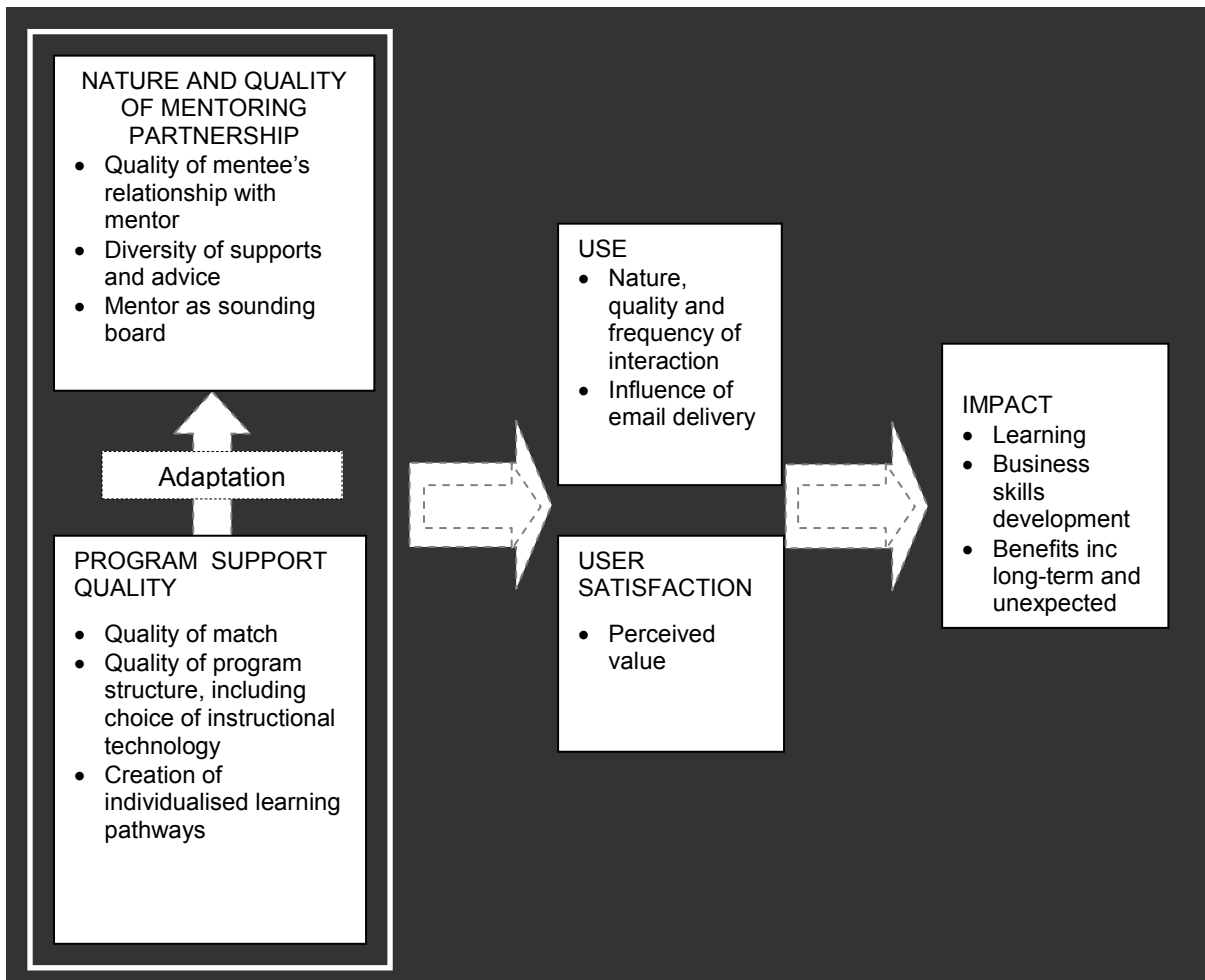
Figure 23 - Rickard model of structured e-mentoring effectiveness arising out of examination of e-mentoring practice for professionals operating as self-employed contractors (as derived from the DeLone and McLean model of IS success) – Phase 1 of contingency framework

In DeLone and McLean's terms (refer 1.7.1) the nature and quality of the mentoring partnership and the nature and quality of the e-mentoring program structure and content were found to be positively linked to impact and effectiveness. The extent of use and its effect on the degree of user satisfaction was not supported so the arrows indicating positive or negative influence between these two dimensions are removed in this respecification. Use and user satisfaction were linked to impact and effectiveness of the e-mentoring program though an ambiguity around causal direction was found in the new context. As set out in Chapter 8, linkages were found between each of the measures used to operationalise the respecified DeLone and McLean dimensions. More precisely, in the context of structured e-mentoring in the cases observed, the quality of the mentee's relationship with the mentor, the diversity of supports and advice, the use of the mentor as a sounding board, the quality of the match and program structure, the creation of individualised learning pathways, the nature, quality and frequency of interaction,

email delivery, perceived value, learning and benefits including long-term and unexpected benefits were each established as being positively linked to effectiveness.

9.4.2 Summary of the development and respecification of the contingency framework

The respecified DeLone and McLean model comprises Phase 1 of the contingency framework. Phase 1 sits alongside Phase 2 which details possible contextual variables or influences which may impact effectiveness and Phase 3 which outlines possible methodological choices to be considered in evaluating the effectiveness of structured e-mentoring. Table 94 represents the final specification of the e-mentoring effectiveness evaluation construct. The particularities of the redefinition and respecification are set out in section 9.2.1.1 of this chapter.

In summary, the contingency framework has been respecified from the DeLone and McLean model in the following ways.

- integration of Phase 1 which comprises the DeLone and McLean model within the contingency framework (refer to 9.4.1);
- addition of Phase 2 contextual and Phase 3 methodological phases, and less importantly, Phases 4 and 5 to provide for metrics selection and finalisation of research strategy. These phases combined comprise the proposed effectiveness evaluation construct;
- addition of framework guidelines and evaluation process summary;
- addition of further metrics from the informing disciplinary areas to Phase 1 and "nature of measurement" added to Phase 3 further to suggestions from expert panel;
- addition of business support to Kram's taxonomy of career and psychosocial support; and
- addition of distinction between personal and economic benefits made further to the work of Galletta and Lederer.

The numbers alongside items in Phase 3 are referred to in section 9.2.2.2 of this Chapter and denote the overall temporal sequence followed in determining the research strategy utilised in the examination of actual practice reported in Chapters 7 and 8 (refer to section 5.7 for a summary of the process undertaken to select the research strategy).

Table 94 – Rickard contingency framework of structured e-mentoring effectiveness evaluation effectiveness arising out of examination of e-mentoring practice for professionals operating as self-employed contractors (derived from Myers Kappelman Prybutok's 1998 respecification of DeLone and McLean's model of Information Systems success)

Phase 1 – E-mentoring dimensions and measures	Phase 2 – Context – contingency factors	Phase 3 – Key methodological decisions to maximise validity	Phase 4 Selection of research strategy	Phase 5 Selection of "measures" or ways of understanding each dimension
System Quality – nature and quality of engagement with e-mentoring partner – considered or measured with reference to: Nature and quality of engagement between mentee and mentor ▪ type of advice and career and psychosocial support provided including (career) sponsorship (if relevant to model of mentoring used), exposure and visibility, coaching, protection and challenging assignments, (psychosocial) role modelling, acceptance and confirmation, counselling and friendship ▪ business skills support provided ▪ whether engagement continued beyond program ▪ whether and how mentor used as sounding board ▪ level of respect for e-mentoring partner ▪ duration of e-mentoring partnership ▪ perceived importance of advice received ▪ perceived difference in mentee's ability to achieve ▪ perceived quality of the relationship ▪ guidance received ▪ most positive aspects of mentoring partnership ▪ most difficult aspects of mentoring partnership ▪ whether willing and active collaboration occurred ▪ whether mentoring partnership was a positive/negative experience ▪ whether mentee/mentor would recommend program ▪ quality of the rapport within a dyad ▪ quality of the contracting between the mentoring partners ▪ skills (netiquette, understanding of mentoring) ▪ contractual expectations (what is the role of each party in the arrangement?) ▪ goal clarity (what are we trying to achieve?) ▪ goal commitment ▪ relationship commitment Nature and quality of engagement with facilitator ▪ satisfaction with facilitation, nature and frequency of engagement with facilitator **Information Quality – nature and quality of and interaction with content and structure (process of adaptation/implementation) – considered or measured with reference to:** ▪ the process of learning including adaptation of generic content to	**Research strategy considered with reference to:** **External environmental factors** ▪ industry ▪ sector ▪ competitive environment ▪ culture ▪ economy ▪ availability of resources ▪ climate ▪ government policy content/policy incentives **External mentee business factors** ▪ age of business ▪ stage of business life cycle ▪ size of business as defined by turnover, number of employees and/or profit ▪ qualifications and experience of business owner/manager ▪ deployment of technology ▪ socio-cultural background ▪ products and services produced ▪ business structure	**Research strategy considered with reference to:** **Internal validity** • time frame – cross-sectional (to capture levels of improvement, short-term outcomes or establish outcomes with reference to pre- and post-assistance states) or longitudinal (to capture long-term behaviour change, evolving benefits, and development of mentoring phases) **(2)** • experimental/non-experimental approach (to establish causal relationships between antecedents or outcomes, or to explore and expand understanding, or suggest influences) **(2)** • which, if any, contingency variables are controlled for (in experimental context) • evaluative referent – effectiveness measured against outcomes for matched non-assisted group, against program goals or fitness for purpose, against individual personal goals, against the extent of time and/or money invested by small business owner/manager, against external business and management competencies, etc? **(3)** • nature of assessment of learning outcomes or development - referenced normatively, ipsatively or against external criteria (development of mentee may not usefully be measured against other		

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individual needs, personal goal setting and integration of learning with day to day business activities
- quality and development of mentoring engagement in terms of phases
- whether assigned/self-selecting mentoring partnerships
- nature and quality of programmatic features
- pedagogical structure of program
- nature and value of matching process
- quality and nature of support from facilitator
- quality of pre-program training provided
- satisfaction with matching process
- relevance of support/content
- timeliness of support/content
- value of structured exercises
- level of system security

Use
- interaction/involvement frequency
- time spent with mentor/mentee
- engagement with content
- engagement with facilitator
- ease of access
- regularity of engagement
- extent to which email delivery impacted on use

User satisfaction
- recommend program to others, satisfaction with mentee/mentor interaction, nature of stories of mentoring experience told by the mentee, whether mentees and mentors would use service again, nominated monetary value of program, perceived value and significance of intervention

Impact
Mentee – career
- promotion, salary growth, intrinsic job or work satisfaction, future prospects, career progression, career mobility, opportunities, overcome discrimination, ability to overcome obstacles to career progression, career planning - also measures of ineffectiveness, intended and unintended outcomes (side effects)
Mentee – psychosocial
- feelings of pride, enjoyment and self-achievement, flexible and adaptable leadership, self-worth, ability to achieve objectives, ability to cope with problems, ability to learn and manage, ability to cope with change, sense of competence, sense of professional

- previous business success
- type of clients served
- business location
- business home or office-based

Internal mentee and mentor factors (also factors relating to host/facilitator)
- socio-economic background/class
- learning attributes
- available skills (technology skills and resources such as ready access to technology)
- learning styles
- personality
- gender
- race
- geographical location
- education level
- years in business
- team playing skills
- patience
- decisiveness
- risk-taking
- comfort with technology
- interpersonal skills
- mentee and mentor motivations
- mentee's career aspirations
- relationship with host organisation
- relationship with facilitator
- professional/non-professional
- belief that job

program participants or with reference to, for example, external competencies) **(5)**
- qualitative/quantitative/combined approach (which approach or combination of approaches will capture outcomes in a form which is useful and relevant in the context of the purpose of the evaluation of the assistance program and in detailing individualised outcomes) **(3)**
- summative, formative or combined approach (outcomes-based approach or looking to improve program or both?) **(1)**

External validity
- type of sample (private, public sector, other) (to assist with generalisability and replicability if needed)
- occupation of subjects (to assist with generalisability and replicability if needed)
- type of sampling (random, non-random, mix, maximum variation sampling) **(2)**
- sample size, sampling frame, response rate (in small business, sample sizes can be small, large sampling frames unavailable and response rates low - how are these to be dealt with and how do they impact on representativeness and generalisability) **(4)**
- whether an internal/external evaluation (even though distance may not ensure objectivity and subjectivity may not threaten it, it may, so how does this impact on the credibility of findings) **(4)**
- whether program has liberal/conservative objectives (does

identity, self-development, validation and emotional support - also measures of ineffectiveness, intended and unintended outcomes (side effects)

Mentee - business skills development (other than direct economic)
- improved skills in areas of finance, marketing, pricing and costing, bookkeeping and accounts, taxation, computer skills, budgeting, credit control, stock control, company law, planning, decision making, record keeping, cash flow planning, preparing a business plan, strategic growth planning, maximising business potential, adapting to business change, developing new ideas, producing action plans for business development, becoming more entrepreneurial, disseminating innovation in the business community, networking, using information to inform decision-making, awareness of training and development issues, delegation skills, greater awareness of strengths, weaknesses, opportunities and threats, broader perspective on key business issues, greater efficiency, more likely to take on employees, more likely to seek assistance from professionals such as solicitor or accountant, more likely to seek an alliance with another business professional - also measures of ineffectiveness, intended and unintended outcomes (side effects)

Mentee - business outcomes/economic
- employment growth/generation, sales rates/revenue increases, GDP, earned income/wages, rate of business startups/formation rate, projected turnover, exports, taxes and sales taxes generated, payroll taxes generated, collaboration and international networking opportunities, information transfer, improved international or regional competitiveness, increased efficiency - also measures of ineffectiveness, intended and unintended outcomes (side effects)

Mentor
- career rejuvenation, praise and recognition, positive feedback, increased self-confidence, career enhancement/advancement, increased information and knowledge, recognition and respect from peers, job satisfaction, feelings of being challenged and stimulated - also measures of ineffectiveness, intended and unintended outcomes (side effects)

performance and events which occur in a work setting are contingent on personal behaviour and under personal control (locus of control)
- identification with work or importance of work to self-image (job involvement)
- extent to which individual engages in career planning
- extent to which individual values work relationships (relationship importance)
- preparedness to invest time and money in program
- learning orientation of the entrepreneur or whether there is a culture of learning by the business including innovation, product and service changes
- aspirations for growth by owner managers

the assistance seek to maintain or challenge the status quo eg programs which target career advancement for women in an organisation can be seen as challenging the status quo, while a program included as an induction for new staff can be aimed at transferring cultural values of an organisation)
- the level of the evaluation (policy, macro-program, individual, etc) **(1)**
- issues of rigour (team-based approach, reading back to social actors who provided the information, etc) **(4)**

Construct validity
- the number of data sources and impact on data quality **(3)**
- the nature of data and impact on data quality (e.g. self-report data only) **(3)**
- precise definition of concepts and operationalisation of construct of mentoring **(4)**
- clearly identifying and ranking stakeholders to assist with identifying purpose and use of the evaluation **(1)**
- whether outcomes for all parties will be measured (mentees only, mentees and mentors, host organisation)
- whether measures of both effectiveness and ineffectiveness are to be used **(5)**
- whether allowance for displacement and deadweight will be made (relevant when an experimental approach is used)
- whether self and administrative selection will be accounted for (can

		- contribute to difficulties with establishing causality) **(4)** - response bias (can contribute to difficulties with establishing causality) **(4)** - influence on or relevance to policy-makers (should evaluation be 'policy-relevant'?)		

Note: The figures which appear in brackets against specific items under Phase 3 are discussed in section 9.2.2.2.

9.5 Implications for theory and practice

Useful to researchers and practitioners

The purpose of developing the contingency framework was to accommodate the complexity of the concept of e-mentoring effectiveness in the small business context, to assist researchers and practitioners with conceptualising these complexities and help develop research strategies which could account for variability in effectiveness and some of the research challenges inherent to the field.

It is hoped that the study advances fundamental understanding in the field by providing initial empirical support for relationships between the DeLone and McLean dimensions and effectiveness. It also seeks however to advance understanding in these terms cognisant of "considerations of use". As stated in Chapter 2, like IS research, e-mentoring research is marked by, in Williamson et al.'s terms, drawing problems from practice and the results of studies generating theories which need to be applied and tested by practitioners in the context of real world information systems (Williamson et al. 2000).

The location of the evaluation research as close to practice is potentially useful in an emerging research area because research questions and focus are informed by the experience of researchers as practitioners. However, such research can also be regarded as compromised by being "internal" (Seddon 1999). The link between research and practice requires the researcher to acknowledge the limitations of the study which, while rigorous and robust in many respects, may be compromised by errors arising out of methodological biases and ethical difficulties. As acknowledged in Chapter 5, this research is "contaminated" by five years of e-mentoring experience and practice. The researcher as practitioner has an intimate understanding of the espoused goals of the program which were considered in the examination of e-mentoring practice, and is certainly not independent of the program. As stated previously, this interocularity is simultaneously a key strength *and* limitation of the evaluation. It is hoped that this study leverages this interocularity to advance use and fundamental understanding simultaneously (Stokes cited in Lyytinen and King 2004).

9.6 Scope for further research

Zikmund (1991) suggests that exploratory research enables the researcher to obtain a better understanding of the dimensions of a research problem. Further to the literature review and study undertaken, it is possible to outline research which would help meet the research

challenges identified in Chapters 1 and 2, and identified or confirmed in the application of the contingency framework outlined in this thesis.

It is proposed that the following list summarises the areas in which this study has indicated future research would be valuable:

- test the framework in a range of different structured e-mentoring evaluation settings to establish the transferability or generalisability of the framework and these findings to other research/business settings;
- further explore the effectiveness of specific program features to provide evidence-based information around factors influencing effectiveness to inform program development;
- extend research into content analysis of email exchanges to explore how the e-mentoring medium impacts learning in the small business context;
- further explore the impact of the nature of the approach and skills of the mentor on effectiveness for mentees;
- consider ways of incorporating methodologies which maximise data quality, for example undertaking longitudinal studies, using larger samples, accounting for selection bias and corroborating self-report data;
- apply the framework using research strategies grounded in both positivist and non-positivist assumptions which, given the limitations contingency theory imposes on confirming causal relationships, would further test the relationships proposed, and test the framework's potential for providing for the theoretical pluralism which characterises the informing disciplinary areas and the different types of knowledge needed to advance research;
- further explore the issue of ambiguity in causal direction between effectiveness and antecedents in temporal terms. It may be necessary to utilise experimental methods to refine understanding in this area, for example, by controlling for and isolating the effects of administrative selection, self-selection and response bias; and
- begin the investigation of the influence of contextual variables including external environmental factors, external mentee business factors and internal mentee and mentor factors, to refine for whom and in what circumstances the link between effectiveness and each of the DeLone and McLean dimensions holds.

9.7 Summary and conclusion

In the current Australian context, this study substantiates the claim that structured e-mentoring is a potentially effective means of, in Atterton's terms, developing the capability to work with

professionals operating as self-employed contractors as a segment of the small business sector. The study offered credible and confirmable empirical evidence that utilisation of the framework can provide an effective means of delivering learning and skills development for those potentially impacted by differential access to training by virtue of their status of operating in non-standard work arrangements. The study confirmed that mentoring utilising information communications technology can support effective learning in a form which is appropriately aligned with the pedagogical needs of this small business segment when considered at the level of effectiveness for individual mentees.

The study outlined in this thesis did not, in Perren's terms, prove the influence of e-mentoring. Rather, the contribution of the study was in more particular terms adopting an alternative but theoretically justified paradigmatic stance. Acceptance of, in Lincoln and Guba's terms, the lawlike attributes of the contingency framework utilising a constructivist approach provided a basis for advancing research by way of identifying, in Blaikie's terms, typicalities, or in Patton's terms, context-bound extrapolations, around linkages between effectiveness at the individual level and the dimensions of e-mentoring. The study proposed, refined and validated the DeLone and McLean dimensions as analysis categories for structured e-mentoring effectiveness evaluation. The examination of actual practice demonstrated the value and limitations of these categories within the contingency framework as a tool for classifying and interpreting data, and offered a substantiated interpretation of effectiveness at the individual level using the DeLone and McLean dimensions as analysis categories.

The study provided support for the claim that the contingency framework was a coherent classification taxonomy for the metrics used in the informing disciplinary areas, confirmed the framework as a non-prescriptive situationally-responsive basis for selecting a research strategy for evaluating effectiveness at the individual level, and developed and applied qualitative and quantitative evaluation instruments based on the respecified DeLone and McLean dimensions, the reliability and validity of which was supported by initial empirical data.

The framework was shown to abstract the contingent nature of effectiveness, and provide a basis for exploring variability in effectiveness outcomes. It largely accommodated the complexity and interdependent nature of the relationships between the dimensions of effectiveness, and integrated solutions to some of the research challenges inherited by the field of structured e-mentoring effectiveness evaluation for this segment of small business. The study confirmed a degree of support for the validity of the contingency framework in a different context and for other stakeholders in the small business context, and, to the extent that it could support extrapolation around effectiveness beyond individual mentee outcomes, found the

framework was confirmed as potentially relevant to decision-support in a program or policy context.

This thesis problematised ways of exploring and measuring effectiveness and developed, tested and confirmed the usefulness of the proposed contingency framework, incorporating the DeLone and McLean effectiveness model, as a valid, credible and justified construct for doing so.

The study contributed to structured e-mentoring effectiveness research in some of the ways which the DeLone and McLean model of IS success contributed to IS effectiveness research as identified by Roldan and Leal – by consolidating previous research, by providing a scheme for classifying effectiveness measures, by providing a means of proposing interdependencies and linkages between the dimensions and effectiveness, and providing a basis for further empirical and theoretical research. On these grounds, it is proposed that the contingency framework assisted with evaluating effectiveness in this context and makes a useful, distinct and original contribution in the field to, in Stokes' terms, both use and fundamental understanding.

As stated in Chapter 5, Patton suggests that:

> *When one examines and judges accomplishments and effectiveness, one is engaged in evaluation. When this examination of effectiveness is conducted systematically and empirically through careful data collection and thoughtful analysis, one is engaged in evaluation research (Patton 1990 p.11).*

In Patton's terms, each of the research steps set out in Chapter 2 of this thesis has been undertaken systematically and empirically using careful data collection and critical analysis. It can therefore be said that evaluation research at the level of the individual has been successfully completed using a framework shown to provide a useful basis for evaluating structured e-mentoring effectiveness. The objective of the study has therefore been achieved. Creating a nexus between DeLone and McLean's model of Information Systems success and structured e-mentoring effectiveness evaluation did indeed provide a taxonomy which has been shown, in this context, to advance understanding of the evaluation of the effectiveness of structured e-mentoring.

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Appendices

The following appendices appear in this section:

Appendix 1 - Evaluation review checklist

Table 1 - Measures across DeLone and McLean's dimensions (Checklist 1)

Study	System Quality - Quality and nature of mentee/mentor interaction	Information Quality - quality of content and structure of program	Use	User satisfaction	Impact
Training and small business interventions					
Hart, M. & Roper, S., 2003	This dimension only relevant in mentoring context	The aim of Business Links is to coordinate existing support services and provide access to Training and Enterprise Councils, chambers of commerce local authorities, enterprise agencies, other bodies such as local universities and also a personal business advisor in the form of a "one stop shop". The quality of the intervention was measured with little or no reference to the type of assistance provided - so no analysis of the quality of the particular features of the content or structure of the training provided.	Study included businesses on the basis that they received assistance. The definition of assistance was based on use as follows: "Firms that had been assisted for the first time in the period January to May 1996 who minimally had two visits/meetings with an advisor and had a third visit by the November 1996."	While interviews and survey questionnaire were used, data reported on user satisfaction was limited. The study measured participant levels of satisfaction with program (p.98)	Impact was the key dimension measured in this study using econometric analysis. Specifically, the rationale and effectiveness of Business Links and the value added by business support services
Wright, P.C., and Tao, F.K.C., 2001	This dimension only relevant in mentoring context	This study included no discussion of the nature of the training intervention other than in terms of its impact on knowledge	Use or training input was implicitly considered a constant in this study as all participants participated in the formal and regulated training course. Outputs or perceived skills increases were measured	Perceived increases in knowledge is the basis of measuring outcomes in this research - the course was "evaluated at the perceptual level".	The benefit of the training program was measured in terms of its impact as an increase in knowledge in nominated areas.
Leitch, C.M. and Harrison, R.T., 1999	This dimension only relevant in mentoring context	The study includes the aims of the training and development program but detail on the nature of the intervention beyond this is limited. The aims of the program were to: improve Northern Ireland's international competitiveness, increase the efficiency and proficiency of key companies within the regional economy, and to develop flexible and adaptable leadership in senior executives to provide a basis for effective organisational transformation and development (p.95)	Use of the program was considered a constant rather than monitored as a variable	The emphasis was on user perceptions of value but was supplemented by data which was solicited to supplement this perceptual data comprising "tangible evidence of changes in business performance attributable to the program" (p.101)	The impact of the program was evaluated in terms of the development of personal leadership, operational organisational development and strategic business development (p.85). This study is one of the few which explictly refers to evolving benefits - benefits which may accrue or evolve over time - which may not be immediately measureable after the program (p.98)
Chrisman, J.J., 1999	This dimension only relevant in mentoring context	The study does not present an analysis of the nature of the advice and assistance being provided by the Small Business Development Centers (SBDC's)	Participants were included if they received more than 5 hours' assistance. There is no discussion of frequency of engagement or receipt of advice beyond this	User perceptions of value were included in this study: "The questionnaire asked clients to evaluate the benefit of the SBDC's services" (p.2)	Impact was measured in terms of "changes in sales and employment between the year in which consulting was received and the year after consulting was received was calculated. Impact was measured using a complex process to arrive at a cost benefit ratio (p.3)
Lenihan, H. & Hart, M., 2004	This dimension only relevant in	The nature of the interventions is not	Details of the degree of use or	User perceptions of factors likely	Impact is measured with using a

	mentoring context	described or analysed in this analysis of two studies of support provided to Irish industry	the degree of provision of support is not included in the study	to impact on deadweight sought and formed the basis of deadweight estimates	sophisticated process which considers deadweight (improvements which would have occurred whether or not assistance was provided), displacement (where benefits for assisted firms may have negatively impacted others) and additionality (improvements which have occurred over and above what would have occurred anyway).
Thomas, T. & Landry, B, 2002	This dimension only relevant in mentoring context	There is no generic program structure detailed in the article and no description of the kind of support provided to small businesses other than the provision of "resources such as information and tools for developing export markets, linkages with universities to enhance research and development, and programs tailored to the unique needs of rural SME's" (p.2)	No measures of contact frequencies are provided	Client/user surveys were one of the multiple lines of evidence obtained by the researchers	The focus of this study is estimating economic impact. "The objective [of the evaluation] was to determine the impact of ACOA as an entity on the ultimate policy outcomes of regional employment and the employment rate, Gross Domestic Product (GDP), a proxy measure for earned income, and regional disparity as well as intermediate outcomes such as wages, business starts and exports" (p.2)
MacDonald, R. & Coffield, F., 1999	This dimension only relevant in mentoring context	The study offers a detailed critique of the rationale behind the programs offered by Government to support youth enterprise. The study explores "the quality of the experiences they undergo" and the processes they were involved in (p.6). "The motivations and decision-making of the informants [involved in the program] who had started, or were intending to start, their own businesses" (p.231) were discussed in detail. The attributes of the youth involved were also discussed in detail.	No measures of contact frequency between youth and program under which funding was obtained are cited	In-depth interviews were used to obtain detailed perceptual data from assisted youth	The study is sophisticated in its approach to impact: "We were interested in studying not just new forms of transitionfrom school to self-employment, but also the experience of enterprise .. as it related to the economic and political attitudes of our informants" (p.6). The study considered the successful and less successful in a typology which refers to runners, fallers and plodders (p.165). In this way it problematises the construct of success or complicates the paradigm of successful and unsuccessful – "the "plodders" comprised those who were "neither successful nor failures" (p.233) and "The majority experience consisted neither of wholehearted success nor of complete failure" (p.235). The study goes on to discuss the insufficient or inadequate operationalisation of the construct of success: "[just as important as] .. rates of business start-up, survival and job-generation [are] .. other dimensions of success [such as] work satisfaction, future prospects, psychological benefits [and] income." (p.248). The study also acknowledged the difficulties withevaluating impact: ".. it proved very difficult to isolate factors

					which might explain the success of some [youth enterprises] and the failure of others" (p.250)
Mentoring - in context other than small business					
Kram, K., 1988	The nature and content of mentee/mentor interaction was the major focus of this study. Detailed analysis of how positive developmental relationships contributed to career advancement and psychosocial benefits and how dysfunctional mentoring relationships don't	Study explored naturally occurring mentoring partnerships therefore no formal structured content so this dimension not relevant in this context. There was however detailed analysis of the nature of the generic forms that career and psychosocial support took.	No engagement of mentees or mentors with an imposed program therefore no "use" of system to quantify - this dimension not relevant in this context	Detailed analysis of mentee and mentor perceptions of value of the mentoring process	Detailed qualitative analysis of impact of mentoring process on mentees and mentors
Hunt, D.M., 1992	The mentee/mentor interaction is detailed tangentially in terms of the unplanned psychosocial outcomes than the key criteria of career rejuvenation and improved teacher ratings	Focus of the study is not on the nature of the interventions but the outcomes for mentors	Contact frequency an item in the interview protocol and subsequent questionnaire (p.44)	Analysis of mentee and mentor perceptions of value of program	Emphasis in this study is on evaluating the impact of a mentoring intervention for mentors with an emphasis on positive and negative outcomes and planned and incidental outcomes.
Chao, G.T., 1997	The quality and nature of mentoring interactions between proteges and mentors, and more specifically, the linkages between mentoring phases and outcomes, are the foci of this study (pp.18-19). Chao also suggests that personality characteristics and interpersonal skills would be important in advancing research in this area		Contact frequency is not reported in this study	The data provided was collected by way of self-report questionnaire	The emphasis of this study is exploring and empirically validating Kram's mentoring phases and their impact on outcomes. This study is also one of the few which employs a longitudinal engagement in the field meaning impact was measured over the course of 5 years. Impact is measured in terms of job and career outcomes, career planning, career involvement, organisational socialization, job satisfaction and income (p.18)
Noe, R.A., 1988	The content of the interaction between mentees and mentors was not formalised in this program. However the content of the interaction and the nature of career and psychosocial functions provided by mentors to mentees formed the basis of this study as antecedents to (p.477) or determinants of (p.472) successful assigned mentoring relationships. The study aimed to begin to "identify the characteristics of formal assigned mentoring program that are critical to effectiveness of the program" (p.474) Protege characteristics were also considered in relation to outcomes (p.460)		Time spent with mentor was monitored as a contributing factor towards the Quality of the mentee/mentor interaction. Mentees must have had at least four hours contact with their mentor over six months	The data was collected by way of self-report questionnaire. This is acknowledged as a limitation of the study	Impact was analysed in terms of careers and psychosocial functions - more specifically, measures were used from previous studies or developed to measure job involvement, locus of control, career planning, relationship importance, Quality of interaction and amount of time spent with mentors, gender composition of mentoring dyad and mentoring functions (career and psychosocial) (pp.465-466). The study acknowledges the limitation that it only measures short-term benefits
Seibert, S., 1999	The processes involved the mentee/mentor interaction formed the basis of this study. Proteges were asked about their satisfaction with the mentoring relationship and how effectively they utilised the mentor.	Mentor/protege pairs were involved in an initial workshop to discuss their expectations of the relationship, to establish a contract which involved meeting on a regular basis for a period of one year, clearly defined purpose and goals, voluntary participation of mentors and clear behavioural expectations (pp.488-489).	The study collected data on the frequency of interaction between mentor and protege: "86 per cent reported meeting with their mentors for 30 minutes or more between once a month and once a week" (p.489)	The study utilised self-report questionnaire so user perceptions of the nature and value of the mentoring partnership were central to this study. Seibert acknowledges this as a limitation of the study: "A second limitation of the study is that all dependent	Impact was the focus of this study. Impact was measured with reference to Kram's (1988) career and psychosocial outcomes with specific reference to job satisfaction, organisational commitment, work-role stress and self-esteem at work.

		Matching was voluntary (p.489).		variables were self-report data" (p.499)
Hale, R., 1999	The relationship built up between the mentee and mentor with particular reference to the importance of the match was one of the areas of enquiry in this research	The nature of the interaction - what was actually discussed between mentor and mentee - was explored in a general sense in terms of the types of behaviours the effective mentor would manifest. However there was no formal program in place in this instance	No interaction frequency data was reported	The study utilised self-report questionnaire and in-depth interviews so user perceptions of value were central to this study	Impact was considered in four ways: evidence of skills and behavioural development (p.6), insights gained by the mentee (p.7), (unanticipated) mentor learnings or spin-off benefits (p.6) and organisational learning (p.8)
Pfleeger, S.L., & Mertz, N., 1995	The nature and quality of interaction and processes which occurred between mentee and mentor were central to this study: The study examined "what occurred between mentors and proteges during the mentoring experience" (p.64), how senior professionals mentor junior proteges (p.64) and "the need for the people involved to 'click', to like each other, to feel comfortable with each other, and to want to be involved with each other" (p.69). The	The study aimed to "find out what was done in the name of mentoring" (p.65). The program provided as part of its structure an introduction and training workshop, but recommended more hands on facilitatation in the form of a person in the organisation interviewing the mentoring pair to remind them of goals, and more comprehensive pre-program training and preparation (p.72). The value of generic or "universal" program structure and content (p.65) as an issue in the context of each mentoring partnership being unique is raised (see also Stokes, P., Garrett-Harris, R. & Hunt, K., 2003)	The mentoring partnerships occurred over 18 months but there is no data presented on the frequency of their interaction	User perceptions of value were central to this study. Pfleeger and Mertz examine "what occurred between mentors and proteges during the mentoring experience" (p.64) and "participant perceptions of their preparation for and needs during the mentoring process" (p.65)	In this study, the emphasis was on impact in terms of career advancement because of its clear goal of mentoring being used to improve the retention and career standing of women in computer science. Impact was measured against the criteria of "changes in the status and position of proteges during and since the conclusion of the program" (p.64-65). Impact is also described in terms of "the pair's success in achieving the mentoring goals, namely to provide the experiences, opportunities, feedback and support that make it more likely for the protege to advance" (p.65) (interestingly some of Kram's psychosocial evaluation criteria are included). Successful pairs were assessed as being so if both mentor and mentee perceived it as such, if the experience involved actions and attitudes designed to help the protege advance and the mentoring partnership went beyond simply advising or supervising (p.66). The study also considered both successful and unsuccessful pairs, one of the few studies to do so
		Mentoring for small business			
Broadbridge, A., 1999	The study did not undertake an analysis of the mentoring process and this is acknowledged as a limitation of the research (p.350). The study looked at naturally occurring rather than assigned mentoring partnerships		The study does not report on the frequency of interaction between mentee and mentor	The study used self-report questionnaire so user perceptions of the value of the mentoring process were central to this study.	The emphasis of this study was to report on the benefits of mentoring. Study measured perceived benefits of mentoring in terms of the incidence of the following being reported by respondents: guidance and support, advice, honest discussion, confidante, friendship, career development and sponsorship, encouragement, role modelling, and acceptance and confirmation.
Dusseldorp Skills Forum, 1999	A limited discussion of mentee/mentor interactions is set out in a series of five	There is no formal program structure so there is no data on the content or structure	Business mentees are described as having accessed	The study used interviews and self-report questionnaires and this	A section headed Program Outcomes details the takeup of the program and the

mentor case studies and five mentee case studies.	of the intervention program other than in the form of benefits reported by participants	the program for anything from 2-3 hours a week to developing longer-term relationships but no further detail is presented	is how the data on user perceptions of success and barriers to success was collected	number of businesses still viable. The section also includes a count of mentors and the man hours contributed. This section goes on to report results of the survey in terms of the percentage who felt their objectives had been met by the program. The study then reports on benefits reported by mentees. mentors and the broader business community; these results are not quantified.
Devins, D. & Gold, J., 2000	This study is exceptionally clear on the importance of the quality of the mentee/mentor interaction: "In nearly all cases, the development of the relationship has formed the cornerstone of subsequent activities and we would argue that it is the development of the relationship which is the most significant outcome .." (p.254).	Business mentors worked with individual business managers to determine their needs. The inappropriateness of generic skills training and competency-based approaches in the small business context is discussed and the need for each business to engage with a mentor in a "unique" way (p.251) is acknowledged. Further to this, no generic program structure was provided	The mentoring partnerships are described as developing over 3-6 months with prompting and pushing (p.254) but the actual frequency of interaction is not presented in the article	User perceptions of value were central to this study. Mentees were interviewed and their perceptions of their interactions with the mentors and perceived outcomes form the basis of the data upon which this study is presented	The mentees' perceptions and the researchers' understanding of the impact of the program are presented as outcomes: "There have been major changes evident in structure, the development of strategy and action plans, the use of information to inform decision-making and greater awareness of training and development issues" (p.254). These are acknowledged as subjective, however the soft measures are described as clearer than profit increases, turnover or other impact measures (p.254)
Kent, T., Dennis, C. & Tanton, S., 2003	The researchers acknowledge in their review of the literature that "the quality of relationships has been found to be important" (p.442). While not a lot of detail is provided in the analysis, the researchers identify the perceived quality of the mentees' match with their mentor as a measure used in the measurement of overall user satisfaction	Assistance consisted of a mix of phone calls and meetings delivered over a period of up to six months. Thus, the nature of the intervention was contingent upon the particular needs of the individual retail manager	The frequency of interaction is not presented in the article other than to report that each retail manager was able to access 26 hours of assistance	An analysis of user perceptions of value were central to this study. The researchers suggest that "the stories that we tell" are the best way for "researchers to come to know about people's experience of mentoring" (p.443)	Impact was measured against seven key program objectives and the reported degree of fulfilment of these objectives. The objectives included maximise sales, develop new ideas, produce action plan, adapt to changes, become more entrepreneurial, develop contacts and network, and other
Bisk, L., 2002	Mentees are asked for their perception of the value of the relationship with their mentor.	There was no program-wide generic information provided to mentees in this program. Data on the types of advice provided - personal, general business, specific business and specific technical - is presented and discussed in terms of "career" and "psychosocial" advice	Data on contact frequency is not presented as part of the research	User perceptions of value were central to this research. Methodology used was self-report questionnaire: "the entrepreneur mentees themselves, through their responses to the various questions, have offered their perception of the value of the relationship" (p.267)	Benefits or effectiveness specifically measured in terms of (1) whether career related advice needs to be sourced from a mentor in the business or industry of the mentee's enterprise, (2) whether the success rate of entrepreneurial mentoring relationships would increase if mentors and mentees participate in an orientation program, and (3) socio-cultural conditions, age and education of the mentee and age of the enterprise have an impact on perceived benefits (p.267)
Deakins, D., Graham, L., Sullivan, R. & Whitlam, G., 1998	Information on the "client relationships with their mentors" was sought and detailed: ".. 69 per cent of entrepreneurs reported a very good relationship with	Generic program-wide content was not part of this intervention. Data on the types of advice received is detailed (p.157)	The mentor/adviser was assigned for a period of 18 months (p.154) but no data on contact frequency beyond this	User perceptions of value were central to this research. The researchers used semi-structured interviews	The "value of the intervention" is evaluated with reference to (1) the importance of advice from the mentor relative to advice from others (p.156),

	their adviser" (p.157)		is presented		(2) the frequency of advice received in nominated areas (p.157), and (3) the perceived significance of the intervention (p.157)
			E-mentoring - in a context other than small business		
Gordon, S.M., Edwards, J., Brown, G., Finnigan, F.A., Yancey, V., Butler, A.Y., Davis, W.D. and Stitt, D.M., 2005	The study considered in detail what students, alumnae and faculty considered to be effective mentoring	This mentoring program was informal in the sense that it was without a shared structure so while evaluation considered what characterised effective mentoring, it did not evaluate a generic program structure. Study considered how technology impacted on the mentoring model (p.31)	Use - data on contact frequency was either not collected or not reported on. Mentoring relationships described as being "the result of two people who were willing to communicate frequently" (p.46) but no further detail provided.	User perceptions of value were central to this study - it involved "gather(ing) constituents' perceptions" (p.35)	The impact of mentoring was central to the study in the form of academic guidance, personally directed support, effective communication, willing and active collaboration, face to face interactions, relationship growth.
O'Neill, K., 1998	O'Neill's study considered in detail the interaction between mentee and mentor.	This program was curriculum based. The curriculum was considered a constant; the focus was on students' engagement with the curriculum with the assistance of the teacher and an externally-based scientist mentor.	The program was set up to automatically log the number of email interactions between students and mentees, so use was regarded as an important dimension	Perceptions of value of participants including students, teachers and mentors was critical to this study	The impact of e-mentoring on the sophistication of students' science reports was central to this study. The study also explored successful and unsuccessful e-mentoring relationships in the form of in-depth case studies
Brown, S.C. & Kysilka, M.L., 2005	All reflections and emails between mentees and mentors were collected by the host and analysed thematically. The nature and quality of the interactions is considered in detail	The content and structure of the formal program is the subject of discussion and analysis in this study. Facilitation from the host was in the form of assigned topics relating to curriculum issues. This created difficulties for participants in that, as mentees were about to undertake their first teaching placement and they had limited understanding of what the curriculum would comprise, their concerns were in areas other than curriculum and the preferred focus of their discussions was outside curriculum issues (p.191-192)	Data on use was maintained by program developers but contact frequency is not specifically referred to	The perceptions of the value of the program from the perspective of the researchers, the mentees and the mentors were central to this study	The study focused on the impact of the program by considering the professional growth of mentees and mentors
Asgari, M. & O'Neill, D.K., 2005	Mentee judgments of the quality of their mentoring partnership were measured by their responses to a series of questions regarding respect, friendliness, trustworthiness and attention to detail	The curriculum-based program called Tracking Canada's Past provided the content of this mentoring intervention. A list of 91 possible topics for research formed the basis of matches and interaction between the dyads	No data on contact frequency was reported. This is perhaps surprising considering the acknowledged link in the literature between contact frequency and success	The mentees' perceptions of value were central to this study	The study of mentee expectations of success and the impact of a range of variables upon their expectations were the focus of the study. Success was measured exclusively in these terms.
Dimock, K.V., 1997	The interaction between the subject matter experts and students is central to this study	This is a curriculum-based program where subject matter experts volunteer to mentor students exploring specific topics. Teachers request a match and then subject matter experts provide mentoring by email. "The teachers laid down the warp threads by committing to the projects, deciding on goals for the project, and structuring the exchanges" (p.38) so the structure of the interventions may be standardized but not the individual content	The way the technology in the form of email was used was described but data on the frequency of interaction was not presented	User perceptions of value were central to this study - face to face interviews collected the stories of the teachers, students and subject matter experts	Impact analysis was in the form of exploring student interest in and engagement with the topic and the mentor
Boyle-Single, P., Muller, C.B.,	The quality and nature of the mentor	As a formal structured program, structure	Contact frequency between	"Participants' assessments of their	One of the major aims of the study was

Single, R.M. & Carlsen, W.S., 2002	interactions are central to this study.	and support provided by MentorNet is discussed in detail. The support comprised training, email prompts, monthly e-newsletters and electronic discussion groups (pp.6-7). Satisfaction with "programmatic features" was central to the study	mentoring partners is not explicitly discussed in this study	mentoring experiences" and their satisfaction with MentorNet and specific programmatic features were central to this study (p.9)	to measure the benefits and value of the MentorNet program. Benefits were measured in terms of changes in self-confidence, mentees' interest in future careers and satisfaction with programmatic features (p.9)
Lewis, C.W., 2005	The quality of the mentee/mentor interaction was measured in this study by using a range of questions such as "rate the quality of the matches between students and mentors", "indicate the quality of the relationship that developed between you and your student", and "how comfortable were you communicating with your mentor about your project?"	The study does not present information or data on the actual content of the interactions	Contact frequency with the mentor group (p.12), and messages sent by mentors to students (p.18) and students to mentors (p.28) were measured	User perceptions of the program was measured with reference to overall experience in the program (p.25), positive aspects of the program (p.30)	Measures of impact changed during the time period covered by this evaluation study. Measures were extensive and included improvement in: proactivity, writing skills, self-directed learning, critical thinking, teamwork, workplace/career awareness, integration of knowledge across subject areas, desire to go to college, grades, critical thinking, and science and math comprehension (p.9)
Cascio, T. & Gasker, J., 2001	The substance of the interactions between mentee and mentor forms the basis of the qualitative analysis (pp.289-291)	The content of the program is discussed in terms of the structured prompts in the first four weeks beyond which students created their own topics (p.286)	The study included a count of exchanges - 102 from mentors and 108 from mentees	User perceptions of the nature and value of the exchanges was central to the qualitative section of this study. The questionnaire which was the data collection method for the quantitative analysis was also self-report	Impact was measured for the quantitative section of the analysis in terms of mean scores on social work values scale. Impact was greater for the experimental group than the control group. In the qualitative section of the analysis, impact was measured in terms of teaching, validation, emotional support, normalizing, and expressing enthusiasm for the profession (p.288)
E-mentoring for small business					
Rickard, K., 2005	Measured with reference to satisfaction with match, with assistance and advice provided and mentees' views on skills of mentor	Measured with reference to satisfaction with pre-program training, review of business plan, program duration, usefulness of facilitation messages and structured web-based exercises. The pedagogical structure of the program is detailed in an article which appeared in the UK journal Mentoring and Tutoring (Rickard 2004). Study measured satisfaction with website access, access to documents through links provided, any problems experienced with email and other infrastructure and reliability of program host	Measured with reference to contact frequency and engagement with website exercises	Measured user perceptions of value with reference to program experience as measured by a range of criteria including whether participant would recommend program to others, would take part again, whether they used mentor as sounding board and survey respondents' perceived value of program	Measured program experience with reference to a range of criteria including whether participant would recommend program to others, would take part again, whether they used mentor as sounding board and survey respondents' perceived value of program
Stokes, P., Garrett-Harris, R. and Hunt, K., 2003 (The MentorsByNet program was a sister program to Mentors Online program (Rickard, 2005). Very similar evaluation instruments were used so the dimensions of the DeLone and McLean construct	Measured with reference to satisfaction with match, with assistance and advice provided and mentees' views on skills of mentor	Measured with reference to satisfaction with online training, relevance of program, review of business plan and usefulness of review of business plan. Facilitation messages not used by host and there was no requirement to review business plan. The value (or otherwise) of generic or "universal" program structure and content as an issue in the context of each mentoring	Measured with reference to satisfaction with contact frequency	Measured user perceptions of value with reference to program experience as measured by a range of criteria including whether participant would recommend program to others, would take part again, whether they used mentor as sounding board and survey respondents' perceived value of	Measured with reference to realisation of specific goals and plans, whether participant would recommend program to others, would take part again, whether they used mentor as sounding board and survey respondents' perceived value of program

were operationalised in very similar ways.)		partnership being unique is raised (see also Pfleeger & Mertz, 1995) Study measured difficulties with computers		program	
Megginson, D., Stokes, P. & Garrett-Harris, R., 2003 (The MentorsByNet program was a sister program to Mentors Online program (Rickard, 2005) and the program referred to in Stokes et al 2003). Very similar evaluation instruments were used so the dimensions of the DeLone and McLean construct were operationalised in very similar ways.)	Measured with reference to satisfaction with match, with assistance and advice provided and mentees' views on skills of mentor	Measured with reference to satisfaction with pre-program training, review of business plan, program duration, usefulness of facilitation messages and relevance of program (facilitation messages not used and no requirement to review business plan). Study measured difficulties with computers	Measured with reference to satisfaction with contact frequency	Measured program experience with reference to a range of criteria including whether participant would recommend program to others, would take part again, whether they used mentor as sounding board and survey respondents' perceived value of program	Measured with reference to realisation of specific goals and plans, whether participant would recommend program to others, would take part again, whether they used mentor as sounding board and survey respondents' perceived value of program

Table 2 - Methodology - Summary of review of variables related to Internal Validity in the interdisciplinary studies relating to mentoring (Checklist 2)

Study	Time frame	Research strategy	Data collected on demographic variables? Contextual variables controlled for?	Evaluative referent (e.g. outcomes related back to program goals, compared with a similar program or with a control group?)	Context explicitly discussed?	Assigned mentors or partnerships occurred naturally?	Is program supported by a third party and generic program structure?	Qualitative/ quantitative approach	Summative and/or formative evaluation - what as well as the how	Useful to practitioners, policy-makers (:policy relevant) or researchers? Clutterbuck and ??
					Training and small business interventions					
Hart, M. & Roper, S. 2003	Cross-sectional	Quasi-experimental – aims to control for assistance and selection effects – comparative analysis between assisted and non-assisted firms – internal validity check – comparison between assisted and comparator groups	Comparison with a control group of196 non-assisted firms meaning study controlled for assistance and selection bias Matching of control group on the basis of sector, employment size and geographical cluster. However the complexity of modelling and assisting small business is acknowledged (p.2), possibly a concession that a range of variables, namely embracing market conditions, business strategy, characteristics of the owner-manager and the firm itself, are difficult to control for	Evaluative referent in this study was a matched comparison group	Additional factors contributing to productivity including extent to which market conditions are embraced, business strategy, characteristics of the owner-manager and the firm itself, are acknowledged as contributing to the difficulties in modelling and assisting business. Of course, what is not explicitly acknowledged is the fact that these factors may ultimately make it impossible to achieve the researchers' stated desire to achieve a study which is at Storey's Level 6.	Not relevant in the context of non-mentoring interventions	Businesses are described as often receiving a range of business supports from Business Links in addition to advice and consultancy but there is no specific generic support provided	Quantitative analysis of impact	Summative or outcomes based	Highly policy-relevant in that effectiveness of Business Link intervention is being measured and potential biases controlled for
Wright, P.C., and Tao, F.K.C., 2001	Cross-sectional	Non-experimental – no control of extraneous variables	This study did not attempt to control for variables such as education level, gender, business type or size of business. This study did not include an analysis	Outcomes related back to program goals so this was the evaluative referent in this case	The diversity of the small business population is not explicitly acknowledged so the impact of context on training outcomes is not discussed as part of		Program is essentially a distance learning program so it is supported by the university	Self-report questionnaire and interviews so combined qualitative and quantitative analysis. Researchers advocate use of	Study used a summative or outcomes-based approach	The study aims to offer to practitioners and policy-makers, a model for enhancing the learning and behavioural changes effected by

Study	Design									
			with a matched comparator group		the study			hard and soft measures of effectiveness but doesn't actually apply that in their study		undertaking training
Leitch, C.M. and Harrison, R.T., 1999	Cross-sectional	Non-experimental - combination of entrepreneurs and small busines owners and executives (managers) leaves the study's internal validity open to challenge – possible failure to control for this critical variable	Data broken down across demographic characteristics including gender, managerial level, industrial sector and course objectives	Effectiveness is judged with reference to the goals of the program	The differences in the settings in which the learnings will be applied and the impact of this context on the relevance and efficacy of learning outcomes is not explicitly discussed		This was a degree course so it was directly supported by the university	Approach which combines qualitative and quantitative approach	The stated aim of this analysis is to undertake a formative analysis but the emphasis appears to be more on outcomes than detailing the nature of personal of business development and how the outcomes were achieved	The study demonstrates the "efficacy of an action learning-based approach" (p.105) which is useful to designers of management education and users
Chrisman, J.J., 1999	Longitudinal – with a view to showing that the intervention program "adds value consistently over time" (p.1)	Quasi-experimental – comparison. Limitations to internal validity acknowledged: "no attempt was made to control for inflation, differences in tax rates, or types of clients served" (p.3)	While data on gender, ethnic background and industry was collected, the researcher acknowledges that "no attempt was made to control for inflation, differences in tax rates, or the types of clients served" (p.3)	This study is a comparison of outcomes between 1990 and 1992 programs, so the evaluative referent is the other program	Potential differences in collective outcomes for SBDC's in different regional contexts is acknowledged as a potential variable but discussion is limited (p.7)		No generic program structure but ongoing support is part of SBDC's service	This study combines a qualitative and quantitative approach using "hard" and "soft" measures. As well as asking the survey respondents to report on their perception of the benefit of the services, they were asked to "provide their sales revenues and employment levels for the year in which counseling was received and for the subsequent year" (p.2)	The focus of this study is primarily on the outcomes of the policy intervention - so a summative approach. It does however suggest that the research indicated that the SBDC's would benefit from improving the efficiency of their operations (p.7)	The study is presented as useful to a range of stakeholders:: "This exercise is useful for entrepreneurs who may be unaware or unconvinced of the benefits the SBDC offers and to policy makers charged with the task of allocating limited public resources" (p.1) and to SBDC directors (p.2)
Lenihan, H. & Hart, M., 2004	Cross-sectional	Quasi-experimental – accounts for selection, displacement and deadweight to estimate additionality – high level of internal validity	The focus of this study is on considering how the concepts of deadweight and displacement were accounted for in two other studies. There is little detail available on how	This study compares outcomes for assisted and non-assisted firms. The researchers suggest that "Evaluation should consider what would have happened in the	Impact of context accounted for in findings		No detail provided	Quantitative analysis informed by positivist approach. Quantitative data was obtained in the first study considered by in-depth face to face interviews: "data	The clear focus of this study is on outcomes or additionality once deadweight and displacement are taken account of - so very much a summative approach	This study is likely to be most useful to researchers as it addresses a key methodological challenge associated with evaluation of small business interventions

			and which contextual variables were accounted for but, in relation to deadweight, the variables of grant type, size of firm, whether the investment appraisal included grant and whether firm was a first-time or repeat grant recipient (p.9) were included in the analysis, so while the basics of age, gender, sector, etc were not mentioned it seems reasonable to assume these factors were accounted for in the original study but not presented in this article	absence of assistance" (p.1)				emanating from the interviews were then used to obtain estimates of deadweight and displacement" (p.4). The method of obtaining data in the second study considered is not presented.		
Thomas, T. & Landry, B, 2002	Longitudinal – 1992-1997	Quasi-experimental design one of the lines of evidence	The study does not detail how or whether or not data on variables such as age or gender were collected or controlled for in the study	The goals of the program are the referent against which effectiveness is measured	The individual settings into which the assistance was provided is not the focus of this study. The context is discussed in terms of the economic impact on the region		No detail of specific programs funded under the policy are discussed	This study combines a qualitative and quantitative approach: "..both qualitative (client/user surveys and independent verifications) and quantitative , such as economic statistics from multiple sources, econometric modeling and time-trend analysis versus a comparison group" (p.1)	The focus of this study was exclusively on an analysis of outcomes so a summative approach	The study is intended to inform the government department/s responsible for funding the programs on the on the program outcomes as a basis for continuing funding. The study was "designed to inform decision making by senior Agency Management and ministers of the Crown" (p.2)
MacDonald, R. & Coffield, F., 1999	Cross-sectional - 15 months – but interviews at different stages of	Non-experimental – ethnographic approach – observation – high	The difficulty of controlling for contextual variables is	Success is evaluated at the individual level with reference to	Context is both problematised and explicitly discussed. Refer to discussion		Funding and some support is provided by enterprise schemes,	While the study included a survey and series of interviews with key	The program uses a sophisticated summative evaluation of the	This study is useful to practitioners, policy-makers, researchers and is

	setting up and running businesses – claims causal links are better explored using qualitative approach rather than associations between variables which are gained from a quantitative approach. Acknowledges the limitations: "it proved very difficult to isolate factors which might explain the success of some and failure of others	level of internal validity	discussed: Of class for example MacDonald and Coffield say "[we] .. simply find it difficult .. to unproblematically 'read off' their class from that of their parents" (p.17). The researchers also acknowledge the complexity of controlling for contextual variables: "it proved very difficult to isolate factors which might explain the success of some and the failure of others""(p.250). Demographic details such as age, gender and sector are discussed (p.232)	the particular aspirations of the individuals while effectiveness is evaluated with reference to policy aims	on controlling for contextual variables and impact		coperatives and community projects (p.5)	professionals involved in providing enterprise support, this study was built around the 100 in-depth qualitative interviews. The researchers discuss the advantages of qualitative studies in that it provides a basis for studying individual choices in context, for discussing complex sensitive questions, for obtaining unexpected. less tangible (p.233) and sometimes contradictory information (pp.9-10)	success of Government-funded support for youth enterprise and the implications for policy and how it might be reviewed in light of the findings	likely to be of interest or useful to the individuals who participated in the study
Mentoring - in context other than small business										
Kram, K., 1988	Cross sectional	Non-experimental	Discussion of impact of gender on developmental relationships but other contextual variables not controlled for	Not an intervention program. No formal comparison with a control group which were not involved in developmental relationships	Impact of organizational features considered but not empirically analysed. "Relationships at work are situated in an organizational context. Features of the organization, including its culture, the reward system, task design, and performance management systems, affect relationships by shaping individuals'	Naturally occurring	Not supported by generic program structure	Detailed qualitative analysis in the form of in-depth semi-structured interviews. "Individuals personal accounts ... offered insights into the essential characteristics of these developmental relationships .." (p.7)	Summative and formative approach to evaluation of mentoring	Useful chiefly to practitioners and researchers - "This book provides the foundation for students, practicing managers, human resource specialists and organizational researchers to pursue the challenges and opportunities [of mentoring].

					behaviour. It is essential to understand how an organization's structures and processes influence behaviour .." (pp. 15 & 16) and "While it is true that there is a common set of mentoring functions ... mentor relationships vary across organizational settings .." (p.197)					
Hunt, D.M., 1992	Longitudinal (7 years)	Non-experimental	No discussion of academic setting in which the mentoring partnerships were placed	Longitudinal study which compares mentor outcomes at the beginning and end of a 7-year time frame. Outcomes measured are directly related to program goal of career rejuvenation	Minimal discussion of context and how contextual variables might impact the findings. For example, there is no discussion around other avenues provided to senior faculty for rejuvenation which may have impacted the outcomes	Assigned – matched	Weekly work on project and bi-weekly symposiums	This study uses a quantitative approach	Chiefly a summative outcomes-based approach	Useful to practitioners: "Future research should continue to examine longitudinal outcomes not only for mentors but also for their organizations and proteges" and "..the practical message to personnel specialists and researchers of planned mentoring programs .. is to .. be aware of unplanned outcomes and do not relegate the mentor to secondary status." (p.47)
Chao, G.T., 1997	Longitudinal (5 years)	Experimental	This study compares with a control group of non-assisted individuals. Data on age, gender and job tenure were included. The study	The comparator or evaluative referent was a non-assisted group: "Data from 82 current proteges and 69 former proteges were compared with those from 93 individuals who	The study was contextualised in the literature. Chao acknowledges the need to include context in terms of personality characteristics, interpersonal skills	Data collected on those mentored without distinguishing between assigned and naturally occurring mentorships so it includes both spontaneous and	Study collected data on those mentored but did not distinguish between mentoring which was or was not supported but a third party	This study uses a quantitative approach to empirically test the validity of Kram's (1988) mentoring phases	The study combines a summative and formative approach - outcomes are looked at in relation to phases of mentoring partnerships - under the	The study is aimed at validating Kram's (1988) work which described mentoring phases, so it is chiefly targeted at researchers. However Chao also

			acknowledges that understanding the importance of variables associated with the proteges such as personality characteristics, interpersonal skills and impression management would advance research further (p.27)	reported never having a mentor" (p.15)	and impression management effects (p.27)	supported mentoring relationships			dimension of the quality and nature of mentee/mentor interaction	suggests that "a better understanding of relationships among mentoring phases, functions, and outcomes can help organisations and individuals maximise positive outcomes for mentors, their proteges, and the organisation as a whole" (p.16)
Noe, R.A., 1988	Cross-sectional analysis so measuring only short-term effectiveness (p.477)	Experimental	Age, gender, locus of control, job involvement, career planning, relationship importance and quality of interaction were some of the individual demographic variables measured (pp.462-463	This study examines the influence of protégé characteristics, gender composition, quality of mentoring relationship and amount of time spent with the mentor on career and psychosocial benefits (p.457) in formal or assigned mentoring partnerships and compares with outcomes from previous studies of outcomes of informal or non-assigned mentoring programs	This study is sophisticated in its measurement and understanding of context	Assigned - each mentor was assigned up to five proteges	Mentoring not supported	This study uses a predominantly quantitative approach though it did include some open questions in the survey questionnaire (p.473)	A combined summative and formative approach was adopted in order to: "identify the characteristics of formal assigned mentoring programs that are critical to the effectiveness of the program" (p.474	This research tested the measurement instrument designed by Noe and is useful primarily to researchers but also to those developing and evaluating programs
Seibert, S., 1999	Longitudinal (1 year)	Quasi-experimental research design to account for differences in the dependent variables so high level of internal validity. Small sample size	Demographic data was collected on age, work experience, education level and ethnic group. Seibert notes that the study doesn't control for personality (p.485). Control variables	This study considers effectiveness for participants in a facilitated mentoring program compared with non-mentored counterparts. This is followed by a discussion which	The organisational context is the same for the assisted and non-assisted	While the mentors were made available via the mentoring program, the proteges could self-select their mentors. So while the mentoring partnerships were not formally	Mentoring not supported	This study uses a quantitative approach to test the hypotheses proposed	The study takes a predominantly outcomes based approach so a summative analysis	This study is useful to researchers and practitioners by measuring the impact of mentoring in the context of facilitated relationships

			were salary, relative salary, alternative employment opportunities and hours worked per week	relates these outcomes back to studies which explored outcomes for spontaneously occurring mentoring partnerships		assigned, nor did they occur spontaneously				
Hale, R., 1999	Cross-sectional	Non-experimental	No demographic data is presented and there is no attempt to control for contextual variables	The only evaluative referent mentioned in the study is the aim of the program, however the discussion of the results don't directly refer back to this	Organisational context is briefly discussed but the contextual variables are not considered further	Mentees were assigned mentors with the match primarily based on common learning styles	Mentors were provided with training and a questionnaire was completed as a basis for matching on learning styles. This was the substance of the support	The study adopted "a qualitative research methodology that uses a systematic set of procedures to develop and inductively derive theory about a phenomenon" (p.2)	Study uses a combined summative and formative approach. The study is presented with a view to being useful rather than improving the substance of the program being offered within the organisation	The research is presented as aiming to: "develop guidance and tools to help practitioners responsible for setting up mentoring schemes in organisations" and to "be of interest to practitioners and researchers in the field of mentoring: (p.2
Pfleeger, S.L., & Mertz, N., 1995	Cross-sectional	Non-experimental – internal validity open to challenge in that it doesn't have a control group design – "the changes might have occurred if the project had never existed" and "it is not clear to what extent the changes in the status or position of proteges can be attributed to the mentring project or anything done in its name" (p.69	No demographic data is presented and there is no discussion of whether any contextual variables are controlled for. Pfleeger and Mertz do state that the article is intended to describe what makes mentoring work rather than to "focus on their experimental design and data" (p.64	The stated aim of the project was on "mentoring for advancement" (p.64) and impact was measured with reference to this objective in qualitative and quantitative terms: "of the ten industry proteges, five received promotions since the inception of the mentoring project, and two received salary increases	The issue of context is problematised in this study and the difficulty of controlling for contextual variables is acknowledged: "Each experience was to some extent unique, involving as it did specific persons in a particular organisational environment within a project in which no attempt had been made to standardise factors of that relationship" (p.66) and "Although each mentoring pair took a different approach"	Partnerships assigned	Supported in preparation stage but not throughout the partnership	Qualitative approach	Pfleeger and Mertz's study combines a summative and formative approach. Outcomes are discussed in terms of the mentoring processes which brought the benefits about	The study is intended to be useful to practitioners and program developers

| | | | | | (p.72). The settings into which the programs were put in place comprised three universities and three commercial organisations and there is no comparison of differences in outcomes for these different contexts. | | | | | |

| | | | | | Mentoring for small business | | | | | |

Broadbridge, A., 1999	Cross-sectional	Non-experimental - no comparison with a matched group of non-assisted individual but demographic data collected on basis of employment (full or part-time), years of work experience, age, gender, marital status, whether or not respondents had children and education level	The study draw from a pool of managers and compared benefits for assisted and non-assisted managers but no formal control group with matching across key characteristics appeared to take place.\n\nStudy did not control for duration of mentoring partnership and this is acknowledged in the study	Comparative approach which evaluates benefits for retail managers who have and have not been involved as proteges in the retail sector - evaluative referent for assisted managers is non-assisted managers	There was no commonality to the mentoring interventions which were being studied. Nor was there commonality in the contexts in which the mentoring was undertaken. The sample was drawn from across the grocery, convenience, mixed goods and clothing sectors so clearly the mentoring activities occurred in a broad range of settings	Naturally occurring	Partnerships not supported by third party	Study combined qualitative and quantitative analysis in the form of self-report survey questionnaire which included open questions	Emphasis on summative outcomes-based approach	Useful to practitioners in that it focuses on the potential for mentoring to assist the personal and career development of managers in the retail sector, an area which had, according to the researcher, not been explored until then - "While there have been many studies investigating the role of mentors in the career development of managers, to date, the author knows of no empirical study ... which has examined the ... retail environment". (p.342)
Dusseldorp Skills Forum, 1999	Cross-sectional	Non-experimental – case study approach, Lack of comparison with non-assisted matched ocmparison group combined with a	Contextual variables are not controlled for, so impact of program could not be isolated from the impact of other variables.	Evaluative referent unclear. Program goal was to support small business so too broad to refer back to as the referent. The more specific objectives	The study includes a general discussion of the importance of small business to the Australian economy but the settings in which	Assigned	Partnerships were supported by third party host/facilitator	Combined qualitative and quantitative approach - survey, interviews and feedback	Combined summative and formative approach - study analyses benefits but also on how the program could be improved	The study suggests that it is useful to researchers in that it provides "research and evidence of the benefits derived from business

		broad definition of mentoring process means that attributing the outcomes to the program can be challenged – questionable internal validity	The program is not structured so not only is the intervention for each mentee different, the assistance is delivered in a different setting or context for each participant	of the program referred to under the heading "Objectives of the Business Mentor Programs" (p.3) are not referred back to in the evaluation of outcomes	the business mentoring assistance was provided is not explicitly discussed or analysed as part of the study					mentoring" (p.14) but also that it is useful to the program hosts by providing information that will assist with long-term planning and development, and support funding applications (p.2). The report includes Recommendations for Future Action (p.13)
Devins, D. & Gold, J., 2000	Longitudinal (at six-monthly intervals but not explicit over what time period)	Non-experimental – case study approach. Devins and Gold acknowledge that outcomes are contingent upon a wide range of factors which reflect the uniqueness of the company. Internal validity acknowledged as problematic in this type of study	Contextual variables not controlled for but article is informed by a sophisticated understanding of the difficulties of doing this in the small business context, specifically the "uniqueness" of each context in which mentoring occurs (p.251). The describe the BC's work as "contingent on a wide range of factors which reflect the uniqueness of the circumstances of the company" (p.252)	The study is underpinned by an acknowledgement of the problems associated with using an evaluative referent. The report includes a discussion of the methodological challenges of referring to anticipated program goals when discussing program outcomes: ".. the crucial point about all the examples is their unpredictable path and their lack of connection to the predicted package of resources and activities that had been developed in advance of the program" (p.254). Outcomes for the assisted group are not compared with outcomes in a similar program, nor with a control group.	Context is problematised and explicitly discussed in detail	Assigned/formal	Partnerships not supported	Qualitative approach (hard measures rejected)	An action research approach which involved the program developers with small business in informing the further development of the program - so a formative approach - but also an emphasis on the benefits arising from the program - so also a summative approach	Study useful to practitioners and researchers

| Kent, T., Dennis, C. & Tanton, S., 2003 | Cross sectional | Non-experimental – qualitative study – acknowledges threat to internal validity because of the greater diversity of respondent, working conditions, educational attainment and learning (compared with in an organisational setting) creates issues of threats to objectivity and difficulties with accounting for bias (p.447) | Context was discussed issues around training and learning for small business managers in the retail sector (p.440). The differences between contexts in which mentoring occurs in an organisational setting compared with the small business environment (p.442) is also discussed: "[In the organisational setting] the variables are limited. With SME retailers [there is a] greater diversity of respondent, working conditions, educational attainment and learning" (p.447). The difficulty of controlling for contextual variables in small business research is well acknowledged and understood | Program outcomes are assessed against the program objectives | The diversity of context/settings in which the mentoring was provided is acknowledged as being across micro-businesses in the grocery, lighting, floristry, stationery, jewellery, photographic, gift, second hand records and books, pharmacies, travel agents, restaurants, dry cleaning, hairdressers and medical services (p.443). This is compounded by, the researchers suggest, variables such as the diversity of respondent, working conditions and educational attainment, all of which make the variables "less limited" than in an organisational setting (p.447). The researchers problematise the issue of context in small business research | Naturally occurring | Partnerships not supported | The study uses a combined qualitative and quantitative approach that "allows for both structured information common to all participants and room for reflexive questioning" (p.443) but the primary emphasis is on qualitative data. The researchers quote Broadbridge who suggests that "a qualitative approach provides more in-depth insight into the nature, role and benefits of the mentoring relationship" Ip.434) | A combined summative and formative approach: "The research will draw some initial conclusions about the effectiveness of mentoring for this group but also outline emerging issues to be assessed in the later stages of the research" (p.440 | The research is potentially useful to practitioners, researchers and policy-makers |
| Bisk, L., 2002 | Cross-sectional | Non-experimental – no control group so open to challenge on the basis that sample could be contaminated by other variables. "Soft" measures used | The study looked at the influence of age and education of the mentee, and the age and socio-cultural context of the enterprise. The general context of entrepreneurship and seeking help in the Irish context | Evaluative referent is unclear - effectiveness of this program not compared with other different or similar interventions, and there is no control group. Implicitly the evaluative referent is a | Setting/context is discussed generally in terms of entrepreneurship and seeking help and advice in Ireland. Specifically context is investigated in terms of age and education of the | Assigned | Mentees supported by third party and mentor throughout program but not by a generic program structure | After suggesting that the basic difficulty of a quantitative approach using measures such as increases in revenues or increases in payroll taxes is that it is "difficult to attribute the | An outcomes-based approach is combined with an analysis of how the mentoring relationships operated in terms of advice sought and provided - so a combined summative and formative approach | While the evaluation is conducted in terms of the outcomes for mentees, there is an indication that there may be confusion around the aim of the intervention program for the individual |

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			are discussed. The difficulty of controlling for contextual variables is acknowledged in terms of "hard" measures (p.266), but not discussed in relation to "soft" measures or qualitative research. Importantly, the study is one of the few to discuss the potential difference of the impact of mentoring in the organisational compared with the small business context (p.263 & 269)	comparison with non-assistance	mentee, and age and socio-cultural context of the enterprise			'success' of these mentoring programs solely on the basis of the [intervention]" (p.266). Bisk chooses to base his study "on the responses of the entrepreneurs themselves as the principal measure of success" (p.266) - a qualitative approach		enterprises, and the aim of the intervention at the policy level: "The potential contribution of entrepreneurial mentoring programs is as a component of economic development. They are not intended to reduce the failure rate and not increase the start-up rate" (p.265). A stakeholder analysis may have helped clarify the analysis
Deakins, D., Graham, L., Sullivan, R. & Whitlam, G., 1998	Longitudinal (18 months)	Non-experimental – however data on profile of business and personal profile including financial targets and fince sources collected. Comparator group but not matched sample	While contextual variables are not controlled for, data is collected on a wide range of demographic categories under the headings of personal profile and business profile	Evaluation was in terms of the objectives of the policy under which the intervention was introduced (objective of program at p.154)	The study is located in the context of the literature, but the issue of multiplicity of contexts into which mentoring is provided is not discussed in terms of a methodological constraint - the constraint to an experimental approach is discussed in terms of the physical and cost barriers (p.155). Business profile and personal profile data is annexed to the article so other researchers can have access to the detail of context in	Business advisers are assigned	Partnerships are "monitored and tracked" by the researchers. Ongoing business advice available to mentees	The study uses a combined qualitative/quantitative approach because "the objectives of the research project .. lay in both qualitative and quantitative outcomes" (p.154)	The study combines a summative and formative approach: "the emphasis of the research was on the processes involved in early stage development and the significance of mentor intervention during this early stage" (p.155)	A strong link is drawn between the outcomes for mentees and the wider significance of these outcomes to policy on public sector support to new start entrepreneurs

					this form					
				E-mentoring - in context other than small business						
Gordon, S.M., Edwards, J., Brown, G., Finnigan, F.A., Yancey, V., Butler, A.Y., Davis, W.D. and Stitt, D.M., 2005	Cross-sectional	Non-experimental – analysts used open coding to explore themes and relationships arising from the data. Difficulties with internal validity acknowledged – "The reasons for the difference in our career and role modeling findings are likely to have more to do with the characteristics of the students in our program than with the online technology" (p.46)	65 interviews provided data - 40 students, 15 alumni and 10 faculty members. Sophisticated approach to sampling: "A stratified sampling frame that included gender, race, length of time in the program or graduation date, geographic location, and Mentor was used to randomly select 20% of the students and 15% of the alumni. Half of the 20 faculty members were randomly selected, based on gender, race, and length of time in the program." (p.36) However self-selection bias for mentees (who are described as older, likely to be self-directed learners and already in well established careers, p.34) is not explicitly taken into account, and there is no control group	Discussion of relationship between e-mentoring and mentoring so mentoring is an evaluative referent. Outcomes related back to program outcomes. No control group	The setting is discussed in detail in terms of the academic setting (pp.33-35) and also the distance learning environment (p.38)	Obviously naturally occurring mentoring partnerships are not possible in the online environment so all mentoring partnerships in articles in this section are "Assigned"	There does not appear to be any regulated program support offered by the university during the course of the mentoring program	Qualitative approach - Approach aimed to "gather constituents' perceptions" (p.35). "Analysts used open coding to explore themes and relationships arising from the data" (p.36)	Combined summative and formative approach. Evaluation in terms of outcomes for mentors (pp.36-44) but also recommendations to promote effective distance mentoring (p.47)	Useful to both practitioners and researchers
O'Neill, K., 1998	Cross-sectional	Non-experimental – case studies of successful and unsuccessful telementoring relationships	The study does not formally control for contextual variables in terms of the settings in which the engagements/interventions occurred	Discussion of relationship between e-mentoring and mentoring: ".. some may ask whether telementoring is	The general educational setting is discussed in detail but the context in which each dyad operated was not explored	Mentors assigned	Program supported by teachers and curriculum	Detailed qualitative approach	The emphasis is on a formative approach with a view to informing design of future interventions, but O'Neill also discusses outcomes	The emphasis of this study is to "inform future designs for telementoring." (p.65) so it is very much intended to be useful to

			but it does report and discuss the data in the two different classroom teachers. O'Neill justifies in detail his use of "natural variation, rather than specially-crafted experimental conditions .." (p.78). He suggests that use of an experimental design is inappropriate in the context of exploratory work researching a field such as e-mentoring.	similar enough to traditional mentoring to deserve comparison at all?" (p.31)					in terms of effectiveness - so a combined summative and formative evaluation	practitioners but also to form an empirical basis for research in this area
Brown, S.C. & Kysilka, M.L., 2005	Cross sectional	Non-experimental – thematic analysis. Tnternal validity open to challenge on the basis that it doesn't control for contextual variables or compare with a matched non-assisted group	The study did not adopt an experimental method. The assisted group is not compared with a matched group so it is not strictly possible to measure the impact of the program because of the possible impact of contextual variables which were not controlled for	There is limited discussion of the relationship between mentoring and e-mentoring: "E-mentoring, mentoring via the computer, can have many of the same features as traditional mentoring, with some other advantages" (p.187). However, as mentees and mentors were located in New York and Florida respectively, the exchanges were via email by necessity	The general context is discussed however the individual contexts into which each of the dyads operated was not discussed	Assigned	Supported	Detailed qualitative approach	The study combines a summative and formative approach. It measures benefits to mentees, mentors and the program hosts in terms of professional growth, but also considers the factors which allow improvement of the program: "We also learned ways to improve the course in the future" (p.197)	The study is presented as useful to the program developers with a view to informing improvements to their own program, rather than being useful to practitioners more generally
Asgari, M. & O'Neill, D.K.	Cross-sectional	Non-experimental – qualitative study to understand what may influence students' views of success of	The study considered mentees' perception of success against a range of other	Perceptions of success are evaluated against expectations so in this study, participant	The context of the study is discussed in detail (p.229)	Up to 10 mentees assigned to a mentor but engagement with mentor still one on one	Supported by other group members and mentees and also by a structure in the form of assignments	This study combines a qualitative and quantitative approach in the form of interviews	This study combines a formative and summative approach - it explores whether	The study is likely to be useful to practitioners involved in open curriculum-based programs and

		telementoring activities. Internal validity improved by computing correlations between the success variable and a range of other variables	variables. This information was available further to a wider study being conducted concurrently. There is no discussion of matched samples, nor is there any comparison with assisted and non-assisted individuals	expectations of success is the evaluative referent			(p.231)	and questionnaires	mentees perceived their e-mentoring relationship as successful, but also how their expectations changed over the course of the program	researchers in this area and more broadly
Dimock, K.V., 1997	Cross-sectional	Non-experimental – qualitative study to look at pscyhological and social aspects of computer-mediated mentoring	Little detail is provided on the profile of the sample in terms of the characteristics of students, teachers and subject matter experts	Outcomes are related back to the objectives of the intervention	Context is discussed in terms of a range of factors creating a human environment in which learning can occur. Dimock quotes Sheingold (1991, p.18) as follows: "It is not the features of the technology alone, but rather the ways in which those features are used in human environment, that shape its impact" (p.3). The focus of the study is on the "psychological and social aspects of computer communication environments" (p.1) rather than just the cost and technical capabilities	Teachers "matched" students who had elected to undertake a project in a specialist area with an assigned mentor or subject matter expert	"The matches are .. facilitated on-line by project staff for the duration of the interaction" (p.3). This program is third party managed	Qualitative approach - focuses on "the stories of the teachers, students and subject matter experts describe how electronic mentoring evolved in four classrooms" (p.3)	The study uses a combined summative and formative approach: "The focus of this study was what happens in classrooms when teachers and students participate in telecomputing projects .. The nature of the teaching and learning in those classrooms was also examined" (p.2-3)	The study is intended to be useful to practitioners and researchers in that it focuses on "the psychological and social aspects of computer communication environments" (p.1). The study also suggests that the study has policy relevance in that: "If participation in telecomputing projects .. increases student interest and engagement with content and increases the amount of content and depth analysis of that content .. then support for continuation and expansion of these projects exists" (p.37
Boyle-Single, P., Muller, C.B., Single, R.M. & Carlsen, W.S., 2002	Longitudinal - 1998-2001	Non-experimental - study did not compare with matched non-assisted group and did not control for self and	The demographic data relating to the sample is presented as part of the study. Data on education level, field of study, ethnic	The effectiveness of the program is evaluated in terms of the program's goals so the objectives of improved self-	Context is discussed in terms of the differential earnings and participation rates of women in the field of engineering	Assigned	Program is supported by a third party	This study combines a qualitative and quantitative approach. The quantitative data was collected	The study combines a formative and summative approach. While evaluating outcomes,	The intention of the study is to empirically demonstrate positive outcomes for mentees. In this emerging research

		administrative selection or other variables. Participants in MentorNet "mirrored" the demographics nationwide. Perceptions of value of e-mentoring process and thematic analysis of responses to open-ended questions are the basis of this study	background were collected. All mentee participants were female. The researchers claim that the demographics of the sample group *mirror* the characteristics of the nationwide undergraduate population (p.8) - the researchers may be claiming a stratified sample by default. Neither self-selection nor response bias is discussed	confidence, enhanced knowledge of the workplace and support received from impartial advisors	and science. The different settings into which each of the e-mentoring partnerships is implemented is not discussed			through mentee applications and post-program online survey administered by email. The qualitative data was collected by way of an open-ended question on the questionnaire and by accessing the content of email exchanges between mentees and mentors	satisfaction with programmatic features and the quality of mentee/mentor interaction will inform improvement of the program	area, this study is likely to be useful to practitioners, researchers and policy-makers
Lewis, C.W., 2005	Longitudinal (3 years)	Non-experimental – study aimed to qualitatively evaluate improvement in writing skills, self-directed learning and critical thinking skills and to adopt a proactive learning position and begin creating their own independent learning plans (p.2)	Demographic data is not presented and contextual variables are not controlled for	The aim of the program is not clearly stated in the report. While the questionnaire did ask a question on how the program impacted students in meeting the various national and state standards, the evaluation did not measure students' progress in these terms in any objective sense	Context was not discussed	Mentors were assigned to mentees	Partnerships supported by teachers and curriculum	This study refers primarily to quantitative data collected via survey questionnaire but also to responses to open-ended questions	This study combines summative and formative approaches. As well as presenting and discussing outcomes, Lewis includes recommendations on improving the program (p.6)	This study appears to be most useful to those involved in the program
Cascio, T. & Gasker, J., 2001	Cross-sectional	Quasi-experimental – comparison made with non-assisted matched comparison group so a high level of internal validity. This approach was supplemented with thematic analysis of email exchanges between mentees and mentors. Researchers, who	Demographic data is presented and a matched control group is utilised in the research design. Results are compared for assisted and non-assisted mentees	Evaluative referent is the non-assisted matched comparator group	Context is discussed in terms of the lack of time for field supervisors to assist with developing appropriate professional values and the possibility of technology being utilised to assist (p.283). The study is also	Assigned	Program was supported in the initial stages and then left to individuals	The study uses a combined qualitative/quantitative approach	A combined summative and formative approach is adopted: "The quantitative findings demonstrate that the professional identity of BSW students can be positively influenced by their MSW counterparts. The qualitative	This study is useful to researchers and practitioners, and potentially policy-makers in the area of social work.

		were also online facilitators of the program, did not view email exchanges prior to completion of study to avoid contamination			contextualised by the relevant literature (pp.284-286). The individual settings into which the mentoring interactions were placed is not discussed				findings .. demonstrate how to make this process happen" (p.292. The focus is on the "how" as well as the "what". There is also discussion about how to improve the program (p.292)	

E-mentoring for small business

Rickard, K., 2005	Cross-sectional	Non-experimental – no comparison with non-assisted matched group. No contextual variables controlled for and no accounting for self- or administrative selection - so internal validity open to challenge as outcomes may be the result of influences other than the program. Thematic analysis of exchanges. Cohort comprised professionals – mainly engineers – operating as self-employed contractors. Difficulty of controlling for a multitude of variables acknowledged (p.162)	Demographic data on age, gender and profession presented but no control of contextual variables. Matching process systematic according to skills needs reported by mentees and experience and qualifications of mentors	Outcomes related back to program goals - no comparative analysis with equivalent mentoring program. No pre and post testing so no quantification of benefits. Due to geographic dispersal of professionals, need to include those in rural and regional locations, the high rate of internet access of professionals, and the need for flexible, relevant and integrated learning, an e-mentoring scheme rather than a face to face mentoring program was developed. In this way, the learning needs of the group drove the choice of instruction/support - e-mentoring was seen as the delivery mode of choice rather than as a secondary or inferior option.	The diversity of settings within which the program is delivered is acknowledged but only limited data collected on contextual variables	Obviously naturally occurring mentoring partnerships are not possible in the online environment so all e-mentoring for small business partnerships in articles in this section are "Assigned"	Partnerships closely supported by facilitator	Combined qualitative and quantitative - survey questionnaires including open questions and feedback provided to program manager	Summative and formative	Emphasis on practice and improvement of program alongside measurement of outcomes

| Stokes, K., Garrett-Harris, R. & Hunt, K., 2003 | Cross-sectional | Non-experimental – case study approach - no comparison with non-assisted matched group. No contextual variables controlled for and no accounting for self- or administrative selection - so internal validity open to challenge as outcomes may be the result of influences other than the program. | No control of contextual variables – demographic data collected | Viability was noted as the basis for opting for an e-mentoring program over a face to face program (p.7) so the evaluation is at least in part underpinned by face to face mentoring as the evaluative referent. The study also compares outcomes with those in the study outlined in Rickard (2005) | The diversity of settings within which the program is offered is not explicitly acknowledged | Assigned | The program was facilitated by a host (but not to the extent that the parent program provided) - Mentors Online - structured facilitation – training and matching, so supported | Combined quantitative and qualitative - survey questionnaires including open questions | Summative and formative | As e-mentoring is an emerging research area, preliminary work is exploratory and likely to be very useful to both researchers and practitioners. The evaluation is not presented as comprehensive or ideal but as a "vehicle for learning". Understanding why participants responded as they did is acknowledged as a limitation of the survey questionnaire approach. |
| Megginson, D., Stokes, P. $ Garrett-Harris, R., 2003 | Cross-sectional | Non-experimental – case study approach - no comparison with non-assisted matched group. No contextual variables controlled for and no accounting for self- or administrative selection - so internal validity open to challenge as outcomes may be the result of influences other than the program. | No control of contextual variables – demographic data collected | Outcomes related back to program goals. The study also compares outcomes with those in the study outlined in Rickard (2005) and included in its methodological approach pre and post-testing of participants. | Context acknowledged by author. The target group is analysed in terms of age, gender, rural/urban location, time availability and rate of PC ownership and Internet access, | Assigned | Ongoing support was minimal: "Ongoing communication .. was kept at a minimum throughout the programme. The centre responded to specific requests from individuals within the mentoring partnership" (p.15) – training and matching, so supported | Combined qualitative and quantitative - survey questionnaires including open questions and general feedback | Summative and formative - "Evaluation of the results of the programme will determine the impact on the participants and identify improvements for future programmes." (p.7) | One of the stated objectives of the report was "the identification of possible best practice criteria/critical success factors for e-mentoring programmes for Entrepreneurs and SME managers" (p.10) so clearly it was intended to be useful to practitioners. In this emerging research area, is also useful to researchers. |

Table 3 - Methodology - Summary of review of variables related to External Validity in the interdisciplinary studies relating to mentoring (Checklist 3)

Study	Research strategy	Type of sample	Occupation of subjects	Type of sampling	Sample size, sampling and generalizability issues	At which stage according to Storey's evaluation continuum (Storey, 1998, p.13)	Internal/external evaluation	Liberal/ conservative values (maintain status quo or effect change)	Evaluation level - impact of program on individual (micro) or impact of policy and program (macro)	Comments on quality and limitations of study
					Training and small business interventions					
Hart, M. & Roper, S. 2003	External validity checks – comparison with wider business population and wider assisted business population	Private sector	Entrepreneurs and small business owners	Non-random	Survey of 137 assisted business. Interview survey response rate 62.2 per cent	The study presents itself as an attempt at Stage VI on Storey's evaluation continuum	External	To improve business performance so this criteria not relevant in this context	Impact of Business Link interventions evaluated collectively	Authors refer to three types of validity checks undertaken: comparisons with the wider business population, comparison between assisted and comparator groups and comparison with wider assisted business population. Validity could be challenged as additional variables mentioned in findings (point 4) were not controlled for
Wright, P.C., and Tao, F.K.C., 2001	Generalizability of findings open to challenge on basis that it measured outcomes from one training course only.	Students in management course but sample not described in terms of public or private sector	Students – diploma level training program – occupation and education level unclear	Non-random	Questionnaires were provided to 28 business managers and 42 face to face interviews were conducted	This study sits at Step II on Storey's evaluation continuum, but acknowledges the limitations of using recipients' opinions as the sole basis for evaluation	External	The stated goal of the training program was an increase in knowledge but this sits sometimes incongruently alongside a discussion of behavioural change	Evaluation at the level of individual but linked directly to justification of Government policy	The study uses perceptual measures to demonstrate the effectiveness of the training intervention. It then suggests that this form of measurement is not sufficient to soundly and robustly establish effectiveness and recommends use of

										hard measures. Rather than doing this and then challenging the initial results, an assumption is made that the training program is ineffective, and this is used as a basis for establishing a model which extends the training/coaching continuum. The validity of this study can be challenged on the basis that it does not logically and empirically demonstrate what it is trying to show, and, in Curran and Blackburn's terms, the stages in the generation of the interpretation are not shown clearly. Thus, the claims made in relation to the proposed coaching model are only speculative. The representativeness of the respondents was not explicitly established, nor was the interview process or questionnaire described.
Leitch, C.M. and Harrison, R.T., 1999	Generalizability of findings open to challenge in that generalizations on value of action-based learning are based on outcomes	Entrepreneurship program through a university – other	Entrepreneurs and small business owners and executives (managers)	Non-random	64 executives participated, 34 executives formed the sample for the first phase of the evaluation and 25 participated in the	Evaluation is at the perceptual level - "participants .. were asked to indicate their perceptions of the extent to which the	This evaluation appears to have been conducted externally but this is not made explicit - it is possible the	Difficult to make a judgment - the executives are seen as change agents rather than as having change imposed upon	Analysis is at the level of the individual	This research is well located in the relevant literature and sophisticated in the operationalisation of the constructs

					second phase which involved a more in-depth analysis	program met course, personal and business objectives" (p.98). In an effort to address the methodological inadequacies of evaluation purely at the perceptual level, participants were asked to report on "tangible" evidence of changes in business performance attributable to the program" (p.101. As Storey points out this is still problematic as it still suffers from the problems of self-report (Nisbett 1977) and the executives themselves are likely to find it difficult to estimate or guess additionality and displacement (Storey 1998 pp.18-20). This study is necessarily at Step III.	researchers were involved in the development of the program but this is purely speculative	them. It's possible that there is ideologically driven content in the MBA course but this is purely speculative		used in the research. Its robustness and validity can be challenged on the basis that there is no comparison with non-assisted executives, and there is no attempt to discuss the representativeness of the sample. However the claims appear to be reasonably soundly based on the data collected with the researchers aware of the limitations of their study in simply "helping to establish an awareness of the boundaries of our ignorance" (p.105)
of a single project										
Chrisman, J.J., 1999	Statistical tests conducted to ensure representativess of the population and generalizability of the findings	Private sector	Entrepreneurs and small business managers	Random – large sample size	Sample sizes were large in this study - readers are told that the surveys were sent to 10,000 SBDC clients in 1990 and 43,000 in 1992 - the actual number of responses and response rate are not included.	Whilst this study claims a sophisticated approach to sampling (a selection of characteristics matched with broader population), the data upon which the study is based	Not made explicit but appears to be external	Not relevant in this context	Analysis at the level of the individual but evaluation at this level is a basis for considering implications for policy-makers and SBDC funders	The limitations of this study are acknowledged by the researcher: "Although it must be emphasised that the numbers presented in this report are only estimates, their magnitude suggests that even

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					Sampling and generalizability issues are discussed. Tests indicated an "acceptable level of sampling error" and "no reason to suspect bias along any of the key variables" and the data was regarded as "reliable" (p.2).	is self-report data which is necessarily problematic according to Storey (Storey 1998 pp.18-20). This study sits at Step IV of Storey's model				if they were in error, our overall conclusions would remain the same." (p.7). Their claim that the SBDC's "assist entrepreneurs and small business managers in a manner that makes a demonstrable contribution to society in terms of job creation and actually recovers .. its costs" (p.7) appears to be on the whole valid and supported by the research undertaken.
Lenihan, H. & Hart, M., 2004	Problem of allowing for less tangible benefits to be included in estimates of additionality acknowledged (p.10)	Private sector	Entrepreneurs or small business owners	Non-random	Sophisticated approach to sampling, representativeness and generalizability issues	This study presents itself as being situated at Step VI of Storey's model for evaluation	External	Not relevant in this context	Evaluation is at the level of the individual and this data is considered collectively as a basis for evaluating the effectiveness of policy	The approach is a sophisticated one which attempts to address the methodological challenges set out in Storey's model and discussion (1998) by addressing the impact of deadweight, displacement and other factors on the measurement of additionality. The claims made are supported by the data and generalizability and representativeness are addressed. This study is informed by a positivist approach which accounts for selection and assistance effects

										utilising a control group approach with a high level of validity. The study could be challenged in two ways. Firstly, the findings could be seen as incomplete on the basis that the data collection may not capture outcomes which cannot be quantified - which are less tangible - in these terms, or provide insight on how the assistance process operated and how it could be improved. Secondly it could be challenged on the basis that it is prescriptive in approach and may not be the most appropriate approach in other contexts.
Thomas, T. & Landry, B, 2002	External validity maximised through project monitoring and review, client/user surveys, tracking of performance, quasi-control group analysis and independent review and verification of estimates of additionality and assumptions employed	Private sector	Entrepreneurs or small business owners	Non-random	Sample size was not detailed. A quasi-control group was used in the analysis to ensure outcomes were the result of the assistance provided. The study accounts for deadweight and displacement	This study could be located at Step VI of Storey's model	Appears to be an external evaluation	Not relevant in this context	Evaluation is at the macro-economic level	Multiple lines of evidence are used to yield the data relied upon. So data triangulation as well as independent checking, quasi-control group design, a comparison of assisted versus non-assisted businesses, accounting for deadweight and displacement suggest that the claims made in relation to

									economic impact are sound and valid. The logic of the interpretation is clear, and analysis is sophisticated and argued coherently.
MacDonald, R. & Coffield, F., 1999	Located in political context – primary focus on youth and their stated experiences. Emphasis is on making small business research "micro" (p.235)	Private sector	Entrepreneurs – young	Random and snowball	The study used a comparatively large study of 74 interviews with those who had started up enterprises and 12 who were intending to do so. The study is sophisticated in its discussion of sampling, representativeness and generalizability issues: "we feel that it is likely that they reported fairly representative experiences of enterprise" (p.13) The discuss selection bias: "we have probably included more of those likely to be highly committed .. That possible over-emphasis should be borne in mind when reading our assessment of the number of failures and successes" (p.13) and "open to the risk of generating a skewed sample" (p.12). Snowball, random and stratified sampling were used and sampling	There is no comparison with non-assisted, no match with a comparator group and no accounting for selection bias, so this study is necessarily at Step III of Storey's model	This is an independent external evaluation and this is acknowledgedas a serious issue: "few, if any, independent evaluations had been carried out" (p.7)	The socio-political context in which this Government support sits is discussed: "We wonder what the reaction would have been if courses were set up with public money to train young people, not in the dynamics of capitalist business management, but in how to start unions, to raise wages and to fight for better conditions for workers. After all, these activities and concerns are no more or less political or ideological than the advice given to young people on how to start small business, and how to make profits" (p.254). In this way, the functioning of the program to reinforce the ideologies of the Thatcher Government are discussed in contrast to programs which may challenge it	This study is described as moving between the micro and the macro. MacDonald and Coffield acknowledge that "most small business research tends *not* to be about micro" (p.235) and discuss the need to "take a step beyond these empirical findings to tease out their implications for social policy (p.240). The researchers "move backwards and forwards from *macro* issues .. to *micro* themes" (p.16)	This study is compelling. The development of the interpretation is based on the complex and diverse qualitative data collected from participants. The research design incorporates a range of approaches (p.10), the study is methodologically sound and the methodological limitations of the study are acknowledged (p.13 & p.234), sampling, representativeness and generalizability issues are discussed and acknwledged, the study is located in the context of the relevant academic literature in terms of both study of youth and enteprise – giving this study a high degree of validity.

					issues such as the lack of sampling frame were discussed (p.11)					
Mentoring - in context other than small business										
Kram, K., 1988	"in-depth study of relationships in one organisation, and I forfeited the possibility of varied characteristics that might influence the nature of developmental relationships (p.211) and "while the small sample sizes permitted intensive interviews .. these also limited our ability to generalise the research findings""(p.215	Public sector utility	Managerial positions	Non-random	25 pairs across two organisations - organisational setting. Individuals interviewed across three stages of career development	Necessarily Stage III because the study uses a qualitative analysis rather than an approach which compares assisted and non-assisted	External	While not explicitly discussed, the description of the value of mentoring to the organisation suggests that the model of mentoring to maintain the status quo underpins Kram's understanding and conceptualisation of mentoring. She says: "Members learn the ropes of the organization ... Thus, these developmental relationships help the organization nurture good talent, pass on central values and practices .." (p.159).	Individual	A strength of Kram's methodology is its analytical validity. Kram describes in detail the process of successively refining her interpretation in Curran and Blackburn's terms, employing a continuing data theory interaction process (p.119). Results could potentially be supplemented by external measures of career advancement to overcome the methodological difficulty associated with self-report - that is, that individuals reported experience may be at odds with data which measures, for example, advancement externally. This however does not mean the study does not make valid claims. Clutterbuck (2003) has made the comment that the sample size involved in Kram's study was only 28 partnerships, so validity can be

										challenged on the basis of sample size
Hunt, D.M., 1992	Comparison of outcomes over time in one setting	University – not reported in terms of public or private sector	Senior faculty – other	Non-random	26 dyads	Possibly Stage IV because it undertakes a comparative analysis of the outcomes for mentors after one year and after seven years. However no provision for selection or assistance bias		Difficult to judge and might be different for each dyad. Potential is there for engagement around challenge and maintaining the status quo in an academic setting but any judgment by another researcher would be speculative	This study presents the findings of a study examining the impact of mentoring program on mentors - so it evaluates at the level of the individual	While there are difficulties with this study which could form the basis of a challenge to its overall validity, the claims made are limited to a specific setting and circumstances. ".. this longitudinal study indicates that both negative and positive mentor outcomes were present in one formal mentoring program in an academic setting, and that these outcomes changed over a period of seven years." (.p.47) This suggests that, while able to be challenged, the study makes generally valid claims.
Chao, G.T., 1997	Engineering graduates only so external validity open to challenge	University (other)	Engineering graduates employed in different occupations (other)	Random	Sample for Hypothesis 1 - 178 respondents - response rate 41.2% Hypotheses 2 and 3 - 93 non proteges and 151 current or former mentors. This study acknowledges that self-report data and the sample drawn from engineers and managers impacts on the study's generalizability	Because this study compares assisted with non-assisted, and the comparison is with a group drawn from the same sampling frame, this study could be described as being at Step V of Storey's model	External	Not relevant to this study	The study uses aggregate data to analyse the outcomes of a program so analysis is at the program level based on data collected around and from the individual	The study is well located in the relevant literature. The interpretation is logically developed via hypotheses based on a positivist approach, and the claims made are based on the data collected. The data is sound using a matched control group approach. The limitations of the study are also

					(p.26) This study compares outcomes with a non-assisted group					stated - there appears to be a high level of validity in this study
Noe, R.A., 1988	Study of educators in formal mentoring program in universities. Generalizability to the private sector stated as a limitation	Nine different sites across the United States (p.464) – mix of public and private	Educators – so other	Non-random	Sample comprised 139 educators and 43 mentors assigned to mentor the educators. Noe acknowledges that generalizability may be an issue in applying the findings to the private sector	This study does not compare with non-assisted, nor with a matched sample and does not take into account selection bias or displacement or deadweight, so it is necessarily at Step III of Storey's model	External	Not relevant to this study	The study uses aggregate data to analyse the outcomes of a program so analysis is at the program level based on data collected around and from the individual	The study is located in the relevant theoretical context, its data collection method is sound, the interpretation is clearly based on data collected, limitations of the study are explicitly acknowledged, and the claims are based on and limited to the data collected - these factors would indicate that the study has a high level of validity. The need for data triangulation to support results obtained by self-report survey was acknowledged by Noe as a means of improving the validity of the study (p.476)
Seibert, S., 1999	External validity open to challenge on the basis that the study was conducted in only one setting	Private sector	Newly-hired engineers (other)	Non-random	Sample was comprised of 72 mentee questionnaires. The study has a fairly sophisticated approach to sampling issues and discusses and addresses selection bias (p.485), the generalizability of data which is comprised of only mechanical and electrical	The study does not account for selection bias and acknowledges this as a limitation: ".. high levels of performance or commitment may be a factor leading to participation in a spontaneous or facilitated mentor relationship, rather than its result" (p.485). It does however	External	Organisational commitment and organisational socialisation are among the measures used to evaluate the effectiveness of mentoring. The use of this as an indicator could be challenged on the basis that doing things in a new or different way may be of the same or	The study uses aggregate data collected from individuals to compare outcomes for participants in a facilitated program compared with those who were not assisted	Seibert's study is sophisticated in its presentation of issues which challenge the validity of the study's findings. Threats to validity are discussed in terms of the use of quasi-experimental designs (pp.492-493), ambiguity regarding causal direction (self-selection) (p.485),

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					engineers, and small sample size (p.499)	use a quasi-experimental research design with a matched control group and this places it at Step V of Storey's model		greater value to the organisation. While this is speculative, it is useful to observe that the way a construct is measured and the way a mentoring program is evaluated is implicated in the social context of the organisation		and the exclusive use of self-report data to measure dependent variables (p.499). In spite of these challenges, the study presents new data and knowledge in relation to facilitated mentoring which is an area which until that time had received little empirical research attention. The challenges to the validity of this study can be perhaps balanced with the fact that it was in an emerging research area where exploratory and tentative research was needed. The validity of the research would be improved if a comparison was made between spontaneous and facilitated mentoring in the same organisational context
Hale, R., 1999	External validity open to challenge on the basis that the study was conducted in only one setting	Public sector utility – Scottish Hydro Electric	Occupation/roles of subjects not reported - other	Non-random	The data was collected via 10 questionnaires and ten interviews with five mentors and five mentees (p.2). The sample size used is obviously small and this may impact on representativeness	This study is necessarily at Step III of Storey's model	Not explicit but appears to be external. It is possible the researcher developed the program as a consultant to the organisation but this is speculative	Not relevant in this context	Evaluation is at the level of the individual	Validity in this study is problematic. Representativeness of the sample and generalizability of the findings are open to challenge. There is no attempt to address selection bias and there is no

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					and generalizability					comparison with a matched control group. The interpretation of data is not clearly related back to the object of the program. Hale acknowledges the limitations of the study and suggests that it might "inform further research efforts" (p.8)
Pfleeger, S.L., & Mertz, N., 1995	High level of external validity because of range of settings	3 universities and 3 private sector organisations	Women with career advancement potential - other	Non-random	The study involved 15 mentoring pairs. Small sample size, its representativeness and the impact on generalizability of the findings is not raised as an issue other than to acknowledge that the results may be particular to the pilots but that the "general lessons learned are applicable to other mentoring programs" (p.64). The study does not address selection bias - proteges are selected on the basis of them being "upwardly mobile" but the study does not discuss this as being the reason behind the successful mentoring rather than the mentoring itself (p.64)	Study is necessarily at Step III of Storey's model because as far as we know it doesn't involve a comparison with a matched group, contextual variables were not controlled for and displacement was not accounted for. Interestingly deadweight was referred to implicitly where Pfleeger and Mertz say: "the changes might have occurred if the project had never existed" (p.69)	Not explicit but appears to be external	This program is explicit about the liberal values which underpin the development of the program. Mentoring is being specifically developed and delivered to assist with the underrepresentation of women in computer science	Evaluation at the level of the individual	The study is open to challenge on the basis that it doesn't deal with sampling, representativeness and generalizability issues. The study claims generalizability in that "there are general lessons learned that are applicable to other mentoring programs"(p.64) and "clear observations can be made" (p.72). However, at the same time Pfleeger and Mertz state "It is not clear to what extent any of the change sin the status or position of proteges can be attributed to the mentoring project or anything done in its name" (p.69) and "the limited number of subjects lends tentativeness to our conclusions"

										(p.72). However, the study offers a sound, consistent and feasible interpretation of the extensive data collected and measurement of career advancement in both qualitative and quantitative terms, making it useful and interesting to researchers and practitioners

Mentoring for small business

Broadbridge, A., 1999	Sample included managers from grocery, convenience, CTN, mixed goods and clothing sectors. While this supports the generalizability of the study's findings, it compromises internal validity in that differences in outcomes may be accounted for in part by differences in sample. Respondents also selected were involved in a distance learning program and were acknowledged as "potential high flyers" and possibly atypical of the retail management population generally (p.342)	Private sector	Managerial positions – retail sector	Non-random – purposive/judgmental sampling techniques (p.342)	132 retail managers from large retail companies across the grocery, convenience, mixed goods and clothing sectors and were in positions ranging from retail supervisors to senior managers. There is no attempt to determine whether this spread is representative of retail managers more generally. The sample also included retail all the managers approached who were registered for an MBA by distance learning. Both these factors have implications in terms of selection bias and could impact on generalizability.	The study would present itself as being at Step IV of Storey's model but the methodology used to compare assisted and non-assisted could be challenged so perhaps Step III.	External	Aim is to establish incidence of mentoring and to quantify in some way the potential benefits of mentoring. Because the mentoring activities were dispersed, it is not possible to make a judgment on whether the mentoring reinforced or challenged the status quo. There was certainly no selection of mentoring activities which only occurred under a "social equity" banner.	Evaluation at the level of the individual	Sample size, a combined qualitative and quantitative approach, definition of concepts such as mentoring The article is positioned in a framework of relevant literature, the limitations are acknowledged, further research which would extend understanding are suggested. Claims made on the incidence of mentoring, and on the general (but quantified) differences between assisted and non-assisted managers mean this research, while open to challenge, is able to claim some validity.

Dusseldorp Skills Forum, 1999	Generalizability of this study's results across populations, settings, subjects or time periods is open to challenge. Logic of interpretation and basis in data collected unclear	Private sector	Entrepreneurs and small business owners	Random sample	30 mentees and 14 mentors responded to a survey questionnaire. Interviews conducted with a "selection of mentors, clients and members of the management of both programs" (p.11). There is no analysis of the representativeness of either of these samples, nor comparison with a non-assisted group, nor any attempt to control for self-selection. The generalizability of the data is open to challenge.	Because the study monitors take up of the programs, participation rates in the two programs, and combines with user perceptions of value, this study would be located at Step II on Storey's continuum	Internal - relationships between researchers and program development and delivery not made explicit but appears to be internal	Not relevant in the business context	Evaluation at the level of the individual	The validity of this study is open to challenge. In their conclusions the authors state "the Business Mentor Programs documented in this report have demonstrated a cost-effective method of supporting small businesses .. small business operators who have received the assistance of a business mentor, report improvements in their skills and confidence and increased profitability of their business" (p.15). Yet the study does not present data which would provide a basis for these claims - there is no cost/benefit analysis, profitability is not measured by using, for example, an econometric rather than self-reporting approach, and improvements are not quantified in a logical or acceptable way. Evaluation is at the level of the individual but claims are made on the effectiveness of policy. However the researchers do

									acknowledge that their research would benefit from more systemic research and analysis of mentor relationships and the resulting changes in small business operations and more thorough research which measures the benefits and outcomes (p.14)
Devins, D. & Gold, J., 2000	Sample is based on size of organisation (6-60 employees), are from a variety of sectors and is comprised of business at varying ages. This leads perhaps to higher external validity but compromises internal validity as variables are not controlled for. Also no discussion of tough nuts and causality and the influence being resistent has had on outcomes. The problem in this instance is the opposite to self-selection but needs to be addressed	Private sector	Managerial positions in retail sector	Sampling process not discussed in any detail	The study was based on the views of 20 mentees. Non-probability purposive sampling method used	Because the study focuses on the mentees' views of the difference made by the assistance, it is located at Step III of Storey's model	Not made explicit but appears to be an external study	Not relevant in the business context	Evaluation is at the level of the individual	This study discusses the complexities involved in evaluating mentoring in the small business context due to the diversity of "help" provided, the uniqueness of contexts in which the "helping" occurs, the interaction between the mentee/mentor interaction (the development of the relationship), the content or structure of the intervention provided (the help provided) and the unique contexts (p.254). The researchers use non-probability sampling and qualitative evidence of learning in favour of hard measures, however in spite of these which could provide a basis on

										which to challenge the validity of the research, the article is strong in how and the basis on which it develops its claims. The article is sophisticated in that it locates the research in the literature, discusses the methodological challenges and limits its claims to the data collected
Kent, T., Dennis, C. & Tanton, S., 2003	Inferences made in relation to retail sector only	Private sector	Entrepreneurs and small business owners or retail managers – unclear	Avoids issue of sampling: "the results reported … are not a sample but a census" (p.444). This could amount to in Babbie's terms "reliance on available subjects" (Babbie, p.178)	The data was collected with reference to 30 responses to a semi-structured survey questionnaire and a further 10 in-depth interviews. The researchers justify their sampling or lack of it by referring to the study as "not a sample but a census" but this form of sampling is open to challenge on the basis of its representativeness. In Babbie's terms, it could be regarded as "availability sampling" or reliance on available subjects (Babbie, 2002, p.178)	The study reports on the take up of the program, recipients opinions and recipients views of the difference made by the Assistance however there is no comparison of the assisted with typical firms, no comparison with a match firm and no accounting for selection bias - so the study sits at Step III on Storey's evaluation model	Probably external but not made explicit	Not relevant in this context	Evaluation at the level of the individual	The sampling methods raise questions about representativeness, generalizability and bias and their impact on the validity of the findings of the study are acknowledged (p.446). It is posited that these difficulties are endemic to small business research (p.446-7) The researchers defined retailing to include micro-businesses across a range of industries (p.443) and this was defined as businesses which employ fewer than 10 employees, however their findings are in terms of outcomes for SME's. It is possible that outcomes for micro-businesses are different to

										outcomes for SME's and this discrepancy is not accounted for in the analysis - this potentially impacts on the validity of the findings
Bisk, L., 2002	No accounting for selection bias and no comparison with non-assisted group so potentially major inferential problems	Private sector	Entrepreneurs or small business owners	Random – Enterprise Ireland provided contact details as sampling frame	Findings are based on responses of 104 mentees to a survey questionnaire drawn from 400 participants in Enterprise Ireland's Mentor Network which was in turn drawn from a database of over 5,000 participants over the last five years. This study did not involve a control group nor a comparison with those who were not assigned a mentor or did not participate in the network. The researchers also make the point that the enterprises were assigned mentors and that therefore this suggests that there is no self-selection bias. It does not acknowledge that the enterprises could be the "resisters" or "tough nuts" (Devins & Gold, 2000) so a different kind of selection bias	This study is necessarily at Step II or III	Not made explicit so unclear	Not relevant in business context	Evaluation at the level of the individual but discussion also in terms of policy implications	The findings are specifically in relation to the hypotheses developed (p.268) however the link between these and the stated aim of the study to evaluate effectiveness perhaps needs clarification. The claims made in the finding are modest and clearly and logically based on the data collected. Data triangulation is limited. The methodological adequacy of using only the continuing engagement with the mentor as a measure of the mentee's perception of the efficacy of the mentoring partnership is questionable. Overall, this article may be slightly confused about what it's measuring and why. Nonetheless, the findings are valuable and the researchers

									acknowledge the nature of research required to advance understanding in the areas discussed (p.268)
Deakins, D., Graham, L., Sullivan, R. & Whitlam, G., 1998	Claim results have wider significance but acknowledge most of the data comes from service sector	Private sector	Entrepreneurs or small business owners	Random (used sampling frame)	This project (which was part of a larger project) was based on interviews with 45 clients or mentees. Sampling issues are discussed in a sophisticated way in the context of the literature with the physical and cost difficulties of using a control group and experimental design discussed (p.155). While the researchers intend to undertake a comparison with those not assisted, it is acknowledged that this will not constitute a matched sample. In spite of the difficulties, the researchers suggest that "the results and issues raised, have wider significance" (p.152)	Because this study specifically asks mentees about the difference made by the intervention, it sits at Step III of Storey's model when applied in this context	While the relationship of the researchers to the project is not explicit, the study appears to be external	While challenge at the individual level was not relevant in this context, the researchers indicate that the findings of the research challenge the trend in policy to avoid supporting new business start ups in favour of supporting established businesses (p.158)	Evaluation at the level of the individual but discussion also in terms of policy implications	In terms of sampling issues and generalizability, the authors are aware of the shortcomings of the methodology and discuss the difficulties as part of the research; these issues include those associated with the non-experimental design of the study including comparison of assisted and non-assisted and comparison with a matched control group (p.155). The researchers indicate that they will look to the results of further interviews with mentors to confirm the outcomes of this study, so the degree to which findings are supported by more than one source will be extended and this triangulation of data will further enhance the validity of the research. The research problem was

										clearly stated, the research was located in the literature and the relevance of the current study in extending the literature was clear, the logic of the interpretation was clear and the claims made were based on analysis of the data collected

E-mentoring - in context other than small business

Gordon, S.M., Edwards, J., Brown, G., Finnigan, F.A., Yancey, V., Butler, A.Y., Davis, W.D. and Stitt, D.M., 2005	Learnings presented in the form of recommendations to promote effective distance mentoring, but most actually apply to the specific program studied. So while external validity could be challenged if claims were being made in relation to distance mentoring generally, the claims being made are particular to program under study	Non-government – so private sector	Students	Combination of random and stratified using sampling frame based on gender, race, length of time in the program or graduation date, geographic location	65 interviews provided data - 40 students, 15 alumni and 10 faculty members. Sophisticated approach to sampling: "A stratified sampling frame that included gender, race, length of time in the program or graduation date, geographic location, and Mentor was used to randomly select 20% of the students and 15% of the alumni. Half of the 20 faculty members were randomly selected, based on gender, race, and length of time in the program." (p.36) However self-selection bias for mentees (who are described as older, likely to be self-directed learners and already in well	Study can be described as being at Stage V on the basis that while it didn't match with a control group, a sophisticated approach to sampling meant that attempts were made to ensure that the characteristics of the mentors and mentees were aligned with doctoral students and faculty members more generally. However the study did not take into account selection bias.	While the relationship is not made explicit, the researchers refer to the program as well as the research project as "ours" which suggests that it is an internal study	Difficult to judge and might be different for each dyad. Potential is there for engagement around challenge and maintaining the status quo in an academic setting but any judgment by another researcher would be speculative	Evaluation at the level of the individual	Research is well situated against background literature (p.31). Sampling, while still open to challenge, was sophisticated. The claims made by the study in the form of recommendations appear to be well founded on the data presented

				established careers, p.34) is not explicitly taken into account, and there is no control group					
O'Neill, K., 1998	O'Neill states that it should be possble to "generalize cautiously" on why some telementoring relationships succeeded and some failed on the basis of the study	Public sector	Students	Non-random - purposive	90 students, two teachers and 100 mentors. On generalizability, O'Neill says: "While a one-year study involving just over 100 students could not hope to produce a general theory of telementoring, it could certainly produce detailed accounts of telementoring activity and its outcomes which ... should make it possible to judge why some ... telementoring relationships succeeded or failed. One could generalize cautiously from these cases to inform future designs for telementoring." (p.65) Purposive sampling in selection of successful and unsuccessful relationships	As this is a qualitative study, it is necessarily located no higher than Step III on Storey's model - participants report on their perceptions of how the program assisted them	External	Not relevant in this educational context	Evaluation at the level of the individual	The O'Neill study is detailed with extensive description of the engagement between mentors, mentees, teacher and curriculum and there is detailed elucidation of the basis for O'Neill's interpretive logic. However, the validity of the study can perhaps be challenged in that it selects successful and unsuccessful relationships and then almost tautologically investigates why they were successful and unsuccessful. While O'Neill suggests that his research questions fell into the categories of effectiveness and sustainability, he also states that the clear intention of the study was to take a formative approach. The relationship in the study between the summative and formative analysis is perhaps slightly confused. However, O'Neill

										presents this research as exploratory work and a basis for further research. The report is a major undertaking which, using a qualitative approach, aims to construct a detailed interpretation of the data collected.
Brown, S.C. & Kysilka, M.L., 2005	Findings in the form of perceptions of the process, advantages and disadvantages of e-mentoring and recommendations for structured e-mentoring. Study is in a real setting so has potential for generalizability	Non-government – other (university)	Students	Non-random	Study based on analysis of data collected from 10 mentees and 20 mentors. No analysis of the sample and whether the sample is representative of pre-service teachers more generally is presented which may impact on the generalizability of the study	As this is a qualitative study, it is necessarily located no higher than Step III on Storey's model - participants report on their perceptions of how the program assisted them	External	While there is no data presented on this nor any basis on which to make a judgment about this, the potential is clearly there for the mentors to be challenged on their views	Evaluation at the level of the individual	While there are potential sampling issues and there is no comparison between assisted and non-assisted pre-service teachers, the claims made appear to be limited to the qualitative data collected and to have reasonable validity. Extracts from exchanges are provided to justify the interpretive stance of the researchers. The study is presented in the context of relevant literature in the area
Asgari, M. & O'Neill, D.K.	Exploratory work – generalizability open to challenge in an alternative setting, but claims made primarily in relation to K-12 students	Non-government – school (other)	Students	Non-random – purposive	The views of 72 adolescents were evaluated in this study. The authors explicitly discuss generalizability as follows: ".. the findings of this study cannot be generalized to every telementoring program. They may provide to be	As this study does not compare assisted with non-assisted individuals, does not compare with match individuals, nor does it discuss or take account of selection bias (it is unclear whether participation in the Tracking Canada's Past was part of the	External	Not relevant in this educational context	Evaluation at the level of the individual	The research problem is clearly stated, while it can be challenged, the methodological appears to be adequate for the claims being made, the logic of the interpretation is clear and supported by relevant data, and the authors make suggestions

					similar to those in other curriculum-based telementoring programs that use an 'open' telementoring scheme, however, we must rely on our colleagues to conduct parallel analyses on their own telementoring programs to test the robustness of our findings" (p.248).	compulsory curriculum or whether those participated had chosen to participate). This study is then necessarily at either Step II or Step III.				on further research which would extend knowledge in the area. On this basis, the study appears to have a reasonable degree of validity.
Dimock, K.V., 1997	Dimock begs the question of the generalizability of her findings and concludes with: "If participation in telecomputing projects such as the Electronic Emissary increases student interest … as it did in these classrooms, then support for continuation and expansion of these projects exists" (p.37	School classroom setting – whether study is set in government or non-government school is not made explicit	Students	Non-random – purposive sampling in context of naturalistic inquiry	The study uses the data collected from interviews with four teachers and 6 students. Purposive sampling was used in the context of naturalistic enquiry. The researcher makes the following comment on purposive sampling: "[In purposive sampling] .. a sample is selected by the researcher based on decisions about the sources that will most help to answer the basic research questions and fit the basic purpose of the study" (Erlandson et al quoted on p.5)) The researcher makes the following comment: "It is not the intention of	The study does not compare assisted with non-assisted, does not refer to a comparison with a matched sample group, and does not address displacement, It does focus on the recipients' views on the difference made by using telecomputing so this study is necessarily at Step III of Storey's model	The researcher acknowledges that she participated in the project as an online facilitator (p.6) but does not discuss the potential impact of this involvement on the research process	Not possible to make a judgment on this on the basis of the report	Evaluation is at the level of the individual	The methodology of the study was described in detail, there is a logical development of the interpretation, the study is contextualised in the relevant literature, the claims made are limited to and related back to the objective of the study, peer debriefing and checking occurred to check the accuracy of the data, and participant observation and interview with the school principal provided for triangulation of the data - so the study can make claims as to validity

					naturalistic inquiry to produce findings 'generalizable' to other contexts, but rather to allow the reader to vicariously participate in the context and make decisions about the transferability of these observations to other contexts" (p.31					
Boyle-Single, P., Muller, C.B., Single, R.M. & Carlsen, W.S., 2002	Findings could be challenged in that it is based on short-term measures rather than long-term increased retention rates. However this is exploratory work in an emerging area with a large sample so while generalizability is tentative, data and findings it advances existing research. Claims are modest and do not claim causal connection (p.18)	University setting – non-government (other)	Students	Non-random	Large sample size . Data collected from 515 e-mentoring pairs with response rates of 68 per cent for mentors and 51 per cent for student mentees	The study did not compare assisted with non-assisted, did not compare with a matched comparator group, and did not consider selection bias, deadweight or displacement. Therefore the study is necessarily at Step III of Storey's model	The relationship of the researchers to the program is not made explicit. It is possible to speculate that at least some of the researchers are closely involved in program development and delivery which suggests the evaluation may be somewhere between internal and external	The objective of this program is to address the underrepresentation of women in the engineering, science and technology-related fields, so the program is intended to effect change	Evaluation is at the level of the individual	While the study can be challenged on the basis on the basis of methodological adequacy, the claims made are limited to the data collected and the interpretation is clearly and logically developed. The study may have been improved with reference to the mentoring literature which informs this research area (for example, the analysis could have referenced Kram's (1988) work which addresses career and psychosocial benefits which seems to be relevant in the context of this study). Along the same lines, using an established and validated evaluation instrument may

										have been useful as a means of comparing outcomes with face-to-face programs. The study's stated aim is to assist with retention of women in non-traditional areas so a longitudinal assessment which includes some objective trend data may improve triangulation and the validity of the study. Nonetheless this is exploratory research supported by data collected from a large sample which will no doubt inform future research
Lewis, C.W., 2005	The generalizability of the findings may be difficult to challenge because the claims are not well defined: "After an in-depth examination of the findings, this program is doing quite well" (p.35). The emphasis is on a formative approach with the researcher making recommendations on program improvement. The researcher claims that the qualitative evaluation of the specific skills the program aimed to	School setting (other)	Students	Non-random	The sample sizes for this study are slightly confused and not summarised as part of the report. There is no general discussion about sampling issues, nor representativeness nor generalizability. Of interest is the fact that self-selection was a condition of student participation (p.14) but the potential for selection bias to influence the results and the impact on the	This study can be considered at Step III though the summary primarily reports on takeup which sits at Step II on Storey's model. There is no comparison with a matched group of non-assisted mentees, and few references to sampling issues. Deadweight is considered in qualitative terms	External	Not relevant in this context	Evaluation at the level of the individual with a view to considering the value of the program	The Summary section of this study (p.35) belies the complexity and detail presented in the preceding data analysis. Lewis's "After an in-depth examination of the findings, this program is doing quite well" and "Teachers have noted that they have seen quite a change in their students" is underwhelming. The methodological and analytical adequacy of this evaluation are able to be challenged.

	improve was supported by the qualitative data collected				evaluation of outcomes is not discussed				It is unlikely that a program would be implemented nationally, as is advocated by Lewis, on the basis of this evaluation
Cascio, T. & Gasker, J., 2001	Acknowledges the fact that the survey instrument is not tested for reliability and validity. Researchers acknowledge social desirability bias. Researchers also acknowledge the limitations for generalizability due to the small relatively homogenous sample (p.292)	Social work students – university - other	Students	Purposive sampling (p.286)	Sample size is small - 14 undergraduate students. The study involved analysis of the results for the experimental group against a matched control group. Selection bias (selection undertaken by instructors) is not discussed, nor is the generalizability of this study to other social work education contexts	This study could feasibly sit at Step V of Storey's model in that it compares outcomes for assisted and non-assisted mentees, and compares with a matched comparison group. The study doesn't discuss selection bias	Internal - the researchers were simultaneously instructors and researchers. Cascio and Gasker attempted to avoid contamination of the sample by not reading the emails which were copied to them as researchers (p.287)	Not relevant in this context	Evaluation is at the level of the individual	The validity of this study could be challenged on the basis that it depends exclusively on self-report data however the researchers could argue that the methodologies utilised are appropriate to the kinds of knowledge being sought. The instrument used in the quantitative work is acknowledged as not having been tested for reliability and validity (p.286). Qualitative data were independently coded to maximise validity and reliability (p.287). The claims made are supported by the data, the interpretation is logical and clear, concepts are well defined, methodologies used are sound and adequate - all giving this study a high level of validity
				E-mentoring for small business					

Rickard, K., 2005	Generalizability open to challenge on the basis that professionals operating as self-employed contractors are not representative of small business generally. Evaluation instrument has not been used before so not tested for reliability or validity	Private sector (publicly-funded program)	Entrepreneurs and small business owners	Purposive	Study based on 20 mentoring partnerships. Generalizability can be challenged on the basis of sampling as characteristics of respondents reported but no attempt to stratify the sample to establish any major differences between the characteristics of sample broader SME population. No attempt to account for selection or response bias. No analysis of deadweight or displacement	Necessarily no higher than Stage III because while using in part a quantitative approach, it does not compare assisted with non-assisted individuals, nor compare with matched group, nor account for selection bias	Internal	Neither - business skills development	Individual	Validity can be challenged on the basis of methodological adequacy - sample size, generalizability of sample, no control group, rival explanations not considered, and limited triangulation so interpretation and claims made not supported by a range of data sources
Stokes, K., Garrett-Harris, R. & Hunt, K., 2003	Generalizability of this research higher in comparison with Rickard study as subjects are from a broader range of forms of employment, occupation and sector. Programs conducted across two regional locations so generalizability improved	Private sector (publicly-funded program)	Entrepreneurs and small business owners	Non-random - researchers acknowledged the difficulty of finding a sample because of the lack of a sufficient sampling frame. Purposive sampling used	40 mentoring partnerships in first case study and 18 partnerships in second study. Response rates were 50 per cent and 47 per cent respectively.	Necessarily no higher than Stage III because while using in part a quantitative approach, it does not compare assisted with non-assisted individuals	Internal - K. Hunt was involved in the design and development of the program	Neither - personal and business skills development	Individual but policy implications also discussed	As with the Rickard study (2003), validity can be challenged on the basis of methodological adequacy - sample size, generalizability of sample, no control group, rival explanations not considered, and limited triangulation.
Megginson, D., Stokes, P. $ Garrett-Harris, R., 2003	Generalizability of this research higher in comparison with Rickard study as subjects are from a broader range of forms of employment, occupation and sector. Programs conducted across	Private sector (publicly-funded program)	Entrepreneurs or small business owners	Non-random	40 mentoring partnerships - response rate over 50 per cent. Generalizability can be challenged on the basis of sampling as characteristics of respondents reported but no	Around Stage III because while using in part a quantitative approach, it does not compare assisted with non-assisted individuals. It does however undertake a comparative	Internal to the extent that the report was provided to the Agencies which funded the program	Neither - personal and business skills development	Individual but policy implications also discussed	While validity could be challenged on the basis of sample size, lack of control group, lack of stratified sample ensuring its representativeness, lack of triangulation of

	two regional locations so generalizability improved				attempt to stratify the sample to establish any major differences between the characteristics of sample broader SME population.	analysis with another program so potentially a Step IV evaluation)			data, and an evaluation approach which is largely derivative and may reproduce validity and generalizability difficulties present in the sister programs, exploratory work such as this is still useful to practitioners and researchers in that it attempts to come to terms with the complexity of the construct being investigated (in this case by measuring across DeLone and McLean's dimensions)

Table 4 - Methodology - Summary of review of variables related to Construct Validity in the interdisciplinary studies relating to mentoring (Checklist 4)

Study	Number of data sources	Stakeholders - does the study measure outcomes for all parties? Seddon and Curran and Blackburn (users of small business research)	Evaluation on behalf of which stakeholder/s	Concepts clearly defined? Precise definition of mentoring, small business, small business owner, etc. (Clutterbuck)	Measures of ineffectiveness as well as effectiveness?
			Training and small business interventions		
Hart, M. & Roper, S. 2003	2 - Interviews and survey	Not a mentoring program so emphasis is on outcomes for assisted small businesses with a view to evaluating policy effectiveness	Evaluation on behalf of assisted businesses with a view to evaluating the effectiveness of policy	The study does not include an analysis of effectiveness by the nature of the assistance provided. Assistance was the criteria by which businesses were included in or excluded from the study. The key definition is therefore assistance and this term was clearly defined (p.6)	This study considers potential displacement so it can be seen as considering and measuring negative as well as positive impact
Wright, P.C., and Tao, F.K.C., 2001	2 - Self-report data only – questionnaires and interviews	The evaluation is in terms of outcomes for small business managers	Evaluation on behalf of small business managers but also with reference to policy-makers	Concepts are reasonably well defined but their theoretical sophistication could perhaps be challenged as not being supported by the relevant coaching and/or mentoring literature. In the context of executive coaching the authors define the coach as follows: "The coach is partly a personal consultant and partly a "sounding board" as well as a competent manager [who] can give informal personalized advice .." (p.219)	No
Leitch, C.M. and Harrison, R.T., 1999	2 - Self-report data only – in-depth case study and questionnaire	The enterprise or organisation and universities are seen as dynamic locations for learning and applying management education. The enterprises are regarded as the beneficiaries of the entrepreneurial learning of executives. So the executives are the primary stakeholders but also the enterprises which become more competitive as a result of management and entrepreneurship education.	The learning of the executives is the focus of this study and outcomes for them as primary stakeholders is central	This study defines the constructs used including action learning, entrepreneurship, operational organisational development and strategic business development and details how they are operationalised and measured	No
Chrisman, J.J., 1999	1 Mail questionnaire	Primarily entrepreneurs assisted by the SBDC's but also policy-makers and SBDC directors	Evaluation on behalf of entrepreneurs, but also Directors of SBDC's and policy-makers	The study may suffer from failing to define the types of assistance provided to SBDC clients. While the outcomes are presented in sophisticated terms, the reader is not privy to what assistance has been provided to yield these results. There is little detail presented on the types of firms or entrepreneurs assisted in terms of number of employees, turnaround, profits.	No

Lenihan, H. & Hart, M., 2004	1 -Interviews – acknowledges the limitations where respondents may exaggerate or play down the impact of assistance (p.4)	The importance of evaluation of industry interventions to small business and policy-makers is the focus of this study, so the businesses and policy-makers are implicitly primary and secondary stakeholders respectively	Evaluation on behalf of entrepreneurs but also policy-makers	The concepts of additionality, deadweight and displacement are defined in detail	This study considers potential displacement so it can be seen as considering and measuring negative as well as positive impact
Thomas, T. & Landry, B, 2002	At least 5 – emphasises the importance of multiple lines of evidence – qualitative and quantiative	The study measures outcomes for assisted businesses and for the region at the macro-economic level	The businesses assisted, the region and taxpayers are acknowledged as stakeholders.	The methodology used, the methods of calculation of estimates and the term small business are clearly defined	This study considers potential displacement so it can be seen as considering and measuring negative as well as positive impact
MacDonald, R. & Coffield, F., 1999	4 - Primarily in-depth interviews but preceded by questionnaire and interviews with professionals involved in business support	The primary stakeholders are the youth who used the Government enterprise support services, but also the locality or region in which the programs are being delivered are acknowledged as stakeholders: "we were keen to assess the impact of enterprise courses and schemes on the local culture of work" (p.6)	Evaluation is primarily on behalf of youth starting up enterprises but also outcomes are considered for the region	The concepts used in this study are defined but also problematised in a sophisticated way. For example, the term enterprise (p.6 and p.229), and success (refer to discussion under impact), The difficulty of clearly defining these concepts because of their complexity and context is acknowledged and used as a basis for taking a qualitative approach which can shed light on these complexities	Yes - indicated that very few of the young entrepreneurs supported by intervention were "successful". Most were successful in part and many were neither successful nor unsuccessful
Mentoring - in context other than small business					
Kram, K., 1988	1 -Supplementary study about peer relationships to provide context to consider findings of first study. However interviews from the first study were the primary data source.	Qualitative analysis of impact of mentoring on mentees and mentors	Primarily mentees and mentors but also discussion of organisational benefits of (p.159)	"To assess whether a particular relationship is a mentoring relationship or not is not as worthwhile a task as to assess which career and psychosocial functions are evident." Kram's focus is on aspects of developmental relationships so mentoring is by default defined very clearly by these career and psychosocial functions	No
Hunt, D.M., 1992	2 - Interviews and questionnaire	Emphasis is on mentor outcomes and suggests that outcomes for stakeholders other than mentees should be included in impact analysis	Unusually, focus is on mentors rather than mentees. Author also suggests that outcomes for organisations should be evaluated (p.47)	Concepts being investigated (mentoring and mentor outcomes), exactly how they are operationalised (career rejuvenation and improved teaching skills) and the indicators used to measure them (positive and negative outcomes) appear to be loosely defined or at least not detailed in the study. As this is exploratory work, it may be that making useful and broad initial investigations is at the cost of and precise definition	No
Chao, G.T., 1997	1 -Questionnaire	Analysis of proteges perceptions of the mentoring partnership and phases without including data on mentors' perspectives is acknowledged as a limitation of the study	Evaluation on behalf of proteges	The researcher clearly defines the constructs used to investigate mentoring phases and outcomes as the study refers directly to Kram's	No

				study	
Noe, R.A., 1988	1 - Questionnaire – proteges only	The study acknowledges as a limitation the fact that it evaluates benefits for and characteristics of proteges only (p.476)	Evaluation is on behalf of proteges only	Noe problematises and clearly defines the mentoring functions he is measuring and analysing	No
Seibert, S., 1999	1 - Questionnaires	The study measures outcomes for mentees only	Evaluation is on behalf of proteges only	Kram's definitions of career and psychosocial benefits in developmental relationships is utilised in this study. Outcomes are operationalised in line with established measurement instruments	No
Hale, R., 1999	2 - Questionnaires and semi-structured interviews	The study "sought evidence of learning by the mentee, the mentor and for the organisation" (p.2)	Evaluation is on behalf of the mentees, mentors and the organisation	The study may suffer from not defining the behaviours and types of assistance which have produced the outcomes presented. The study may also be seen as not being contextualised by and adding to the existing literature as it does not discuss the benefits in terms of Kram's (1988) career and psychosocial benefits". It is not clear whether the mentoring was supported	No
Pfleeger, S.L., & Mertz, N., 1995	1 - Interviews – no success measures beyond self-report	Study measures success with reference to both mentees and mentors (p.66)	Stakeholders acknowledged are mentees, mentors and the organisations in which the pilot programs were implemented	The tautology involved in defining and researching mentoring is evident in this study. All the participants are included and an analysis is made of what processes occurred, rather than excluding some participants and data because what occurred did not constitute mentoring as previously defined by the researchers. This difficulty is discussed by O'Neill (p. 67 1988)	Yes - study looked at successful and unsuccessful pars
Mentoring for small business					
Broadbridge, A., 1999	1 - Self-completed survey questionnaire	The study evaluates the benefits for proteges only and acknowledges this as a limitation	Evaluation on behalf of proteges only	The concept of mentoring is defined for questionnaire respondents as follows: "A mentor is someone with greater seniority and experience who, either on an informal or formal basis, has guided, coached and advised you in your career to date" (p.342). This broad definition including formal and informal mentoring is fairly broad but this is perhaps to be expected in research which is exploring mentoring in a new context..	Looks at how advantages outweigh disadvantages – so Yes
Dusseldorp Skills Forum,	2 - Interviews and survey	The study attempts to evaluate benefits for	Evaluation on behalf of mentees, mentors and	While the study presents a definition	No

1999	questionnaires to mentees and mentors	mentees, mentors and the business community	the business community	of the concept of mentoring, the definition is a fairly rudimentary and unsophisticated one which is not informed by the relevant literature. The difficulty with this is that the study which follows does not come to terms with the complexity of the phenomena it is evaluating. However the authors do acknowledge the limitations of their study.	
Devins, D. & Gold, J., 2000	1 - Interviews with tough nuts	The study measures outcomes primarily for mentees	Evaluation on behalf of mentees	The study is sophisticated in its definition of mentoring and refers to a debate around mentor as coach versus advisor, etc. (p.251). The study is informed by the difficulties of using a competency-based approach which is necessarily generic when the nature of assistance required by small business is necessarily relevant to individual businesses (p. 251). The study also problematises the issue of context in which the interventions occurred in the form of a discussion of "uniqueness". A definition of tough nuts is included (p.250)	No
Kent, T., Dennis, C. & Tanton, S., 2003	1 - Semi-structured questionaire to mentees	The study primarily evaluates outcomes for mentees	Evaluation primarily on behalf of mentees	The study problematises the definition of mentoring, considers the background to the concepts of learning and training for SME's and considers some of the methodological challenges in evaluating mentoring in the SME context - so the study comes to terms with the difficulties involved in precisely defining concepts in this research area	No
Bisk, L., 2002	1 - Success of partnership was measured with reference to primarily whether the engagement between mentor and mentee continued beyond formal program and this is perhaps a limited way of operationalising the construct of effectiveness. Questionnaire – responses of mentees only	This study focuses on the benefits for participating mentees	Evaluation primarily on behalf of mentees	The study acknowledges the complexity of the mentoring phenomenon and attempts to problematise the definition of mentoring. The definition is located in the informing literature. It also defines a number of the other critical terms used throughout the study (p.263). The study may have benefited from defining the stakeholders further because there may be a lack of clarity around the purpose of the intervention at the individual and	No

				policy levels and this may have the consequence of affecting the logic of the study because the evaluation is not in terms of any clear stated goals of the intervention at the level of the individual	
Deakins, D., Graham, L., Sullivan, R. & Whitlam, G., 1998	1 - Mixture of research methods planned but this study focuses on interviews only (interviews with advisors underway) - self-report data only	This study focused on outcomes for mentees but it is part of a larger study which will also evaluate outcomes for mentors	Evaluation on behalf of key stakeholders who were the mentee entrepreneurs and the mentors/business advisors	Concepts are defined, then problematised, and also contextualised in the relevant literature. Mentoring is generally defined as consisting of "advice, counselling or consultancy" (Abstract, p.151)	No
E-mentoring - in context other than small business					
Gordon, S.M., Edwards, J., Brown, G., Finnigan, F.A., Yancey, V., Butler, A.Y., Davis, W.D. and Stitt, D.M., 2005	1 - Semi-structured phone interviews – students, alumni and faculty	The study measures outcomes for mentees and mentors	Evaluation on behalf of students, alumnae and faculty	Concepts were precisely defined and the operationalisation of the constructs clear and logically developed.	No
O'Neill, K., 1998	1 - In-depth interviews with students, teachers and mentors	The emphasis of the study is on outcomes for students (mentees).	Evaluation on behalf of students/mentees	The difficulties with precisely defining mentoring and e-mentoring are acknowledged and discussed in a sophisticated way (p.67). On the scope and types of assistance provided by mentors, O'Neill says: ".. it may be this diversity in the kinds of assistance and support provided in the relationship that best characterizes mentoring." (p.32) Of course, this also presents one of the major methodological challenges of researching mentoring.	No
Brown, S.C. & Kysilka, M.L., 2005	2 - Reflections of students on project (open-ended questions) and content of email exchanges	The study reports on outcomes for mentees, mentors and the program developers/ hosts	Evaluation on behalf of mentees, mentors and program developers/researchers	Mentoring concepts are defined and discussed. In addition, because the program was developed and delivered in an education setting, concepts such as adult learning, the sociality of learning, learning using a constructivist approach are also discussed explicitly	No
Asgari, M. & O'Neill, D.K.	4 - Multiple lines of evidence – pen and paper surveys, group interviews, face-to-face or phone interviews and tracking of mentee/mentor exchanges	The focus of this study is on mentees' perceptions of success. It does not focus on outcomes for mentors	Evaluation on behalf of mentees only in this study	O'Neill and Asgari attempt to define the concepts they use. The focus of the study is on problematising the definition of success	No
Dimock, K.V., 1997	1 - Data collected comprised of the "stories" of the teachers, students and subject matter experts	The study measures outcomes for students, teachers and subject matter experts	Evaluation is primarily on behalf of students as mentees	This study could be criticised in that it does not sufficiently define or problematise mentoring - rather it accepts uncritically and with limited sophistication the fact that whatever is occurring between students,	No

				teachers and subject matter experts is electronic mentoring	
Boyle-Single, P., Muller, C.B., Single, R.M. & Carlsen, W.S., 2002	2 - Participant application, post-program questionnaire (online) and additional qualitative data from open-ended question on questionnaire (all self-report data)	The evaluation primarily evaluated outcomes for mentees but also collected data from 1913 mentors	Mentees are the primary stakeholders but evaluation is also conducted with reference to the perceptions of mentors	The study is based on a definition of structured mentoring. The operationalisation of the construct of the retention of women in non-traditional areas with the surrogate measures of increased self-confidence, enhanced knowledge of the workplace and support from impartial advisors, is potentially open to challenge. The study would perhaps have benefited from a discussion of how retention is measured and the limitations of this study	No
Lewis, C.W., 2005	2 - Survey questionnaire and interviews	The study primarily reports on outcomes for student mentees but also includes data collected from teachers and mentors as other key stakeholders	Student mentees were the primary stakeholders but teachers and mentors were surveyed	The types of interaction between mentees and mentors being investigated are not clear. The purpose of the report is also unclear. The aim of the program is not clearly stated	No
Cascio, T. & Gasker, J., 2001	1 - Pre- and post-test survey. Copies of email exchanges sent to researchers for thematic analysis	The study measures outcomes for undergraduate mentees	Evaluation is on behalf of undergraduate mentees	Concepts such as social work values, mentoring and professional identity are clearly defined	No
E-mentoring for small business					
Rickard, K., 2005	2 - Survey questionnaire and a limited sample of exchanges between mentee and mentors. Strength of the study is in the diversity of measures used to operationalise the constructs but compromised by lack of internal and external validity	Measured outcomes for mentees, mentors and host/facilitator	Primarily mentees but also mentors and host organisation	Structured e-mentoring defined, professions involved defined by ABS ASCO definitions. Clear that the relationships were developmental rather than simply advisory or instructional	No
Stokes, K., Garrett-Harris, R. & Hunt, K., 2003	1 - Survey questionnaire. Operationalisation of construct of effectiveness which was largely replicated from the Rickard study is a strength	Measured outcomes for mentees and mentors	Mentees and mentors	Definition of mentoring and e-mentoring provided	No
Megginson, D., Stokes, P. $ Garrett-Harris, R., 2003	1 - Survey questionnaire. Again operationalisation of construct of effectiveness which was replicated from the Rickard study is a strength	Measured outcomes for mentees and mentors	Mentees and mentor (compares outcomes in some cases)	Concepts of mentoring and e-mentoring are presumed rather than defined	No

Appendix 2a

Delphi Survey Questionnaire 1 (1st round)

Thank-you again for agreeing to participate in this study.

The aim of this round is to identify the range of issues and problems related to the contingency framework which the members of the expert panel see as important.

You may find it helpful to print off a copy of the framework to refer to while completing these questions.

Please respond to the questions, save the amended file and return to the researcher by email to krickard@apesma.asn.au along with your consent form by Friday 9th June or as soon as is convenient to you. Answering particular questions is optional - please feel free not to answer questions which are outside your field of expertise if you wish.

■■

Section 1 questions relate to the phases of the *E-mentoring in the small business context contingency theory development framework*.

Section 1
(questions mainly directed at mentoring and e-mentoring experts)

Phase 1 - E-mentoring dimensions and measures

1.1   Please comment on the following statement:

   DeLone and McLean's dimensions provide a useful and appropriate taxonomy for describing and evaluating e-mentoring effectiveness.

1.2   If any, what do you see as the positives of borrowing from Information Systems effectiveness models such as DeLone and McLean's model in evaluating e-mentoring in the small business context?

1.3   If any, what do you see as the negatives?

1.4   If any, what do you think are the omissions in DeLone and McLean's taxonomy when applied in the context of e-mentoring?

1.5   Are there any other dimensions or measures you believe should be included or made explicit in the model?

   If Yes, please specify:

1.6   **Kram's seminal work on mentoring developed a taxonomy for describing mentoring outcomes which explicitly or implicitly underpins much of the subsequent research (Kram 1980). Kram's taxonomy can be summarised as follows: (i) career benefits/support including sponsorship, exposure and visibility, coaching, protection and challenging assignments, and (ii) psychosocial benefits/support including role modelling, acceptance and confirmation, counselling and friendship] can be usefully transferred and extended from the organisational setting to the business context.**

   Please comment on whether or not you think Kram's taxonomy can be usefully transferred and extended from the organisational setting to the business context.

1.7   Please comment on whether or not you think Kram's taxonomy sits consistently within DeLone and McLean's dimensions.

1.8   In "Problems with Research in Mentoring" (Clutterbuck 2003) David Clutterbuck suggests that "Recognising that mentoring is a class of phenomena and that each phenomenon needs to be investigated

in its own right, would be a major step forward in research quality in this field"
(http://www.coachingnetwork.org.uk/resourcecentre/Articles/ViewArticle.asp?artId=82).

Please comment on whether or not you think DeLone and McLean's dimensions set out in Phase 1 of the framework (either with or without Kram's taxonomy) provide a basis for making useful generalizations about classes of mentoring phenomena.

Section 2
(questions directed to all participants)

Phase 2 - Context - contingency variables

2.1   Please comment on the statement in bold:

The effectiveness of business/entrepreneurial support, mentoring and e-mentoring in the small business context is contingent upon a wide range of factors which are usefully included as contingency variables in this framework.

2.2.   Please comment on the statement in bold:

In the mentoring and e-mentoring for small business context, the variables upon which effectiveness is contingent can be usefully, appropriately and sufficiently summarised as external environmental, business characteristics and personal/individual variables.

2.3   Are there any other variables you believe should be included?

        If Yes, please specify the additional variables which should be included:

Section 3
(questions directed to all participants)

Phase 3 - **Key methodological decisions in maximising validity**

3.1   Please comment on the statement in bold:

The external, internal and construct validity of research studies evaluating the effectiveness of e-mentoring in the small business context will be influenced by a range of important methodological decisions and open to challenge on the basis of the methodologies used.

3.2   Please comment on the statement in bold:

Considering the methodological decisions summarised in Phase 3 will assist researchers and practitioners with selecting a research strategy which will potentially improve the validity of their evaluation.

3.3   Please comment on the statement in bold:

Considering the methodological decisions summarised in Phase 3 will potentially assist researchers and practitioners to identify the limitations of their evaluation studies.

3.4   Are there any other key methodological decisions you believe should be included in Phase 3?

        If Yes, please specify:

Section 4
(questions directed to all participants)

Phases 4 and 5 - **Selection of research strategy and selection of measures**

4.1   Can you foresee any difficulties with selecting a research strategy and measures using the framework?

Please explain why or why not:

Section 5
(questions directed to all participants)

General questions

5.1   Please comment on the statement in bold:

The contingency framework will be useful in considering an examination of actual practice (a study evaluating the effectiveness of e-mentoring in the small business context).

5.2   Please comment on the statement in bold:

The contingency framework will assist with understanding variability in outcomes of intervention and support programs across the informing research disciplines.

5.3   Please comment on the following statement:

The framework will be useful to researchers.

5.4   Please comment on the following statement:

The framework will be useful to practitioners.

5.5   Do you think the framework may have relevance and application beyond the context of evaluating e-mentoring for small business?

Please explain why or why not:

5.6   Do you think the framework's relevance is affected by whether a study adopts a positivist or constructivist approach to evaluation?

Please explain why or why not:

5.7   Do you think there are any inconsistencies or contradictions with the phases sitting alongside one another? Please explain why or why not, and how the contradictions or problems might be resolved.

5.8   The framework is intended to make explicit and address some of the difficulties and disincentives inherited by this research area. Please comment on the statements in bold (disregarding the questions which don't apply to your area of expertise if you wish).

5.8.1 **The contingency framework assists with providing a basis for addressing some of the difficulties of mentoring research (when evaluating e-mentoring in the small business context).**

5.8.2 The contingency framework assists with providing a basis for addressing some of the difficulties of small business research (when evaluating e-mentoring in the small business context).

5.8.3 The contingency framework assists with providing a basis for addressing some of the difficulties of e-mentoring research (when evaluating e-mentoring in the small business context).

Section 6
Assumptions underpinning framework

I would like your comments on some of the basic assumptions which underpin the contingency framework with a view to identifying general consensus and divergence.

6.1   Please comment on the statements in bold:

6.1.1 **Consideration of:**
- **process (the quality and nature of the mentoring process);**
- **content (the content provided by a structured support program);**
- **context (the context in which the mentoring occurred; and**
- **methodological choices suited to the evaluation task at hand**

are critical to choosing a sound research strategy and selecting appropriate measures of effectiveness.

6.1.2 **Systematically codifying the factors set out in 6.1.1 in a contingency framework is likely to be useful in advancing research and/or practice.**

6.1.3 **Effectiveness evaluation in the context of e-mentoring for small business should not be methodologically prescriptive, nor should it privilege a quantitative over qualitative approach, or experimental over non-experimental approaches.**

6.2 **Please detail any other views you have on the framework's structure, relevance, appropriateness and/or sufficiency.**

Thank-you for completing this questionnaire. Would you please save this document to your system and then forward it to me. Remember if you close the email which contained this attachment, answer Yes if prompted to Save Changes.

Thank you again,
Regards,
Kim Rickard.
email: krickard@apesma.asn.au

Appendix 2b

Delphi Survey Questionnaire 2 (2nd round)

Thank-you again for agreeing to participate in this study.

Please respond to the questions, save the amended file and return to the researcher by email to krickard@apesma.asn.au by the end of the week or as soon as is convenient to you.

▪▪

Section 1 (questions mainly directed at mentoring and e-mentoring experts)
Phase 1 - E-mentoring dimensions and measures

Q1.   Please indicate whether you agree or disagree with the statement in bold by placing an "x" in the relevant box.

DeLone and McLean's dimensions provide a useful and appropriate taxonomy for describing and evaluating e-mentoring effectiveness.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Q2.   Are there any other dimensions or measures you believe should be included or made explicit in the model?

Yes ☐   No ☐

If Yes, please specify:

Q3.   Please indicate whether you agree or disagree with the statement in bold by placing an "x" in the relevant box.

Kram's taxonomy for evaluating mentoring outcomes (Kram 1980) [that is, (i) career benefits comprising sponsorship, exposure and visibility, coaching, protection and challenging assignments, and (ii) psychosocial benefits comprising role modelling, acceptance and confirmation, counselling and friendship] can be usefully transferred and extended from the organisational setting to the business context.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Q4.   Please indicate whether you agree or disagree with this statement by placing an "x" in the relevant box.

Kram's taxonomy sits consistently within DeLone and McLean's dimensions.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

If you disagree, please explain why:

Q5.   Please indicate whether you agree or disagree with the statement in bold by placing an "x" in the relevant box.

In "Problems with research in mentoring", David Clutterbuck suggests that "Recognising that mentoring is a class of phenomena and that each phenomenon needs to be investigated in its own right, would be a major step forward in research quality in this field" (http://www.coachingnetwork.org.uk/resourcecentre/Articles/ViewArticle.asp?artId=82).

DeLone and McLean's dimensions set out in Phase 1 of the framework either with or without Kram's taxonomy provide a basis for making useful generalizations about classes of mentoring phenomena.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

If you disagree, please explain why:

Section 2 (questions directed to all participants)
Phase 2 - Context - contingency variables

Q1.   Please indicate whether you agree or disagree with the statement in bold by placing an "x" in the relevant box.

The effectiveness of business/entrepreneurial support, mentoring and e-mentoring in the small business context is contingent upon a wide range of factors.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

If you disagree, please explain why:

Q2.   Please indicate whether you agree or disagree with the statement in bold by placing an "x" in the relevant box.

In the mentoring and e-mentoring for small business context, the variables upon which effectiveness is contingent can be usefully summarised as external environmental, business characteristics and personal/individual variables.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

If you disagree, please explain why:

Q3.   Are there any other variables you believe should be included?

Yes ☐   No ☐

If Yes, please specify the additional variables which should be included:

Section 3 (questions directed to all participants)
*Phase 3 - **Key methodological decisions in maximising validity**

Q1.   Please indicate whether you agree or disagree with the statement in bold by placing an "x" in the relevant box.

The external, internal and construct validity of studies evaluating the effectiveness of e-mentoring in the small business context will be influenced by a range of important methodological decisions and open to challenge on the basis of the methlogies used.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

If you disagree, please explain why:

Q2.   Please indicate whether you agree or disagree with the statement in bold by placing an "x" in the relevant box.

Considering the methodological decisions summarised in Phase 3 will assist researchers and practitioners with selecting a research strategy which will potentially improve the validity of their evaluation.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

If you disagree, please explain why:

Q3.   Please indicate whether you agree or disagree with the statement in bold by placing an "x" in the relevant box.

Considering the methodological decisions summarised in Phase 3 will potentially assist researchers and practitioners to identify the limitations of their evaluation studies.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

If you disagree, please explain why:

....

....

....

Q4.   Are there any other key methodological decisions you believe should be included in Phase 3?

Yes ☐   No ☐

If Yes, please specify:

Section 4 (questions directed to all participants)
Phases 4 and 5 **- Selection of research strategy and selection of measures**

Q1.   Can you foresee any difficulties with selecting a research strategy and measures using the framework?

Yes ☐   No ☐

Please explain why or why not:

Section 5 (questions directed to all participants)
General questions

Q1.   Please indicate whether you find the statement in bold true or false by placing an "x" in the relevant box.

The contingency framework will be useful in considering an examination of actual practice (a study evaluating the effectiveness of e-mentoring in the small business context).

Definitely false	False	Maybe	True	Definitely true

Please explain why:

Q2.   Please indicate whether you find the statement in bold true or false by placing an "x" in the relevant box.

The contingency framework will assist with understanding the variability in outcomes identified in the literature across the informing research disciplines.

Definitely false	False	Maybe	True	Definitely true

Please explain the basis of your view:

Q3.   Please indicate whether you find the statement in bold true or false by placing an "x" in the relevant box.

The framework will be useful to researchers.

Definitely false	False	Maybe	True	Definitely true

Please explain why:

Q4.   Please indicate whether you find the statement in bold true or false by placing an "x" in the relevant box.

The framework will be useful to practitioners.

Definitely false	False	Maybe	True	Definitely true

Please explain why:

Q5.   Do you think the framework may have relevance and application beyond the context of evaluating e-mentoring for small business?

Yes ☐   No ☐

Please explain why or why not:

Q6.   Do you think the framework's relevance is affected by whether a study adopts a qualitative or quantitative approach to evaluation?

Yes ☐   No ☐

Please explain why or why not:

Q7.   Please detail any other views you have on the framework's structure, relevance, appropriateness and/or sufficiency:

Appendix 3 - Framework Guidelines

Preamble

The contingency framework is the product of an interpretive research process which aimed to identify recurrent conceptual and methodological themes and measures in a review of effectiveness evaluation studies across the three informing disciplinary areas of mentoring, e-mentoring and small business research including entrepreneurial learning.

It is not intended that a research study will use all the measures, all the methodologies or refer to all the contextual factors included in the framework, nor is it intended to support practitioners through developing an appropriate assistance program, nor guide the evaluator through the evaluation process itself beyond a very basic compendium of suggestions of where to start on the evaluation process from the literature to assist evaluation researchers or practitioners. The framework will not of itself produce valid comparable credible research. The art and science of designing an evaluation is dependent on how a researcher or practitioner "handles the mix" of factors included in the framework according to the purpose of the particular evaluation, and how they deal with issues of rigour.

The framework is built on three premises.

The first premise is that of methodological pluralism - that is, that there is no one correct method of science but many methods. The "correct" methodology is contingent on the problem to be studied and the kind of knowledge desired (Hirschheim, 1984, p.33). The aim of this approach is to provide a basis for advancing the emerging discipline of the evaluation of effectiveness of e-mentoring in the small business context - without limiting methods of analysis, description or categorisation.

The framework is intended to guide researchers and practitioners in their selection of a structured e-mentoring effectiveness research strategy and provide a possible taxonomy for describing the e-mentoring as it relates to effectiveness. It problematises the construct of effectiveness and proposes a taxonomy for evaluation which accommodates some of the multiple defintions of the e-mentoring observed. It includes an overview of not only the contextual factors upon which effectiveness is contingent, but also a sample of the multiple methodological approaches and measures which have arisen in the grey and peer reviewed literature to date.

The legitimacy and significance of the framework relies on the second premise that each of the dimensions of DeLone and McLean's model (re-specified for the e-mentoring context) - the quality and nature of the mentoring partnership, the structure and content of the program and the process by which this structured content is adapted by the mentoring partners, the mentee and mentor's perceptions of the value of the assistance provided, and the degree to which the mentoring partners engaged with the content and each other - are critical and interdependent dimensions of evaluating effectiveness in the context of structured e-mentoring. These form, it is proposed, a taxonomy which may assist with description, categorisation and data analysis. To this extent, the framework aims to assist exploration in the form of description, meaningful data categorisation and interpretation of data.

Put simply, it is proposed that practitioners or program developers conducting an evaluation will obtain a sound basis for the making claims of effectiveness if they design into their evaluation measures or indicators of the dimensions of the nature and quality of mentoring processes, how participants adapted the structure and content to their needs, the nature and extent of use or engagement with the program, and the users' satisfaction levels. That is, it is proposed that this is potentially a useful "cluster of indicators" for evaluating the effectiveness of structured e-mentoring.

Researchers aiming to establish or explore causality can use the framework as a taxonomy for selecting a research strategy which can provide a basis for linking the variability in mentoring processes, content and structure, context and outcomes.

The framework highlights a range of contextual factors upon which effectiveness may be contingent drawing on Myers Kappelman and Prybutok's restatement of DeLone and McLean's model. It also summarises some of the key methodological challenges/choices/decisions with which effectiveness evaluation researchers have contended. These choices are grouped according to a taxonomy drawn from Buelens et al to indicate that particular decisions will impact the validity of the research.

The proposed framework aims to support informed decision-making about selection of research strategy with reference to the methodologies and measures used in previous research studies. It is the contention of the researcher that the contingential nature of the framework accommodates and provides a conceptual basis for the variability evident in effectiveness evaluation criteria and evaluation studies. The framework aims not to be prescriptive but to guide the development of a broad diverse research base in the early stages of this emerging research area.

The third premise is that the emerging discipline of e-mentoring in the small business context will be best supported by a systematic and to a degree a "scientific" approach to evaluation research. The framework, relying on such concepts as contingency, internal, external and construct validity, causality, and "measures" of effectiveness implicitly privileges a positivist approach. While these concepts and research strategies underpinned by these concepts is not the only paradigm through which to approach evaluation research in this area, it is proposed that even if researchers adopt a constructivist approach, it is likely to be useful in advancing the field if the construction through which we advance the field is developed with some "lawlike" attributes. Even if researchers operate from within a constructivist paradigm, it can be acknowledged that

"included in our construction are some lawlike attributions." The researcher, for the purpose of this thesis, asserts, as does Clutterbuck, that it is necessary to make some form of generalisations about "classes of phenomena" and therefore "useful for a variety of purposes to think in lawlike terms" (Lincoln & Guba, 1989, p.86)

There is nothing in the framework which precludes the weighting of the DeLone and McLean dimensions according to the researcher's purpose, but nor is there any measure which is intrinsically more important than another in the framework - it depends on the evaluation strategy which is in turn dependent on, among other things, the purpose of the evaluation, the program's goals, the value position adopted, and the methodologies selected.

The contingencies inherent in this research area are infinite - and the point of the framework is to provide a non-prescriptive basis for advancing description, categorisation, framing, mapping, intepreting and accommodating these contingencies. The framework is intended to provide guidance with strategic choices and to present a basis for, in Patton's terms, situational responsiveness in the design of an effectiveness evaluation study of a structured e-mentoring program in the small business context.

Using the framework

In the context of structured e-mentoring for small business, a strategy to evaluate effectiveness should be developed and measures selected with reference to the three "phases" set out in the Contingency framework as follows:

Phase 1 - Structured e-mentoring is a multi-dimensional construct which should be evaluated as such using multiple measures. A holistic or systems approach is a useful means of abstracting the complex and interdependent dimensions of e-mentoring evaluation. DeLone and McLean's model of Information Systems success potentially provides a systems approach with a taxonomy or meaningful categories for effectiveness evaluation. The dimensions are System quality (P1.1), Information quality (P1.2), Use (P1.3), User satisfaction (P1.4) and Impact (P1.5).

P1.1 - System Quality	
This is defined as the nature and quality of the engagement between e-mentoring partners.	
The nature and quality of engagement between mentee and mentor can be evaluated with reference to:	
(a) the types of career and psychosocial support provided	Kram (1980) used this conceptual separation in the context of what is referred to as the sponsorship model of mentoring. While this model of mentoring is now not common, many of the studies in the mentoring literature carry through this distinction either explicitly or implicitly. O'Neill suggests that "while there is no standard, comprehensive set of mentoring functions in the literature, there seems to be consensus on two broad classes of mentoring functions: career and psychosocial" The division was initially proposed by Schockett, Yoshimura, Beyard-Tyler & Haring-Hidore in 1983.
(b) the business skills support provided	An evaluation of an e-mentoring program delivered in the business context should clearly document and analyse the forms of business support provided.
(c) whether engagement continued beyond program	Selection of relevant effectiveness indicators according to the particular operationalisation of the construct of mentoring - based on program goals and the values and information needs of stakeholders - will provide indicators of the effectiveness of the mentoring partnership.
(d) whether and how mentor used as sounding board	
(e) the level of respect for e-mentoring partner	
(f) the duration of e-mentoring partnership	
(g) the perceived importance of advice received	
(h) the perceived difference in mentee's ability to achieve	
(i) the perceived quality of the relationship	
(j) the guidance received	
(k) the most positive aspects of the mentoring partnership	
(l) the most difficult aspects of mentoring partnership	
(m) whether willing and active collaboration occurred	
(n) whether the mentoring partnership was a postive/negative experience	
(o) whether the mentee/mentor would recommend program	
(p) the quality of the rapport within a dyad	
(q) the quality of the contracting between the mentoring partners	
(r) relevant e-mentoring skills such as netiquette, understanding of mentoring	

(s)	the contractual expectations including understanding of the role of each party in the arrangement	
(t)	goal clarity including understanding of aims of what is to be achieved	
(u)	goal commitment - the extent of commitment of parties to goals	
(v)	relationship commitment - the extent of commitment to the mentoring relationship	

P1.2 - Information Quality is defined as nature and quality of the learning and mentoring process including interaction with and adaptation of content and structure.

Information quality should be considered or measured with reference to:

(a)	the process of learning including adaptation of generic content to individual needs	With reference to Patton and Wadsworth, this thesis considers individualised outcomes for respondents. Respondents are accepted as active agents rather than passive recipients of a program. with the unique process of implementation and adaptation of the program acknowledged. This sits consistently alongside Lincoln and Guba's suggestion that evaluation should acknowledge the process of *implementation* of the program (Lincoln & Guba 1989 p.451). This conceptualisation of a program as, rather than being stable, as being adapted by those using it and affected by its context means that an understanding of this implementation and adaptation process is likely to be relevant, if not critical, to evaluting the effectiveness of the e-mentoring process. Implementation in these terms consists of a process of mutual adaptation (Patton p.106) and an e-mentoring partnership will be characterised by the unique series of mutual adaptations made by each of the e-mentoring partners in each of their own unique contexts. Therefore, whatever conceptual and analytical framework is developed needs to accommodate the fact that there will be virtually an infinite number and type of experiences to be evaluated.
(b)	the quality and development of mentoring engagement in terms of phases	Documentation and analysis of the development of the mentoring process can be fundamental in assessing the antecedents to outcomes. The phases of mentoring and different outcomes which occur at each phase may be a useful approach.
(c)	whether assigned/self-selecting mentoring partnerships	This may be a factor in effectiveness and identifying the nature of mentor selection may assist with comparability and replicability.
(d)	the nature and quality of programmatic features	Documentation and an understanding of program features is essential to an understanding of the antecedents to outcomes in the context of structured e-mentoring. Outcomes may be contingent upon the nature and quality of the content and structure of the program and the ways these are delivered to participants.
(e)	the pedagogical structure of program	Appropriate documention and analysis of the pedagogical structure of a program can be intrinsic to effectiveness in terms of describing the learning process and learning outcomes.
(f)	the nature and value of matching process	Because effectiveness may be contingent upon it, identification, analysis and documentation of the basis upon which mentoring partners are matched is critical to a sufficient description of a program.. Matching in e-mentoring programs

		may be differentiated from matching in mentoring programs because geographical proximity is not generally the basis of the match. Satisfaction with the matching process may be an appropriate indicator.
(g)	the quality and nature of support from facilitator	A good relationship with the host may redeem a poor relationship with a mentor, and vice versa. Alternatively, a mentee's relationship with the host may be perceived to be immaterial to program outcomes. A poor relationship with a host may compromise an otherwise positive program experience.
(h)	quality of pre-program training provided	Research indicates that pre-program training influences program effectiveness for participants so this may be an important consideration in evaluating effectiveness.
(i)	relevance of support/content	Relevance will always be problematic when delivering generic content to small business owner/managers because of the diversity of both the business operations themselves and the development needs of the mentees participating.
(j)	timeliness of support/content	Effectiveness may be contingent upon the timeliness of support.
(k)	value of structured exercises	If web-based exercises form part of the structure of the e-mentoring program, their perceived value may be an indicator of effectiveness.
(l)	level of system security	Any program which relies upon IT infrastructure for its delivery should document the systems in place to ensure security and confidentiality. This may be taken for granted but could impact significantly on perceived value if the appropriate procedures and securities are contravened.

P1.3 - Use

The nature, quality and extent of use or engagement with the structured program and mentor should form part of the evaluator's understanding of antecedents to mentee outcomes. In line with well established mentoring literature (Bierema and Merriam 2002) which found frequent interaction to be critical to the success of a mentoring partnership and the closest thing the lit has to a predictor ["successful mentoring involves frequent and regular interaction (Bierema & Merriam 2002)], it would be reasonable to expect that use, which is in the existing literature most frequently operationalised and measured as contact frequency, would be data which is consistently collected in studies of mentoring and e-mentoring. This dimension is also where the impact of email delivery of program structure and content most logically sits.

(i)	(a)	time spent with mentor/mentee	Effectiveness may or may not be contingent upon these factors but as a minimum, some documentation and analysis of the engagement with program and mentee/mentor should be included.
	(b)	engagement with content	
	(c)	engagement with facilitator	
	(d)	ease of access	
	(e)	interaction frequency	
(ii)		impact of email delivery	A discussion of e-mentoring effectiveness must necessarily discuss the impact of email delivery of program structure and content. This facet of effectiveness evaluation is included under the dimension of Use.

P1.4 - User satisfaction

While user satisfaction is contested as a sole measure (Galletta & Lederer 1989, Melone 1990 et al) it is widely acknowledged that user perceptions and attitudes are critical to an understanding of the effectiveness of information systems. It is also an important factor to consider in that it may have some predictive power because of its relationship with outcomes. The literature suggests the need for multi-attribute satisfaction measures rather than single measures (Swanson, Bailey & Pearson, Kriebel and Ives, Olson & Baroudi, Sanders cited in DeLone and McLean, 1992, p.69). This dimension measures program experience at the perceptual level. Gatian (1994) (cited in Myers, Kappelman & Prybutok, 1998, p.97) found support for the relationship between user satisfaction and information systems effectiveness. Myers, Kappelman and Prybutok point out that user satisfaction alone is an insufficient measure of impact but is legitimate as part of a research strategy to determine effectiveness.

(a)	recommend program to others	These are all possible measures or indicators of effectiveness.
(b)	satisfaction with mentee/mentor interaction	
(c)	perceived value and significance of intervention	
(d)	whether mentees and mentors would use service again	
(e)	nature of stories of mentoring experience told by the mentee	Megginson (2000) suggests that the only appropriate and sufficient methodological means of capturing mentoring processes and outcomes is by accessing the stories of mentors and mentees. This approach may suffer from the limitations of self-report data with the validity and reliability of the data open to challenge

P1.5 - Impact

There is massive diversity in the range of approaches and measures used in evaluating impact. Galletta & Lederer's (1989) proposal that impact measures in information systems can be broadly described in terms of personal and economic has been broadly adopted in the respecified model. There may or may not be validated instruments for measuring or understanding these factors or variables.

(i)	Mentee – career	
	(a) promotion	Each of these are possible measures or indicators of impact, and there may be validated instruments already available to measure these.
	(b) salary growth	
	(c) intrinsic job or work satisfaction	
	(d) future prospects	
	(e) career progression	
	(f) career mobility	
	(g) opportunities	
	(h) overcome discrimination	
	(i) ability to overcome obstacles to career progression	
	(j) career planning	
	(k) measures of ineffectiveness	Myers, Kappelman and Prybutok suggest that evaluation of effectiveness should include measures of both effectiveness and ineffectiveness. This is based on the work of Cameron (1984, cited in Myers, Kappelman and Prybutok, 1998)) who suggested a model of organisational ineffectiveness on the basis that it imay be easier and more beneficial for organisations to identify problems or faults than it is to identify criteria for effectiveness. Using this as a basis for studying effectiveness, an organisation is effective when it is free from characteristics of ineffectiveness.
	(l) intended and unintended outcomes (side effects)	Scriven suggests that side-effects should be sought and evaluated as serious or trivial, fatal or flawed. He points out that if a program is evaluated only in terms of its program goals, the value or otherwise of side effects is implicitly valued at zero which is unsatisfactory. He also discusses side impacts or the impact of a program on populations that were not targeted (Scriven, 1993, p.24). Side impacts can be seen as similar in nature to Storey's displacement (Storey 1998).
(ii)	Mentee – psychosocial	
	(a) feelings of pride, enjoyment and self-achievement	Each of these are possible measures or indicators of impact, and there may be validated instruments already available to measure these.
	(b) flexible and adaptable leadership	
	(c) self-worth	
	(d) ability to achieve objectives	
	(e) ability to cope with problems	
	(f) ability to learn and manage	
	(g) ability to cope with change	

	(h) sense of competence	
	(i) sense of professional identity	
	(j) self-development	
	(k) sense of validation and emotional support	
	(l) measures of ineffectiveness	Refer P1.5(i)(k)
	(m) intended and unintended outcomes (side effects)	Refer P1.5(i)(l)
(iii)	Mentee - business skills development	
(a)	improved skills in areas of finance, marketing, pricing and costing, bookkeeping and accounts, taxation, computer skills, budgeting, credit control, stock control, knowledge of company law, planning, decision making, record keeping, cash flow planning, preparing a business plan, strategic growth planning, maximising business potential, adapting to business change, developing new ideas, producing action plans for business development, becoming more entrepreneurial, disseminating innovation in the business community, networking, using information to inform decision-making, awareness of training and development issues, delegation skills, greater awareness of strengths, weaknesses, opportunities and threats, broader perspective on key business issues, greater efficiency, more likely to take on employees, more likely to seek assistance from professionals such as solicitor or accountant, more likely to seek an alliance with another business professional	These are listed as prompts for some of the "non-measureable" factors which may be surrogate measures for impact in the business context. Improvements in other skills may be relevant depending on the goals of particular assistance programs.
(b)	measures of ineffectiveness	Refer 1.5(i)(k)
(c)	intended and unintended outcomes (side effects)	Refer P1.5(i)(l)
(iv)	Mentee - business outcomes	
(a)	employment growth/generation, sales rates/revenue increases, GDP, earned income/wages, rate of business startups/formation rate, projected turnover, exports, taxes and sales taxes generated, payroll taxes generated, collaboration and international networking opportunities, information transfer, improved international or regional competitiveness, increased efficiency	These are listed as prompts for what can be seen as "harder" impact measures or measures to which a monetary value can be ascribed. There are examples in the small business literature of these factors being measured.
(b)	measures of ineffectiveness	Refer 1.5(i)(k)
(c)	intended and unintended outcomes (side effects)	Refer P1.5(i)(l)
(v)	Mentor	
▪	career rejuvenation, praise and recognition, positive feedback, increased self-confidence, career enhancement/advancement, increased information and knowledge, recognition and respect from peers, job satisfaction, feelings of being challenged and stimulated	Clutterbuck suggests that surprisingly few mentoring studies consider both mentee and mentor outcomes (2003). O'Neill suggests that positive mentor outcomes are critical to the sustainability of a program and should form part of an understanding of partnership outcomes. These are some examples of indicators of impact for the mentor in the literature. Of note is the fact that most are not possible to attach a monetary value to but should not be valued at zero by omission.
▪	measures of ineffectiveness	Refer 1.5(i)(k)
▪	intended and unintended outcomes (side effects)	Refer P1.5(i)(l)

The research strategy should also be considered with reference to:

Phase 2 - The contextual factors affecting a program should be examined in sufficient detail to as far as possible identify and understand their influence on program outcomes.

The difficulty of controlling for contextual variables is acknowledged by a range of researchers across the ifnorming disciplinary areas including Storey (1998), MacDonald and Coffield (1991), and Pfleeger and Mertz (1995). In discussing deadweight and displacement, Curran and Storey (2000) suggest that "while it should be relatively easy to measure .. these [factors], . in practice it is extremely difficult. Because firms supported are

relatively small they are extremely sensitive to external influences which are *difficult to control for*" (my emphasis). Along similar lines, MacDonald and Coffield suggest that: "it proved very difficult to isolate factors which might explain the success of some and the failure of others" (1991, p.250). Pfleeger and Mertz similarly acknowledge the difficulty of contamination in their work (interesting, in spite of using a non-experimental approach): "Each experience was to some extent unique, involving as it did specific persons in a particular organisational environment within a project in which no attempt had been made to standardise factors of that relationship" (p.66), "the changes might have occurred if the project had never existed" and "it is not clear to what extent the changes in the status or position of proteges can be attributed to the mentoring project or anything done in its name" (p.69).

The contextual factors are summarised as follows in the framework: External environmental factors (P2.1), External mentee business factors (P2.2) and Internal mentee and mentor factors (also factors relating to host/facilitator) (P2.3).

Research strategy considered with reference to:	
P2.1 - External environmental factors	
(a) industry (b) sector (c) competitive environment (d) culture (e) economy (f) availability of resources (g) climate (h) government policy content/policy incentives	Effectiveness is potentially contingent upon or influenced by all these external environmental factors. Obviously controlling for these factors is in practice extremely difficult.

P2.2 - External mentee business factors	
(a) age of business (b) stage of business life cycle (c) size of business as defined by turnover, number of employees and/or profit (d) qualifications and experience of business owner/manager (e) deployment of technology (f) socio-cultural background (g) type of products and services produced (h) business structure (i) previous business success (j) type of clients served (k) business location (l) business home or office-based	Again, effectiveness is potentially contingent upon or influenced by all these "external" mentee business factors but controlling the factors is in practice extremely difficult. In turn, this means that experimental work controlling these factors as formal variables and establishing causal relationships in relation to the variables is generally not feasible. There is some academic literature available on some of these issues such as the deployment of technology by small business, the qualifications and experience of the business owner, and the relationship between business life cycle and learning needs available. These may provide some samples of validated measurement instruments.

P2.3 - Internal mentee and mentor factors (also factors relating to host/facilitator)	
(a) socio-economic background/class (b) learning attributes (c) learning styles (d) personality (e) gender (f) race/ethnicity (g) geographical location (h) education level (i) years in business (j) team playing skills (k) patience (l) decisiveness (m) risk-taking (n) comfort with technology (o) interpersonal skills (p) mentee and mentor motivations (q) mentee's career aspirations (r) relationship with host organisation (s) relationship with facilitator (t) professional/non-professional	Again, effectiveness is potentially contingent upon or potentially influenced by all these 'internal' mentee business factors but controlling the factors is in practice extremely difficult. In turn, this means that experimental work controlling these factors as formal variables and establishing causal relationships in relation to the variables is generally not feasible.

(u)	belief that job performance and events which occur in a work setting are contingent on personal behaviour and under personal control (locus of control)	There are academic studies available in these areas and they may provide options for using validated instruments and therefore possible comparative or replicating research.
(v)	identification with work or importance of work to self-image (job involvement)	
(w)	extent to which individual engages in career planning	
(x)	extent to which individual values work relationships (relationship importance)	
(y)	preparedness to invest time and money in program	
(z)	learning orientation of the entrepreneur or whether there is a culture of learning by the business including innovation, product and service changes	
(aa)	aspirations for growth by owner managers	

The research strategy should also be considered with reference to:

Phase 3 - The framework is built on the premise that methodological pluralism - that is, there is no one correct method of science but many methods. The "correct" methodology is contingent on the problem to be studied and the kind of knowledge desired (Hirschheim, 1984, p.33).

A selection of the methodological options are listed against the three categories of Internal validity (P3.1), External validity (P3.2) and Construct validity (P3.3). Methodologies should be selected to ensure that the evaluation and claims of effectiveness are reliable, valid, credible and suited to the problem to be studied and the kind of knowledge desired..

The outlines of validity below are grounded in positivist assumptions. Curran and Blackburn (2001 pp.118-119) offer an alternative process for assessing validity in the context of qualitative studies. The six-point process for establishing the validity of qualitative research includes (1) clear and precise statement of the research problem, (2) clear and precise statement of key concepts and assumptions, (3) methodological adequacy including sample size, theoretical justification of research method, sample representativeness, and strategies used to ensure data quality (including triangulation), (4) analytical adequacy defined as the clear statement of the logic, elements and stages of interpretation generation, (5) context of interpretation defined as the location of the interpretation in context of previous research and account for possible challenges to the intepretation of informed reader, and (6) claims made in the interpretation specific and suggestions for further study made.

If an interpretivist approach is used, reliability and confirmability are issues which impact on internal validity. Dependability is the stability of the data over time and confirmability relates to ensuring that data, intepretations, and outcomes of inquiries are rooted in contexts and persons apart from the evaluator (Curran and Blackburn, 2001).

Curran and Blackburn (2001, p.120) and MacDonald and Coffield (1991, pp.9-10) interestingly retain causality as a defining principle in evaluating credibile and valid qualitative research. Curran and Blackburn suggest that "causality is intrinisic to the internal world of meanings, motives and logics of the human actors and can only be established by research approaches which focus directly on these" (p.121) and qualitative research is "useful in "establish[ing] what is 'behind the numbers' and especially to try to isolate causalities" (p.123).

P3.1 - Internal validity
Buelens Bouckenoogh et al (2005) suggest that internal validity pertains to:
- the correctness of inferences about causal connections between focal constructs;
- the confidence one has that there is a true cause-and-effect relationship between the constructs under investigation; and
- the evidence that the observed relationships which are found in a study reflects the real co-variation between the variables.

They suggest that a possible threat to internal validity occurs when contaminating and extraneous variance are not controlled for. Milton-Jenkins describes internal validity as "the potential for determining that the independent variable (and nothing else) caused the observed effects on the dependent variable" (in Mumford et al 1984, p.113). Christensen and Carlile describe internal validity is the extent to which: 1) conclusions are unambiguously drawn from premises; and 2) the researchers have ruled out all plausible alternative explanations that might link the phenomena with the outcomes of interest (Carlile & Christensen 2005 p.16).

(a)	time frame – cross-sectional (to capture levels of improvement, short-term outcomes or establish outcomes with reference to pre- and post-assistance states) or longitudinal (to capture long-term behaviour change, evolving benefits,	Vitalari (in Mumford 1984) talks about the need for longitudinal studies in IS research to capture changes over time. Dan Remenyi discusses benefit evolution - the propensity of benefits to evolve over time. Mentoring researchers evaluating programs which aim

	and development of mentoring phases)	to assist with long-term behaviour change suggest that cross-sectional analysis does not allow this. Clutterbuck suggests that the paucity of longitudinal mentoring studies is a problem, and in particular discusses the need to consider the development of the mentoring relationship in terms of phases which a cross-sectional analysis does not provide for.
(b)	experimental/non-experimental approach (to establish causal relationships between antecedents and outcomes, or to explore and expand understanding, or suggest influences)	Whether or not an experimental or non-experimental approach is used and whether attempts are made to control for particular variables depends on the nature of the knowledge being pursued. The difficulties associated with establishing causal relationships between antecedents and outcomes are inherited by the field and should be taken into account when selecting a research strategy. Research undertaken using each of the approaches will carry with them compromises which will inevitably make findings open to challenge on the basis of validity and reliability but which may advance the discipline in spite of this.
(c)	which, if any, contingency variables are controlled for (in experimental context)	
(d)	evaluative referent – effectiveness measured against outcomes for matched non-assisted group, against program goals as fitness for purpose, against individual personal goals, against the extent of time and/or money invested by small business owner/manager, against external business and management competencies, with reference to intrinsic or extrinsic value (merit and worth respectively, generalized or instrumental respectively)	Cameron and Whetten 1983 are cited in Seddon (1999, p.3) and Myers Kappelman and Prybutok (1998, p.97) discussing the importance of the evaluative referent in Information Systems effectiveness evaluation. They propose that the following questions should be asked: "Against which referent is effectiveness to be judged? (effectiveness of this organisation compared to: some other organisation; some ideal level of performance; stated goals of the organisation; past performance of the organisation; or certain desirable characteristics.

In his Problems with Mentoring Research (2003), Clutterbuck suggests that, as a minimum, outcomes should be related back to program goals which define the purpose of the mentoring relationship, so evaluative referent as a criteria relevant to comparative evaluation was included. This however is in marked contrast to Scriven who suggests that evaluation should be goal free in that an evaluator should not contaminate the evaluation by looking at outcomes whilst being aware of the intended program goals. Scriven goes on to suggest that evaluation with reference only to the program's goals potentially ignores unanticipated benefits and what he terms "absolute values", cost analysis, generalisability and comparisons – that is, could the same outcome have been achieved more affordably or with fewer negative side effects. He also notes that some program goals may have different relative importance and that there may be varying levels of success for a range of these goals potentially creating a complex set of data/results which the program evaluator must effectively judge, rank and synthesise. |
| (e) | nature of assessment of learning outcomes or development | Decisions about methodology involve choices around whether measurement is referenced normatively, ipsatively or against external criteria (development of mentee may not usefully be measured against other program participants or with reference to, for example, external competencies but by asking them about their own perception of their development against where they stood prior to the intervention). These choices necessarily have implications for the quality of the data. |
| (f) | qualitative/quantitative/combined approach (which approach or combination of approaches will capture outcomes in a form which is useful and | The tensions between qualitative and quantitative approaches and hard and soft measures in small business research is discussed extensively in the recent |

	relevant in the context of the pupose of the evaluation of the assistance propgram and in detailing individualised outcomes)	small business literature. In advocating further qualitative studies in small business research, Curran & Storey (2000) suggest that a qualitative approach "explores issues not addressed by quantitative approaches" (p.16) would be desireable. In a similar way, Hytti & Kuopusjarvi (2004) suggest that qualitative data has the advantage of being more people-centred than aggregate approaches, qualitative approaches do not adopt economic assumptions about the individuals being studied, and "refuse to assume any simple, rational policy-making process" (p.29). Curran and Storey (1998, p.41) discuss the importance of pursuing non-positivist approaches to "social and business phenomena". They suggest that qualitative approaches yield data and understanding which "would be difficult or impossible to arrive at using positivist, quantitative approaches" (p.109). There are however problems with qualitative data and this criterion was included in an effort to highlight some of these issues. Stufflebeam suggests that quantitative and qualitative information in an evaluation should be systematically analyzed in such a way that evaluation questions are effectively answered (Stufflebeam 1999).
(g)	program purpose including whether summative, formative or combined approach (outcomes-based approach or looking to improve program or both?) used, for decision support, etc.	Summative and formative approaches consider the technical and functional aspects and outcomes of a program, and ways to improve a program respectively. An evaluation can legitimately do either or both. Evaluation can also be characterised by a process versus outcomes approach; while an outcomes approach may look exclusively at outcomes achieved, a process approach considers implementation, the why and how of outcomes achieved and the context in which it occurred is likely to be a more useful approach for practitioners. The framework covers the adaptation of the generic content of a structured e-mentorng program in Phase 1 under the Information quality dimension. This dualism is complicated by an approach such as action research which is defined by Rapoport (in Myers, Kappelman et al 1997) as follows: "Action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework". Action research can be seen as sitting between, or complicating the paradigm of, evaluation for researchers and evaluation for practitioners. Boyle-Single and Muller advocate an iterative approach to e-mentoring evaluation which includes a combined summative and formative approach (Boyle-Single & Muller 1999).

P3.2 - External validity
In their overview of External validity, Buelens Bouckenoogh et al (2005) suggest that External validity:
• reflects the correctness of inferences about the generalizability of a study's results across populations of settings, subjects, or time periods; and
• pertains to the extent to which the conclusions of a study also hold for subjects other than the ones used in the study in terms of place, time or context.

They suggest that external validity may be threatened when empirical findings are generalized to subjects who hold different characteristics in comparison to the examined sample, and also that there is often a trade-off between internal and external validity when choosing a type of research strategy. For instance, the potential internal validity obtained through controlled laboratory experiments with precise measurement may come at the expense of the generalizability of the research findings. Alternatively, field studies in a real business setting may lead to high external validity but low internal validity given possible contaminating factors

Milton-Jenkins (in Mumford et al 1984, p.113) suggests external validity can be separated into two areas - firstly the applicability of the results to different populations or sub-populations, that is, the extent to which the research findings may be generalized across populations - and second, the applicability of the results in different environments and the extent to which the research results may be generalized to other settings or environments.

The *external* validity of a theory is the extent to which a relationship that was observed between phenomena and outcomes in one context can be trusted to apply in different contexts as well (Carlile & Christensen 2005).

Where an interpretivist stance is taken, transferability may the focus rather than generalizability. Lincoln and Guba suggest that claims are made in relation to a specific context and method rather than assuming that if all variables are held constant, the outcomes will be able to be replicated. The onus, they assert, is on the evaluator claiming similar outcomes to establish the transferability of the outcomes to the subsequent population, rather than on the original evaluator. In contrast, Curran and Blackburn suggest that, rather than being supplanted by the principle of transferability (Lincoln & Guba, 1989, p.241), the generalizability of a qualitative approach is still critical but is "weakened" by the typically "limited scale" of qualitative research studies (p.122).

A discussion of the characteristics of the sample - its strengths and weaknesses and the impact on representativeness and therefore generalizability - is critical to any discussion of external validity (refer to items a, b and c immediately below).

(a)	type of sample	Eg private, public sector, other to assist with generalisability and replicability if needed. Standard categories may need to be modified for the particular sample.
(b)	occupation of subjects	Again to assist with generalisability and replicability if needed.
(c)	sample size, sampling frame, response rate	Small sample size is an issue frequently cited as a difficulty in small business research. This is attributed to a range of factors including poor take up of support services (Curran & Blackburn 2001 p.182-183, Curran 2000, p.43), low response rates (Curran & Storey 2000 p.12), and the difficulty of accessing sufficiently large sampling frames (Curran & Blackburn 2001). This means that in experimental research which make claims relying on statistical validity, the size of the sample may not meet in, Curran & Storey's terms, "statistical criteria for establishing validity" (2000 p.17). With the heterogeneity of the small business population, a very large sample is needed to ensure representativeness across a range of variables which is simply by and large not available, so again these issues impact on the generalizability of research findings. In small business, sample sizes can be small, large sampling frames unavailable and response rates low - how are these to be dealt with and how do they impact on representativeness and generalizability Clutterbuck (2003) identifies small sample size and other sampling issues as impacting on the robustness of research in the field of mentoring. Storey (1998) also discusses the inferential problems and general difficulties associated with non-probability sampling and small sample size. Curran and Storey (2000) discuss sampling issues in small business research including the difficulty of creating a matched sample group because of the heterogeneity of small business, the low-takeup rates of small business assistance programs, the low response rate to surveys, the lack of appropriate and comprehensive sampling frames, and the impact of the diversity of small business research populations on generalizability and inferential power (p.12). This criterion was included as a way of identifying and highlighting these issues.
(d)	type of sampling (random, non-random, mix, maximum variation sampling)	Maximum variation sampling may mean the weaknesses common to or inherent in e-mentoring research sampling can be ameliorated (Patton 1990

	p.172). For small samples a great deal of heterogeneuity can be a problem because individual cases are so different from each other. The maximum variation sampling strategy turns that apparent weakness into a strength by applying the following logic: Any common patterns that emerge from great variation are of particular interest and value in capturing the core experiences and central, shared aspects or impacts of a program How? 1. Identify diverse characteristics or criteria for constructing the sample. Data collection will yield: (1) high quality, detailed description of each case which are useful for documenting uniqueness, and (2) important shared patterns that cut across cases and derive their significance from having emerged out of heterogeneity .. By including in the sample individuals the evaluator determines have had quite different experiences, it is possible to more thoroughly describe the variation in the group and to understandthe variation in experience while also investigating core elements and shared outcomes. The evaluator is not attempting to generalize findings but rather to gather information that elucidates individual variation and signficant common patterns within that variation.
(e) whether an internal/external evaluation	Stufflebeam suggests that: "Conflict of interest should be dealt with openly and honestly, so that it does not compromise the evaluation processes and results" (Stufflebeam 1999). Even though distance may not ensure objectivity and subjectivity may not threaten the credibility of findings (Patton 1991), it may, in Stufflebeam's terms, compromise it in some way. Issues of bias should be considered, analysed and reported on. Scriven distinguishes between preference and bias suggesting that preference and commitment (which may be justified) do not entail bias in the sense of meaning a tendency to error. People with knowledge about an area, Scriven suggests, are typically people with views about it; the aim should be for a balance of views rather than an absence of views (Scriven 1993 p.80). Bias, he goes on to suggest, must be shown either by demonstrating a pattern of error or by demonstrating the presence of an attitude that definitely and regularly produces error. Any possible bias in the obtained information should be documented The persons conducting the evaluation should be sufficiently trustworthy, competent and cognisant of the issues around potential bias to perform the evaluation, so that the evaluation findings achieve maximum credibility and acceptance.
(f)whether program has liberal/conservative objectives	Does the assistance seek to maintain or challenge the status quo eg programs which target career advancement for women in an organisation can be seen as challenging the status quo, while a program included as an induction for new staff can be aimed at transferring cultural values of an organisation? How are the different possibly competing needs of the

		various interest groups documented?
		Gibb suggests that value of mentoring can be explored through an adversarial paradigm - "those for and against, the believers and the sceptics". Where mentoring is pursued in the context of liberal values, it has the capacity to open up careers for disadvantaged groups while in the context of conservative values, mentoring can be seen as contributing to the maintenance of the status quo, replicating desirable patterns of behaviour, etc." (p.46). Lincoln and Guba (1989) suggest that "Evaluations can be shaped to enfranchise or disenfranchise stakeholding groups" (p.9) again suggesting that stakeholder analysis and context are inseparable from any evaluation. Such issues should be considered in selecting a research strategy, designing the evaluation study and in reporting findings.
(g)	the level of the evaluation (policy, macro-program, individual, etc)	Studies could generally be reviewed for whether they adopted an individual or "micro" approach or considered the impact of a program at the policy level. A number of studies made generalizations at the program and policy level based on findings of their research at the individual level, but MacDonald and Coffield (1991) were the only researchers to explicitly discuss this issue: The researchers "move backwards and forwards from *macro* issues .. to *micro* themes" (p.16) Owen and Rogers (1999 p.90) suggest a "3 p's" approach to establish the level of the evaluation - policy development, big "p" program provision and little "p" program provision. This framework is intended for use with "little p" evaluations.
(h)	issues of rigour (team-based approach, reading back to social actors who provided the information, etc)	In the context of Information Systems research, Klein and Lyytinen suggest that: "Rigourousness in research is always something for which one should strive. But rigournessness in the context of IS resarch as opposed to research in the physical sciences may well mean quite different things (Klein & Lyytinen 1985, p.5 in Galliers in Mumford 1984, p.283). "In IS resarch," they continue, "we would obviously make every attempt at objectivity but we should always bear in mind our limited vision. When it comes to respect for the facts, the appropriate question to ask is "whose facts?" since many interpretations are always likely and indeed, are perfectly valid. This approach is clearly equally applicable to the e-mentoring context. Strategies to impose rigour upon the research process should be desgned into any study of effectiveness. In qualitative work, for example, a team-based approach, and reading back to social actors who provided the information along with a range of other strategies may be useful to maximise rigour.

P3.3 Construct validity

In their overview of Construct validity, Buelens Bouckenoogh et al (2005) suggest that Construct validity:
- is a function of the degree of correspondence between a construct and its operational definitions; and
- refers to whether a study's variables have been adequately defined and measured by appropriate instruments, procedures, manipulations or methods.

They go on to suggest that threats to construct validity occur when investigators use inadequate definitions and measures of variables.

Construct validity is an issue in qualitative as much as quantitative research. While construct validity may be

measured, among other techniques, by using statistical tests in quantiative research, the emphasis in establishing construct validity in effectiveness evaluations using a qualitative approach is on clear and precise statement of key concepts and assumptions in order to provide for an understanding of precise antecedents to outcomes.

(a)	the number of data sources and impact on data quality	Lack of multiple lines of evidence and lack of data triangulation characterise some of the studies in the mentoring literature.
(b)	the nature of data and impact on data quality	Triangulation can be seen as less relevant in the context of qualitative research because it presumes that an objective reality exists and can be "uncovered" objectively providing triangulation occurs to verify and confirm findings. Researchers may however wish to consider the usefulness of the concept of triangulation regardless of the broad paradigmatic location of their study. Data collected should be relevant to the evaluation questions and the information needs of stakeholders. The fact that the mentoring research is dominated by self-report data and unsupported by other lines of evidence potentially impacts on data quality. Of data usefulness and credibility, Carlile and Christensen suggest that: "Much like theory, the only way we can judge the value of data is by their usefulness in helping us understand how the world works, identifying categories, making predictions and surfacing anomalies (Carlile & Christensen 2005 p.19).
(c)	precise definition of concepts and operationalisation of construct of mentoring	Clutterbuck identifies as a problem of mentoring research, the difficulty of defining the types of behaviours which constitute mentoring. He suggests this is one of the bases for the lack of robustness in the mentoring field. Noe (1988) similarly suggests that: "While preliminary studies have focused on identifying the benefits proteges gain by participating in mentoring relationships, the mentoring construct remains unclear. Likely, this is because of a lack of agreement regarding the functions provided by mentors and differences in the purpose and extent of formalization of mentoring programs in organisations" (p.458). Clutterbuck advocates an approach which provides for agreement on the types of behaviours mentoring involves in order to advance research. The difficulties of doing this originate in the fact that while mentoring can be viewed as a simple phenomenon in itself - for example, mentoring is "a single thread" which connects all successful individuals (Pierce 1987), mentoring can also be characterised by provision of a broad range of support. O'Neill suggests that it is the very nature of the range of support provided that characterises mentoring (O'Neill 1998): ".. the kinds of assistance that have traditionally been classified as mentoring functions are quite broad in scope. In fact, it may be this diversity in the kinds of assistance and support provided in the relationship that best characterises mentoring (O'Neill, 1998, p.32). The logic of causality and the need to identify antecedents and consequences is essential in considering the effectiveness of mentoring and small business assistance, but is sometimes tautologically based. Seibert refers to this when he says: "Ambiguity regarding causal direction can be a troubling problem in research on the effectiveness of mentoring. For

		example, high levels of performance or commitment may be a factor leading to participation in a spontaneous or facilitated mentor relationship, rather than its result" (Seibert, 1988, p.485). O'Neill addresses this difficulty when he suggests that investigators assume a tautological definition of mentoring by assuming that whomever is assigned the role of mentor actually fulfils the role and whatever desirable things the mentor does is assumed to be part of the mentoring role (p.67). Similarly, in the small business context, Harrison and Leitch (1994) discuss the need to identify aims of a project which informs evaluation rather than taking a "Whatever you hit, call that the target" approach.
		Remenyi (1999) uses a metaphor of a bulldozer in describing benefits from IT investment suggesting that IT, like a bulldozer, does not represent value of itself but that researchers need to measure derived value. This metaphor is a useful one provided the bulldozer's activities are defined precisely and acknowledged as the antecedents to the consequences or derived value.
		Curran and Blackburn (2001) also discuss the difficulties with clearly defining small business terms including small business and small business owners (pp.9-15).
(d)	clearly identify and rank stakeholders	Effectiveness is a value judgement made by an individual from the point of one or more stakeholders. The particular information needs, purposes, perspectives and priorities of the various stakeholders will be critical to defining and evaluating effectiveness.
(e)	whether outcomes for all parties will be measured (mentees only, mentees and mentors, host organisation, other stakeholders)	Clutterbuck (2003) expresses surprise at the paucity of studies available which measure outcomes for both mentees and mentors considering the quality of the partnership is intrinsic to effectiveness.
(f)	whether measures of both effectiveness and ineffectiveness are to be used	Refer 1.5(i)(k)
(g)	whether allowance for displacement and deadweight (relevant when an experimental approach is used) (Storey 1998, Curran & Blackburn 2001) or side impacts (Scriven 1993 p.24) will be made.	Displacement (negative outcomes experienced by those outside the target group), deadweight (an attempt to account for improvements which would have occurred without the assistance program) and side impacts (impact on those who have have the unintended effects of a program imposed upon them, should all be considered important when deciding on a research strategy. They can be evaluated in quantitative or interpretive ways.
(h)	whether self and administrative selection will be accounted for	Seibert (1990) states that "Ambiguity regarding causal direction can be a troubling problem in research on the effectiveness of mentoring. For example, high levels of performance or commitment may be a factor leading to participation in a spontaneous or facilitated mentor relationship, rather than its result" (Siebert, 1988, p.485). The failure to acknowledge self and administrative selection can signficantly compromise any claims of causality.
(i)	response bias	Curran and Storey (2000, p. 12) point out that while small sample size is not necessarily of itself a problem, the issue of response bias which may follow from small sample size is potentially a problem. They identify the most common biases in small business research as firm size bias (that is, smaller firms have been shown to be less likely to respond than larger firms) (Goffee and Scase 1995 cited in Curran & Storey 2000 p.12) and sector bias (that is, firms in some sectors are more likely to respond than others

		(Curran & Blackburn 1994 pp.69-71 cited in Curran & Blackburn 2001 p.12). If the individuals or firms who respond have, in Curran and Blackburn's terms, "had a more positive experience than those who do not" this may seriously impact on the external validity of the research findings (Curran & Blackburn 2001 p.61).
(j)	influence on or relevance to policy-makers	Should evaluation be 'policy-relevant? Curran and Storey (2000) discuss the need to make research policy-relevant (p.8). If policy relevance is to inform the evaluation, policy makers should be identified as stakeholders. Possible policy implications are a legitimate inclusion at the stage of making recommendations in an evaluation.

Appendix 4 - Mentee questionnaire

Structured interview sheet

PROVE – PARTICIPANT REVIEW OF THE VALUE OF E-MENTORING
- an instrument for understanding the impact of e-mentoring on participants - mentees

PART 1 – USER SATISFACTION

SECTION 1 – PROGRAM EXPERIENCE

1. Would you describe your e-mentoring experience as a positive one?   Yes   No

2. Professionals may be dispersed and potentially isolated. Do you feel that Mentors   Yes   No
    Online was useful as a way for you to engage in semi-structured discussions with a
    professional colleague?

3. Do you regard Mentors Online as a relevant business support service?   Yes   No

4. Would you participate again in a similar program at some time in the future?   Yes   No

5. Would you recommend this program to another professional in small business?   Yes   No

6. Do you feel that participating in Mentors Online helped you develop professionally?   Yes   No

7. Do you feel that participating in Mentors Online helped you develop personally?   Yes   No

8. Would you say participating in the program contributed positively to your professional   Yes   No
    identity?

9. Please rate the value of the Mentors Online program as an APESMA service to self-employed
    professionals
    Excellent   Very good   Good   Poor   Very poor

SECTION 2 - PROGRAM OUTCOMES

10. Do you feel you benefited from participating in the Mentors Online program?   Yes   No

11. Please assess the impact of your participation in the e-mentoring program:
    Major effect   Considerable   Some effect   Minor effect   No effect
                     effect

12. Did you develop skills in the areas you nominated in your Mentors Online   Yes   No   Partly
    registration form?

    If No, did it matter to you that these skills gaps were not specifically addressed?   Yes   No

13. Did you develop skills in areas other than those you nominated in your Mentors   Yes   No   Partly
    Online registration form or in unexpected ways?

    If Yes, please specify

14. Did you begin to develop skills in areas as a result of your participation in   Yes   No   Partly
    Mentors Online which you are continuing to develop after the program has
    concluded?

If Yes, please specify

15. Are you more likely to continue in your professional consultancy area after completion of the program?   Yes   No   Unchanged

16. Did the program provide you with an opportunity to bounce ideas off a neutral third party?   Yes   No

17. Did you discuss issues or ask questions which you would not normally ask within your existing network?   Yes   No

18. Do you think your participation in the program either directly or indirectly led to any of the following (please tick where appropriate)?

✔	
	Reviewed and/or updated business plan
	Greater awareness of strengths/weaknesses, opportunities and threats to your business operation (SWOT analysis)
	Consideration of ways to network more effectively
	Consideration of possible professional development activities
	Improved skills in nominated areas
	Improved skills generally
	Improved business practices
	More clearly identified business goals
	Better able to act on business opportunities
	More aware of relevant emerging technologies
	More aware of resources available to self-employed professionals
	Increased competitiveness
	Broader perspective on key business issues
	Improved professional standing
	Better growth outlook for business operation
	Improved self-confidence and professionalism
	Enhanced business knowledge or acumen
	Greater business efficiency
	Better bottom line
	More likely to take on employees
	More likely to seek assistance from appropriate professionals such as a solicitor or accountant
	Less likely to close down your business
	More likely to seek an alliance with another business professional
	Other (please specify)

19. Do you think participation in the program may have contributed or will contribute to your business's long or short-term stability, viability or growth?   Yes   No

PART 2 –SYSTEM QUALITY

SECTION 1 - PROGRAM STRUCTURE

20. Did you review your business plan?   Yes   No

21. Do you think the requirement to have in place a business plan to discuss provided a focus for your discussions with your Mentor?   Yes   No

22. Did you set your own program goals and move towards them throughout the program?   Yes   No

    If No, did you use the goals included as part of the structure of the program?   Yes   No

SECTION 2 – DURATION OF PROGRAM

23. Did you find the 14 week program an appropriate duration?   Yes   No
    If No, would you prefer the program to be shorter or longer?   Shorter   Longer

24.   What duration would you see as ideal?

SECTION 3 – PROGRAM CONTENT

25.   Please rate the value of the content of facilitator's messages from 5 (very helpful) to 1 (not helpful):

Support	Rating				
	5	4	3	2	1
Introductory email advising how to initiate email partnership					
Advice on establishing a regular communications schedule					
Advice on setting own program goals					
Value of suggested topics for discussion					
Encouragement to be proactive and resourceful					
Reminder that Mentors have given a commitment to invest time and effort in you as a Mentee					
Reminders to keep discussions focussed, specific and goal-orientated					
Reference to feedback from other participants on how they were finding the program					
Reference back to online tutorials such as Questions to establish rapport					
Reference to expertise on small business incubator					
Suggestion on supplementary forms of communication such as online chat or regular phone hook up					
Invitation to submit feedback and contact Mentors Online					
Advice with each email of when you'd be contacted next					
Invitation to visit mentoring partner's Home Page					
Referral to APESMA Connect website and resources available from there					
Summary of email message content					
Suggestion that mentoring partners jointly consider a "critical incident"					
Provision of a pro-forma reference as a basis for reference provided to mentoring partner					
Advice on how to formally conclude the mentoring partnership – suggested wording of closing email					
Referral to four web-based exercises including business plan, SWOT analysis, networking and PD exercises					
Guidelines to electronic communication in manual/online tutorial					
Startup questionnaire in manual					
Mentors Online host as a point of contact if needed					

26.   Any other comments on content of facilitator's messages:

        ....

        ....

        ....

        ....

SECTION 4 – PRE-PROGRAM TRAINING (ONLINE TUTORIALS)

27.   Do you think the online tutorials helped you prepare for the e-mentoring experience?   Yes   No

28.   Please indicate if you found the online tutorials useful for the following:

✔	
	Preparing me for what I could reasonably expect from the Program
	Pinning down what I should and should not expect from my Mentor
	Information on different learning styles
	Questions to establish rapport
	Questions to agree learning outcomes
	Questions to generate discussion topics
	How to respond to feedback and suggestions from my Mentor

	Outline of common pitfalls for Mentees
	Other (please specify)

29. Was there anything which you think should have been discussed in the online   Yes   No
    orientation tutorial which was not covered?
    If Yes, what should have been included?

SECTION 5 – EMAIL BASED COMMUNICATION

30. Did the program's delivery by email make it more accessible to you?   Yes   No

31. Did you have access to mentoring other than that offered by Mentors Online?   Yes   No

32. Did the fact that Mentors Online was email based facilitate your participation?   Yes   No
    If Yes, for what reason (you may indicate as many options as you wish)
        Located in regional/rural/international location
        Time constraints in running a consultancy and managing other responsibilities would mean
         face to face mentoring not an option
        Email delivery meant program was delivered in small blocks
        Flexibility
        Asynchronous communication
        I felt more an equal partner to my Mentor than I would have in the case of face to face
        mentoring
        I could participate from home
        My responses were more carefully considered than in face to face exchanges
        Other (please specify)

33. Did you supplement your email contact with other forms of communication?   Yes   No
    If Yes, how?
        Real time online chat
        Telephone
        Face to face meeting
        Other (please specify)

SECTION 6 – INFORMATION QUALITY - IT INFRASTRUCTURE

34. Did you experience any difficulties with opening any documents or links via the   Yes   No
    Mentors Online facilitator's messages?

35. Did you experience any difficulties accessing the website?   Yes   No

36. Did you find the website presentable and easy to use?   Yes   No

37. Were you able to access the Mentors Online and Connect websites when you needed to?   Yes   No

38. Did you experience any difficulties with your email during the program?   Yes   No

39. Did you experience any other difficulties with your computer during the program?   Yes   No
    If Yes, please specify?

SECTION 7 – MATCHING

40. The Mentors Online matching process was based on matching Mentees with skills gaps in nominated areas
    with mentors with expertise in these nominated areas. It also considered age, gender, interests and
    education level. Please rate your level of satisfaction with the match made with your mentoring partner:
      Very satisfied   Satisfied   Neither satisfied   Dissatisfied   Very dissatisfied
                                          nor dissatisfied

| 41. | If you were matched with a Mentor outside your profession group, do you feel that the program was still worthwhile? | Yes | No | Matched within profession |

| 42. | Would you have appreciated the opportunity to accept or reject the match made by Mentors Online at the outset of the program? | Yes | No |

SECTION 8 – PROFESSIONAL DEVELOPMENT

| 43. | Have you undertaken any formal business training? | Yes | No |

| 44. | Do you feel that participating in the Mentors Online program was or would be of greater value than an off-the-shelf formal training product? | Yes | No |

| 45. | Do you think the fact that the Mentors Online program was integrated with your day-to-day business activities helped make the program more relevant? | Yes | No |

SECTION 9 – RESOURCES AND FURTHER CONTACT

| 46. | Did you continue your engagement with your Mentor at the conclusion of the program? | Yes | No |

| 47. | Did your Mentor refer you to journals or websites of interest? | Yes | No |

| 48. | Did you find any information of value on the APESMA Connect website (www.apesma.asn.au/connect)? | Yes | No |

| 49.. | Was the information presented to you by Mentors Online by email and on the website accurate and easy to understand? | Yes | No |

50. If you continued contact with your Mentor, do you feel Mentors Online could have assisted more with the transition and redefinition of the relationship?

    Yes   No   Didn't maintain contact   Satisfied with the way transition was handled

PART 3 – USE/CONTACT FREQUENCY

Contact with Mentor

51. How frequently did you communicate with your Mentor on average over the course of the program (to allow us to see the relationship between contact frequency and benefit from the program) (please indicate whichever appropriate)?

        More than twice a week
        Twice a week
        Once a week
        Less than once a fortnight

Contact with Mentors Online

| 52. | Did Mentors Online contact you when they said they would? | Yes | No |

| 53. | Were you satisfied with the frequency of contact from Mentors Online? | Yes | No |

54. Mentors Online made at least fortnightly contact with all participants in this program. Do you think you would have preferred more or less frequent contact from Mentors Online?

        More frequent contact
        Less frequent contact
        Fortnightly contact appropriate and worked well
        Contact from host ineffective or irrelevant

| 55. | Did you contact Mentors Online throughout the program? | Yes | No |

    If Yes, for what reason?
        To provide feedback on program

To check up on something not sure of
To seek assistance with a document not accessible via link
To provide a copy of a response given to mentoring partner
To clarify a contact schedule issue
To provide some form of progress report to Mentors Online
Other (please specify)

56. Mentors Online was structured around invitations to undertake four web-based exercises   Yes   No
     and an invitation to follow up on resources available through the Connect website – so a
     minimum of five website visits. Did you visit the website for these purposes?

PART 4 – MENTEE ATTRIBUTES – DEMOGRAPHIC DETAILS, MOTIVATION, FAMILIARITY WITH TECHNOLOGY

57. Were you experienced with email and comfortable with its use prior to the program?   Yes   No

58. There is no doubt that acting on advice or suggestions from a Mentor can complicate   Yes   No
     your existing business strategy and create additional workload. Did you find this was the
     case in your mentoring partnership?

59. Did you feel motivated to work toward the changes and goals set with your Mentor?

| Yes – all the time | Yes – most of the time | Some of the time | No – found motivation difficult | No - lost motivation quickly |

60. Mentors Online will be able to introduce some motivational tools if we can track patterns in motivation of participants.

(a) At what points would you say your motivation was strongest?

     Week 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14

            (b) At what points would you say your motivation was weakest?

     Week 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14

(c) Were there any reasons in particular for your motivation changing throughout the 14 week period?

61. What is your gender?

     Male
     Female

62. How old are you?

     18-24 years old
     25-29 years old
     30-39 years old
     40-49 years old
     50-59 years old
     60 years or older

63. In which state/territory are you normally based?

     Victoria
     New South Wales
     ACT
     Queensland
     South Australia
     Western Australia
     Northern Territory
     Tasmania

64.   In what area is your professional qualification?

    Engineering
    Science
    Information Technology
    Architecture
    Pharmacy
    Veterinary Science
    Business Management
    Surveying
    Other (please specify)

65.   Do you operate your business from
        Home?
        Commercial office?
        Other? (please specify)

66.   Do you
        Engage employees?   Yes   No
        If Yes, how many?
        Subcontract?   Yes   No
        Both employ and subcontract?   Yes   No

PART 5 – MENTEE/MENTOR INTERACTION

67.   Were you satisfied with the frequency of contact with your Mentor?   Yes   No

68.   Did you agree on a contact schedule at the start of the program?   Yes   No

69.   Did you have experiences in common with your Mentor?   Yes   No

70.   Did you build a good relationship with your Mentor?   Yes   No

71.   Please rate your level of satisfaction with the advice, assistance and support provided by your Mentor
        Very satisfied   Satisfied   Neither satisfied   Dissatisfied   Very dissatisfied
                                             nor dissatisfied

72.   Please rate your Mentor's skills in the following areas from 5 (excellent) to 1 (very poor)):

Support	Rating				
	5	4	3	2	1
Ability to engage you in non-judgemental discussions					
Use of appropriate language (non-sexist, non-racist, non-technical, non-jargon)					
Ability to encourage you to work with him/her to develop your own response rather than advising directly on what you should do					
Ability to present you with options					
Setting a good example with ethical and professional behaviour and demonstrating personal integrity					
Capacity to show genuine concern for you and your business operation					
Preparedness to give you a pat on the back and to reward effort as well as achievement					
Ability to appropriately define parameters of the mentoring relationship					
Open, flexible and confident style					
Listening skills – listened actively and carefully					
Ability to encourage, accept, explore and reinforce your perceptions, concerns, beliefs, suggestions, etc.					
Ability to ask questions which evoked discovery, insight, commitment or action					
Ability to ask open-ended questions which created greater clarity for you and encouraged to you consider new possibilities					
Ability of Mentor to provide clear, articulate and direct feedback					

Ability to help you establish goals and milestones to work towards within and beyond the mentoring program					
Ability to establish a feeling of trust					

73.   Did you experience any problems with your Mentor during the Program?   Yes   No
        If Yes, please give details.

PART 6 – OPEN QUESTIONS

74.   What was the most valuable part of your Mentors Online experience?

75.   What was the least valuable part of your Mentors Online experience?

76.   What was the most frustrating part of your Mentors Online experience?

77.   Please describe an example of a recommendation/idea that your Mentor suggested that you implemented
        and benefited (or will implement and will benefit) your business?

78.   Please estimate how often you sought advice from your Mentor in each of the following areas

	Very often	Often	Occasionally	Not very often	Never
Personal (eg work life balance, etc.)					
About your business in general (SWOT analysis, business plan, etc.)					
About your skills in specific areas (prof. development, networking, marketing, IT, etc.)					
Other (please specify)					

79.   What do you perceive to be the best thing about email based mentoring?

80.   What do you perceive to be the biggest problem with email based mentoring?

****

It would be appreciated if you would check that you have answered all questions, including the Open Questions in Part 6.
Thank-you very much for completing this survey.

Appendix 5 - Semi-structured interview questions

Structured interview questions

Introduction

Thank-you for agreeing to participate in this process which I've chosen to conduct using email because of its convenience for both of us. Most of the questions are open but there are also a few which ask you to rank responses or check a box. This format gives me a chance to explore issues which are not ideally captured using a survey questionnaire which you have already completed. There's no rush to get this information back so please take your time to answer the questions in as much detail as you can. Call me on 03 9695 8842 if you need help or clarification on anything.

If possible, it would be great to have the survey back by the end of November, but I know you're busy so just let me know if you need more time. I'd rather you take the time to fully answer the questions than rush to get it back to me.

The mentoring relationship

Question 1
Please describe for me in detail how and in what ways the quality of your relationship with your mentoring partner was important to any positive or negative outcomes that resulted.

Question 2
Because a survey doesn't allow for points throughout the program at which we can ask you about the development of your mentoring relationship, please describe the phases of the mentoring process as you experienced it over the 14-week program.

Question 3
Could you comment on times at which the partnership may have waned or faltered or when you were on a roll - I'm interested in the ups and downs and what you think the reasons for them might have been.

Question 4
How do you think the extent of exchanges with your mentoring partner - the frequency of your interaction - affected the impact of the program?

Question 5(a)
Please rank these in order of which you think impacted most on the effectiveness of the program for you (1 impacts most to 8 impacts least).

Quality of rapport with mentoring partner	
You and your mentor's clarity around goals for the program	
Program structure provided by Mentors Online	
A regular communications schedule	
Your experience and level of comfort with email and online communication skills	
Your self-motivation and commitment to the program	
You and your mentor's interpersonal and communication skills	
The degree to which you believe your business and personal performance is under your control	

Question 5(b)
Other than those listed above, what are the major factors you think influenced the effectiveness of the program?

Question 6
What do you think were the major obstacles, inhibitors or deterrents to the program being effective or more effective?

Question 7(a)
Rank the importance of each of these types of assistance from 1 (most important) to 3 (least important)

	Level of importance
Career	
Business	
Personal	

To assist with identifying the types of support provided and received as part of the mentoring program, please indicate the extent to which the following were part of you and your mentoring partner's program:

Career	Very often	Often	Occasionally	Not very often	Never
Advice on professional development					
Networking advice					
Business advice					
Advice on particular business skills					
Advice on business plan					
SWOT analysis					
Referral to further resources					
Identifying and analysing critical incidents					
Personal and social support/advice					
Role modelling/setting an example					
Acceptance and confirmation					
Counselling and friendship					
Sounding board					
Advice on other personal matters (please specify)					
Other - please specify					

The program structure

Question 8
Describe for me whether or not and how the Mentors Online program structure (including the email facilitation messages and web exercises and resources) were or were not related to the value of the program.

Question 9
How did you respond to the structure provided (you can check as many boxes as you like)
☐ went through the process fairly much as suggested
☐ adapted it extensively to suit our needs
☐ adapted parts of it
☐ ignored it all
☐ ignored parts of it
☐ it was largely irrelevant to the mentoring process for me
☐ it was an unwelcome intrusion

Question 10
If you adapted the program to your particular needs, how did you adapt it?

Question 11
Do you generally think the structure helped the mentoring process - either with grounding it, directing it, helping establish, sustain and/or conclude the partnership? Were the facilitation messages over the top, too long, off the mark, totally irrelevant, discussion topic prompts useful? Please comment on both the positives and negatives.

Question 12
It was hoped the mentoring program would bring about long-term as well as short term changes and improvements. Could you speculate on any long-term benefits since you took part in the program that you would attribute directly or indirectly to the mentoring process.

Question 13
What weight do you give to the importance of your mentoring relationship compared with the structured content provided by APESMA? Please highlight or check the balance in your case.

	Mentoring partnership 100 / APESMA 0
	Mentoring partnership 75 / APESMA 25
	Mentoring partnership 50 / APESMA 50
	Mentoring partnership 25 / APESMA 25
	Mentoring partnership 0 / APESMA 100

Value and effectiveness

Question 14
If you participated in the program as a mentee, would you say the program was:

Very ineffective	Ineffective	Neither effective nor ineffective	Effective	Very effective

If you participated in the program as a mentor, would you say the program FOR YOUR MENTEE was:

Very ineffective	Ineffective	Neither effective nor ineffective	Effective	Very effective

Question 15
What does effective mentoring mean to you? To what extent do you think you achieved this?

Question 16
How did *you* judge or measure whether the program was worthwhile and/or effective?

Question 17
Describe the benefits of the program for you (developing skills such as those nominated in your registration form, changing attitudes such as more of a planned business approach, changing behaviour such as better at overcoming obstacles, personal development such as self-confidence?) Sometimes the benefits of mentoring are difficult to quantify. Can you describe the benefits or otherwise even if they don't impact on your bottom line.

Question 18
Please summarise the impact of your participation in the e-mentoring program:

Considerable positive effect	Some positive effect	No effect	Some negative effect	Considerable negative effect

Question 19
Do you think participation in the program may have contributed or will contribute directly or indirectly to your business's

long or short-term stability, viability or growth?

☐ Yes
☐ Possibly
☐ Not sure
☐ Probably not
☐ No

Question 20
Please identify the major area or areas of benefit from participating in the program.

Question 21
(a) On a scale of 1-10, estimate your skills/knowledge in that area **PRIOR** to the program.

1 2 3 4 5 6 7 8 9 10

(b) On a scale of 1-10, estimate your skills/knowledge in that area **AFTER** the program.

1 2 3 4 5 6 7 8 9 10

Matching
Mentors Online tried to work out what some of your needs were prior to the program and to match you with someone who

could help you with these areas in particular.

Question 22
To what extent do you think the quality of the match between you and your mentoring partner affected the effectiveness of the program (please note whether the quality of the match was in your view a good or bad one)?

Question 23
Sometimes the benefits were in relation to the needs identified up front but in many case they weren't.

(a) Would you outline any outcomes which occurred which you didn't expect, both positive and negative.

(b) Would you also comment on their relative importance to the skills development areas you nominated upfront (this question is to make sure unanticipated benefits are considered in evaluating effectiveness).

Question 24
If any benefits resulted, do you think similar development or benefits to those which occurred as a result of the mentoring process would have occurred in the absence of mentoring support? Please comment on why or why not.

Other
Question 25
Commitment to a mentoring program for contractors can be affected by competing priorities, work-related travel, and work, family and other responsibilities. Did your commitment change throughout the program, and if so, why and in what ways to you think your level of commitment impacted on its effectiveness?

Question 26
Goal setting - did you and your mentoring partner develop a range of goals you were working towards. Do you think this helped or hindered your partnership and the impact of the program?

Question 27
Many mentoring researchers see e-mentoring as an option only where face to face mentoring is not feasible because the lack of face to face contact impacts negatively on important communication cues. On the other hand, some suggest that e-mentoring is different altogether allowing the opportunity to be more considered about mentoring exchanges and to take a more focused problem-solving approach. Some suggest it depends on whether an individual is experienced in and suited to this environment and what's feasible for mentees and mentors at the time. What do you think?

Question 28
(a) Did you find the combination of structured content, mentor support and contact with the host useful as a framework for the mentoring program?

(b) How did your feelings change over the three months?
Toward your mentor
Toward the host
Toward the program

Question 29
What were the main factors or motivators which encouraged your participation in the program?

Question 30
Would you describe yourself as highly self-motivated?
☐ Yes   ☐ No

Question 31
In what ways do you think self-motivation was important in achieving any outcomes which resulted from the program?

Question 32
Did you feel motivated to work toward the changes and goals set with your Mentor?

Yes – all the time	Yes – most of the time	Some of the time	No – found motivation difficult	No - lost motivation quickly

Question 33
 (a)   At what points would you say your motivation was strongest?
          Week 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14

(b)   At what points would you say your motivation was weakest?
          Week 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14

Question 34
Do you think you and your mentoring partner's understanding or definition of what mentoring is was different at any stage of the process? Please describe how.

Question 35
I'm going to put together a log of unusual circumstances to highlight any incidents, occurrences or patterns which happened unexpectedly. Did anything unusual or unexpected worth noting occur throughout the partnership from your point of view?

Question 36
To what extent was the e-mentoring program integrated with your day to day business activities?

Question 37

Do you think you and your mentoring partner adapted to each others learning styles, your approaches to mentoring and your mutual experiences?

Question 38
So I can describe the diversity of the respondents, would you please complete this very general overview of your consultancy when you participated in the mentoring program (all details provided will be treated with the strictest confidentiality):

Industry or industries you work in	
Business or commmunity environment in which you offer the services/products	
Area of specialisation	
Estimated annual profit	
Estimated annual turnover	
Level of technology used in your business	
Number of employees or sub-contractors used	
Home or office-based	
Business structure through which you operate	
Number of clients in a five-year period	

Question 39

Any other comments on any other matters relating to the e-mentoring program:

****

Thanks for answering these questions.Let me reassure you again of the absolute confidentiality of your responses. If you can save this document and send it back to me by email to APESMA at krickard@apesma.asn.au, that would be great.

Thanks again,
Kim Rickard.

Appendix 6 - Summary score sheets

Summary of data and findings for individual respondents

PARTICIPANT 9   Year participated in program: 2002

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✗	Rate the value of the content of facilitator's messages in <range of content areas>	✔ (6 x 4 = 24))	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✗	Were you satisfied with the frequency of contact with your mentor?	✗	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (1)
Did you build a good relationship with mentor?	✔	Did you set your own program goals and move towards them throughout the program?	✗	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✔ (1)	Did you review your business plan?	✗
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	(0)	Did you develop your skills in the areas identified in your registration form?	✗	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	✔ (1)	Did you keep in contact with your mentor?	✗
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (3)	Did you find the 14-week program an appropriate duration?	✗	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✗	Do you feel you benefited from participating in the program?	✗
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✗	Helped you develop professionally?	✗				
		Indicate which areas included in the online tutorials you found useful	✗	Helped you develop personally?	✗				
		Did the fact that Mentors Online was email-based facilitate your participation?	✔	Contributed to professional identity?	✗				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	(0)				
		Rate level of satisfaction with matching (0-3)	(0)	More likely to continue in your consultancy area?	✗				
		Did you find any information of value on the Connect website?	✔	Opportunity to bounce ideas off a neutral party?	✗				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✗				

TOTAL SCORE	**37**	**Summary for Participant 9**
System quality – mentee/mentor interaction	4	Limited outcomes
Information quality – program content and structure	27	Poor relationship between mentee and mentor
User satisfaction - program experience	3	Limited engagement with the program structure and content
Use – interaction frequency	2	Low level of user satisfaction
Impact – outcomes	1	Low level of regular interaction

PARTICIPANT 17   Year participated in program: 2005

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✔	Rate the value of the content of facilitator's messages in <range of content areas>	(0)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✔	Were you satisfied with the frequency of contact with your mentor?	✔	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (5)
Did you build a good relationship with mentor?	✔	Did you set your own program goals and move towards them throughout the program?	✔	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✖	Did you review your business plan?	✔
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✔ (3)	Did you develop your skills in the areas identified in your registration form?	✔ (0.5)	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	(0)	Did you keep in contact with your mentor?	✖
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (15)	Did you find the 14-week program an appropriate duration?	✔	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✖	Do you feel you benefited from participating in the program?	✔
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✖	Helped you develop professionally?	✖				
		Indicate which areas included in the online tutorials you found useful	✖ (0)	Helped you develop personally?	✖				
		Did the fact that Mentors Online was email-based facilitate your participation?	✖	Contributed to professional identity?	✔				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	✔ (1.5)				
		Rate level of satisfaction with matching (0-3)	✔ (3)	More likely to continue in your consultancy area?	✖ (0)				
		Did you find any information of value on the Connect website?	✖	Opportunity to bounce ideas off a neutral party?	✔				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✔				

TOTAL SCORE

TOTAL SCORE	**41**	**Summary for Participant 17**
Impact – outcomes	7	Limited outcomes
System quality – mentee/mentor interaction	20	Excellent relationship between mentee and mentor
Information quality – program content and structure	6.5	Limited engagement with the program structure and content
User satisfaction - program experience	8.5	Reasonable level of user satisfaction
Use – interaction frequency	1	Low level of regular interaction

PARTICIPANT 12   Year participated in program: 2003

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✔	Rate the value of the content of facilitator's messages in <range of content areas>	(0)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✔	Were you satisfied with the frequency of contact with your mentor?	✔	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (3)
Did you build a good relationship with mentor?	✔	Did you set your own program goals and move towards them throughout the program?	✗	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✔	Did you review your business plan?	✗
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✔ (3)	Did you develop your skills in the areas identified in your registration form?	✔	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	✔ (1)	Did you keep in contact with your mentor?	✔
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (10)	Did you find the 14-week program an appropriate duration?	✗	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✔	Do you feel you benefited from participating in the program?	✔
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✔	Helped you develop professionally?	✔				
		Indicate which areas included in the online tutorials you found useful	✗	Helped you develop personally?	✗				
		Did the fact that Mentors Online was email-based facilitate your participation?	✔	Contributed to professional identity?	✔				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	✔ (2)				
		Rate level of satisfaction with matching (0-3)	✔ (3)	More likely to continue in your consultancy area?	✗				
		Did you find any information of value on the Connect website?	✔	Opportunity to bounce ideas off a neutral party?	✔				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✔				

TOTAL SCORE — **41**

Impact – outcomes	5	Summary for Participant 12
System quality – mentee/mentor interaction	15	Limited outcomes
Information quality – program content and structure	8	Reasonable relationship between mentee and mentor
User satisfaction - program experience	9	Limited engagement with the program structure and content
Use – interaction frequency	4	Reasonable level of user satisfaction
		Reasonable level of regular interaction

PARTICIPANT 5   Year participated in program: 2002

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✔	Rate the value of the content of facilitator's messages in <range of content areas>	✔ (12)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✔	Were you satisfied with the frequency of contact with your mentor?	✘	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (10)
Did you build a good relationship with mentor?	✔	Did you set your own program goals and move towards them throughout the program?	✔	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✘	Did you review your business plan?	✘
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✔ (2)	Did you develop your skills in the areas identified in your registration form?	✔	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	✔ (1)	Did you keep in contact with your mentor?	✔
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (12)	Did you find the 14-week program an appropriate duration?	✘	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✔	Do you feel you benefited from participating in the program?	✔
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✔	Helped you develop professionally?	✔				
		Indicate which areas included in the online tutorials you found useful	✔ (3)	Helped you develop personally?	✔				
		Did the fact that Mentors Online was email-based facilitate your participation?	✔	Contributed to professional identity?	✔				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	✔ (1)				
		Rate level of satisfaction with matching (0-3)	✔ (2)	More likely to continue in your consultancy area?	✔				
		Did you find any information of value on the Connect website?	✔	Opportunity to bounce ideas off a neutral party?	✔				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✔				

		Summary for Participant 5
TOTAL SCORE	**64**	**Summary for Participant 5**
Impact – outcomes	12	Reasonable outcomes
System quality – mentee/mentor interaction	16	Good relationship between mentee and mentor
Information quality – program content and structure	23	Limited engagement with the program structure and content
User satisfaction - program experience	11	High level of user satisfaction
Use – interaction frequency	2	Low level of regular interaction

PARTICIPANT 8   Year participated in program: 2002

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✔	Rate the value of the content of facilitator's messages in <range of content areas>	✔ (6 x 4 = 24)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✔	Were you satisfied with the frequency of contact with your mentor?	✗	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (6)
Did you build a good relationship with mentor?	✔	Did you set your own program goals and move towards them throughout the program?	✗	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✗	Did you review your business plan?	✔
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✔ (2)	Did you develop your skills in the areas identified in your registration form?	✗	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	(0)	Did you keep in contact with your mentor?	✔
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (15)	Did you find the 14-week program an appropriate duration?	✗	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✔	Do you feel you benefited from participating in the program?	✔
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✔	Helped you develop professionally?	✔				
		Indicate which areas included in the online tutorials you found useful	✔ (4)	Helped you develop personally?	✔				
		Did the fact that Mentors Online was email-based facilitate your participation?	✔	Contributed to professional identity?	✗				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	✔ (2)				
		Rate level of satisfaction with matching (0-3)	✔ (2)	More likely to continue in your consultancy area?	✔				
		Did you find any information of value on the Connect website?	✗	Opportunity to bounce ideas off a neutral party?	✔				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✔				

TOTAL SCORE	**71**	**Summary for Participant 8**
Impact – outcomes	9	Limited outcomes
System quality – mentee/mentor interaction	19	Excellent relationship between mentee and mentor
Information quality – program content and structure	31	Reasonable engagement with the program structure and content
User satisfaction - program experience	11	High level of user satisfaction
Use – interaction frequency	1	Low level of regular interaction

PARTICIPANT 19   Year participated in program: 2005

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✔	Rate the value of the content of facilitator's messages in <range of content areas>	✔ (28)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✔	Were you satisfied with the frequency of contact with your mentor?	✖	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (4)
Did you build a good relationship with mentor?	✖	Did you set your own program goals and move towards them throughout the program?	✔	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✖	Did you review your business plan?	✔
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✔ (2)	Did you develop your skills in the areas identified in your registration form?	✔ (0.5)	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	(0)	Did you keep in contact with your mentor?	✔
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (16)	Did you find the 14-week program an appropriate duration?	✔	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✔	Do you feel you benefited from participating in the program?	✔
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✔	Helped you develop professionally?	✖				
		Indicate which areas included in the online tutorials you found useful	✔ (3)	Helped you develop personally?	✖				
		Did the fact that Mentors Online was email-based facilitate your participation?	✔	Contributed to professional identity?	✖				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	✔ 1.5				
		Rate level of satisfaction with matching (0-3)	✔ (2)	More likely to continue in your consultancy area?	✖				
		Did you find any information of value on the Connect website?	✖	Opportunity to bounce ideas off a neutral party?	✔				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✖				

TOTAL SCORE	72	Summary for Participant 19
Impact – outcomes	7	Limited outcomes
System quality – mentee/mentor interaction	19	Excellent relationship between mentee and mentor
Information quality – program content and structure	38.5	Reasonable engagement with the program structure and content
User satisfaction - program experience	6.5	Reasonable level of user satisfaction
Use – interaction frequency	1	Low level of regular interaction

PARTICIPANT 1   Year participated in program: 2002

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✔	Rate the value of the content of facilitator's messages in <range of content areas>	✔ (11x4 = 44)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✔	Were you satisfied with the frequency of contact with your mentor?	✘	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (8)
Did you build a good relationship with mentor?	✔	Did you set your own program goals and move towards them throughout the program?	✔	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✔	Did you review your business plan?	✘
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✔ (2)	Did you develop your skills in the areas identified in your registration form?	✔	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	✔ (2)	Did you keep in contact with your mentor?	✔
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (9)	Did you find the 14-week program an appropriate duration?	✘	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✔	Do you feel you benefited from participating in the program?	✔
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✔	Helped you develop professionally?	✔				
		Indicate which areas included in the online tutorials you found useful	✔ (8)	Helped you develop personally?	✘				
		Did the fact that Mentors Online was email-based facilitate your participation?	✔	Contributed to professional identity?	✔				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	✔ (2)				
		Rate level of satisfaction with matching (0-3)	✔ (3)	More likely to continue in your consultancy area?	✔				
		Did you find any information of value on the Connect website?	✔	Opportunity to bounce ideas off a neutral party?	✔				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✔				

TOTAL SCORE	**92**	**Summary for Participant 1**
Impact – outcomes	3	Limited outcomes
System quality – mentee/mentor interaction	13	Reasonable relationship between mentee and mentor
Information quality – program content and structure	61	High level of engagement with the program structure and content
User satisfaction - program experience	11	High level of user satisfaction
Use – interaction frequency	4	Reasonable level of regular interaction

PARTICIPANT 15   Year participated in program: 2004

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✗	Rate the value of the content of facilitator's messages in <range of content areas>	✔ (70)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✗	Were you satisfied with the frequency of contact with your mentor?	✗	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (3)
Did you build a good relationship with mentor?	✗	Did you set your own program goals and move towards them throughout the program?	✗	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✔	Did you review your business plan?	✗
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✗ (0)	Did you develop your skills in the areas identified in your registration form?	✗	Participate again?	✗	How frequently did you communicate with your mentor over the course of the program? (0-4)	(0)	Did you keep in contact with your mentor?	✗
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (6)	Did you find the 14-week program an appropriate duration?	✗	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✔	Do you feel you benefited from participating in the program?	✗
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✔	Helped you develop professionally?	✗				
		Indicate which areas included in the online tutorials you found useful	✔ (8)	Helped you develop personally?	✗				
		Did the fact that Mentors Online was email-based facilitate your participation?	✗	Contributed to professional identity?	✗				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	✔ (1)				
		Rate level of satisfaction with matching (0-3)	✔ (1)	More likely to continue in your consultancy area?	✗				
		Did you find any information of value on the Connect website?	✔	Opportunity to bounce ideas off a neutral party?	✗				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✗				

TOTAL SCORE — **96**

		Summary for Participant 15
Impact – outcomes	3	Limited outcomes
System quality – mentee/mentor interaction	6	Poor relationship between mentee and mentor
Information quality – program content and structure	82	High level of engagement with the program structure and content
User satisfaction - program experience	3	Low level of user satisfaction
Use – interaction frequency	2	Low level of regular interaction

PARTICIPANT 4   Year participated in program: 2002

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✔	Rate the value of the content of facilitator's messages in <range of content areas>	✔ (12 x 4 = 48)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✔	Were you satisfied with the frequency of contact with your mentor?	✔	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (9)
Did you build a good relationship with mentor?	✔	Did you set your own program goals and move towards them throughout the program?	✗	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✔	Did you review your business plan?	✔
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✔ (3)	Did you develop your skills in the areas identified in your registration form?	✔	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	✔ (2)	Did you keep in contact with your mentor?	✔
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (4)	Did you find the 14-week program an appropriate duration?	✔	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✔	Do you feel you benefited from participating in the program?	✔
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✔	Helped you develop professionally?	✔				
		Indicate which areas included in the online tutorials you found useful	✔ (3)	Helped you develop personally?	✔				
		Did the fact that Mentors Online was email-based facilitate your participation?	✔	Contributed to professional identity?	✔				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	✔ (2)				
		Rate level of satisfaction with matching (0-3)	✔ (3)	More likely to continue in your consultancy area?	✗				
		Did you find any information of value on the Connect website?	✔	Opportunity to bounce ideas off a neutral party?	✔				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✔				

TOTAL SCORE

Impact – outcomes	12	**Summary for Participant 4**
System quality – mentee/mentor interaction	9	Reasonable outcomes
Information quality – program content and structure	60	Poor relationship between mentee and mentor
User satisfaction - program experience	11	High level of engagement with the program structure and content
Use – interaction frequency	5	High level of user satisfaction
		Reasonable level of regular interaction

TOTAL SCORE: **97**

PARTICIPANT 7   Year participated in program: 2002

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✔	Rate the value of the content of facilitator's messages in <range of content areas>	✔ (11 x 4 = 44)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✔	Were you satisfied with the frequency of contact with your mentor?	✔	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (11)
Did you build a good relationship with mentor?	✔	Did you set your own program goals and move towards them throughout the program?	✘	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✔	Did you review your business plan?	✔
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✔ (2)	Did you develop your skills in the areas identified in your registration form?	✘	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	✔ (2)	Did you keep in contact with your mentor?	✔
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (15)	Did you find the 14-week program an appropriate duration?	✔	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✔	Do you feel you benefited from participating in the program?	✔
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✔	Helped you develop professionally?	✔				
		Indicate which areas included in the online tutorials you found useful	(0)	Helped you develop personally?	✔				
		Did the fact that Mentors Online was email-based facilitate your participation?	✔	Contributed to professional identity?	✔				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	✔ (1)				
		Rate level of satisfaction with matching (0-3)	✔ (2)	More likely to continue in your consultancy area?	✔				
		Did you find any information of value on the Connect website?	✔	Opportunity to bounce ideas off a neutral party?	✔				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✔				

TOTAL SCORE   **100**   **Summary for Participant 7**
Impact – outcomes   14   Reasonable outcomes
System quality – mentee/mentor interaction   19   Excellent relationship between mentee and mentor
Information quality – program content and structure 51   Reasonable level of engagement with the program structure and content
User satisfaction - program experience   11   High level of user satisfaction
Use – interaction frequency   5   Reasonable level of regular interaction

PARTICIPANT 10   Year participated in program: 2003

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✔	Rate the value of the content of facilitator's messages in <range of content areas>	✔ (10 X 4 = 40)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✔	Were you satisfied with the frequency of contact with your mentor?	✘	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (14)
Did you build a good relationship with mentor?	✔	Did you set your own program goals and move towards them throughout the program?	✔	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✘	Did you review your business plan?	✔
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✔ (3)	Did you develop your skills in the areas identified in your registration form?	✔	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	✔ (1.5)	Did you keep in contact with your mentor?	✔
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (15)	Did you find the 14-week program an appropriate duration?	✔	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✔	Do you feel you benefited from participating in the program?	✔
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✔	Helped you develop professionally?	✔				
		Indicate which areas included in the online tutorials you found useful	✔ (4)	Helped you develop personally?	✔				
		Did the fact that Mentors Online was email-based facilitate your participation?	✔	Contributed to professional identity?	✘				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	✔ (2)				
		Rate level of satisfaction with matching (0-3)	✔ (2)	More likely to continue in your consultancy area?	✔				
		Did you find any information of value on the Connect website?	✔	Opportunity to bounce ideas off a neutral party?	✔				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✔				

TOTAL SCORE   103.5   **Summary for Participant 10**
Impact – outcomes   17   Positive outcomes
System quality – mentee/mentor interaction   20   Excellent relationship between mentee and mentor
Information quality – program content and structure   53   Reasonable level of engagement with the program structure and content

User satisfaction - program experience   11   High level of user satisfaction
Use – interaction frequency   2.5   Low level of regular interaction

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✔	Rate the value of the content of facilitator's messages in <range of content areas>	✔ (16 x 4 = 64)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✔	Were you satisfied with the frequency of contact with your mentor?	✘	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (5)
Did you build a good relationship with mentor?	✔	Did you set your own program goals and move towards them throughout the program?	✘	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✘	Did you review your business plan?	✔
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✔ (2)	Did you develop your skills in the areas identified in your registration form?	✘	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	(0)	Did you keep in contact with your mentor?	✘
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (10)	Did you find the 14-week program an appropriate duration?	✔	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✔	Do you feel you benefited from participating in the program?	✔
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✔	Helped you develop professionally?	✘				
		Indicate which areas included in the online tutorials you found useful	✔ (8)	Helped you develop personally?	✘				
		Did the fact that Mentors Online was email-based facilitate your participation?	✔	Contributed to professional identity?	✘				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	✔ (2)				
		Rate level of satisfaction with matching (0-3)	✔ (3)	More likely to continue in your consultancy area?	✘				
		Did you find any information of value on the Connect website?	✔	Opportunity to bounce ideas off a neutral party?	✔				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✔				

TOTAL SCORE — **109**

		Summary for Participant 6
Impact – outcomes	7	Limited outcomes
System quality – mentee/mentor interaction	14	Reasonable relationship between mentee and mentor
Information quality – program content and structure	80	High level of engagement with the program structure and content
User satisfaction - program experience	8	Reasonable level of user satisfaction
Use – interaction frequency	0	Low level of regular interaction

PARTICIPANT 14   Year participated in program: 2004

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✔	Rate the value of the content of facilitator's messages in <range of content areas>	✔ (59)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✔	Were you satisfied with the frequency of contact with your mentor?	✔	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (7)
Did you build a good relationship with mentor?	✔	Did you set your own program goals and move towards them throughout the program?	✘	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✔	Did you review your business plan?	✔
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✔ (2)	Did you develop your skills in the areas identified in your registration form?	✔ (0.5)	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	(0)	Did you keep in contact with your mentor?	✔
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (16)	Did you find the 14-week program an appropriate duration?	✔	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✔	Do you feel you benefited from participating in the program?	✔
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✔	Helped you develop professionally?	✔				
		Indicate which areas included in the online tutorials you found useful	✔ (8)	Helped you develop personally?	✔				
		Did the fact that Mentors Online was email-based facilitate your participation?	✔	Contributed to professional identity?	✔				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	✔ (2)				
		Rate level of satisfaction with matching (0-3)	✔ (2)	More likely to continue in your consultancy area?	✔				
		Did you find any information of value on the Connect website?	✔	Opportunity to bounce ideas off a neutral party?	✔				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✔				

TOTAL SCORE	119.5	Summary for Participant 14
Impact – outcomes	10	Reasonable outcomes
System quality – mentee/mentor interaction	20	Excellent relationship between mentee and mentor
Information quality – program content and structure	74.5	High level of engagement with the program structure and content
User satisfaction - program experience	12	High level of user satisfaction
Use – interaction frequency	3	Low level of regular interaction

PARTICIPANT 11   Year participated in program: 2003

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✔	Rate the value of the content of facilitator's messages in <range of content areas>	✔ (15 X 4 = 60)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✔	Were you satisfied with the frequency of contact with your mentor?	✔	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (9)
Did you build a good relationship with mentor?	✔	Did you set your own program goals and move towards them throughout the program?	✔	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✔	Did you review your business plan?	✔
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✔ (3)	Did you develop your skills in the areas identified in your registration form?	✔	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	✔ (3)	Did you keep in contact with your mentor?	✔
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (15)	Did you find the 14-week program an appropriate duration?	✖	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✔	Do you feel you benefited from participating in the program?	✔
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✔	Helped you develop professionally?	✔				
		Indicate which areas included in the online tutorials you found useful	✔ (5)	Helped you develop personally?	✖				
		Did the fact that Mentors Online was email-based facilitate your participation?	✔	Contributed to professional identity?	✔				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	✔ (2)				
		Rate level of satisfaction with matching (0-3)	✔ (3)	More likely to continue in your consultancy area?	✖				
		Did you find any information of value on the Connect website?	✔	Opportunity to bounce ideas off a neutral party?	✔				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✔				

TOTAL SCORE	122	Summary for Participant 11
Impact – outcomes	12	Reasonable outcomes
System quality – mentee/mentor interaction	20	Excellent relationship between mentee and mentor
Information quality – program content and structure	74	High level of engagement with the program structure and content
User satisfaction - program experience	10	High level of user satisfaction
Use – interaction frequency	6	High level of regular interaction

PARTICIPANT 2   Year participated in program: 2002

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✔	Rate the value of the content of facilitator's messages in <range of content areas>	✔ (11 x 4 = 44)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✔	Were you satisfied with the frequency of contact with your mentor?	✔	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (22)
Did you build a good relationship with mentor?	✔	Did you set your own program goals and move towards them throughout the program?	✔	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✔	Did you review your business plan?	✔
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✔ (3)	Did you develop your skills in the areas identified in your registration form?	✔	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	✔ (3)	Did you keep in contact with your mentor?	✔
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (15)	Did you find the 14-week program an appropriate duration?	✘	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✔	Do you feel you benefited from participating in the program?	✔
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✔	Helped you develop professionally?	✔				
		Indicate which areas included in the online tutorials you found useful	✔ (8)	Helped you develop personally?	✔				
		Did the fact that Mentors Online was email-based facilitate your participation?	✔	Contributed to professional identity?	✔				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	✔ (2)				
		Rate level of satisfaction with matching (0-3)	✔ (3)	More likely to continue in your consultancy area?	✔				
		Did you find any information of value on the Connect website?	✔	Opportunity to bounce ideas off a neutral party?	✔				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✔				

TOTAL SCORE — **124**

		Summary for Participant 2
Impact – outcomes	25	Positive outcomes
System quality – mentee/mentor interaction	20	Excellent relationship between mentee and mentor
Information quality – program content and structure	61	High level of engagement with the program structure and content
User satisfaction - program experience	12	High level of user satisfaction
Use – interaction frequency	6	High level of regular interaction

452

PARTICIPANT 13   Year participated in program: 2004

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✔	Rate the value of the content of facilitator's messages in <range of content areas>	✔ (66)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✔	Were you satisfied with the frequency of contact with your mentor?	✔	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (14)
Did you build a good relationship with mentor?	✔	Did you set your own program goals and move towards them throughout the program?	✔	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✘	Did you review your business plan?	✔
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✔ (3)	Did you develop your skills in the areas identified in your registration form?	✔ (0.5)	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	✔ (3)	Did you keep in contact with your mentor?	✔
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (16)	Did you find the 14-week program an appropriate duration?	✔	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✔	Do you feel you benefited from participating in the program?	✔
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✘	Helped you develop professionally?	✔				
		Indicate which areas included in the online tutorials you found useful	✔ (2)	Helped you develop personally?	✔				
		Did the fact that Mentors Online was email-based facilitate your participation?	✔	Contributed to professional identity?	✔				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	✔ (1.5)				
		Rate level of satisfaction with matching (0-3)	✔ (2)	More likely to continue in your consultancy area?	✔				
		Did you find any information of value on the Connect website?	✘	Opportunity to bounce ideas off a neutral party?	✔				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✘				

TOTAL SCORE   **128**   **Summary for Participant 13**
Impact – outcomes   17   Positive outcomes
System quality – mentee/mentor interaction   21   Excellent relationship between mentee and mentor
Information quality – program content and structure   74.5   High level of engagement with the program structure and content
User satisfaction - program experience   10.5   High level of user satisfaction
Use – interaction frequency   5   Reasonable level of regular interaction

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✔	Rate the value of the content of facilitator's messages in <range of content areas>	✔ (62)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✔	Were you satisfied with the frequency of contact with your mentor?	✔	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (10)
Did you build a good relationship with mentor?	✔	Did you set your own program goals and move towards them throughout the program?	✖	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✖	Did you review your business plan?	✔
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✔ (3)	Did you develop your skills in the areas identified in your registration form?	✔	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	✔ (4)	Did you keep in contact with your mentor?	✔
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (14)	Did you find the 14-week program an appropriate duration?	✔	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✔	Do you feel you benefited from participating in the program?	✔
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✔	Helped you develop professionally?	✔				
		Indicate which areas included in the online tutorials you found useful	✔ (8)	Helped you develop personally?	✔				
		Did the fact that Mentors Online was email-based facilitate your participation?	✔	Contributed to professional identity?	✔				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	✔ (2)				
		Rate level of satisfaction with matching (0-3)	✔ (3)	More likely to continue in your consultancy area?	✔				
		Did you find any information of value on the Connect website?	✔	Opportunity to bounce ideas off a neutral party?	✔				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✔				

TOTAL SCORE   **129**   **Summary for Participant 18**

Impact – outcomes	13	Positive outcomes
System quality – mentee/mentor interaction	19	Excellent relationship between mentee and mentor
Information quality – program content and structure	79	High level of engagement with the program structure and content
User satisfaction - program experience	12	High level of user satisfaction
Use – interaction frequency	6	High level of regular interaction

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✔	Rate the value of the content of facilitator's messages in <range of content areas>	✔ (17 x 4 = 68)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✔	Were you satisfied with the frequency of contact with your mentor?	✔	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (14)
Did you build a good relationship with mentor?	✔	Did you set your own program goals and move towards them throughout the program?	✔	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✔	Did you review your business plan?	✔
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✔ (3)	Did you develop your skills in the areas identified in your registration form?	✔	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	✔ (2)	Did you keep in contact with your mentor?	✔
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (11)	Did you find the 14-week program an appropriate duration?	✔	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✔	Do you feel you benefited from participating in the program?	✔
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✔	Helped you develop professionally?	✔				
		Indicate which areas included in the online tutorials you found useful	✔ (6)	Helped you develop personally?	✔				
		Did the fact that Mentors Online was email-based facilitate your participation?	✔	Contributed to professional identity?	✔				
		Did you experience any problems with the email infrastructure during the program?	✘	Rate value of the program as a service to self-employed professionals (0-2)	✔ (2)				
		Rate level of satisfaction with matching (0-3)	✔ (3)	More likely to continue in your consultancy area?	✔				
		Did you find any information of value on the Connect website?	✘	Opportunity to bounce ideas off a neutral party?	✔				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✔				

TOTAL SCORE   **132**   **Summary for Participant 3**

Impact – outcomes	17	Positive outcomes
System quality – mentee/mentor interaction	16	Good relationship between mentee and mentor
Information quality – program content and structure	82	High level of engagement with the program structure and content
User satisfaction - program experience	12	High level of user satisfaction
Use – interaction frequency	5	Reasonable level of regular interaction

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✔	Rate the value of the content of facilitator's messages in <range of content areas>	✔ (65)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✔	Were you satisfied with the frequency of contact with your mentor?	✔	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (15)
Did you build a good relationship with mentor?	✔	Did you set your own program goals and move towards them throughout the program?	✔	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✔	Did you review your business plan?	✔
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✔ (3)	Did you develop your skills in the areas identified in your registration form?	✔	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	✔ (3)	Did you keep in contact with your mentor?	✔
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (16)	Did you find the 14-week program an appropriate duration?	✘	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✔	Do you feel you benefited from participating in the program?	✔
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✔	Helped you develop professionally?	✔				
		Indicate which areas included in the online tutorials you found useful	✔ (5)	Helped you develop personally?	✔				
		Did the fact that Mentors Online was email-based facilitate your participation?	✔	Contributed to professional identity?	✔				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	✔ (2)				
		Rate level of satisfaction with matching (0-3)	✔ (3)	More likely to continue in your consultancy area?	✔				
		Did you find any information of value on the Connect website?	✔	Opportunity to bounce ideas off a neutral party?	✔				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✔				

TOTAL SCORE	**136**	**Summary for Participant 16**
Impact – outcomes	18	Positive outcomes
System quality – mentee/mentor interaction	21	Excellent relationship between mentee and mentor
Information quality – program content and structure	79	High level of engagement with the program structure and content
User satisfaction - program experience	12	High level of user satisfaction
Use – interaction frequency	6	High level of regular interaction

PARTICIPANT 20   Year participated in program: 2006

System quality (mentee/mentor interaction)	Score	Information quality (program content and structure)	Score	User satisfaction (program experience)	Score	Use (interaction frequency)	Score	Impact (outcomes)t	Score
Did you have experiences in common with mentor?	✔	Rate the value of the content of facilitator's messages in <range of content areas>	✔ (74)	Was program useful as a way for you to engage in semi-structured discussions with a professional colleague?	✔	Were you satisfied with the frequency of contact with your mentor?	✔	Did participation in program directly or indirectly lead to <range of outcomes>?	✔ (12)
Did you build a good relationship with mentor?	✔	Did you set your own program goals and move towards them throughout the program?	✔	Relevant business support service?	✔	Did you set a satisfactory communication schedule at the start of the program?	✔	Did you review your business plan?	✔
Rate level of satisfaction with advice, assistance and support provided by mentor (0-3)	✔ (3)	Did you develop your skills in the areas identified in your registration form?	✔ (0.5)	Participate again?	✔	How frequently did you communicate with your mentor over the course of the program? (0-4)	✔ (2)	Did you keep in contact with your mentor?	✘
Rate quality of mentor's skills in <range of mentoring competencies>	✔ (16)	Did you find the 14-week program an appropriate duration?	✔	Recommend program to another professional?	✔	Were you satisfied with the frequency of contact from the host?	✔	Do you feel you benefited from participating in the program?	✔
		Do you think the online tutorials helped you prepare for the e-mentoring experience?	✔	Helped you develop professionally?	✔				
		Indicate which areas included in the online tutorials you found useful	✔ (8)	Helped you develop personally?	✔				
		Did the fact that Mentors Online was email-based facilitate your participation?	✔	Contributed to professional identity?	✘				
		Did you experience any problems with the email infrastructure during the program?	✔	Rate value of the program as a service to self-employed professionals (0-2)	✔ (1.5)				
		Rate level of satisfaction with matching (0-3)	✔ (3)	More likely to continue in your consultancy area?	✔				
		Did you find any information of value on the Connect website?	✔	Opportunity to bounce ideas off a neutral party?	✔				
				Did you discuss issues or ask questions which you would not normally do within your existing network?	✘				

TOTAL SCORE	141	Summary for Participant 20
Impact – outcomes	14	Reasonable outcomes
System quality – mentee/mentor interaction	21	Excellent relationship between mentee and mentor
Information quality – program content and structure	91.5	High level of engagement with the program structure and content
User satisfaction - program experience	9.5	Reasonable level of user satisfaction
Use – interaction frequency	5	Reasonable level of regular interaction