Constructing Safety Training: Foundations of Attitudes and Perceptions of the Construction Site Supervisor

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Abstract

Safety-training interventions are common across all Australian workplaces due to the legislative requirement to provide a safe working environment. As a safety practitioner, I often work with workers who are *forced* to attend training programs and, as a consequence, do not want to participate. In my ten years of delivering safety training, attitudes of 'boring', 'irrelevant', and 'already know it all' are common barriers to effective training.

My investigation into the construction industry sought to unearth the foundational principles that determine attitudes and perceptions of supervisors toward safety training, and trace the impact that these attitudes have on organisational values and safety practice. I sought to reveal how the attitudes and perceptions of construction site supervisors can be mediated to produce effective safety-training situations and, as such, move toward reducing the injuries and fatalities that plague the construction industry.

Using a social-constructivist framework of enquiry and an embedded case study approach, I crossed the boundaries of two disciplines: the theoretical tradition of applied sciences and the tradition of adult learning. My research was inductive and framed by the construction supervisors' stories.

Identified in the participant narratives is a mismatch between individual supervisors and organisational learning needs, and the identification that workplace learning in the safety discipline is negatively influenced by a number of aspects that need to be addressed. Armed with the identification that safety training is boring, repetitive, and irrelevant to participants, the training profession in the safety industry has an opportunity to improve training interventions and make a lasting impact on safety practices and individual behaviours.

Declaration

I, Marilyn Hubner declare that the PhD thesis entitled ***Constructing Safety Training: Foundations of Attitudes and Perceptions of the Construction Site Supervisor***is no more than 100,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and endnotes. 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:

Marilyn Hubner

Acknowledgements

This moment in time - the submission of a PhD thesis - has been on my bucket list since illness and my actions forced me to suspend my initial studies in early 2004. At that lowest point in my adult life, there were three people that may have lost faith in me, Dr. Annie Ross, Professor Helen Ross and Dr. Manada Page. These three academics offered their knowledge and experience to me, and at that stage in my life I was too immature to understand the importance. One of the drivers behind my passion and motivation for this thesis has been the memory of the disappointing look I saw in my supervisor's faces.

Skip ahead eight years where two more academics Dr Mark Vicars and Dr Kerry Renwick offered to assist me in my journey to submission. The journey has been longer than expected with external factors often clouding my ability to write. Mark and Kerry challenged, pushed, forced, assisted but most of all supported my growth and their effort should not go unrecognised. Thank you Mark and Kerry for you unwavering support through difficult times.

However, I would not have had the opportunity to meet Mark and Kerry had it not been for my burning desire to beat my brothers at something. Growing up with four brothers has been difficult. The level of competition between us is worthy of an Australian Vs. New Zealand test match. Be it ten-pin bowling, cards, monopoly, cockroach races or qualifications our competition is fierce. No one in my immediate family has a PhD! So, I will be the first, and my brothers cannot take that away from me. I give thanks to my mother for my brothers and for providing me the opportunity to make mistakes (many of them) for from them I have learnt.

In some ways, more important than the drive provided from my family history, the support freely given by my life long partner Julie has been the catalyst for success. Julie has given me time, financial assistance, and love throughout the years of this journey. I hope that the positive

consequence of my completion will provide us with opportunities to improve the world together. My biggest thanks are to you Julie who has suffered and celebrated the big and the small with me.

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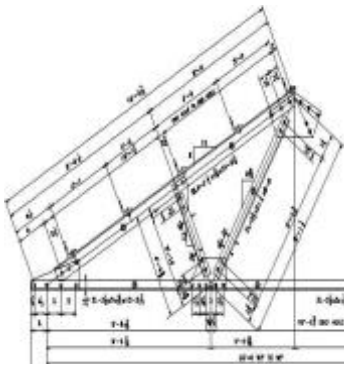
Phase One - Drawing for Research: Introducing the Research Plan



Construction planning and the associated drawings are a fundamental and challenging activity in the management and execution of all construction projects. Much like the introductory chapter of a PhD thesis, which provides the reader with all the necessary information on the research, construction drawings provide the builder with all information for the construction of the project. A decent construction plan, like a good introductory chapter of a thesis, provides an overall view of the project, is divided into sections, and gives detailed information on all distinct sections.

Introduction to the Research Space

This constructed work focuses on safety training in the commercial construction industry within Australia. It seeks to reveal how the attitudes and perceptions of construction site supervisors can be mediated to produce effective safety-training situations and, as such, move toward reducing the injuries and fatalities that plague the construction industry. Whilst presented as a case study, the work

essentially situates itself in workplace learning or adult education fields of study.

Across Australia, between 2003 and 2013, the construction industry was responsible for 402 work-related fatalities, which equates to one worker killed on a construction site every eight days (SafeWork Australia, 2014a). These fatalities, along with a high number of serious injuries, mean that the construction industry accounts for 21% of $60 billion of workplace injury and fatality costs in the Australian economy each year (SafeWork Australia, 2012b). Labourers and tradespersons account for a high proportion of these numbers each year, yet it is difficult to further distinguish workplace positions for within official statistics and public perception, there is a lack of segregation and segmentation between civil, domestic, and commercial construction. All State Regulators and the National Authority, SafeWork Australia, report on these statistics as a combined industry. This lack of segmentation can cause concern within the individual components of the industry that intentionally attempt to improve safety performance through increased safety interventions, such as training programs. It is the attitudes and perceptions toward these programs that this work investigates.

This constructed work is limited to the Australian commercial construction industry, which is unique, standing apart from the civil and domestic industries. The building components in the work performed are considerably different in terms of size, project timelines, location, craft skills, and production. As the civil component builds and maintains roadways, railways, and bridges, the domestic component develops and builds housing estates and subdivisions, as well as provides maintenance services to the wider public. In comparison, the commercial construction component builds large commercial buildings such as office blocks, apartments, and hotels.

A fundamental component of the commercial construction industry is its contractual nature; and, this is further intensified by an increasing reliance on subcontracting. In addition, the commercial construction industry is characterised by the pressure from developers and clients to build, with the emphasis on certain attributes: time, budget, and safety. The commercial construction industry's continued success is based upon the principal builder supervising subcontractors with minimal formal skills or training, but yet are performing high-risk tasks and operating equipment on a daily basis. In addition, many workers

are lured by the high wages and increasing benefits, as opposed to a desire to work in an industry that is building the nation.

The construction industry is commonly associated with a disproportionately high number of injuries and fatalities as compared to the number of workers (Raheem & Hinze, 2014). The industry is dynamic, complex, and inherently dangerous (Carter & Smith, 2006); but, many risks can be avoided through the proper implementation of safe work practices (Raheem & Hinze, 2014). The poor safety performance across the entire construction industry has connected the commercial industry component to a poor safety culture (Stephan, 2001). Organisations, comprised of their workers and management, have differing cultures. They integrate specific, but constantly changing, attitudes and behaviours to safe working practices. The term "safety culture" is used to refer to these comparative values and practices, which are formed by, as well as a part of, each organisational culture (Bahn, 2008). It is increasingly common practice for organisations to focus on improving their safety culture by implementing mandatory safety-training programs for management and workers (Gale, 2011). However, whilst current research in the industry focuses on the development and implementation of strategies

(i.e., safety training and safety culture programs), evaluation is required for the safety programs and managing practices currently in place.

This work indicates that, in order to improve training programs and increase the safety performance of the commercial construction industry, the opinions of those involved in supervision and management need to be heard, and opinions considered, when developing and delivering safety interventions, such as training. Identifying the workplace attitudes, perceptions, and values, which permeate this industry, and ascertaining how they are determined, to reinforce the safety culture and safety performance, underpins this constructed work.

Strategies and partnerships could be developed to encourage increased consultation between training coordinators, senior management, and onsite staff when planning for safety performance interventions. Investigating the gap between rhetoric and reality to ensure the effectiveness of the safety intervention was a key idea behind this research. Recognising the need for new approaches of development and delivery of safety-training programs is a driving force behind this

work, and identifying appropriate best practice strategies in an effort to provide a benchmark for construction organisations and safety-training organisations is a major aim. This phase of construction details the significance and purpose of these issues, and follows with background information on OHS, as well as specific issues facing the construction industry.

Research Purpose

The primary purpose of this research is to investigate the relationship between construction site supervisors' individual attitudes and perceptions, as well as organisational values and management practices, in terms of workplace-based, safety-training interventions in an effort to identify areas where training interventions could be improved.

The practical aim of this work is to identify methods, approaches, or initiatives that may improve the effectiveness of safety-training programs within the construction industry, as it is plagued with ever-present incidents that result in serious injuries and fatalities. Despite targeted compliance programs by the OHS Regulator, increased legislative and training requirements, as well as increasing public

interest in workplace safety, construction managers, supervisors, and workers still practice unsafe acts onsite; there is still a gap between company objectives and practice. This pragmatic constructed work is aimed at improving the effectiveness of workplace, safety-training programs; but, it is positioned in a sea of perceptions and interactions where values, behaviours, and practices compete to enable safe working practices.

Theoretically, this constructed work challenges the current model of safety-training development and delivery. On one level, it is constructed around actual legislative and organisational safety-training requirements and training practices in the workplace. On a different level, it endeavours to explore the perceptions, attitudes, and practices that challenge the effectiveness of these training programs as they occur. Practically, this constructed work seeks to highlight organisational actions or approaches, at both workplace level and training development level, which can increase the effectiveness of safety-training programs.

The aim of this work is to theoretically establish how the broad actions of the regulators and the industry facilitate and produce safety

behaviour on a construction site. As such explores the relations between individual and organisational values, practices, and expectations, or more simply, how safety attitudes and perceptions are established and enacted in daily practice. The work identifies and investigates the underlying power of regulators and organisations over workplace managers and supervisors in establishing how safety interventions (such as training) are practiced on construction sites. Primarily, it is positioned within the field of workplace training, investigating how attitudes and perceptions can influence the effectiveness of training interventions.

This constructed work uses a social constructivist framework and a qualitative approach to gather and explore construction site supervisor narratives, in an effort to highlight and focus upon the relationship between individual and organisational needs, and how this can affect training interventions. This approach is used, as the objective of the work is to focus upon individual attitudes and perceptions, and how they intertwine with internal organisational and external regulatory requirements to produce safety practice onsite. The narratives gathered from site supervisors are used to identify areas of concern within current training interventions, as well as provide context as to

what effect the range of different attitudes and perceptions have on safety-training interventions and safety practice in workplaces. The supervisors' narratives explore how attitudes and perceptions are generated and applied in practice within the construction industry.

The following section details the rationale behind the use of attitudes and perceptions toward safety training in the construction industry. This information sets the ground for the exploration and presentation of the construction site supervisors' attitudes and perceptions and their relationship with safety-training interventions.

Research Questions

The main research question, which drives the central purpose[1] of this constructed work, is as follows:

- To what extent are the attitudes and perceptions toward safety-training interventions influencing the effectiveness of such training in the construction industry?

This research question is supported by the following sub-questions:

[1] ***"…to investigate the relationship between construction site supervisors' individual attitudes and perceptions, as well as organisational values and management practices, in terms of workplace-based, safety-training interventions…"***

1. What are the foundations for these current attitudes and perceptions?
2. To what extent are these attitudes and perceptions affecting the relationship between organisational values and expectations and safety practice?

Research Significance

Theoretically, this constructed work will challenge the conceptualisation of workplace safety as a disembodied, tangible, and easily quantifiable phenomenon (Zanko & Dawson, 2012; Nichols, 1997). By providing an exploratory study that tackles the current realities for an industry that is continually demonstrating poor safety performance (AIG, 2014, Carter & Smith, 2006), this work will provide current and relevant information, which can be utilised by regulatory authorities to inform training requirements or standards, and by organisations to direct safety-training development. Whilst there is considerable quantitative literature on safety interventions and their effectiveness within the construction industry, there appears to be minimal qualitative literature that explores an individual's attitudes toward, and perceptions of, specific safety-training programs. This

constructed work aims to produce knowledge that utilises socially constructed perspectives on the nature of, as well as contests, the practice of safety training.

Construction Framework

This dissertation represents my struggle as a pragmatic, industry-focused practitioner, to conceptualise and structure a comprehensible argument by way of a large piece of academic writing. In order to facilitate this process, I found it more effective to present my academic voice through the use of a metaphor, like many before me (Kelly, 2011). Therefore, in an effort to tell the story (Richardson, 2000; Keller, 1992) of construction supervisors, I use language typically heard onsite in the construction industry. In addition, various elements of construction industry language (i.e., project work, phases, and constructed work) are used as metaphors in the formation of this PhD thesis.

As such, each chapter is presented as a construction phase, in an effort to both model and situate the research within the construction industry. To remain consistent with the metaphor of a constructed building, this dissertation is referred to as 'constructed work' for the remainder of the paper, as opposed to an enquiry, investigation, thesis,

dissertation, or research. I do this purposefully to highlight that, just as buildings can be deconstructed, decommissioned, refurbished, or renovated, this thesis argument, data, and analysis can also be deconstructed to fit contexts and situations such as research papers, industry guidelines, or codes of practice.

The second phase of construction, Clearing the Site, provides an understanding of the difficulties within the practice of OHS in both the workplace and the construction industry. During this phase, the changing definition and context of OHS between different stakeholders within a workplace situation will be reviewed, and these complexities linked to a more specific situation of safety training.

Phase three, Laying the Foundations, will highlight the issue that the sub-discipline of safety training is trailing behind other workplace learning disciplines within the construction industry, primarily due to the lack of consideration of the importance of incorporating learning theory into training programs. This phase will also highlight that, whilst there are repeated calls to explore different methods of engaging workers in safety training, training organisations and their clients

continue to be strongly influenced by economic and organisational considerations of training, thus failing to consider workers' attitudes, perceptions, and needs.

Phase four, Raising the Crane, will outline the overarching framework of the research design. The rationale for an exploratory, socially-constructed case study, which uses qualitative data collection methods, will be argued. There will be a specific emphasis on the deep ethnographic and narrative case study process that is at the core of the study's purpose and aims. My role as the practitioner and researcher, as both "emic" and "etic," will be addressed. This phase will also highlight the critical analysis of the collected narratives and the formulation of the presentation method of the site supervisors' voices. Last, in this this phase, the reader will be assured that a high level of ethics is employed while gathering what, at times, is sensitive data.

Phases five, six, and seven will present and discuss the narratives of the construction site supervisors as grouped into three major themes:

1. capability differences in trade-qualified and university-trained

supervisors,

2. relevance of safety-training interventions, and
3. organisational and industry influences on safety, as well as safety-training interventions.

Detailed discussion on the relationship between individual and organisational attitudes, perceptions, expectations, behaviours, and values will be presented through a critical lens across these three phases of construction.

Construction phase eight Applying Finishing Touches will highlight the narratives, link them to current practice, and provide recommendations for practice and further research. This final phase of construction, will review the entire work and suggest critical outcomes in terms of its contribution to theory, recommendations for practice, and future research targets. This stage provides responses to the research question and supporting sub questions, and will provide an appraisal of the issues that mediated the constructed work.

The use of short anecdotal details at the beginning of each phase will

provide the links between the construction of a building and the construction of a PhD thesis. These details, whilst simplistic in nature, are not true reflections of the stages of the construction of a commercial building. They are provided as a representation of the practice and the struggles of undertaking research, and to keep the context of the work located within the construction industry.

Phase Summary

This investigation provides qualitative data on perceptions surrounding issues pertaining to safe work practices in the construction industry, as such, it draws on first person accounts of individuals who have responsibility for overseeing the implementation of safety measures. As such it provides insight into the divergence of policy and practice as told by practitioners' experiential accounts. This introductory phase presented the significance of the study in the field of this constructed work. It explored and defined the research issues and stated the broad aims and pragmatic orientation. It concluded with an overview of the remainder of the work. The next phase introduces the construction industry as a unique industry with its own specific issues relating to workplace safety attitudes and perceptions.

Phase Two - Clearing the Site: Understanding OHS and the Construction Industry

Excavation and clearing the site for commencement of a building project is an integral part of construction. The clearing of the ground opens up the site to enable the foundations and formwork to be built. In the construction of a PhD thesis, the development of a literature review is similar to the process of clearing of the site. A literature review provides the stability and structure for the research, just as the excavation and clearing provides a solid standing on which to build.

Phase Introduction

Within this phase, the concept of OHS is introduced, initially at a general holistic level, and then within the complexity of the construction industry in Australia. Whilst OHS is often discussed as being "common sense" (Young, 2010), OHS is actually a multifaceted, multi-disciplined, multi-positioned concept that, in one of its simplest

forms, aims to bring people home from work each day safely. As this constructed work primarily focuses on attitudes and perceptions toward safety-training, there is a discussion on the difficulty of defining OHS within this realm, followed by identification of how safety interventions are managed through the use of management systems. The Phase concludes with a discussion on the competing positions within the Construction Industry to highlight the complexities of why organisations implement safety training interventions.

Safety Research

OHS is a challenging field in which to undertake research due to the complexities that exist between the legislative requirements, organisational needs, and individual's perceptions. What attracts me, though, is the opportunity to provide outcomes that have the potential to save people's lives. But, to do this effectively, an understanding of complex issues on a range of different levels is required. Part of the complexity of the field is that it is difficult to place OHS in a specific setting, or even define it. OHS is not really a discipline in its own right, such as medicine or education. As it focuses on the health and safety of all workers, OHS appears as a fragment of every discipline, and is represented by multi-disciplined practitioners that provide a "service"

to all industries. Therefore, as a service, OHS research provides knowledge that enables decision-makers to implement safety interventions.

Anecdotal evidence suggests that, when engaged in talking about safety, workers and management will say that safety is of major importance. Nobody wants to get hurt at work. Nobody goes to work on any given day and says '*I'm going to fall off the building today*'. 'Safety is Number One' or 'Zero Harm' are common catchphrases or aims. However, individual and organisational behaviours do not reflect this strongly expressed goal. Accident investigations often cite unsafe acts (individual behaviour) or unsafe conditions (organisational systematic failures) (see Reason, 1990, 1997) as the two major contributing factors of workplace incidents and accidents. However, the focus of safety research gravitates toward two main approaches: (a) the systems (focusing on management commitment, resources, and interventions), and (b) the processes (engineering solutions or dealing with risk at the source), as opposed to the individual choice and reasons behind unsafe acts.

The first approach, based on an assumption that OHS performance in the workplace is directly affected by the effectiveness of risk management activities, ensures that a majority of safety research takes a technical, rational approach, focusing on safety in design (Waddick, 2011). The increasing trend to focus on upstream interventions, such as engineering out (or eliminating) safety risks prior to the use (of equipment or resources) in the workplace is evident (see Bluff 2014; Safe Work Australia, 2012b) with this approach.

The other main research approach stems from a social norm that OHS improvement in the workplace requires significant commitment from management. This ensures that research focuses on development and implementation of safety interventions, such as management systems, training programs, and safety culture communication (Yoon Kin Tong, 2015).

These two approaches use quantitative data (and methodology), such as injury statistics or financial resource costs, to develop or present results and recommendations. However, these approaches often fail to recognise the importance of participation and involvement of low-level

supervisors or workers in the development or implementation of safety interventions.

Increasingly, there are safety research projects such as case studies and ethnographies being undertaken that focus on the missing subjective element of previous research. Using mixed methods, with open-ended surveys accounting for the majority of the qualitative methods used, safety research (particularly within Australia) is moving toward identifying and investigating the role of individual workers in safety performance (see Waddick, 2011; SafeWork Australia 2011a; Bluff, 2010). However, the major research influence for government and organisational policymakers remains that of quantitative scientific enquiry, which continues to fail to recognise the individual and personal factors of safety.

This resistance to recognise these factors of safety in both research and practice is the core driver behind this constructed work. In order to demonstrate the importance and usefulness, as well as the social and cultural aspects of safety, this constructed work identifies and presents the individual attitudes and perceptions of construction supervisors.

An understanding of what OHS is to these supervisors is provided in the following section.

What is Occupational Health and Safety?

OHS—as its name suggests—is concerned with the health and safety of people conducting their occupations. However, this is not a simple construct. OHS is a wicked problem (Wagner, 2010), which is made complex by the seemingly competing positions, divisions of responsibility and authority, and different perceptions demonstrated by the major stakeholders.

The gamut of safety language, as well as the range of differing environments that OHS occupies, further extends these complexities. Language concerns, debate on the definition of OHS, and difficulty in interpreting the legal jargon, is made more problematic by the changing risk context of workplaces where OHS is perceived and practiced by individuals in an array of different strategies.

Definition Debates

There is no clear consensus on what constitutes OHS, and its current scope seems too wide. Lowrance (1976) initially voiced the concern that the concept of safety had, up until that point, been poorly defined, widely misunderstood, and often misrepresented. The context in which the term was used or situated was a major contributing factor to the explanation. Thirty years later, Montante (2006, p. 36) supported Lowrance's concern by identifying that "a single vision of what safety is and how to manage it is not a certainty among OHS professionals or those that are served by them". In a survey undertaken by SafeWork Australia, Australian workers identified numerous meanings for the term "occupational health and safety," with six major categories and at least 15 separate subcategories of meaning identified (SafeWork Australia, 2011a).

Dictionary Definition

Some definitions used across the world are simply ambiguous, whilst others appear to be too complex. The expression "occupational health and safety" is referred to in the Oxford Dictionary as, the absence of work-related injury and illness, and is defined as "the maintenance and improvement of the health and safety of workers in their place of

work," where "health" refers to a "state of well-being in mind and body," and "safety" refers to the "freedom from danger or risk" (Australian Oxford Dictionary 2004, pp. 969, 645, 1247). However, on the surface, these simplistic definitions do not consider the practical nature of the work activities, or the complexity of how OHS is implemented in workplaces.

Workplace Definition

Within a workplace environment, OHS is generally considered to be a set of obligations, standards, or minimum criteria listed within legislation that duty holders must reach to prevent prosecution. Some stakeholders define OHS as being a goal to protect and promote the safety and health of workers by preventing and controlling occupational diseases and accidents (Dunn, 2012). Still, others discuss OHS as a right, using the World Health Organisation's Declaration on Occupational Health as a definition, as it states that there is a "fundamental right of each worker to the highest attainable standard of health" (WHO, 1994:2).

The language and definition changes again if talking to individuals in workplaces, where they are inclined to define OHS as, keeping safe at

work, not getting hurt, wearing protective equipment, following rules, and going home safely (SafeWork Australia, 2011b).

Government Definition

Australian government regulators, who have the responsibility to check compliance of safety in workplaces, use a complex definition of OHS by looking at either of the following: (a) the elements they are composed of, such as "system of laws, regulations and compliance codes which set out the responsibilities of employers and workers to ensure that safety is maintained at work" (WorkSafe Victoria, 2013, title page), or (b) the objectives they seek to achieve, such as a reduction in the number of worker fatalities due to injury of at least 20% (SafeWork Australia, 2012a, p. 4). Governmental policymakers in Australia (and writers of legislation) infer the definition of OHS through the objects of the Act, such as "secure the health, safety and welfare of employees and other persons at work" and "to eliminate, at the source, risks to the health, safety and welfare of employees and other persons at work" (VIC Act S. 4 (1) & (2) 2004, p. 3).

Safety Professional Definition

From a safety professional's perspective, OHS is not defined as an expression or an object. It is a multidisciplinary field that incorporates a variety of opportunities to engage in the practice of providing advice, conducting training, implementing interventions, auditing, or consulting. The International Labour Organisation (ILO) describes OHS as a discipline that primarily deals with the prevention of work-related injuries and diseases, as well as the promotion of workers' health (ILO, 2011). As a discipline, it involves a variety of specialised fields, such as systems specialists, occupational hygienists, auditors, or trainers, who collectively aim to promote and maintain the highest possible degree of physical, mental, and social well-being of workers across all occupations.

As no clear definition for the term OHS exists, practitioners are often faced with using the term in the manner that the client understands it. The practice and language of OHS is still understood primarily from the positivist paradigm and viewed as a technical and medical phenomenon as Quinlan et al. (2010) observed:

> The terminology used in the OHS arena frequently supports particular ideological positions regarding the causation of injury and illness, that is the prevailing definitions of occupational injury and illness are value laden and frequently based on medical or managerial constructs. (p. 114)

Worldwide Definitions

Even the term "occupational health and safety" is becoming lost in translation, as some states within Australia have adopted the harmonised term of Work Health and Safety (WHS), whilst elsewhere in the world, Occupational Safety and Health (North America and Europe), Safety at Work (some areas of Asia), or Workplace Safety (South Pacific) are used.

Issues with Different Definitions

This constructed work is situated within one large multinational construction organisation that functions across various social frameworks with different hierarchical structures, different values, and different knowledge. Differences in language and differences within definitions add to the multilayered structure of the organisations OHS discourse. BuildUp Constructions along with other organisations within the construction industry, work across Australian and international boundaries. Workers and management often travel across these jurisdictional boundaries to worksites where potential safety issues

can arise due to the lack of understanding of safety practice. Gunnarsson (2004, 2009) and Kankaanranta (2005) both identified the need to consider the interactions between all hierarchal levels and the local environment, in order to understand and improve practice. Differing perceptions of what OHS entails are partly due to the wide array of working definitions used within practice (Gunnarsson 2004)

This constructed work focuses on one component of OHS—the training within the workplace. Therefore, any definition or understanding of the term should involve a learning or knowledge acquisition characteristic. As such, I adopt Gherardi and Nicolini's (2000) definition of OHS:

> Safety is the result of a set of practices shaped by a system of symbols and meanings which orient action but which consist of something more. Safety can therefore be viewed as a situated practice, an emerging property of a socio-technical system, the final result of a collective process of construction, a "doing" which involves people, technologies, textual relations." (P. 333)

This definition of OHS is not offered as a means of contributing to the ongoing debate concerning the meaning of OHS, but as an understanding of how implementing safety (including training) should be seen as more than just an activity to be imposed on frontline

managers and workers. OHS should not be viewed as separate to workplace practices; it should be viewed as an integrated part of practice. The difficulty in coming to a shared and agreed upon definition is often highlighted in training interventions where questions about positions and language are encountered regularly (Waddick, 2011).

The Importance of OHS

If safety is a result (Gherardi & Nicolini, 2000), then we (as a society) could be failing the test. Concerns of OHS are one of the biggest workplace challenges facing governments, regulators, organisations, and workers, worldwide (Masi & Cagno, 2015). The ILO estimates that more than two million people die from work-related diseases and accidents annually. This equates to an average of more than 6,300 work-related deaths each day. This statistic is often combined with work-related injury and illness numbers to emphasise how serious is the problem of OHS. Estimates of annual workplace injuries and illnesses are more difficult to obtain than fatality numbers, but the ILO has, in the past, conservatively estimated that workers experience 270 million workplace accidents and 160 million new cases of occupational diseases each year (ILO, 2003).

The one difficulty with these numbers is that they are reported as estimates, as there is no real system to record actual data on a worldwide basis. This reporting issue is exacerbated in Australia where reporting systems across the jurisdictional borders differ, thus affecting the total number of injuries and incidents identified. SafeWork Australia is the governmental body responsible for reporting the annual workplace injury statistics; and, this is usually measured using data collected from accepted workers' compensation cases (Dunn, 2012). Official statistics take time to be collected and are generally years behind. For example, at the time of this writing, the most recent official Australian statistics available were dated 2014, and these reported 188 fatalities (SafeWork Australia 2015b) and 106 565 serious injuries (SafeWork Australia, 2015c).

SafeWork Australia reported 205 as the preliminary number of work-related fatalities for the year 2015 (SafeWork Australia, 2016). The official record of fatalities for 2014 will not be released or published by SafeWork Australia until the 2015 Compendium of Workplace Statistics is released (generally around September each year). However, due to jurisdictional differences in reporting requirements and categorisation

of injuries through the workers' compensation scheme, these numbers could be incorrect.

Inherent problems with using accepted compensation cases as the official measurement of workplace safety statistics could be classified under four separate headings: (a) workplace diseases not reported correctly to health or workplace officials due to the long latency period of many diseases (Dunn, 2012), (b) workplace injuries and diseases not reported through official channels by sole-traders and independent contractors as there is no requirement to do so (Dunn & Chennell, 2012), (c) workplace injuries and fatalities incorrectly recorded under other statistics (such as road accidents and public health issues), and (d) workplace injuries unreported by workers due to perceived consequences (Probst & Estrada, 2010). These issues provide limitations for the use of workers' compensation data as a sole means of identifying the extent of injuries and fatalities within Australian workplaces.

The economic cost of OHS

The number of workplace injuries and fatalities also continues to be high on government agendas due to the economic cost. The total

economic cost in Australia for the 2008–2009 financial year was estimated to be $60.6 billion, representing 4.8% of gross domestic product for the same period (SafeWork Australia, 2012b). Again, here is evidence of the lag time in releasing statistical data, as this most recent estimate of cost was based on the 2008-2009 financial year data. Whilst recorded injury statistics have reflected a reduction over time, the economic cost has been increasing, with $57.5 billion reported for the financial year 2005-2006, which was an increase of 0.9% from the previous report published in 2000-2001 (ASCC, 2009). This increase in costs is mostly borne by the community (through increased use of health facilities), with the economic burden reported as 3% of total costs covered by employers, 49% by workers, and 47% by the community (ASCC, 2009).

Linking the cost of workplace injury and disease back to Gherardi and Nicolini's (2000) definition of OHS (as being a result of a set of practices), these practices within Australia seem to be in need of an overhaul. The issues related to the reported, versus actual number and cost of, workplace injuries, diseases, and fatalities are important to consider. The design, development, and implementation of measures and initiatives by governments (i.e., strict regulations and enforcement

of penalties) and organisations (i.e., management systems, training, policy and procedures) are firmly situated within a positivist paradigm that uses these statistics as evidence to make decisions regarding the management of OHS issues within workplaces (Waddick, 2011).

Providing and Managing OHS in Workplaces

The statistics, and the dialogue on their importance, have caused an increase in the adoption of ideas and tools from general business administration and related disciplines that focus on traditional systems and technological advances (Nunez & Villanueva, 2010). Through the evolution of safety legislation and the increased use of management systems to monitor safety performance, organisations have implemented systematic processes to manage safety performance. These processes—intrinsically connected to a technical-rational approach—link safety directly back to the statistics when something goes wrong such as an incident or injury in the workplace (Waddick, 2011). However, the technical-rational approach endeavours to condense the complex field of workplace safety practices into clear, precise procedures that can be measured and managed effectively.

From a legislative perspective, traditionally OHS has been viewed as a state responsibility; however, during the past two decades, various attempts to harmonise or standardise have been attempted. The Australian Productivity Commission (2004) recommended "a single uniform national OHS regime, which is focused on preventing workplace injury and illness, should be the medium-term reform objective for OHS" (p. 96). This recommendation was implemented during 2011-2013, as seven of the nine jurisdictions within Australia harmonised their legislation by enacting a local version of the Model Work Health and Safety (WHS) Act.

However recent changes to the national OHS and WHS legislation frameworks were not prompted by the number of injuries or illnesses within workplaces, but by (a) the inconsistencies for duty holders, (b) the changing nature of work, and, (c) the need to implement best practice (Dunn & Chennell, 2012). Whilst the overall aim of the new legislation was to prevent injury and illness, the day-to-day implementation and management of OHS in the workplace focuses on the elimination of risk at the source through the means of engineering and the demonstration of compliance through systems implementation. Waddick (2011) stated, "the technical-rational approach to managing

OHS assumes that a business owner or manager could access legislation and then implement policies and procedures to ensure a safe and healthy workplace" (p. 21). This concept of compliance through systems implementation has evolved through different ages of safety (Hale & Hovden, 1998).

Hale and Hovden (1998) argued that OHS evolved from an age of reliance on technology, to an age of reliance on human factors, to an age of reliance on systems. Their description of the ages of safety has been extended more recently to include a fourth age—one of integration (Glendon et al., 2006). This integration age identifies a change from a systematic evolution to a more scaffolding approach, in which each age uses the last, and then builds upon it. The integration age scaffolds the use of systems with human interaction and behaviour. However, whilst some organisations may identify and use evidence relating to human factors to improve safety (see Cohen & Colligan, 1998, for a range of case studies), the reliance on systems, rules, policy, and procedure remains the major focus of safety prevention for most organisations. This is evident when looking at the management of safety within construction organisations, as the necessity for safety management systems is a legal requirement in many cases.

The aims of safety management systems include providing documentation for compliance and eliminating any surprises in unforeseen risk (by correct implementation and 100% operating efficiency) (Dunn and Chennell, 2012). Management of safety is practiced through frontline staff being able to act immediately to whatever risk issue or problem arises. Organisations using safety management systems can be confident that their workers and managers are acting correctly as the components of the management system provide proper procedures. These procedures are designed to ensure that the response is appropriate to the situation, meeting required standards.

The difficulty, however, is that no safety management system can operate at 100% efficiency, as it is impossible to foresee (and, therefore, develop responses for) all risks. This being the case, when unforeseen risks occur in the workplace, workers and managers can be caught unaware. When this happens and an incident does occur (regardless of if an injury resulted), two typical responses have been identified within the literature (see Human Engineering, 2005; Mullen, 2004). One common response is to ignore the incident, by either

downplaying (or hiding) it or just not reporting the circumstances. The second common response is that the incident is reported to the appropriate persons, and the circumstances are incorporated in the next update of the management system (Probst & Estrada, 2010). This second, and more common, approach often fails to answer questions regarding the circumstances that caused the incident, as new procedures are created to guide the workers and management through the next occurrence without regard to individual components of incident causation. Thus, unforeseen risks (often caused by a multitude of causation factors) are treated as exceptions rather than the norm. Workers' and managers' perceptions and attitudes become averse to the nature of risks; and, a major consequence is that they no longer pay attention to any risk. The systems of control are increased and procedures improved rather than questioned, as if the complexities of the safety risks can be accounted for by increasing the size of the safety management system (Mullen, 2004). Workers and, in particular, managers become complacent (Waddick, 2011) toward changes to safety practice and any implementation of safety interventions.

This constructed work, whilst focusing on safety training, begins from a position that argues against a total reliance on systems management.

The focus on injury statistics, costs, technological and engineering control options, management systems and their associated policy and procedures, to make decisions regarding workplace safety is contributing negatively to the implementation of effective safety-training interventions. Systems management includes a component of safety training, and implementation of this training is often mandated by organisations, thereby forcing workers and management into training that may not be required or useful in improving safety performance. The training becomes a tick in the box activity; and, the opportunity for effective and engaging learning is lost, as no training transfer can occur (See Phase Three for a more detailed discussion on safety training and the opportunity for learning, and training transfer.)

However, whilst the focus of safety performance relies on systems management, the attitudes and perceptions of workers and frontline managers are left unnoticed. The general premise of a safety management system (SMS) is that workers and managers will undertake and implement the system-mandated activities. However, these activities (including safety training) are often brought into question by researchers. Yet the questions and statements seem to go unnoticed in actual practice. As early as 2001, safety professionals and

researchers were questioning the effectiveness of safety management systems (Gallagher et al., 2001). The National Occupational Health and Safety Commission (NOHSC) issued the report, which identified that safety management systems would fail if the right circumstances existed:

> The likelihood is that SMS can deliver better OHS outcomes, although the volume and quality of direct research on this issue remains limited. The research and consultants strongly encourage, including the kind of system used, senior management commitment, integration into general management systems, and effective employee participation. OHSMS can succeed, but in the wrong circumstances, they will also fail. (Gallagher et al., 2001, p. vii)

Dekker (2003) identified that there is a "mismatch" (p. 234) between system management (through rules and procedures) and actual practice; and, there is "always tension between centralised guidance and local practice" (p. 237). Bruns (2009) questioned if following routines (rules and procedures) "actually leads to stability or change" (p. 1400). Woods et al. (1994) and Snook (2000), using different case studies and industries, discussed that not abiding by, or following, systematic procedures and rules does not necessarily lead to accidents or incidents in the workplace. Dekker (2003) provided further strength

to this argument by introducing other internal organisation factors such as production, time issues, power relations, and sociocultural issues such as attitudes, perceptions, and competing positions within a workplace that can impede workers from following rules at all times. These factors that Dekker (2003) identifies have cause to impact on the safety training interventions as arranged training will often focus on the rules that need to be followed.

Competing Positions in Safety

It is in the investigation of sociocultural issues that this constructed work resides, and where the identification of competing positions becomes an issue. The different perceptions of OHS taken by the stakeholders within a workplace, often compete. The competing positions between compliance and individual practice are major contributing factors to ineffective training programs.

Safety in the workplace (and especially on a construction site) is multidisciplinary, involving a variety of stakeholders including unskilled workers; a variety of tradespersons, including plumbers, carpenters, and electricians; engineers; safety specialists; project managers; site supervisors; construction graduates; health and safety

representatives (HSRs); union officials; senior management; and government regulators. Whilst general respect for each professional or individual is given, the "positions" of each are commonly taken for granted and are recognised by a range of different opinions, attitudes, and motivations. The range of different motivations and opinions causes competition for safety control (both individually and organisationally) and places constraints on what can and cannot be said or done (Cheek, 2000; Allender, Colquhoun, & Kelly, 2006).

With the increasing popularity of workplace training programs as safety interventions, and the reliance on management systems to provide the need or justification for these types of interventions, OHS consultants and private providers of safety-training services look toward the dominant positions to develop and deliver training programs. Training providers often promote programs to organisations based on compliance and commercial requirements, yet scant regard is paid to the end-users of the training programs—the frontline supervisors and workers. This position, taken by training providers, adds further complications to the delivery of effective safety-training interventions.

A number of competing discourses, or positions, on OHS have previously been identified and discussed through the literature in the vein of organisational responses to OHS, although none of these discussions have centred specifically on the implementation of safety interventions, such as safety training. This constructed work expands on the current literature by extending the discussion to focus on the implementation of safety interventions.

Stakeholder Safety Positions

Whilst there are a number of stakeholders who practice safety in the workplace, only two dominant positions, legislative compliance and financial motivation, and a third (albeit weaker) position of personal safety have been identified as being the major influences for implementation of safety interventions (SafeWork Australia, 2011b; Bluff, 2010; Parker, 2002; Haines, 1997; Hopkins, 1995). These influences, held by a range of people within the workplace, often provide decision-makers with the rationale for implementing safety interventions or, conversely, provide the justification for limiting OHS implementation (Bluff, 2010).

Legislative Compliance Motivation

All Australian industries, including the construction industry, face a range of safety-related legislative requirements, from a general or primary "duty of care" obligation under both statute and common law, to more technical specifications and standards that regulate everyday work practices. The cornerstone of these obligations is the assumption that improved compliance results in lower injury rates (Purse, Dawson, & Dorrian, 2010). OHS' compliance intervention has traditionally been seen as the role of the regulator, and intervention strategies have drawn heavily upon the enforcement of legislation. The safety regulator in each state or territory, armed with objectives to reduce statistics, enforces these obligations and regulations through a regime of reports, inspections, and prosecutions, which have become known as the enforcement pyramid (SafeWork Australia, 2014a). Failure to comply with legal obligations can result in a range of consequences, from improvement notices, prosecutions, fines, and, in some cases, imprisonment.

Figure 1: The enforcement pyramid

This enforcement pyramid, shown in Figure 1, is frequently spoken or thought of in terms of "responsive regulation" because the regulator will generally take into account any past conduct or behaviour of the organisation or individual when considering the level of regulatory response for any breach of the legislation (Ayres & Braithwaite, 1992). The pyramid provides regulators of all jurisdictions with a scaffolded approach for the application of enforcement, allowing them to graduate through levels of the pyramid if lower levels failed to provide the necessary compliance with the legislation. This form of scaffolded enforcement also provides organisations (possessing knowledge of this framework) with an incentive to comply with legislation and

regulators' advice and encouragement, as the risk of higher-level sanctions should motivate ongoing compliance.

Historically, the enforcement strategies of Australian and international regulators have been criticised (see Johnstone, 2008; Matthews, 1993; Prior, 1985). This criticism has been partly due to the lack of deterrence motivation for organisations when in noncompliance of OHS legislation. A lack of inspectors to enforce compliance and insignificant fine amounts has often contributed to wide-ranging noncompliance of OHS legislation (Purse, Dawson, & Dorrian, 2010). However, changes to legislation, as well as increasing pressure from stakeholders, have led to significant changes in the way that organisations manage OHS in their workplaces.

Until the mid-1980s, maximum fines for OHS offences rarely exceeded $1,000 and, in many cases, were much lower. As an example, Braithwaite and Grabosky (1985) identified that within the construction industry during the early 1980s, the average fine in New South Wales (NSW) was $182; and, in South Australia (SA), the average fine was $201. The low fines were all the more contentious given that

prosecutions were customarily confined to breaches of legislation that resulted in a serious injury or death, thereby ignoring a significant number of incidents and potential breaches of legislation (Purse, Dawson, & Dorrian, 2010).

During the 1980s, reform-minded Labour governments largely supported a strong push from trade unions to reduce injury statistics and improve safety performance. This push culminated in significant changes to OHS legislation across each of the Australian states and territories. These changes included considerably higher maximum penalties for OHS offences. In SA, for example, the maximum fine for organisations increased from $500 to $50,000 (SafeWork SA, 2016), and in VIC, the maximum fine increased from $2,000 to $40,000 (WorkSafe VIC, 2013). Although different across each jurisdiction, there continued to be an upward trend in the dollar amounts of fines over the next two decades. By 2008, the range of maximum fines available to courts in Australia was between $100,000 and $1,020,780 (Stewart-Crompton et al., 2008: 104).

Along with the increased penalties, changes to each jurisdiction's legislation also provided the regulators with new enforcement instruments in the form of on the spot improvement and prohibition notices. The improvement notice provided inspectors with powers to require organisations, and other duty holders, to implement corrective measures to address any alleged legislative breaches within a specified timeframe. The prohibition notice provided a legislative process for ceasing work that involved an immediate risk to health and safety. Additionally, in all jurisdictions, noncompliance with notices constituted an offence; therefore, failure to comply resulted in prosecution of the initial breach, along with the breach of not complying with the notice, thus increasing the potential fine amount for the organisation that did not comply.

With further changes to the OHS legislation across Australia during the 2011-2013 harmonisation processes (Johnstone, 2008), enforcement policies of regulators have now become more standardised, and enforcement practices, such as inspections, issuance of notices, and successful prosecutions, are currently increasing. Research has shown that effective enforcement increases compliance of legislation requirements with a positive correlation between inspector visits and

organisational compliance being continually demonstrated in longitudinal studies (Purse, Dawson, & Dorrian, 2010; Bluff, 2010; Weil, 1996).

The recent harmonisation process adds further motivation for Australian organisations to comply with the legislation, as significant changes to enforcement were made. The changes included increase of safety breach fines to a maximum of $3 million for organisations; an obligation of due diligence on all senior managers, coupled with individual fines of $500,000 for noncompliance; and, increased resources to most regulators, resulting in the ability to conduct more inspections and cross jurisdictional-boundaries cooperation of regulators. Previous research has shown that organisations comply with legislation and regulations as they change, due to the potential of the direct impact of noncompliance (Bluff, 2010; Gunningham, Thorton, & Kagan, 2005).

Deterrence is the fundamental feature of OHS legislation. The level of potential consequences for noncompliance of legal obligations becomes the main driver for the implementation of safety interventions (Purse, Dawson, & Dorrian, 2010). In addressing regulators' safety concerns,

organisations often must expend a great deal of resources to implement safety interventions, such as, purchasing new equipment, training staff, and implementing new systems. Therefore, in most cases, it is easier and more cost efficient for a large organisation to start operations from a legally compliant position. In fact, in some organisations (see Gunningham, Thorton, & Kagan, 2005), the legislative compliance motivation has become so embedded in its (or the industry's) culture, that it exercises unconscious influence on the decision-makers, and becoming not regulation, but "just the way we do it." Organisations have allowed legal requirements and compliance to them to become the major doxa (Bourdieu, 1984) of safety. The repercussion of this is that no-one will question the use of legal requirement as the sole reason for safety activities. Thus, safety activities such as training are inherently designed to comply with the legal requirements as opposed to meeting needs of individuals.

Increased compliance, however, does not guarantee corresponding reductions in injury statistics. Compliance becomes the objective; and in many cases, this does not necessarily provide sufficient conditions for improvement in workplace safety performance. The motivation of

organisations to implement safety interventions just to comply with the legislation, otherwise leading to adverse consequences, is an important consideration. However, it fails to take into account the magnitude of risk placed on the workers and frontline managers.

The legislative compliance motivations are not autonomous from other motivations. A range of economic motivations, driven by profitability and concerns of unsubstantiated costs of effective safety interventions, often augments the adverse outcomes of noncompliance.

Economic Motivations

Economic motivations have the ability to both support and impede the implementation of safety interventions. The range of supporting commercial motivations is vast and includes business risk minimisation, business opportunity, plant and product quality, competitive advantage, customers and distributors, and reputation (Bluff, 2010). However, these seemingly long-term advantages are often outweighed by the impeding motivations of cost, productivity, and functionality (Gunningham, Thorton, & Kagan, 2004; Bluff, 2010).

In today's profit-driven market, the prioritisation of production over safety is well-documented, with management decisions often focused on short-term profitability and survival rather than long-term savings (see Hopkins, 1995; Quinlan & Mayham, 2000; Whysall et al., 2006; Masi & Cagno, in press). This focus on profit over safety has been able to increase due to the increase of neo-liberalism policies adopted by governments and major multinational organisations. Neo-liberalism consists of a set of core assumptions, including a belief that economic success depends on allowing individuals to pursue their own interests and that the operation of a competitive free market will lead to superior economic outcomes (Avis, Fisher & Thompson, 2015).

The move towards a neo-liberal approach can be seen in the change in WHS legislation in Commonwealth countries leading from Lord Roben's Report on Health and Safety at work (Roben, 1972). The report identified that a larger focus on self-regulation of safety compliance would encourage consultation and participation in the workforce. As a result, through the 1980's in Australia WHS legislation was changed, Regulators reduced numbers of compliance officers, organisations cut expenditure and budgets of the safety departments (Quinlan & Mayham, 2000).

This neoliberal approach, where health and safety interventions are implemented according to management perspectives on what is reasonable (given current cost constraints), provides organisations ample opportunity to somewhat neglect safety in order to meet demands (Reason, 1995). The major consequence of this approach is that, when shortcuts are taken and result in no negative safety outcomes, then the decision-makers are more likely to allow shortcuts to become part of routine work practices, thus promoting a culture of production over safety.

Over time, this gradual reduction in safety, through the normalisation of allowing shortcuts, leaves organisations exposed to unseen OHS risks and a decision-making process that bases safety decisions on economic costs, and not on worker interests (Lamm & Walters, 2004). Coupled with increasing pressure from ever-increasing competitive tenders, organisations within the construction industry (along with many others) are continually forced to pit resources for OHS against profits (Sorensen & Barbeau, 2004). Therefore, OHS interventions that are unable to demonstrate immediate cost-cutting or cost-saving benefits are not even presented for management decisions.

Another major influence on the economic motivations for the implementation of safety interventions comes from the inconsistency of inspection and enforcement from safety regulators across Australia. Within the construction industry, this is a particular motivation for the small to medium subcontractor organisations, as the regulators are often more concerned with larger organisations and major projects. Haines (1997) demonstrated that smaller construction organisations were more likely to be driven by profit; thus, by taking a calculated risk on the probability of not being caught, the company would make decisions to reduce or eliminate safety interventions that were legally required, but costly to implement. However, this tendency of smaller organisations to be noncompliant, often becomes a problem within larger construction projects when sizeable numbers of smaller firms are subcontracted to complete tasks (Lamm & Walters, 2004). The routine work practice of the smaller firms is to be noncompliant (Lamm, 2002); but, the economic and legal risks are firmly placed on the principal builder or contractor. This often results in the principal contractor expending resources to ensure compliance of subcontractors, thus reducing the financial resources for any further safety interventions.

Lamm and Walters (2004) (researchers of small to medium businesses) have demonstrated that industries, other than construction, also cite the inconsistency of regulator enforcement as an economic motivator. Bluff (2010) proposed that organisations within the manufacturing industry identified commercial motivations that often prompted the lack of implemented safety interventions, as they perceived a "less-than-level playing field" (p. 301).

However, large organisations in a wide range of industries also cite regulator inconsistency as a major economic motivator for non-implementation of safety interventions. Masden (2013) identified this motivator in the aviation industry around the world, citing a 2008 example in which airline decision-makers strategically limited aircraft safety maintenance due to limited FAA inspections. This decision to limit necessary and legally required interventions changed quickly when a multimillion-dollar fine was imposed on one specific carrier (Masden, 2013).

The inconsistencies in regulators' enforcement, coupled with the perceived need of less safety interventions due to the increasing use of

shortcuts, are major economic motivations for most organisations. However, these motivations are also intrinsically linked to the cost of implementing safety interventions. Implementing changes to a workplace or a system based on a safety need takes time and resources. This extra cost, combined with the other economic motivations mentioned, becomes a major contributing factor to any intervention being implemented.

The relationship between profitability and safety is an ever-present concern across all industries, as shown in a recent survey conducted by the Australian Institute of Management (AIM, 2010). Across all sizes of organisations, the survey reflected that an average of 30% of management and workers agreed that efforts to implement safety interventions had an impact on productivity. Safety intervention decisions, made by managers whose major concern is the search for profitability, have the potential to critically impact worker safety (Masden, 2013). The costs of implementing interventions are important; and the justification of, or the cost saving (through decreased statistics or increased productivity), is not always immediately apparent. The costs of interventions do not instantly evolve into action, and, as such,

this potential “inaction” of the safety intervention provides fuel to the decision-makers economic, rationalist fire (Hopkins, 1995).

The provision of evidence as to the economic benefit of implementation of specific safety interventions is a difficult proposition. It is difficult for a safety-training organisation to place a dollar amount on the value awareness training. It is almost impossible for an engineer to show the financial worth of a new improved machine that has an advance guarding system. These types of values (along with a multitude of others) remain unknown in the wider scheme of the safety industry. Yet, regulators, unions, and safety professionals have long used the cost effectiveness of safety interventions as a tool to encourage and market products and systems; however, little evidence is available to give credence to these claims (Hopkins, 1995).

Bluff, (2010) stated that the mixture of economic motivations is precariously balanced, with an overriding concern for cost and productivity often outweighing any need for safety interventions. However, the financial motivations do not operate outside of, or separate from, other motivations, such as the legal motivations. The combination of both economic and legal motivations will often

influence decisions on the implementation of safety interventions (Bluff, 2010). However, increasingly identified in the literature (see SafeWork Australia, 2011a, b, c) is the demonstration of how influential individual and personal safety motivations are becoming.

Personal Safety Motivations

Personal safety motivations, articulated in current literature as values and attitudes (see SafeWork Australia, 2011b; Bluff, 2010), can have a significant influence on the safety decisions in the workplace. However, similar to economic motivations, these influences can be both positive and negative. Some of these personal motivations, such as the "moral obligation to protect," have a positive influence on the decisions to implement safety interventions. Conversely, personal motivations, such as the "unsafe worker attitude," have the potential to push safety decisions toward specific types of interventions that may not be appropriate for the situation.

The moral obligation to protect people from harm has evolved from societal expectations (NEBOSH, 2014); and, this expectation of protection of the health and safety of workers has increased over time.

The obligation (based on the good neighbour principle[2]) of all people is to behave reasonably to one another and to take care of each other in all situations. The principle also extends to those within the workplace, thereby placing an obligation on people within workplaces to take reasonable care of each other. Although individuals often express an ambivalent attitude toward health and safety, if a serious injury or disease is caused by work, the overall response from society is not ambivalent, but one of condemnation (NEBOSH, 2014). It is this potential condemnation that often drives individuals, to implement positive safety interventions (Bluff, 2010).

Although the moral case for implementing safety interventions should be enough for most organisations and individuals, workplace practice has shown that not everybody has sufficient moral motivations, but that other attitudes become stronger influences in many situations (see NEBOSH, 2014; Bluff, 2010; Wagner, 2010; Montane, 2006). Generally, the moral obligation does not influence the decision-making process alone, as the influences from both legal and economic considerations

[2] The Good Neighbour Principle is well-recognised within the OHS field, as it is the basis for common law negligence cases. "You must take reasonable care to avoid acts or omissions which you can reasonably foresee would be likely to injure your neighbor." For further information, refer to Dunn & Chennell, 2012.

will provide further justification for action or inaction (SafeWork Australia, 2011a; Bluff, 2010).

Whilst the moral obligation motivation often supports the implementation of positive safety interventions, the unsafe worker attitude generates support for non-implementation of interventions due to the "damned if you do and damned if you don't" (Bluff, 2010:306) attitude that prevails across a range of industries within Australia (SafeWork Australia, 2011a). The dominance of this attitude has been demonstrated in a number of studies within Australia (see Bluff, 2010; Wagner, 2010; Montane, 2006; ANOP Research Services, 1995), and in general, relates to unsafe acts of workers being responsible for the majority of all workplace incidents.

"Unsafe acts" are part of the wider domino theory developed in 1931 by Herbert Heinrich in which he focused on the sequential process of workplace incidents. Entrenched within this theory is the attitude that unsafe acts are the primary cause of workplace accidents. Heinrich's seminal study of accident reports found that unsafe acts accounted for 88% of accidents, unsafe conditions accounted for 10%, and the remaining 2% were noted as being unpreventable and without

apparent cause (Heinrick, 1931). From his research, Heinrich was able to postulate that organisations should focus safety interventions on preventive efforts to reduce the episodes of unsafe acts.

The theory, whilst widely criticised for simplifying human behaviour (see Hosseinian & Torghabeh, 2012; Culvenor, 1997), has become the basis for many other incident causation processes, and continues to show dominance in the education of OHS professionals (see SIA, 2012) and in workplaces. Safety surveys conducted across a wide range of Australian industries have demonstrated that the conviction about the role of unsafe behaviour remains entrenched in both decision-makers and workers (see SafeWork Australia, 2011b; Bluff, 2010; DeJoy, 1990; Haines, 1997; ANOP, 1995; Biggins et al., 1988). These surveys indicate that a majority of workers, managers, and safety professionals, as well as people in the wider community, hold a strong attitude that blames individuals for workplace incidents.

It is also evident through the results of the surveys, as well as in the general discourse around safety in Australia, that Heinrich's domino theory of accident causation has led to a vast majority of workers and decision-makers developing an attitude that leads them to believe that

safety can be improved by ensuring that workers follow rules and systems that are designed to keep them safe.

The overall result for organisational decision-makers holding this common attitude is that the theory does not prompt decision-makers to look at "why" individuals acted in an unsafe manner. Accordingly, the focus or blame for an incident (or potential incident) is placed on the worker, and not on other possible influential factors (Bluff, 2010; Biggins et al., 1988). This mindset contributes directly toward workers' and managers' overall attitudes toward safety training, changing practices, or extra tasks, which are often part of safety intervention implementation (Nielsen, 2014). Workers and managers often perceive the training, changes, or extra tasks to be unnecessary due to their own personal safety motivations, which may differ from the organisational motivations. When looking at safety improvements, decision-makers with a strong unsafe worker attitude will focus on interventions that emphasise individual roles and behaviour, and not the complexity of other situational factors. This allows key decision-makers to distance themselves from responsibility when an incident occurs. This "defence mechanism" (Bluff, 2010:307) provides the justification for not

implementing interventions that are perceived to be unnecessary, or for not changing interventions that are perceived to be ineffective.

Managers' and workers' individual attitudes toward safety are often cited as another negative attitude that can influence decision-makers as to whether to take action within workplaces. Attitudes, such as "it is just common sense" (Young, 2010), "this is the way we have always done it" (Törner & Pousette, 2009), or "safety has gone too far" (Bluff, 2010), are common across all workplaces. The general result of such attitudes is that the tasks being undertaken are inherently dangerous; therefore, risk and incidents are expected. Decision-makers that are swayed by this type of motivation, hold the belief that it is impossible to reduce the risk (SafeWork Australia, 2011c; Bluff, 2010). Therefore, safety interventions are not necessary and consume too much time and money.

A large part of an organisation's management of safety is in the implementation of appropriate interventions. In order for the interventions to be successful, they must have the necessary willingness, motivation, and support from decision-makers, managers, and workers (SafeWork Australia, 2011b). If decision-makers are

influenced by, or hold specific negative attitudes toward (as discussed) particular safety interventions, then any intervention implemented may not address all safety concerns and incidents will still occur, thus placing more pressure on any further interventions to succeed.

However, decision-makers do not usually use their personal motivations as the only justification for implementing specific safety interventions. This discussion on the legal, economic, and personal motivations has demonstrated the vast range and diversity of organisational motivations toward health and safety action. Most studies have concluded that, whilst motivations differ with the context of organisational practices and operating environment the motivations coexist and, in most cases, interact with each other causing stronger influences (SafeWork Australia, 2011b).

In support of Hale's (2003) call that emotion should be the primary motivator in health and safety decisions, this constructed work begins from a position that the primary motivation for safety intervention should be the personal regard for the severity and probability of the risk that workers encounter. This is in spite of the empirical studies, which argue that the major motivations for health and safety actions are more

likely to be legal, economic, and personal motivations, rather than due to potential moral outrage (Nielsen, 2014, Young, 2010).

Wrap Up on OHS

Despite safety-training interventions becoming more commonplace and OHS playing a more central role in our workplaces and lives, the manner in which these training programs are constructed and delivered has not been critically examined. From the research, it is evident that further work needs to be undertaken to identify the best mix of safety influences, as well as the most effective types of safety interventions for those influences. This constructed work aims to advance the argument on the latter by investigating the attitudes and perceptions behind one significantly used safety intervention—training. By examining construction supervisors' attitudes toward training, and linking those attitudes back to safety practices, this work will be able to advance the discourse surrounding safety-training effectiveness. The following discussion merges the positions of OHS into the complex world of the construction industry.

The Australian Construction Industry

The nature of the Australian construction industry is one of complexity, primarily due to the fragmentation of the industry's structure. Operating across the private and public sectors, the industry engages in five broad areas of activity: domestic housing, civil engineering, commercial buildings, roads, and infrastructure. Each sector is comprised of both operational (building) and support service organisations that generally operates within different tiers (one, two, or three) that are commonly related to the size and capability of each organisation. The fragmentation is caused by involvement both from the public and private sectors, the use of a variety of financing or funding sources, the deployment of numerous procurement methods, the globalisation of the industry, and the involvement of a number of different actors and components within the individual organisations. The size, resources, money, and experience of an organisation determine the type of projects it is able to manage, and thus, to which "tier" group it relates. The range of organisations includes building contractors at all tiers of construction, trade and labouring contractors, unions, skilled workers, and unskilled workers; however, without the contributions of these components, the industry would fail (Fang & Wu, 2013).

Tier One Organisations

This constructed work is situated within a tier one organisation. Tier one organisations are generally tendering and winning submissions for large government and private jobs with build values of over $10 million dollars. However, whilst the tier one builders win large contracts, they do not physically build the structures. Other actors, such as trade and service organisations (commonly referred to as subcontractors), ensure that the labour-intensive task of actual building is undertaken.

The tier one builder, commonly referred to as the principal contractor, oversees the building construction and assumes responsibility for delivery of the project to the client, both on time and on budget. The oversight of the project includes supervision of the workers, decision-making for the implementation of the design, engineering changes as required, interaction with government departments for permits and licenses, and, most importantly, acceptance of a significant proportion of the financial risk associated with the sourcing of subcontractors and the provision and use of building materials.

Whilst the majority of participating companies across the entire industry are Australian-owned, the majority of tier one organisations are foreign-owned, or have foreign parent companies to which they report. The globalisation of the major players in the industry adds to the complexity of issues already identified, providing another level of interactions and another position within the hierarchy that need to be identified and addressed.

The Importance of the Industry

The Australian Industries Group's (AIG) recent construction industry outlook reported that, within Australia, the industry is comprised of approximately 320,000 organisations, with a majority (approximately 60%) being sole-traders (AIG, 2014). The industry employs more than a million people across a range of different occupations, making it the fourth largest employment industry. This industry contributes an estimated 7% of gross domestic product, thereby playing a major role in the determination of economic growth (ABS, 2014).

Internationally and within Australia, economic factors, such as population growth, consumer confidence, interest-rate fluctuations, and inflation contribute significantly to the supply and demand for

construction activities. However, government policy and changes within linked industries (i.e., mining, manufacturing, and agriculture) also contribute to demand. As seen during the recent global financial crisis, economic factors are often the driver behind changes to governmental policy (AIG, 2014). Due to changes in infrastructure policy, the industry continues to show increasing growth. And, whilst a slowdown is expected over the next few years, the industry continues to outperform other sectors, including mining, agriculture, and manufacturing (AIG, 2014; KordaMentha, 2012). The continued strong growth of the industry has provided opportunity for construction organisations, especially tier one builders, to expand internationally.

Globalisation of the Industry

Globalisation, whilst being widely cited as important, is a concept that, like OHS, appears to have different contexts for different situations. It is generally defined as being a system of connectivity that allows countries, corporations, and people to be involved in trade or exchange of goods, services, and ideas (Friedman, 2000). Globalisation refers to the growing collaboration in world trade, national and foreign investments, capital markets, and ascribed roles of government in the national economies. Globalisation seeks to view all countries as one

economic unit, possibly without governments or borders (Marcuse & van Kempen, 2000). From an economic perspective, globalisation is the term given to the extension of an internationalisation of economic activity that has been transpiring since the beginning of time (Arain, ND). The word and the concept has been validated more recently, due to a significant increase in the movement of capital, as well as international integration of production and control enabled by innovations in communication, transportation, and technology (Arain, ND; Rosewarne et al., 2006; Najjir et al., 2012).

Along with great change to an industry, comes a plethora of research that either supports or argues against such reordering. The changes to the construction industry due to globalisation are no different, with a significant proportion of research providing support through economic rationalisation (see Amair, ND; Rosewarne et al., 2006; Weddikkara & Devapriya, 2001; Raftery et al., 2000). However, whilst globalisation of the construction industry is generally viewed (and researched) from an economic perspective, scant attention is given to the social impacts and considerations that may be occurring due to the widening interactions that globalisation allows.

The construction industry has, over the past decade, become more open, deregulated, and competitive because of the strong growth demonstrated within Australia and changes in the international economic system. During this time, organisational transformations have altered the industry in order to accentuate the motivation of globalisation. Major construction companies, to extend their reach globally, have transformed into transnational conglomerates (Rosewarne et al., 2006; Najjar et al., 2001). Along with the rise of transnational construction organisations, the effects of this globalisation on the industry can also be seen in the rise of international contracting, increased corporate standardisation activity, and increased technology uptake, all of which add to the complexity of the industry as a whole. As discussed in phase two, the transformation of the industry within Australia has led to the majority of tier one builders being either partly- or fully-owned by international organisations, thus adding another level of authority and reporting to the hierarchal structure of the industry, as shown in Figure 2 (below).

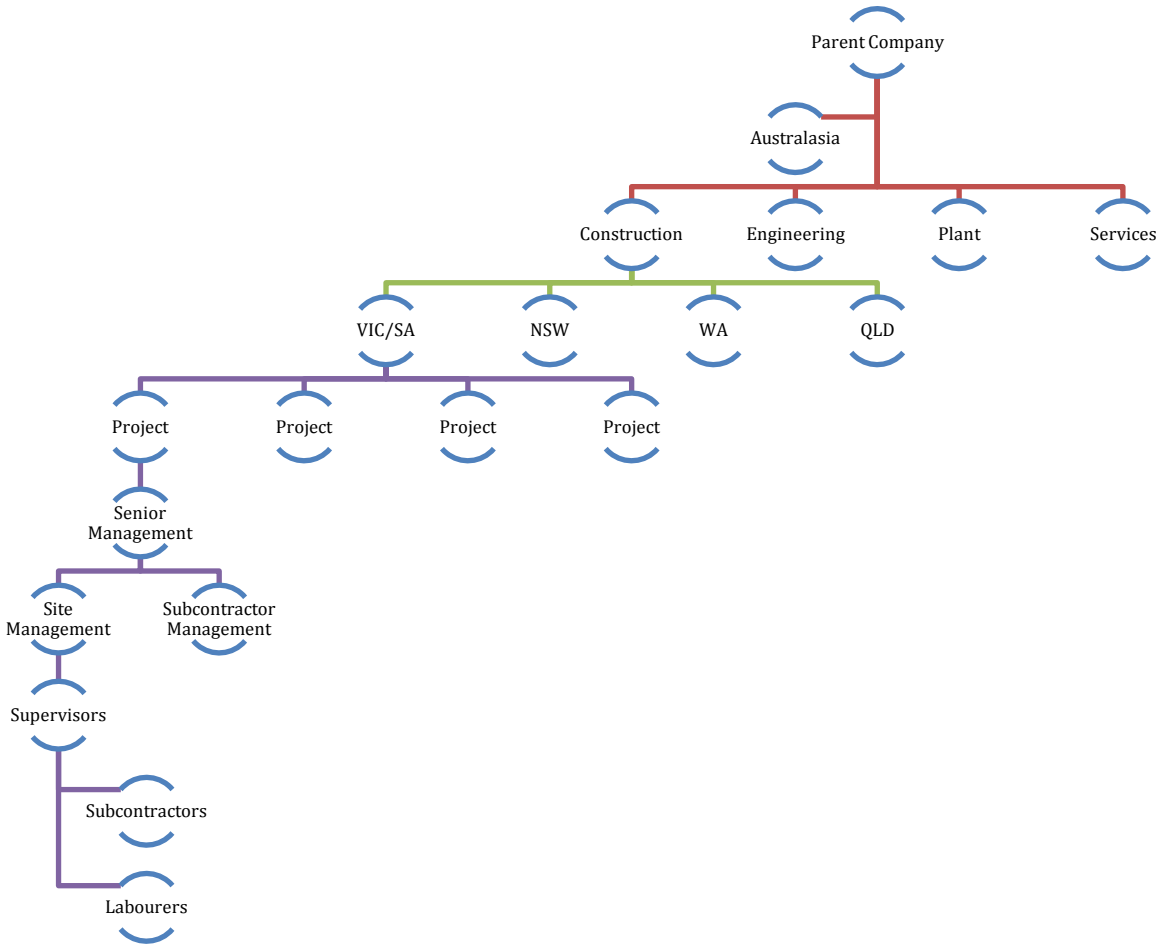


Figure 2: Example of construction organisation hierarchal structure

This constructed work is not a discussion about the positive or negative impacts of globalisation, or the structure of the industry. However, it is important to begin with an understanding that workplace practice (including safety training) must operate within a complex scheme of fragmentation, interactions, power relations, and reporting structures. Also relevant is to understand that individual actors (or components)

are often dealing with competing positions and pressures from a variety of mediums. However, these competing positions, created by the globalisation and the complex hierarchical structures of the industry, have the ability to influence decision-makers when considering the implementation of specific safety interventions. Hence, the interest for this constructed work, as the decision-makers within any specific organisation will be influenced by the strongest or most important perceived position.

Competing Positions Within the Construction Industry

When focusing on the implementation of safety interventions, the competition for influence within the construction industry comes from four main positions: economic, legal, union, and organisational structure. As the legal and economic positions, have been previously discussed, only a brief mention is made on added dimensions of influence. A more detailed discussion on the organisational structure and the union influence is provided.

Due to the nature of the construction industry, the economic and legal positions have added complexity. The legal position has a slightly stronger influence due to the high-risk nature of operations. As

expressed, regulators are likely to consider previous behaviour when determining enforcement strategies, and the construction industry, as a whole, is a poor performer (SafeWork Australia, 2013b). Therefore, inspections followed by prosecutions is more likely when organisations are operating in the construction industry, thus providing a stronger motivator to comply with, or go beyond, legislative requirements.

From an economic perspective, the main objective and, therefore, potentially the strongest influence within construction organisations, is to deliver the construction of the project to the client on time and on budget. The organisation's main concern to complete the job quickly is again due to the nature of how the industry operates. Project submission tenders are most often won due to the total cost placed on the job by the contractor. In addition, clients will place strict conditions and timeframes in the contract that, if not met, will often result in monetary penalties for the contractor (Rosewarne et al., 2006). This influence sees major contractors working toward the goal of improving their own bottom line, not necessarily focusing on other project components (including safety and quality). This has the potential to generate adversarial and argumentative relationships within the

workplace that give rise to a reduced budget, “at all costs” attitude (Maqsood, 2006).

This on time and on budget attitude, coupled with the legal considerations, creates a complex web of influence and interactions that have the ability, not only to affect safety interventions being implemented on construction sites, but also to affect individual behaviour and practice. These attitudes and influences permeate throughout the worksite, from senior managers through subcontractor management, from tradespersons to labourers, creating more pressure at each level (Maqsood, 2006). Thus, accompanied with the pressure of meeting budget, the attitudes contribute toward the formation of a culture that resists implementation of any form of intervention that is designed to bring about change—including safety.

A third influence on decisions to take safety action through implementation of interventions is the Trade Union. Although workers have been organising themselves into unions since the early 19th century in order to improve working conditions, the responsibility for OHS has resided with either the state regulator or organisational

management (Quinlan, 1995). Through the 1970s and 1980s, cooperation between workers, organisations, and Trade Union officials was instrumental in improving OHS regulation and legislation (Johansson & Partanen, 2002). Changes to OHS legislation across Australia provided for increased responsibility for management to consult on matters of health and safety. This increased responsibility has allowed for increased union participation.

It is widely reported in the literature that unionised workplaces provide safer outcomes and increased participation in health and safety issues (see Nichols et al., 2007; Johansson & Partanen, 2002; Quinlan, 1995). Conversely, other research is noting a decline in the influence of unions due to both increased industrial relations issues, such as collective bargaining, and stronger resistance from management in organisations (Tucker, 2013; Gunningham, 2008).

However, whilst literature on the benefit of union involvement in workplace health and safety issues is accessible, the empirical evidence does not demonstrate the true influence that unions have on

organisational decision-makers within the Australian construction industry (Fang & Wu, 2013).

In my role as a safety trainer over the past five years, I have visited numerous working construction sites across Australia and spoken to hundreds of workers and managers about participating in, and implementing, safety interventions. During these conversations, positive and negative union influence has been openly discussed. At the operational level, the union regularly influences worker participation and behaviour in safety activities through a range of coercive tactics, intimidation, and bullying. Workers are "told" by union safety officials how to perform particular tasks. This is often perceived by workers as a positive influence for the workers feel the union crew is ensuring their safety interests; however, in many cases, legislative compliance is not considered in the union's "way of doing things."

The second influence that the union demonstrates is at a site or project management level, again using coercive and bullying tactics. Discussions with site managers and subcontractor management have revealed that union officials will openly threaten (and implement) the shutdown of a construction site with strikes and protests if processes

are not changed, or issues are not resolved in a manner that is agreeable to the union. These tactics have been demonstrated over the past two years, at a Melbourne construction site, with newspaper headlines articulating the union's influence:

- "Unions' workplace war goes national" (Financial Review, 2012, August 28)
- "Grocon site dispute set to escalate" (Sydney Morning Herald, 2012, August 30)
- "Grocon chief Daniel Grollo will negotiate with CFMEU after end to illegal blockades" (Herald Sun, 2012, September 06)
- "Unions may axe super fund over Grocon dispute" (Melbourne Age, 2013, March 15)
- "Grocon submits to union reps" (Melbourne Age, 2013, July 16)

As evidenced in these headings, the union's influence is not restricted to only closing down worksites; the lobbying dominance of the unions can be quite powerful. The dispute between Grocon and the Construction workers Union is ongoing and whilst the union itself has been investigated for illegal tactics, it demonstrates that the union influence within the Industry is strong. Site managers and project

managers are compelled to consider union positions on safety interventions so as to avoid disruptions to their site.

The negative consequences that can arise due to union influence links directly to the economic considerations of a site. Site managers need to complete their project on time and on budget, and they need to work with the unions to achieve this. Whilst the economic and union considerations seem to be the strongest influences, decision-makers also need to consider potential issues that arise from the organisational structure of large multinational construction organisations, and how these issues or organisational structures work within the construction industry.

Figure 3 demonstrates the Australian hierarchal structure, yet when looking specifically at safety interactions and reporting, a number of external factors need to be considered including: differences between strategic safety policy at international and national levels, differences between legislation across Australia, enforcement differences between state regulators, and specific influence from Federal Building regulators (including policy, procedures, contractual differences, and specific safety requirements). The complexity of influences that

decision-makers must consider when implementing safety interventions is most clearly revealed when viewing the global platform of BuildUp Constructions (see Figure 4) which extends the Australian structure across the globe.

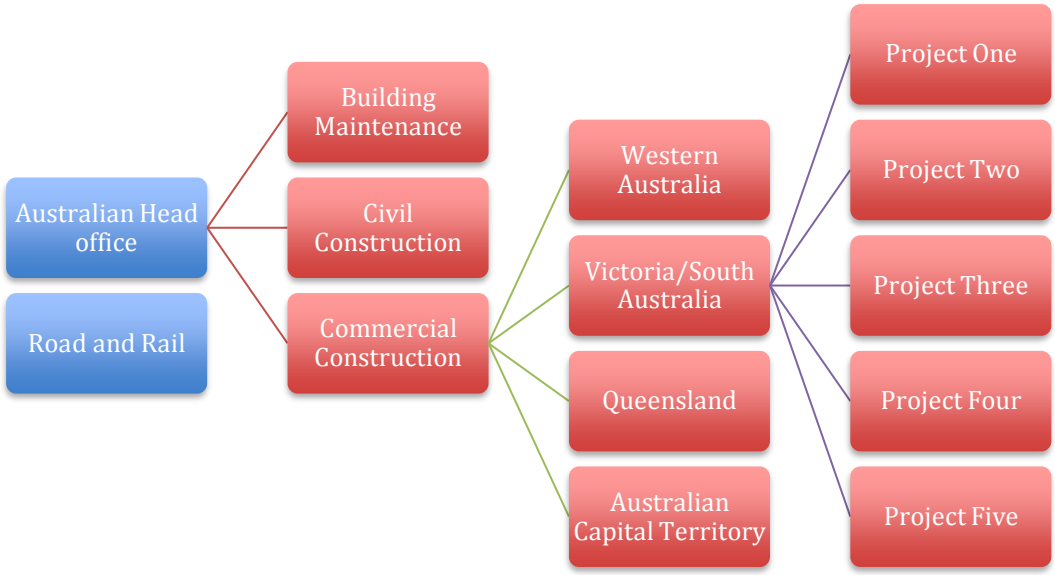


Figure 3: BuildUp Constructions Australian Structure

Figure 4: BuildUp Constructions Global Structure

Maqsood (2006) identified that the culture of the construction industry, developed over time by the complex nature of hierarchal structures, subcontracted workforce, finance sources, and competing positions, resists change. Barthorpe et al. (2000) add to this argument with the following observation:

> "The casual, fragmented, and hierarchical nature of the construction industry illustrates the incapability of the industry to operate in a co-ordinated, homogeneous way when dealing with universal issues such as training, quality standards, education, research and development, innovation, skills certification, public relations, marketing, and government lobbying." (p. 346)

Therefore, when decision-makers are considering the implementation of safety interventions, it becomes difficult to find or experiment with new or improved ideas, as the uncertainty and resistance to change across workers, subcontractors, and managers, may put the project, or other actors, at risk. The internal hierarchal structure of any organisation (particularly a multinational) also places a great deal of influence on decision-makers.

The organisational structure, specifically the authority and responsibility, has a great deal of influence on safety decisions. Research continually demonstrates that safety performance is directly linked to management commitment and responsibility (see Dunn, 2012; Bruns, 2009; Dekker, 2003; Gherardi & Nicolini, 1998); therefore, for interventions to be successful, they must have a component of management responsibility. This can be difficult to obtain, especially within a multinational organisation, as management responsibility could be interstate or international. Additionally, commitment provided by senior management in the form of signatures on national policy is significantly different from the commitment

required by the onsite supervisors and managers that need to "walk the talk" (Gunningham & Sinclair, 2011; Marshall, 2008).

Another difficulty for decision-makers, particularly at a strategic level, is that multinational organisations are often financially arranged so that each region, state, and jurisdiction are separate business entities, making it difficult to achieve "corporate" agreement on any specific intervention. This often results in separate OHS management systems being implemented in each area. Recent studies have identified that multiple or parallel management systems can cause major problems including (a) increased complexity of internal management decisions (Zeng et al., 2007), (b) potentially lower management efficiency, especially when managers travel across regional boundaries (AIM 2010), and (c) dramatically increased management costs (Masden, 2013). This possibility for lack of agreement can also affect legal influences, as state or national regulators will investigate the entire organisation if a serious incident occurs. Due to the new enforcement strategies implemented along with harmonisation of OHS legislation, questions can be raised if interventions have been implemented in one region, but not in another, as this can often demonstrate a lack of due diligence (SafeWork Australia, 2013b).

The construction industry, made up of principal contractors, subcontracting specialists, engineers, unions, and a wide variety of service organisations, should be viewed as different when compared to other industries, due to the organisational complexity, wide variety of competing positions, and the ongoing exposure of the workers to high risks. Construction of a building is a physically demanding and stressful process (Lingard & Sublet, 2002), where multiple teams of workers, supervisors, and managers labour for long hours, and are constantly under the pressure to meet project timelines and avoid risks. Whilst a number of influences on strategic-level decision-makers have been discussed, and the decision to implement safety interventions is finalised, the issue then is for the site staff to participate or implement these interventions while, at the same time, dealing with the same influences (albeit at a different level) on the worksite.

It is evident from both empirical and anecdotal evidence that a multitude of influences should be taken into account when organisations are looking to improve safety performance and behaviour with safety interventions. However, the complexity of the industry is often ignored, and specific individual components (i.e.,

worker or supervisor capabilities/behaviours) are presented as justifications for the industry's poor performance (Dingsdag et al., 2008), presenting significant risk to the growth and development of both individual organisations and the industry as a whole (KordaMentha, 2012; AIG, 2008). Therefore, as organisations attempt to address the risk, they implement interventions that focus on a specific component (such as behaviours), ignoring other important aspects of the complex system (Hardison et al., 2014). This disregard for all influences continues on to the intervention design and development stage. While organisations will often consider some influences at the organisational level, the complex nature and interrelationship of the competing positions are rarely passed on to developers at the intervention design or development stage.

While this constructed work aims to identify if specific interventions can be improved by investigating the range of attitudes and perceptions behind the behaviours that cause the need for intervention, it also aims to discover how these positions impact the wider practice of OHS within the industry. By doing so, the constructed work proposes to provide information for the development stage of interventions.

Phase Summary

During this construction phase, the concept of OHS, and how it is managed within the construction industry, has been introduced. The difficulties and complexities which decision-makers face when looking to improve safety in the workplace have also been identified, whilst highlighting the range of both positive and negative influences on safety performance.

With an initial understanding of the difficulties faced when considering the implementation of safety interventions, the following phase scaffolds the discussion by looking at how the power relations within the workplace can affect the effectiveness of safety interventions. Phase Three also identifies the barriers to effective safety-training interventions, as well as how the interventions fit within the wider scheme of workplace learning.

Phase Three - Laying the Foundations: Locating the Theory in Workplace Safety Training

After a new building site has been cleared, the foundations must be incorporated into current structures, or strategically placed, to ensure the structural soundness of the building that is to be constructed. The foundations of a PhD thesis are similar to concrete column pilings; the theoretical framework lies deep within the ground of past literature and supports the new knowledge gained through the research. all the way to the top.

Phase Introduction

Within this phase, I examine the literature on workplace learning, educational learning theories and adult learning principles. I do so to contextualise my informant narratives that articulate the attitudes and perceptions from the field of practice. The emphasis of this enquiry is to identify and present construction supervisors' attitudes and perceptions toward safety training. The reason behind this focus is that, for training to be effective in improving workplace safety practice,

the content and delivery strategies must be aligned to individual and organisational needs (Dunn & Chennell, 2012). However, as identified in the previous phase, organisational (and individual) safety-training needs are often overshadowed and influenced by legislative and financial pressures.

Due to the prevailing legislative and financial influences, organisations often commission, develop, and implement safety-training interventions that are designed to meet specific legislative requirements. However, this traditional approach to safety training provides little regard for the wide variety of individual, organisational, and social interactions and processes that occur prior to, during, and after training sessions. In this phase, I will look at the development of workplace training theory and practice. I will identify how, even with the vast amount of literature that supports the need to consider how social processes and broader sociocultural considerations contribute to effective learning, the majority of safety-training interventions remain steeped in pedagogical teacher-centred traditions.

Separating the Language

As discussed in the Phase Two, the overall responsibility for safety management lies with the employer, but this is overseen by the state or territory regulator (e.g., WorkSafe Victoria). The regulator enforces the legislation to which each employer must adhere. Indirectly referred to within each jurisdiction's legislation is the need for both education (in the form of competent persons providing safety advice and specific high-risk tasks requiring permits or licences) and training (ensuring all workers know how to undertake their tasks safely). As an example, the Victorian Occupational Health and Safety Act states as follows:

> S.21 (2) (e) - provide such information, instruction, training or supervision to employees of the employer as is necessary to enable those persons to perform their work in a way that is safe and without risks to health.

> S. 22 (2) (b) employ or engage persons who are suitably qualified in relation to occupational health and safety to provide advice to the employer concerning the health and safety of employees of the employer.

Whilst the legislation provides no further information on how "training" is to be undertaken, appropriate Australian Vocational Education and Training (VET) "qualifications" from Certificate IV (and above), or single competencies from VET qualification programs, are

further identified in accompanying regulations. With no formal definition or guidelines on how this required training is to take place, organisations are left to interpret the legislation in their own way. As a result, learning opportunities are being lost as organisations focus on the legislative requirements, as opposed to the actual content or methods of delivery.

Within the discipline of safety, no attention has been given to any similarities or differences in the terms of training, education, workplace learning, or professional development. That said, as safety is concerned with the behaviour of working adults (albeit workers can include people as young as 15), and this is often discussed through safety training interventions. Therefore, the alignment of interventions with adult education and workplace learning theory should be considered.

Understanding Workplace Learning

The theories and the practice of workplace training have progressed dramatically over the past few decades, due to the economic and social imperatives of organisations seeking to formalise workplace learning

(Hager, 2011; Harteis, Gruber, & Lehner, 2006). Whereas initially focused on formally educating individuals prior to workplace entry, new directions expanded the theories of workplace learning during the 1990's so that catchphrases such as 'workplace learning' became popular as vocational orientated learning was beginning to be seen as a problem solver of relevancy, financial and skills issues. **Illeris (2011)** describes the move toward 'workplace learning' as a direct result of one, a shift away from the notion that education and qualifications are obtained in one's youth and two, the changing face of competencies and qualifications.

Jacobs & Park, (2009) define workplace learning 'as the process used by individuals when engaged in training programs, education and development courses, or some type of experiential learning activity for the purpose of acquiring the competence necessary to meet current and future work requirements' (pg. 134). This process is further defined by Illeris (2003, 2011) who argues that all learning includes internal processes of elaboration and acquisition and external interaction processes between the learner and their social, cultural and material environment.

The development of general workplace-learning theory can be traced to a wide variety of theoretical backgrounds; but it is not within the scope of this work to identify and discuss all of them. Instead, this constructed work focuses on three main theoretical frameworks: those influenced by psychological theories, such as behaviourism and cognitive theories; those influenced by sociology and anthropology, such as sociocultural theories; and those influenced by educational theories, such as experiential learning and andragogy. These major influences are identified in contemporary literature, in current safety practice and highlighted in legislative guidance, are presented separately and in a linear fashion. However, they should not be viewed as evolving one after the other, or as one replacing the other. Instead, they should be seen as growing together, but across different disciplines.

As increasing importance is placed on the training of workers through safety legislation, the expectation would be that the growing range of theoretical learning approaches should influence the sub-discipline of workplace safety training. As such, practitioners, training organisations, and individuals should be able to “choose” a theory, or a set of practices derived from a theory, to suit their specific need

(Holladay & Quiñones, 2007). However, within the safety literature, critical discussion on the positive or negative influences of theoretical frameworks or positions is limited. Whilst respected workplace-learning theorists, such as Hager (2004, 2011), Illeris (2007, 2009, 2011), and Billett (2001, 2009, 2010, 2011), call for major reconsiderations by decision- and policymakers in their understanding of "how" workplace learning occurs, safety-training research is mired in debates on effectiveness, learning styles, and training methodology (Burke et al., 2006; Robson et al., 2010).

If considering where and how participants' attitudes and perceptions of workplace safety training evolve, this enquiry requires a theoretical understanding of both past and current states of safety training. The following discussion investigates various examples of current safety training within the major workplace-learning theories, identifying how each framework might affect individual participants and organisations that implement the training interventions. In discussing the key theories, I provide a contextual background for the participant narratives.

Behaviourism Theories

Behaviourism was grounded in the scientific idea that learning should be understood and explained in terms of what is directly observable (Hager, 2011). With its basis in animal training, observable conditions, such as stimulus-response (Thorndike, 1898), reinforcement (Pavlov, 1897), and classical conditioning (Pavlov & Watson, described in Hilgard & Bower, 1966), remain the major influences in learning steeped in the behaviourism tradition. Advanced by psychology scholars, such as Hull (1929, 1943, 1951), Skinner (1938, 1953, 1968), and Spence (1956, 1960), systematic behaviour theory revolved around the central notion that there existed intervening variables in the organism which influenced what response would occur following the onset of a stimulus. The behaviourist approach, therefore, believes that all learning comes from behavioural responses to external stimuli (Russ-Eft, 2011).

The behavioural approach was made popular and became legitimised through activities such as Thorndike's WW1 aptitude tests for soldiers and word-books that assisted children with reading and writing (Harris et al., 1995). The popularity continued through Skinner's positive reinforcement ideas in education that consisted of traditional rote

learning and punitive discipline regimes that were losing appeal through the mid- to late 19th century (Clemans & Rushbrook, 2011).

These developments, centred in psychology, had significant impacts on educational practice with the dominant learning theories for many years, encouraging educational psychologists and practitioners alike to concentrate on such external factors as reward schedules, transfer gradients, and external environments (Brown, 1994). Applying the general theory to workplace-learning situations, Hager (2011) stated that behaviourism theories identified that a task could be divided into a series of behaviours. Workers were then trained to perform the tasks through the connections of the appropriate behaviour. “All trainers need do is set up the appropriate stimuli and reinforcement schedules for the workers to learn the specified behaviour” (Hager, 2011:18). To receive the appropriate response and ensure success, the behaviourist approach required the fragmenting of information into small units by the trainer, and the passive reception of knowledge from the participant (Russ-Eft, 2011).

Whilst gaining popularity through the 1950s and 1960s, behaviourist approaches to learning lost favour with educational theorists due to

rapidly changing social, economic, and technological environments, leading to the realisation that on-the-job learning was required to be successful in workplaces (Hager, 2011; Foley, 2000). However, the behaviourist notion of learning all that is required to complete job tasks prior to attending a workplace is a critical component in competency-based training (CBT) (Clemans & Rushbrook, 2011; Hager, 2011).

In the late 19th century, the reaction to the narrowing of behaviourism as a valid interpretation of human learning, "led to a resurgence of cognitive theories of learning that invoked unobservable mental terms such as thinking, reflection, and understanding" (Hager, 2011:18). However, within the discipline of safety science, the behaviour approach to safety management was just beginning to come to the forefront of practice.

Behaviour Approaches to Safety Management

During the latter part of the 20th century, behavioural approaches to safety became popular across the world (Cooper, 2000), due to well-respected safety scholars and government regulators declaring that up to 90% of workplace incidents could be attributed to "unsafe

behaviours" (Hollnagel, 1993; HSE, 2002; Hopkins, 1995; Heinrick, 1931). Governments and organisations were being informed by the psychology discipline that safe and unsafe behaviours were subject to the same laws and principles that governed all other human behaviour, and were learned in the same way as all other stimuli and response bonds (Jonson, 1997).

Within Australia, behavioural approaches gained ground through the mining industry, which was still battling increasing injury statistics and rising compensation costs, despite investing large sums of money in technological risk prevention strategies (Parand & Foster, 2006). In 1995, Hopkins reported that both government regulators and unions were taking a simplistic view on safety by focusing on equipment, stating, "95% of accidents occur because of the acts of people. They do something they are not supposed to do and are trained not to do, but do it anyway… Changing behaviour is much harder than focusing on equipment" (General Manager of DuPont Australia, cited in Hopkins, 1995:187-188).

Safety research in the mining industry was reporting that "new technology produces more tonnes with less people, but introduces

different types of hazards, and the probability of being killed underground has not come down dramatically" (Cliff et al., 1998:176). At the 1997 Queensland Industry Mining Health and Safety Conference, the following was argued:

> Industry initiative to improve safety performance in mines will largely depend upon changing many of the attitudes and behaviours that make up the mine culture and codes, which in turn influence the way in which mineworkers perform their daily tasks. (Jonson, 1998, p. 153)

With an increasing number of medium to large organisations keen to improve safety performance, behavioural-based safety programs (BBSPs), were implemented across Australia in the 1990s. The programs, based on the principle that the majority of accidents and incidents were caused by the behaviour of frontline staff, varied in their detail depending upon the provider; however, they all included generic components:

- definition of safe and unsafe behaviour,
- training elements to cover the definition,
- observations of behaviours, and
- feedback and reinforcement of behaviours (HSE, 2002).

The majority of BBSP interventions promoted a proactive focus, encouraging supervisors and their subordinates to "consider the potential for accident involvement, and their own behaviour as safe versus unsafe before somebody gets hurt" (Sutherland et al., 2000:12). This proactive focus was based on the assumption that once a person's behaviour had changed, a change in attitude would follow (Bem, 1967). However, this assumption has been debated in the literature for many decades, as some research was demonstrating that to effect long-term change, it was necessary to change not only behaviours and attitudes, but also workers' motivations to comply (Lee & Harrison, 2000; Griffin & Neal, 2000; Fishbein & Ajzen, 1975; Vroom, 1964).

Differences in research opinions caused amendments and different BBSPs to be implemented across a variety of industries. Fishbein and Ajzen's (1975) "theory of reasoned action" was incorporated into many safety improvement BBSPs, as they argued that behaviour could be predicted if observers (generally trained supervisors) knew the person's attitude to the particular behaviour; the person's intention to perform the behaviour; the person's belief about the consequences; and the social norms which governed that behaviour. Identifying or

satisfying each of these conditions would enable predictions of behaviour to be made more clearly through the behavioural safety process (Cox et al., 2004).

Other BBSPs incorporated Vroom's (1964) theory of motivation, as Australian-specific studies (Griffin & Neal, 2000) had identified motivation as an important factor in worker compliance. Vroom's (1964) theory of motivation developed from an understanding that individuals would act in a specific way (a safe act) if they

- Held a strong desire to achieve a certain task outcome,
- Had a reasonable expectation that they would achieve that outcome, and
- Expected that the achievement of the task outcome would result in a reward.

The inclusion of this theory in implemented BBSPs is still evident today in a large number of organisations that provide incentives to management (and, in some cases, workers) when key performance indicators (KPIs) are met. "This is why we have health and safety as key performance indicators in the Short-Term Incentive Plan (measured in

relation to all injury frequency rates, significant potential incidents rate and semi quantitative risk assessment)" (Rio Tinto, 2010).

Personal goals and intentions, as separate from motivations, were also found to be an important component when evaluating behavioural changes (Cox et al., 2004). In applying Locke and Latham's (1990) intention theory to safety BBSPs, the identification of a worker's goals or intentions was included in the initial and ongoing assessments, observations, and performance management. However, results (see Cox et al., 2004) have shown that organisational goals were more likely to be identified and compelled onto workers as their own goals.

This early use of organisational goals, instead of workers' individual's goals, as the basis for safe behaviour observations within BBSPs, caused a wave of mistrust from Australian workers (De-Pasquale & Gellar, 1999). Whilst previously identified as being important in organisational studies (such as Lane & Bachmann, 1998), research on trust within safety BBSPs was limited to a handful of studies. De-Pasquale and Gellar (1999) and Jones et al. (2004) both recognised the

importance of interpersonal trust when conducting observations and providing feedback to fellow workers, with De-Pasquale and Gellar (1999) concluding that a lack of trust in managements' intentions will affect the success of any BBSP.

Regardless of these negative results, the overwhelming response to BBSPs through the late 20th and early 21th centuries was positive. Research continued to demonstrate that the programs were effective; results that identified significantly improving safety performance and favourable reactions from workers toward BBSPs, as opposed to other interventions, were common (see Cooper, 2000; Krause et al., 1999; Sutherland et al., 2000; Fleming & Lardner, 2001; Cox et al., 2004). The majority of literature identified, that as well as the increase in safe acts, thus reducing the likelihood of accidents, BBSPs were also found to provide a wide range of less tangible benefits:

- Demonstration of management commitment,
- Increased consultation between management and workers,
- Increased profile of OHS,
- Quicker response on unsafe behaviours, and

- Improved learning.

BBSPs have undergone a series of transformations since their inception. From the early days of programs that were based on Skinner's (1953) operant theory, where only management conducted observations and gave feedback, to employee-led programs of the 1980s that were centred around committees and workgroups changing behaviour from the bottom, to the cultural approach based on management and worker partnerships (Cooper, 2000) that are still popular today.

However, the popularity of BBSPs was losing momentum in Australia by the mid-2000s (Cox et al., 2004), with well-respected scholars questioning the sustainability of the initial implementation results (Hopkins, 2005; Reason, 2008). It is interesting to note that the same criticisms lodged at earlier versions of safety BBSPs, can still be found in recent intervention effectiveness research (Robson et al., 2010).

The primary criticism to a large number of the safety behavioural programs stems from the fundamental importance that these programs

place on the observations of worker behaviour. Hopkins (1995) and Reason (2008) both identified that this focus on the worker, or person (Reason, 2008) model leads to a blame-centred culture. Hopkins (2002; 1995) posited that "unsafe acts may have organisational or systemic causes. If so, it may be the organisational procedures rather than the mind of men that need to be changed" (Pgs. 5-6). As Flemming and Lardner (2001) stated,

> "Whilst a focus on changing unsafe behaviour into safe behaviour is appropriate, this should not deflect attention from analysing why people behave unsafely. To focus solely on changing individual behaviour without considering necessary changes to how people are organised, managed, motivated, rewarded and their physical work environment, tools and equipment can result in treating the symptoms only, without addressing the root causes of unsafe behaviour." (p. 3)

These criticisms have been published and communicated through a wide range of mediums, including conferences, regulator working papers, and safety professionals. However, the popularity of safety behavioural programs remains steady with little regard for the criticisms, albeit not as much within Australia, (except in multinational organisations with parent organisations outside of Australia). Interestingly, at a recent Australian pipeline safety conference the principal psychologist at DuPont (one of the world's leading providers

of BBSPs) indicated in his keynote speech that BBSPs are currently suffering from a plateau and need rejuvenation due to a number of negative consequences that relate to trust, or lack thereof:

> A number of explanations for the limitations of BBS have been proposed. One explanation is "habituation," which is our natural ability to adjust to our surroundings and any actions taken toward us. More importantly though, research has found that safety improvements diminish because a purely behavioural approach is driven externally to the individual and bypasses the complexities of personal decision-making and cognitive processing. In many ways, under a BBS approach, individuals are motivated to act safely by fear of repercussion and consequence rather than by a true commitment to safety. (Gutierrez, 2011:1)

Although admitting that the programs he helped develop were failing in some ways, Gutierrez (2011) still emphasised their (the programs) importance, by explaining that achieving increased safety standards requires an understanding of what influences behaviour. Put simply, the premise of cognitive psychology is that much of what influences our behaviour occurs "below the surface" in our mental processing. Although behaviours and emotions can be readily observed, there are a number of unobservable mechanisms that interact to give rise to them. These unobservable mechanisms include:

- "learning," directly related to the principles of BBS, which develops learnt behaviour through conditioning, as discussed above,
- "social influence," or the social context in which employees operate, including components such as leadership, organisational culture, and organisational climate, and
- "thoughts, values and beliefs," the cognitive processes that directly influence behaviours. (Gutierrez, 2011:1).

Gutierrez's identification of the of learning and social influences is important from a workplace-learning context as it is demonstrative that DuPont is mindful of research and looking to improve its BBSP. By situating learning as a thing or a product that is unobservable, and stored "under the surface," DuPont placed its behavioural programs firmly in an assumption that workers can achieve identical learning that can be acquired and transferred whenever required (Hager, 2011).

Whilst the BBSP, with foundations in behavioural and cognitive psychology, continue to be perceived as effective management interventions for safety performance in many parts of the world, the

positive perception of such programs is waning within Australia. The literature shows that overall, the behavioural theories that underpin popular BBSP interventions are problematic and restraining, due to their focus on the individual behaviours of workers, and the lack of understanding of latent organisational causes of accidents and incidents.

Sociocultural Theories

As discussed so far, the typical behavioural theories of workplace learning held the common idea that learning was a product that could be acquired and located within the mind of a learner or worker. Within the sociocultural theories, to be introduced, the common perception is that learning is a process situated in practice. These sociocultural theories, with their groundings in sociology and social anthropology, provide alternative angles for theorising workplace learning (Hager, 2011).

These differences, of where and how learning "is," create a number of distinguishing positions, separate from those theories ground in behaviourism that have their foundations firmly planted in the general

learning theory work of Vygotsky (1962, 1978). Sociocultural theories, whilst varied in their range of details and methodologies, have a number of common factors, including,

- Recognising the various social aspects of learning beyond the aspects of the individual learner,
- Understanding learning as a process of participation,
- Suggesting that learning is influenced by social, cultural, and other contextual factors, and
- Recognising learning as embodied (Hager, 2011; Cairns & Malloch, 2011; Gruber & Harteis, 2011; Illeris, 2003).

Vygotsky's main approach to learning was focused on the "concept that human activity takes place in cultural contexts, are mediated by language and other symbols systems, and can be best understood when investigated in their historical development" (John-Steiner & Mahn, 1996:191). This concept of interdependency between individual and social processes is identifiable in the sociocultural theories that have most influenced workplace-learning practice across the past few decades. These theories, including Lave and Wenger's (1991) and Wenger's (1998) Communities of Practice or Situated Learning theory;

Engeström's (1999) cultural-historic activity theory; Fuller and Unwin's (2003, 2004) expansive-restrictive continuum, and; Billet's (2006, 2008a) personal agency theory; can all claim foundations in Vygotskian theory that, although not published until 1962, was first applied in Russia in the 1920s and 1930s (John-Steiner & Mahn, 1996).

Situated Learning Theories and Communities of Practice

In their seminal work, Brown et al. (1989) suggested a model of situated cognition, which explored the idea that learning would require situational context if it were to be successful. Their model has made a substantial impact on educational thinking since it was first published (Cairns, 2011), and serves as the foundation to the communities of practice concept (Lave & Wenger, 1991). The communities of practice concept, whilst widely criticised for issues such as a lack of attention on fragmented workplaces (communities) and contradictions about membership of the communities, still captured the imaginations of many educational theorists of the time.

The underlying premise of a situated learning approach is that knowledge and skills need to be learned in the environment that mirrors how knowledge is obtained and applied in ordinary situations. In a collaborative effort to move away from the individualistic behavioural/cognitive models of learning of the 1970s and 1980s, and to build on Brown et al. (1989) and Lave's (1988) earlier works, Lave and Wenger (1991) developed the communities of practice concept, with the identification of learning being socially situated, such that this "view also claims that learning, thinking and knowing are relations among people in activity in, with and arising from the socially and culturally structured world" (p. 50).

Lave and Wenger (1991) argued that we learn as we engage in everyday activities or ventures, whether they are for personal, community, or organisational gain. The learning occurs within these activities and ventures as we interact with other people, such as family, work colleagues, or teammates, and these interactions have the ability to influence all members of the activity. Within each activity or venture, individuals have different "positions" that may affect their level of influence on others within the activity. Over time, the collective interactions or learnings, which are occurring within each activity or

venture, become practices that essentially "belong" to the community of people within the activity or venture, hence, the term "communities of practice."

These communities of practice can be found everywhere, and individuals can be "members" of more than one group at a time. However, in making a distinction between communities of practice and a general community of interest (where people are drawn together by a common interest), Wenger (1998) noted that communities of practice are brought together by what they have learned through their mutual engagement in the activities.

Another central premise within the communities of practice concept is that an individual's participation level within the community changes, depending on the capabilities of the individual and the nature of the community. In describing "legitimate peripheral participation," Lave and Wenger (1991:110) proposed that it was critical that members (originally referred to as apprentices), upon entering or joining the community, be given the opportunity to be observers (if they so

choose). As learning and participation within the community increased, the individual could move from the peripherals into the functioning centre, as shown in Figure 5.

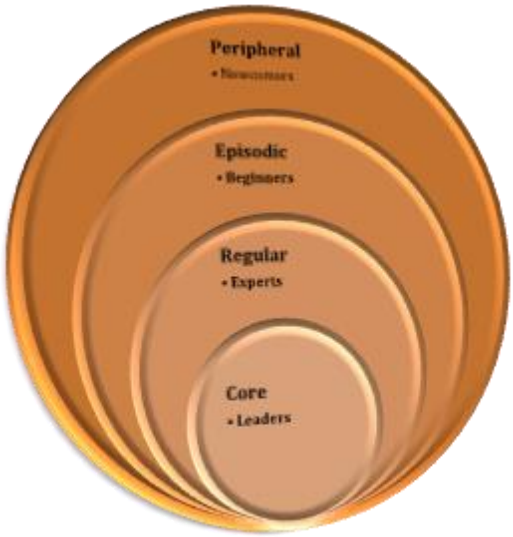


Figure 5: Levels of participation within a community of practice (Adapted from Wenger et al., 2002)

However, whilst Lave and Wenger (1991) identified that communities of practice could occur everywhere, a common criticism of the concept, that it lacked explanation as to "how" a community is formed or operates (Hodkinson & Hodkinson, 2003), is highlighted when attempting to implement or develop a community of practice for a specific learning purpose.

At a more practical level, and particularly for workplace training experiences, such as those that this enquiry is centred, a situated learning theory approach posits that participants learn content through activities, as opposed to being "provided" information by trainers or facilitators (Stein, 1998). Within an activity, learning opportunities are presented within situations designed to challenge the participant's current level of "knowledge" (Lankard, 1995). However, to be successful, activities developed for a situated learning experience should include consideration of four major principles.

- Activity must be based in the actions of everyday situations.
- Knowledge is acquired situationally and transfers only to similar situations.
- Learning is a social process encompassing ways of thinking, perceiving, problem-solving, and interacting, in addition to declarative and procedural knowledge.
- Learning exists in robust, complex, social environments comprised of actors, actions, and situations.

(Adapted from Anderson et al., 1996)

It is in the application of these four principles, through developed learning activities, that the theory differs from earlier behavioural learning theories. The content contained within the activities can emerge, evolve, or be developed from interactions with the surrounding environment or between participants and the environment. Within a situated learning model, the participant learning is implicit within the experience (Lave, 1997). This is in contrast to the previously dominant behavioural models of learning where knowledge, being identified by the instructor as important to learn, was then transferred to the participant.

Cultural-Historic Activity Theory

Current activity theory, formulated by Engeström (1987), is a conceptual framework, which is based on the premise that activity is primary, and that "doing proceeds thinking, that goals, images, cognitive model, intentions and abstract notions like definition and determinant grow out of people doing things" (Morf & Weber, 2000:81). Engeström (2011) identified the theory from the framework as "expansive learning," putting the "primacy on communities as learner, on transformation and creation of culture, on horizontal

movement and hybridisation, and on the formation of theoretical concepts" (p. 86).

Drawing from Vygotsky's activity theory, Engeström's (2001) expansive learning theory utilises the entire work activity as the unit of analysis, as it breaks the activity into components of subject (person being studied), tool (mediating device by which action is executed), and object (the intended activity). Engeström (1996) also identified that there were other components that have implicit effects on work activities and added a new plane of community to the activity, with rules (as a set of conditions that help determine behaviour) and with a division of labour (providing for a range of distribution of actions between different workers). Therefore, Engeström (1996) proposed that the work activity system, as shown in Figure 6, is comprised of a range of components, which include the following:

- the workers, individually and within teams;
- the conceptual models, tools, and equipment required for the work;
- the rules that govern the activity and the environment; and
- the purpose to which the activity is directed.

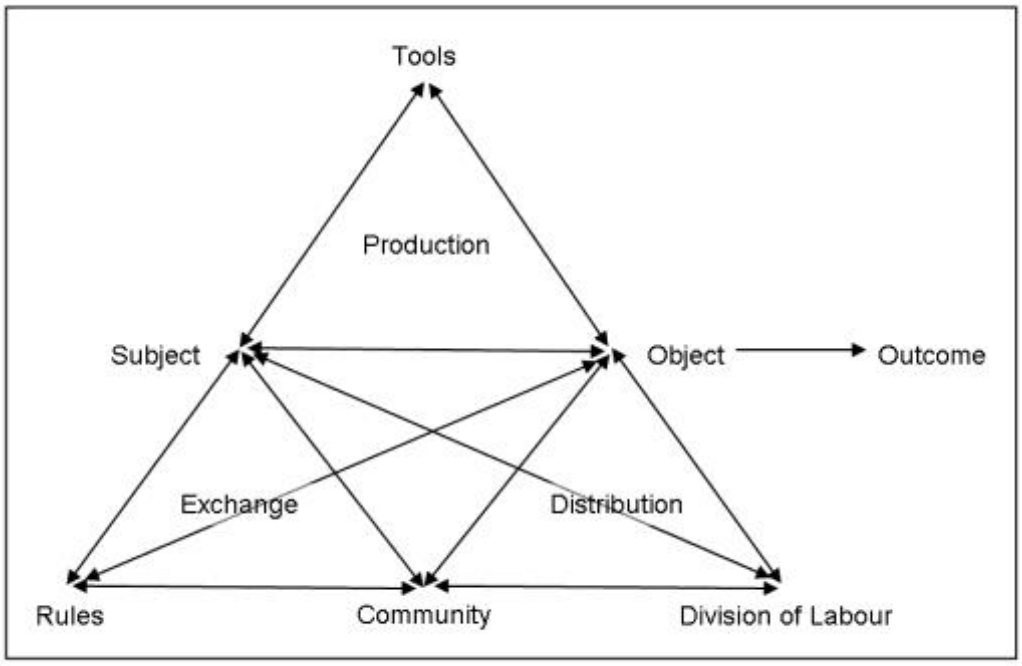


Figure 6: General model of an activity system

(Engeström, 1987:78)

As within the communities of practice approach, the expansive learning theory recognises that interrelations occur within the activity that are mediated by the components. The theory's focus is on learning processes in which, the subject of learning is transformed from individual to collectives, and onto even larger networks of collectives. Engeström (2011) argued that as individuals question the activity they are involved in, they seek other actors to participate, and a collaborative analysis and modelling of Vygotsky's (1997) zone of

proximal development are initiated and implemented, with the result that the learning induces change within the activity.

Whilst this theory has inspired theoretical reflection across a range of disciplines that investigates approaches which involves human activity, including psychology, education, management, and culture (Hashim & Jones, 2007), it does not easily transform into practical strategies for workplace-learning practitioners. A number of recent studies have indicated that the theory is particularly useful in analyses of learning in the non-traditional, hybrid multi-organisational and multi-cultural settings (Engeström, 2011).

At a more practical level, whilst interventions based on the expansion model have been developed and implemented in a variety of situations (see Change Laboratory, Engeström et al., 1996), their focus seems to centre on change management for large organisations that are facing significant challenges and need to undergo transformation.

Expansive-restrictive Continuum

In looking for the role of that of the formal educational institution for "newcomers" within the situated theory approach, and in looking to

understand and categorise the barriers and opportunities to learning being experienced by these workers, Fuller and Unwin (2003) scaffolded Engeström's (2001) expansive learning theory. They developed a conceptual and analytical tool for evaluating the "quality of learning environment and for analysing an organisation's approach to apprenticeship, and indeed to workforce development more generally" (Fuller & Unwin, 2003:7). With their expansive-restrictive continuum model, they focused on workforce development and identification of the features within a specific environment or work situation that could either offer or deny successful learning opportunities (Fuller & Unwin, 2003).

In offering success, the model (Fuller & Unwin, 2003) found that within the apprenticeship training system there were significant differences between organisations and industries with established learning and training practices, versus those without. They placed these differences into the "expansive-restrictive continuum" (Fuller & Unwin, 2003, 2004, 2011) that presents the differences in the nature of workplaces providing learning opportunities, as outlined in Table One.

EXPANSIVE	RESTRICTIVE
Dual status as learner and employee: Explicit institutional recognition and support for apprentice's status as learner	Status as employee dominates: Ambivalent institutional recognition and support for apprentice's status as learner
Participation in multiple communities of practice inside and outside the workplace	Restricted participation in multiple communities of practice
Primary community of practice has shared "participative memory": cultural inheritance of apprenticeship	Primary community of practice has little or no "participative memory": little or no tradition of apprenticeship
Broad: access to learning fostered by cross-company experiences built into program	Narrow: access to learning restricted in terms of tasks, knowledge, and location

Access to range of qualifications, including knowledge-based vocational qualification	Access to competence-based qualification only. Virtually all on-job: limited opportunities for reflection
Planned time off the job, including for college attendance and for reflection	Fast – transition as quick as possible. Apprenticeship aim: partial expert but full participant
Gradual transition to full participation	Post-apprenticeship vision: static for job
Apprenticeship aim: rounded expert who is full participant	Apprenticeship is used to tailor individual capability to organisational need
Post-apprenticeship vision: progression for career	Apprenticeship design limits opportunity to extend identity: little boundary crossing experienced
Apprenticeship is used as a vehicle for aligning the	Apprentices have limited and restricted access to

goals of developing the individual and organisational capability	the range of skills and knowledge of their workplace
Apprenticeship design fosters opportunities to extend identity through boundary crossing	
Apprentices have full access to their workplace's curriculum, values, and goals	

Table One: Approaches to Apprenticeship Expansive-Restrictive Continuum

(Fuller & Unwin, 2006:6)

In identifying that organisations with expansive frameworks had a range of supportive opportunities and established practices for apprentices, Fuller and Unwin (2003) argued that expansive frameworks would "create a stronger and richer learning environment" (p. 411-12). Correspondingly, organisations that displayed characteristics presented at the opposite end of the continuum—the restrictive end—would have little diversity in learning opportunities, implying that participation in activities would be limited to "a narrow range of homogeneous tasks" (Fuller & Unwin, 2011:52).

The Fuller and Unwin model can be seen as a framework that allows for the identification and promotion of relationships between both organisational and individual goals. In an expansive workplace, the recognition of the role of the individual's "learning territory" (Fuller & Unwin, 2004:133) allows for the identification and management of individual differences, thus fostering and increasing the learning opportunities. However, a restrictive workplace, with a central focus on organisational contexts and goals, can dismiss the importance of an individual's cultural and historic background, thus creating a barrier to effective learning opportunities.

At a practical level, the expansive-restrictive continuum can be seen as a simple, reality-based model, which, though originally developed as a way of situating apprentices' learning environments, can be easily transferred to any learning situation. Fuller and Unwin (2004) developed the expansive-restrictive framework into a diagnostic instrument that could be used by organisations or training providers to identify or evaluate their learning programs. Whilst empirical data on the use of this instrument has yet to be circulated, at face value it appears that it would be useful in providing a holistic picture of where any learning challenges existed, thus allowing for improvement.

Theory of Expertise – Knowing in Practice

In contrast to the situated learning and cultural-historic learning theories presented above that focus on the social setting and activities within a workplace, Billett (2001, 2004, 2008a, 2008b) proposed a theory of expertise that focused on "both" the individual and the social working environment, as well as the relational interdependencies between the two. In identifying that, the dominant paradigm, with its focus on individuals' acquisition of knowledge, and the emerging processes, that focus on the social and cultural relationships to thinking, Billett (2001) suggested that "the inter-psychological

processes for developing expertise are held to be constituted reciprocally between the affordance of the social practice and how individuals act and come to know in the social practice, activities and individual cognition" (p. 432).

In describing the "coming to know," Billett (2001) drew upon and advanced Schön's (1983) "knowing in action" concept, which was concerned with "how" knowledge came about, by linking reciprocal processes and "engaging with the world beyond the physical self and drawing together both knowledge 'how,' and knowledge 'that'" (p. 433). In making this distinction, Billett (2001) presented the relationship between "what is known" and "the knower" as a dynamic one. In presenting this relationship as dynamic, he proposed that successful learning involves activities that are "relational and authentic" (Billett, 2001:447).

In advancing the interdependency between individual and social setting (see Figure 7, below) Billett (2001, 2002) stated the necessity for newcomers or novices to the work setting to gain access to, and engage in, domains of activities in order to meet the needs of the

workplace (organisational needs). This concept of participatory practices is built on the premise that knowledge is co-constructed through interactions between the social setting (workplace affordances such as monitoring or resources) and the individuals (individual agency such as attitudes, perceptions, employment history, etc.) who are participating in the activities (work tasks).

Figure 7: Interdependency between individual agency and workplace affordances

These interactions are dependent on each other, but neither is "equal or reciprocal" (Billett, 2008a: 233), as the situation that influences a

specific action may require a stronger reaction from an individual agency, whereas another situation may require a stronger reaction from workplace affordances. Thus, Billett (2008a) identified that "the duality between the social and the personal were found to be more relational: dependent upon negotiations between the personal and the social" (p. 236). Therefore, learning opportunities and activities can be effective if the correct amount of interest and value are added to the authentic situation.

In developing his theory, Billett (2001) focused on vocational training—or "professional development" (Billett, 2008a), defined as training directly related to the work tasks within the workplace. In doing so, the theory only relates to learning opportunities that are perceived (through normal workplace affordances) to be required to enable further participation in workplace activities. For example, when discussing workplace affordances in hairdressing salons, Billett (2002) discussed the importance and knowledge of hair structure. This type of knowledge content, that would be deemed to be essential to all hairdressers, albeit at different levels of importance for each task, must provide heavy influence on the personal agency of each individual being provided the opportunity to learn about the specific content. The

point of significance here is that if personal agency and workplace affordances interrelate to form effective learning opportunities, then to be determined is what happens when the personal agency is in opposition to the learning opportunity or work task.

On a practical level, Billett's (2001, 2004, 2008a, 2008b) model is a theoretical framework that adds to the literature on how learning occurs; therefore, the practical application is found in how practitioners and organisations can develop and implement learning opportunities. By understanding that learning in the workplace or professional development is a process, which occurs through participation in work activities and relies on relational interdependence between social and personal agencies (Billett, 2008a), practitioners can design and develop learning activities that serve to engage the individuals, yet still meet organisational expectations and needs.

Sociocultural Approaches to Safety Management

It is clear that the social-cultural theories (or approaches) have had significant impact across the wider workplace-learning discipline;

however, the application into practical safety-training situations has not been as distinctive. Whilst there has been a move toward investigating the positive or negative effects of more socially engaging workforce training (see Burke et al., 2006; Taylor et al., 2005), the relationships between activities, individuals, performance, and theory have been "largely unarticulated and unexplored" (Burke et al., 2011:49). However, there have been recent calls for the need to more closely examine the contribution that social processes can have on organisational safety behaviour, and this has resulted in a small number of workplace intervention studies that focus on social interactions (Burke et al., 2011). Whilst not directly investigating the application of learning theory within a safety intervention sense, the move toward acceptance of social-cultural interactions is a large step forward for the safety discipline.

In a study of aged-care nurses, Bernoth (2001) suggested that manual handling training (a common safety-training intervention) can only be learned in practice. She identified a variety of influences, both individual and organisational, which would affect the application of manual handling training for nurses and aged-care workers. The influences included peer pressure from more experienced workers to

do things "the old way" (Bernoth, 2001:54), cultural practices of the facility, organisational resources, policy, procedures, staff rostering, and the political contest (Bernoth, 2001). In advancing her identification of the organisational and individual influences, Bernoth (2009) focused on the need to recognise the personal agency within policy decisions—including manual handling training. Whilst not specifically exploring the use of Billett's (2001) theory, Bernoth (2009) identified the need to recognise and understand the personal agency components in order to influence decisions on worker safety.

In an exploration of underground miners, Somerville (2005) also identified the need to recognise, understand, and use the experience of "the old miners" (p. 15), describing some of the safety learning opportunities within a mine to be part of a community of practice. The miners in her research identified that "pit-sense" (personal experience and common sense) was more important when it came to safety than organisational procedures.

> Learning about safety was described as a practical process of developing common sense; and, in the process of becoming an experienced mine worker, this learning becomes instinctive. A major aspect of this learning is pit sense, in which experienced workers acquire the ability to

> read the safety status of the mine at any given moment. Pit sense is learned through their bodies, using the full range of senses in multiple and subtle ways (Somerville, 2005:18).

Again, whilst not specifically exploring the practical application of learning theory, Somerville's research (2005) emphasised the complexities of learning safety in the workplace. She identified the relationships between the cultural practices of the mine and the individual experiences of the workers, as well as the importance of understanding these complexities.

Within the construction industry, Waddick (2005) identified individual aspects, such as common sense, onsite experience, and watching others, as the most common ways of learning about safety for workers. He stressed the importance of training interventions to recognise and acknowledge the personal agency of workers when delivering safety training.

Within the complexities of the firefighting service, Somerville and Lloyd (2006) explored the manner in which new fire fighters were provided opportunities to learn after graduation from the academy, and assignment to a fire station. Whilst focusing on information and

technology, and not learning opportunities, their research indicated that communities of practice are apparent at fire stations; and, this situated learning is potentially more important than the learning at the academy. More experienced fire fighters recognise "[out of the academy] … you know all the tactics, but still don't know the job" (Somerville & Lloyd, 2006:192). Their research indicated that the embodied understanding of risk, danger, and safety was unable to be learned within a classroom or a book, but that knowledge was constructed through experience within fire situations.

The existence of these few papers that focus on the importance of both workplace and individual components of learning, indicate that codified knowledge practices may not be effective in delivering safety-training interventions. The research shows that learning to work safely requires more than just a conceptual understanding of safety. "It requires an ability to locate the body in place and in practice" (Somerville & Lloyd, 2006:288). For training practitioners, this means that identification, understanding, and application of a wide variety of both organisational and individual aspects is required when developing and delivering safety-training interventions, along with the capability to use authentic training situations.

Educational Learning Theories – Learning Through Experience

In retreating from the behavioural-based theories, with their focus on the fragmenting of information into small units and the passive reception of knowledge from the participant, the characteristic feature of experience-based learning (EBL) is that the experience of the learning occupies the focal point in both teaching and learning (Anderson et al., 2000). In using experience as the means of knowledge production, a participant analyses their experience through reflection and evaluation, then reconstructing it to draw meaning from the experience. The foundation of EBL as a theory or framework is a set of assumptions identified by Boud et al. (1993).

- The foundation and stimulus for learning is experience.
- Learners will actively construct their own experience.
- Learning is a holistic process that is socially and culturally constructed.

The theory has its roots in the ancient Greek teachings of Aristotle; however, the work of Dewey (1858-1952) is more commonly seen as

the foundation of the theory. Although originally centred on the way that children learn, the application of the theory into adult education is widely accepted. Dewey (1938) believed that there was a major connection between education and personal experience. The assumptions and characteristics of EBL can be found in a variety of models and theories on workplace or adult learning. However, as this constructed work focus lies in safety training, only those characteristics with direct links to safety training will be discussed.

Andragogy – Adult Learning Principles

The 1970s saw the introduction of the concept, by Malcolm Knowles, that adults learn differently than children. Since that time, both the concept and the core principles developed from the theory have received much attention from within and outside the workplace-learning discipline (Knowles et al., 2011). Despite continuing debate on what constitutes andragogy, and Knowles initial, perceived differences between adults and children, the phenomenon remains popular worldwide within the discipline of adult education. The central position remains that "andragogy presents core principles of adult learning that in turn enable those designing and conducting adult learning to build more effective learning processes for adults" (Knowles et al., 2011:4).

This phase is focused on the application of learning theories and frameworks to safety-training interventions, and thus, specifically interested in the core principles of adult learning. Therefore, the continuing debate surrounding the wider andragogy discipline is outside the scope of this constructed work. However, where deemed appropriate and important to the discussion, a critique of the debate assumptions will be discussed.

The Adult Learning Principles

Due to criticism surrounding the initial assumptions (see Jarvis, 1987b; Brookfield, 1986) and research, indicating that in different situations the adult assumptions did not work, Knowles' (1984; 1990) original four assumptions of how adults learned (that appeared opposite to how children learned), were advanced to the current six assumptions. The current six assumptions, as shown in Figure 8 (below), are offered to practitioners not as a "be all and end all," but as a set of principles that can be used when appropriate for the situation. Knowles et al. (2011) indicated that in many situations, the assumptions identified as appropriate for supporting children's learning would be suitable for adult learning situations, and vice versa.

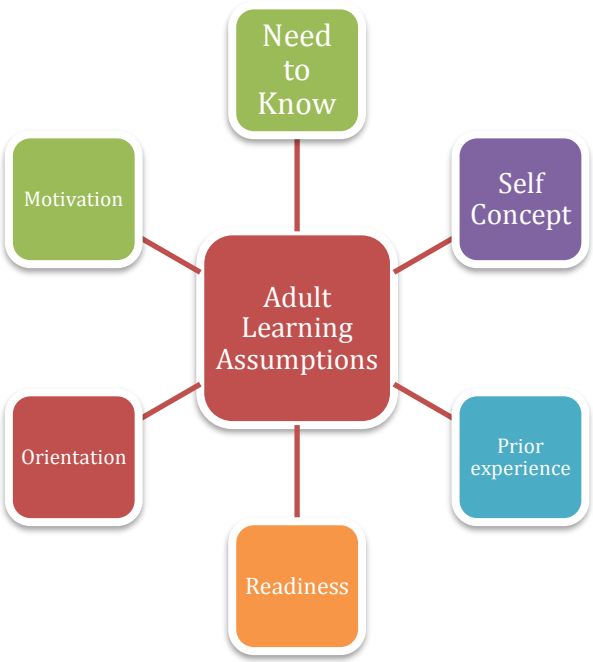


Figure 8: Adult learning principles

(Adapted from Knowles et al., 1998)

The assumptions are also designed to be used in acknowledgment of the wider influences, including individual and organisational differences, and the goals and purposes for learning (see Figure 9 below).

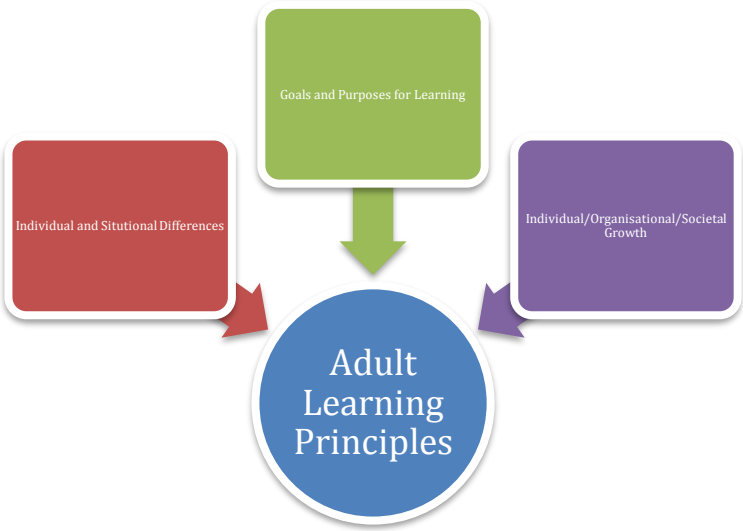


Figure 9 Adult learning principles in practice

(Adapted from Knowles et al., 2005)

It is interesting to note that, within the writings of Knowles (1973; 1980; 1984) and Knowles et al. (2005; 2011), the terms "adult learning assumptions" are interchangeable with "adult learning principles." Whilst small differences in the meanings of the terms do exist, and ongoing criticism of Knowles' work is his lack of attention to the importance of providing clear definitions (see Merriam, 2004; Merriam & Caffarella 1999) this enquiry will also use the terms interchangeably, presenting them as they are used in the original versions of Knowles' work.

Much of the criticism toward the assumptions has been that they lack the support of empirical evidence (Brookfield, 1995), and they fail to encompass an underlying epistemological base (Hartree, 1984). However, Knowles (1984) viewed the assumptions as a "system of concepts" (p. 8), not as a theory, and identified the influences from previously recognised educational theorists such as Lindeman, Bruner, Rodgers, and Maslow.

Lindeman (1925) proposed that learning would be a lifelong practice, and that learners would learn about learning while "engaged in the process" of learning (p. xix). The influence of Lindeman's work on Knowles is noticeable in both the assumptions and the process outline for practitioners to apply the principles. The assumptions of self-direction, prior experience, and problem-centred learning indicate an influence from Bruner's (1966) active-learning work. The constructivist learning approach, of building on the learner's past knowledge and experience, as well as identifying personal shortfalls, is clearly identifiable in both the assumptions and their application. Rodgers' (1967) work on experiential learning is also evident within Knowles' concepts. Rodgers (1967) supported the idea that educators

and teachers were there to facilitate the learning process of the learner, and thus, his experiential learning theory was focused on addressing the needs of the learner with the support of reciprocally considerate relationships. Rodgers' focus on the self-direction of learners as opposed to the focus on traditional curriculum of the day is evident in the principles of adult learning. Knowles' (1984) assumptions of adult learning are based on the premise that, as learners cultivate knowledge through experience, they become more aware of their needs, and their capacity to rely on prior experience grows. This premise has strong undercurrents of Maslow's (1943) hierarchy of needs, due to the gradual realisation of self-actualisation.

The andragogical model, based on the assumptions of adult learning, has become a tool for practitioners across many different training situations. The assumptions, and their application in adult training environments, are recognised as one of the foundation stones of training and development. The assumptions (presented as principles) form part of the "train the trainer" curriculum, as their effective application is considered a core skill for facilitators (ASTD, 2008).

Assumption One – The Need to Know

In recognising research that was showing that adults were interested in the benefits of gaining specific skills or knowledge, Knowles et al. (2011) identified that adults "need to know why they need to learn something before undertaking to learn it" (p. 63). In considering this need, practitioners should inform participants of the value of the specific content and the benefits.

Assumption Two – the Learner's Self-concept

With this assumption, Knowles identified that adults need to be actively involved in the decisions that affect them, for they can "resent and resist" (Knowles et al., 2011:63) learning and training opportunities if they are forced to participate. Knowles proposed that adults could enter learning and training environments with preconceived ideas from the past, when their learning was dependent, and thus, could affect their capacity to engage. In considering this assumption, practitioners need to recognise that adults can be more independent and self-directed in some situations than in others. As such, there is the need to create environments that are collaborative and welcoming to all participants.

Assumption Three – The Role of Experience

This assumption recognises and values the prior experience that participants bring to any learning environment. Knowles (1984) acknowledged that the wide range of experience held by any particular group of adults (as in a class or a workplace), whilst an important resource, would require a greater emphasis and focus on the individual within development and implementation strategies. He also recognised that, due to their varying degrees of experience, the adult participants could be a resource for each other within learning situations, thus placing a need to create opportunities where the experience could be shared, such as group discussions and peer-helping activities (Knowles et al., 2011).

However, Knowles (1984) also recognised that negative attributes of experience could affect learning opportunities. Attitudes, perceptions, habits, and prejudices that adults develop over time and through experience can negatively affect learning, creating the need for facilitators to implement methods to "open the minds" of participants to new ideas and experiences (Knowles et al., 2011:65).

Assumption Four – Readiness to Learn

Knowles (1984) identified that adults learn predominantly out of necessity, and a particular experience or situation within a person's life could trigger the need to develop new knowledge. Linking with the assumption of experience, adult learners want to know why they need to know something before they can open up to learn. In considering this need, and recognising the importance of external needs, Knowles proposed that practitioners should identify and use both individual and organisational (societal) needs when developing training situations (Knowles, 1980). In considering the need to be ready to learn, practitioners should consider "timing learning experiences to coincide" with important developmental needs (Knowles et al., 2011:65).

Assumption Five – Orientation to Learning

In terms of adults' prior experiences and their readiness to learn, Knowles (1984) believed that adults are problem - or task-centred when it comes to learning opportunities; and, they will not seek out learning just for learning's sake. The orientation assumption comes from the belief that learning experiences need to be structured around

realistic situations, which can be immediately applied. In considering this principle, in workplace training situations, practitioners need to link content to work tasks through a range of practical mediums such as pictures, demonstrations, videos, and scenarios (Blondy, 2007).

Assumption Six – Motivation to Learn

Closely related to the assumptions surrounding orientation and readiness to learn, the motivation to learn assumption comes from the belief that adults will respond to internal factors. Knowles, responding to research that indicated that barriers to learning were being caused by internal factors, recognised that adults would be more motivated to learn when internal characteristics, such as "self-esteem, job satisfaction, and quality of life" (2011: 67) were raised and addressed. The important application of this assumption is that practitioners need to recognise and appreciate the participants' efforts and contributions within the classroom or learning settings.

Application of Adult Learning Principles in Safety Training

As stated, the adult learning principles remain popular still today with practitioners and training organisations. As this enquiry is only focused

on the attitudes and perceptions of learners in specific training situations, it is important to recognise how these principles currently are, or are not, applied in safety-training situations.

The state safety regulators have a responsibility for applying legislation; in some cases, this includes approving and accrediting safety-training courses. To gain accreditation from the regulators, training providers must adhere to strict development and delivery guidelines of approved training courses. The practical application of the adult learning principles developed by Knowles (1973, 1984, 1990) forms a considerable part of the guidelines as Table Two displays.

Adult Learning Principle	Regulator	Course	Application
Need to Know	Victoria	HSR	"Curiosity component for each section to promote and encourage uptake of content"
Role of Experience	ALL	HSR Construction Induction High-Risk Licences	"The course should integrate the participant's experience into activities" "Prior experience is to be assessed and acknowledged" "Participants should be encouraged to actively engage with other participants"
Orientation	ALL	HSR Construction Induction High-Risk Licences	"The majority of adults like to see the relevance of what they are learning to their work and life" "Course content should enable participants to understand the link with their workplace experience or situation"
Motivation	ALL	HSR	"HSRs play an important role in prevention of workplace injury and illness and promotion of good WHS practice"

Table Two: Application of Adult Learning Principles in Safety Training

(Adapted from Course Development Guidelines[3])

[3] Course Guidelines - VIC: HSR Training Course Application Package, SA: HSR Training Course Requirements, QLD: Guide for Applicants: How to become an Approved Provider of Health Safety Representative Training, Commonwealth: Health and Safety Representative (HSR) training course requirements, WA: Guidelines and criteria for accreditation.

Interestingly, the development and delivery guidelines for the HSR training course in each state, also mandate that the training must be delivered face-to-face over a 35-hour time period, and each course must appropriately deal with the six learning objectives by ensuring that the 26 learning outcomes will result in expected learner outcomes being met. These two stipulations seem to challenge the adult learning principle of self-concept, in that they do not allow for the participants to learn at their own pace, nor do they involve the participant in decisions in how the course content is to be structured. Each privately developed HSR course (by training organisations), must cover the learning objectives outlined in guidance documents, and whilst there is no prerequisite for attendance in the course, there is no recognition of past experiences, no prior contact with participants, and no allowances for individual differences (such as VIC, where the regulator has developed the course).

The safety regulators appear to be encouraging the use of the adult learning principles, but also limiting the amount of flexibility needed for training organisations to accommodate for the wide range of individualistic behaviours. Clearly, the adult learning principles are

firmly entrenched in the ethos of legislative-required safety training, but not all workplace safety training is approved and accredited by the regulators. A large proportion of the training is developed and delivered based on the needs of specific organisations and their safety management systems. Consequently, there is the lack of an overarching development criterion.

However, as the regulators actively encourage the use of these principles, Albert and Hallowel (2013) suggested that current safety-training programs primarily rely on instructor-centric pedagogical approaches, which are insensitive to the adult learning process. These types of training programs can be ineffective, and even have negative effects on safety performance, as they fail to incorporate theories of learning (Wilkins, 2011; Haslam et al., 2005). Apart from the safety regulators requirement to consider the adult learning principles, there is little empirical evidence available that would suggest the principles are widely-applied across a range of safety-training programs. However, there continues to be calls for the integration of andragogical-based learning techniques into safety-training programs (Albert & Hallowel, 2013; Wang et al., 2010).

Kolb's Learning Cycle

"David Kolb's experiential learning cycle has touched the imagination of many educators" (Foley, 2000:231-232). Kolb's (1984) philosophy of education and theory on experiential learning, whilst having influences from the work of Dewey, Lewin, James, Freire, Rodgers, and Piaget, is fundamentally based on what Dewey called a "theory of experience" (Dewey, 1938). Kolb (1984) integrated ideas and components of those theorists to identify six propositions that form a holistic model of adult development and experiential learning. The six propositions (see Figure 10) created the foundation for Kolb's (1984) identification of individual learning styles.

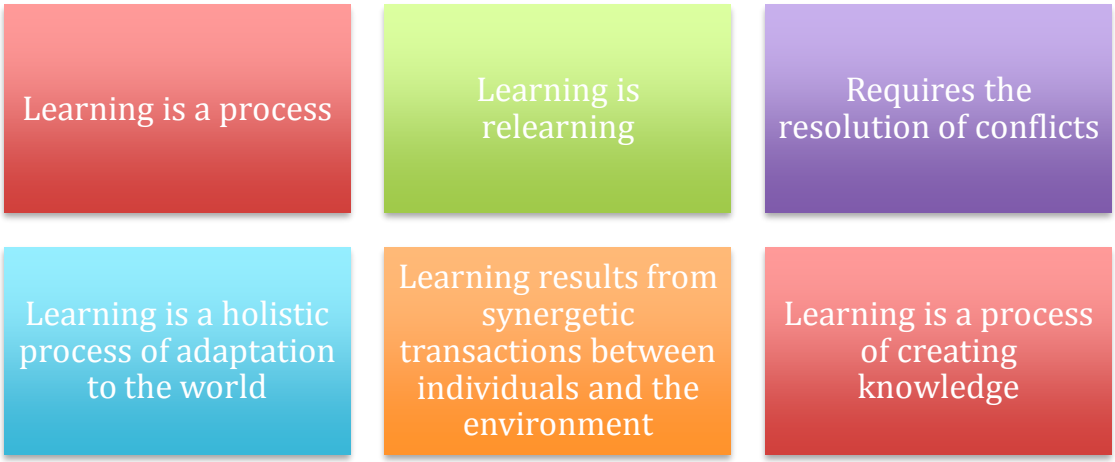


Figure 10: Kolb's learning propositions

(Adapted from Kolb, 1984)

Kolb (1984) proposed that individuals would move through a learning cycle (learning spiral) that contained two sets of dialectically-related modes (see Figure 11). This learning cycle displays learning as a "process whereby; knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience" (Kolb, 1984:41). Using the learning cycle, Kolb identified that learning is a process of constructing knowledge involving a "creative tension" between the modes, whereby a learner will "touch all bases" (Kolb & Kolb, 2005:194).

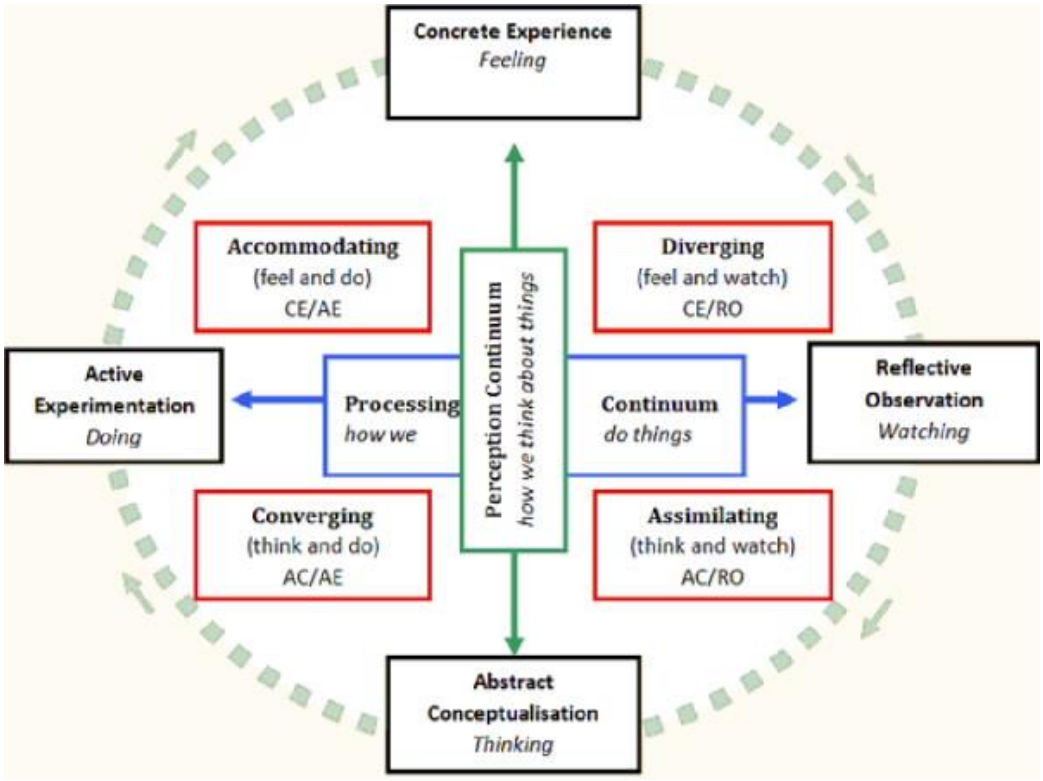


Figure 11: Learning styles

JCU Workplace Educators Resource Package accessed online at:

http://www.jcu.edu.au/wiledpack/modules/fsl/JCU_090344.html

Kolb's (1984) learning cycle is the fundamental process in his experiential learning theory, where concrete experiences provide the basis for observations and reflections. These observations and reflections are integrated and refined into abstract concepts, thus, producing new associations for action, which can then be actively tested to create new experiences. Kolb's theory of learning operates on two levels (see Figure 11). The first level is the four-stage learning cycle:

- Concrete experience (CE),
- Reflective observation (RO),
- Abstract conceptualisation (AC), and
- Active experimentation (AE).

The second level is a four-type definition of learning styles, where each represents the combination of two preferred styles, for which Kolb used four terms:

- Diverging (CE/RO),
- Assimilating (AC/RO),
- Converging (AC/AE), and
- Accommodating (CE/AE).

In initially presenting the learning cycle, Kolb (1971) identified that individuals have preferences for different stages of the cycle due to inherited traits, past life experiences, and any specific external environmental or social pressures. Individuals develop a specific learning style based on the preferences for the stages of the learning cycle experienced during their development from early home and school years, through formal education and early working life, to midcareer and later (Kolb, 1984). The development of particular strengths within one or two modes indicates the core of an individual's learning style.

The practical application of the learning cycle is two-fold. Within development of training programs, the cycle provides encouragement to use a wide range of learning activities that will enable the participant to touch each base. During delivery, the learning style inventory (LSI) can be used to identify preferences to participants, thus providing individuals with an understanding of their own style. Kolb's learning cycle forms part of the theoretical and practical (through the use of the LSI) of Senge's (1990) learning organisation.

Whilst the LSI has been further enhanced by Honey and Mumford (1986), Kolb's theory and his learning cycle remain popular as the basis for "learning by doing," as it is a reasonable way of demonstrating the importance of the link between theory and practice (Vince, 1998).

Application of the Learning Cycle in Safety Training

Empirically, it is difficult to see the influence that Kolb's (1984) learning theory has on safety training. Although constant calls are heard to make changes to ineffective safety-training programs (see Burke et al., 2006; Robson et al., 2010; Waddick, 2005), little published work identifies the theoretical positions of these programs.

Ferris and Aziz (2005), called for change in safety-training programs for machine operators due to the lack of hands-on experience with the machines, recommending that increased time on machines should be incorporated into training programs. Wallen and Mulloy (2006) identified that performing well in quizzes would not ensure safe behaviour outside the classroom, and discussed how identifying learning styles prior to training could help furniture makers. Burke et al. (2011) identified that "more engaging methods had a greater effect on miner safety knowledge and performance than the less engaging

methods" (P. 47). These few studies focused on the use of engaging activities and providing participants with experience to enhance their learning opportunities. This use of experience as a learning tool lends itself to the thinking that Kolb's learning cycle is an important theoretical and practical tool in safety training.

The safety regulators are also advocating the use of increased engagement and experience within their accredited programs. As an example, the HSR course development guidelines across the country state,

> The majority of adults are more likely to learn in circumstances where they are actively involved rather than passively observing. A range of interactive activities (such as group work, case studies, and workplace simulations) must be utilised to provide opportunities for participants to further develop and practice the required knowledge and skills."
>
> (WorkSafe Victoria 2016 Health and Safety Representatives Guidelines Appendix 3, p. 1)

Other guidelines state that "the applicant must ensure the course content caters for differences in learning styles. Using a variety of media (e.g., print, digital, audio) and activities (e.g., trivia quizzes,

games, role plays) should ensure all learning styles are accommodated" (SafeWork South Australia 2016 Guidelines 1.2.6).

These regulator guidelines suggest the influence of Kolb's (1984) ideas, that learners will have a learning style preference; therefore, training organisations and their trainers should accommodate the full range of styles within their programs. However, the use of learning styles questionnaires such as Kolb's (1984) LSI has also been criticised.

Coffield et al., (2004) identify that the LSI has limited reliability, has low predictive validity and there is no evidence that the use of the inventory will improve academic performance. Kirschner and van Merrienboer (2013) highlight the commercial nature of learning styles and their respective questionnaires or inventory's and the generalisation of most of the styles. They indicate that most learning styles are based on types that classify people into distinct groups and this creates three issues. The first is that most people do not fit into one particular style, two the information used within questionnaires to classify the style is limited and inadequate, and there are so many different styles it becomes cumbersome to link individuals to particular styles (Kirschner and van Merrienboer, 2013). Another significant downfall of applying learning styles is that in most learning styles tests,

the individuals are choosing answers based on their own experiences, likes and dislikes. The foundation behind this is that the individual learner is assumed to know what is best for him or her. Pashler et al. 2008) identify that individuals preferred style, as indicated by results may not be their most productive way of learning.

Regardless of the criticisms of learning styles, they continue to be used as a tool within the safety industry to identify preferred learning styles and to assist with the development of engaging training interventions. Safety regulators, RTO's and private organisations actively promote and encourage the consideration of a range of learning styles in the development of training.

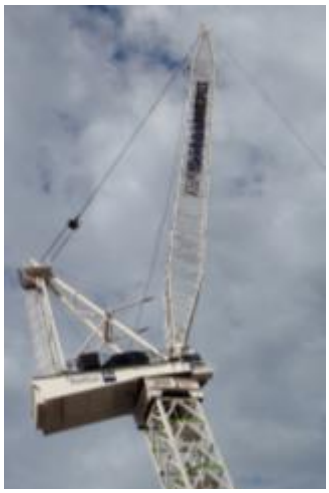
Phase Summary

Phase two highlighted how the practice of safety (including safety training) is heavily influenced by legislative and financial pressures. This phase has identified that the sub-discipline of safety training is trailing behind other workplace-learning disciplines. This is due to the failure to consider the importance of incorporating learning theory into training programs. This phase also highlighted that, whilst there are repeated calls to explore different methods of engaging workers in

safety training, training organisations and their clients continue to be strongly influenced by economic and organisational considerations of training. This focus fails to consider workers' attitudes, perceptions, and needs.

This phase, through a discussion of influential workplace-learning theoretical backgrounds, has identified that a major gap between theory and practice exists in workplace safety training, in part due to these external pressures and in part due to the ignorance of the Industry to critically evaluate the traditional safety/learning environment. In the following Phase, the methodology of this enquiry is presented. The methods described aim to provide an effective way of identifying and presenting the attitudes and perceptions of construction supervisors toward safety training. By exploring the supervisors' attitudes and perceptions, this enquiry aims to provide information to fill the gap.

Phase Four - Raising the Crane: Research Methodology



In the construction industry, the crane is responsible for moving and assembling heavy equipment and materials, like cement or concrete blocks, as well as panels and plates. This equipment is used to lower or lift materials in different directions. Cranes (like research methodologies) come in different forms, shapes, and sizes, and each are tailored for a specific purpose. When constructing a high-rise building the builder needs to identify the right crane for the job, as it needs to have the ability to move anything around the site with ease. Similarly, when constructing a research project, the most appropriate methodology needs to be chosen that will allow the researcher to build the data around the topic.

Phase Introduction

The purpose of this constructed work is to examine how construction site supervisors' attitudes and perceptions toward safety training are developed, influenced, and integrated into practice, as well as how

these attitudes and perceptions may affect the effectiveness of mandated and organisational arranged safety-training programs and courses. I framed this enquiry into the three guiding research questions presented in Phase One.

This phase outlines the methodological design of the work, research questions, aims, and methods chosen. Using a social-constructivist framework of enquiry, this constructed work crossed epistemological boundaries: those of policy and those of situated practice. The research was inductive and framed by the construction supervisors' stories. By using an embedded case study (Yin, 2009), the stories of the supervisors were embedded around the themes, whilst still enabling readers to construct their own interpretation of the narratives. My own experiences as a safety trainer were positioned within the methodology, serving as a guide for the work. In doing so, it enabled this constructed work to explore the complexity of conducting research, where the researcher was positioned as both an insider and outsider. Finally, an outline of the research methods, as well as the scope and limitations of the research, were addressed.

Methodological Understandings

Much of the research work undertaken in the safety field commenced from a point that recognised that the bulk of literature and practice was firmly aligned within a positivist framework. This traditional positivist approach to safety research focused on interventions designed to improve safety performance or reduce physical risks through technological advancements in machinery, and reducing human error (Nichols, 1997). Researchers using these traditional approaches within safety science, seek to explain and predict what happens in the workplace by searching for irregularities and causal relationships between fundamental elements (Burrell & Morgan, 1979). They "treat the probability of risk, prevention of harm, and occurrence of incidents as deterministic properties that are largely separable from their social context" (Turner & Gray, 2009:1260).

Despite the frequency of positivist-framed enquiries and the primary use of quantitative methodology within safety intervention research, social researchers have trended, more recently, toward incorporating qualitative means to investigate the personal, interpersonal, and social facets and issues underpinning safety, and more specifically, safety training (Robson et al., 2010; Turner & Gray, 2009). Mixed methods

methodology and qualitative method methodology have been introduced to safety research to improve knowledge and promote deeper understanding of the contributing factors of incidents, injuries, and fatalities (Robson et al., 2010). “A large range of social science disciplines have investigated safety within organisations using a social constructionist lens” (Turner & Gray, 2009:1260), from communication and identity research (Zoller, 2003; Sauer, 1999) to sociologists investigating the embodied nature of safety (Gray, 2005; Haas, 1977), to legal practitioners investigating rights and obligations of duty holders (Mascini, 2005; Hopkins, 1989), and psychologists exploring the mechanisms of socially constructing safety (Zohar & Luria, 2003). However, Shannon et al. (1999), Robson et al. (2010), and Waddick (2011) all document the dearth of social and critical research into safety-training interventions, and call upon the need to add detail, experiences, and understandings to the technical and problem-solving positioning of traditional positivist-based safety research.

As this constructed work is concerned with identifying the relationship between attitudes and practice, a traditional positivist paradigm focused on the search for an absolute truth would not be appropriate. However, a social constructionist framework would challenge the

conceptualisation of workplace safety training as a disembodied, tangible, and easily quantifiable workplace safety intervention.

A Social Constructionist Methodology

Social constructionism is fundamentally concerned with identifying and describing the processes by which people gain understandings and use language to explain or account for the world in which they live (Gergen, 1985). Burr (2003) identified that, whilst there is no dominant definition of social constructionism, researchers taking this position must be critical toward the traditional techniques of understanding the world. Mead (1934) proposed that people construct their own and each other's understandings toward life, and other things, through everyday encounters with others during social and shared interactions. Workplaces are important spaces for social interactions (Butterworth et al., 2000), and safety training provides excellent opportunities for these interactions, where safety understandings can be constructed. However, traditional positivist-based research on safety training, which focuses on technological advances and changing human behaviour, denies the complex relationship, social interactions, and discourse that people have when engaged in workplace activities.

Safety, and in particular safety training, in many workplaces is often "seen" through the processes and activities that organisations implement to achieve legal compliance (Waddick, 2011). The emphasis is often on the process, rather than the people involved within the processes. This positivist approach diminishes, and in many cases, ignores, the attitudes and perceptions that shape safety behaviour of people within the workplace. Using a social constructionist lens, I would be able to explore deeper insights into the construction site supervisors' "dynamics of social interaction" (Burr 2003:9).

Recognition of the individual construction supervisor discourse, perceptions, and attitudes surrounding safety training are currently ignored. But, listening to these supervisors' opinions would have implications for what organisations can and should do (Burr, 2003). If the neoclassical, teacher-led model is positioned within the discourse as the most efficient method of imparting knowledge, then there is a short step toward the position that safety training offers the opportunity to change behaviour, and its effectiveness can be measured in top-down, mandated, and standardised assessment or competency demonstrations. In this discourse, participants and training facilitators are reduced to rule following information

deliverers or receivers (robots), with no consideration being given to social, cultural, or historical aspects of individuals. This prevailing technical "epistemology of practice" (Kincheloe, 2010:7) fails to identify and understand the significant influences that discourse has with institutional and social practices (Burr, 2003) that, in the case of safety discourse and the associated safety practice, leave participants with insufficient information or knowledge to undertake their work in a safe manner.

Whilst there is considerable criticism and debate on the lack of alternate discourses on safety-training research (see Waddick, 2011; Robson et al., 2010; Turner & Gray, 2009), these views could be seen as obstructive, as typically, researchers of each side of the debate will continue on without considering the positives of the opposing view (Michael, 1999). The emphasis of this constructed work is the identification and understanding of the complex social relationship between safety training and safety practice. This requires a methodology that enables data, in the form of individual attitudes, and perceptions, to be identified, analysed, and presented in a deep and meaningful manner.

Positionality

A phenomenological approach is increasingly being used for safety research and is a common approach for social constructivists (Burr, 1995, 2003). However, whilst a phenomenological design framework would have allowed for the documentation of supervisors' experiences, as well as provided a "description of the universal essence" (Creswell, 2007:58), the need to discard my prejudgments (Moerer-Urdahl & Creswell, 2005) during analysis and presentation of the data, or bracket out my experiences (Creswell, 2007, Moustakas, 1994). This made the use of a phenomenological approach impossible for a practitioner in my position.

People who are insiders to a setting being studied often have a view of the setting and any findings about it quite different from that of the outside researchers who are conducting the study. I believe that these differences have significant implications for the quality of knowledge that will be gained from the research, its potential to enhance insiders practice and the relationships insiders and outsiders have with each other. Whether the researcher is an insider, sharing the characteristic, role, or experience under study with the participants, or an outsider to the commonality shared by participants the

under study with the participants, or an outsider to the commonality shared by participants, the personhood of the researcher, including her or his membership status in relation to those participating in the research, is an essential and ever-present aspect of the investigation. My own experiences as a safety trainer and consultant in the construction industry were positioned within the methodology so that they served as a guide for the work and, in doing so, enabled this work to explore the complexities of conducting research where the researcher was positioned as both insider and outsider.

Insider/Outsider Approach

The insider/outsider approach, in particular, provides the intimate insider the implicit, practitioner's subjective perspective, whilst allowing the external visiting outsider the explicit, auditor's (almost) objective perspective, that the research requires when handling organisational content. This insider/outsider approach provides the emic and etic view needed for research methodology to gain greater credibility and validity within the workplace domain (Brislin, 1976). Whether the researcher is an insider, sharing the characteristic, role, or experience under study with the participants, or an outsider to the commonality shared by participants, the personhood of the researcher,

including her or his membership status in relation to those participating in the research, is an essential and ever-present aspect of the investigation. In this case study, I am both an insider and an outsider.

Being an Insider

My position as an insider in the case study organisation – BuildUp Constructions comes from having been contracted by them to deliver a variety of safety training programs to some of their staff (including site supervisors). I have worked with BuildUp Constructions in both Victoria and South Australia and have delivered training to over 200 staff members. I have a thorough understanding of the regions training programs, safety systems, organisational structure and have 'taught' senior management and site personnel.

In this work with site supervisors, I developed knowledge that not only will enhance understanding of safety training interventions but also will assist me personally and help future participants in training courses as it could help me become a better facilitator of safety training interventions. On further reflection, I realised I sometimes shared experiences, opinions, and perspectives with my participants, and at

other times I did not. It is not that I sometimes saw myself as an outsider instead of an insider. Rather, not all populations are homogeneous, so differences are to be expected.

Being an Outsider

The issue of the researcher as an outsider or an insider to the group studied is an important one that has received increasing exploration by social scientists, often because they find themselves studying a group to which they are not a member (Dwyer and Buckle, 2009). Whilst my position as an insider in the case study organisation – BuildUp Constructions comes from delivering training to some staff, I still am considered an outsider by all of the people I interviewed as I do not work in Construction. In the case of my research with construction site supervisors, I have not experienced the daily grind of the construction site, I am not forced to attend the safety training interventions that I am investigating. I do not have the same qualifications, gender or workplace experiences as the interview participants.

The benefit to being a member of the group one is studying is acceptance (Brannick & Coghlan, 2007). One's membership automatically provides a level of trust and openness in your

participants that would likely not have been present otherwise (Asselin, 2003). One has a starting point (the commonality) that affords access into groups that might otherwise be closed to "outsiders." Participants might be more willing to share their experiences because there is an assumption of understanding and an assumption of shared distinctiveness; it is as if they feel, "You are one of us and it is us versus them (those on the outside who don't understand)." As a qualitative researcher, I do not think being an insider or an outsider makes me a better or worse researcher; it just makes me a different type of researcher.

The aims of this constructed work evolved from my position as both and insider and an outsider. The central premise that construction supervisors have negative attitudes toward safety training comes directly from my work within the industry and the case study organisation. The knowledge that these attitudes have ongoing consequences for the practice of safety training and safety practice onsite also comes from my position as an educator – one outside the organisation.

The insider/outsider approach was crucial to this constructed work as latent beliefs and understandings of safety and safety training emerged through the interview process, and allowed the interviewee and myself to become more aware of these beliefs and their potential effects.

Research Design Framework

In undertaking this constructed work, I seek to become a "bricoleur" (Denzin & Lincoln, 1994), by using a range of different processes as dimensions of my research, I can seek understandings across a range of disciplines, industries, and methodologies Kincheloe (2004). My "toolbox" (Becker, 1979) for this constructed work requires a framework that allows me to (a) identify and analyse the relationship between training, and individual attitudes and (b) report and present the results in a way that is easily comprehensible for practitioners, organisational management, and the wider safety community. Investigating the relationship between safety attitudes and their application in the workplace practice fits comfortably within this approach, as the qualitatively nuanced interviewing and observations allow for deeper explorations of the individual attitudes and their application, as opposed to a quantitative framework that might focus

more on the identification and probability of specific attitudes or practices.

The increasing trend of the use of qualitative methodology and design frameworks is becoming evident in the broader "industry" of safety. However, the context of this work, and the focus on individual attitudes and perceptions toward safety training within the construction industry, could lend itself to a variety of research design frameworks. This constructed work requires a design framework that allows for (a) the investigation of how construction supervisors develop attitudes and perceptions of safety training, (b) how these attitudes affect experiences in safety training and safety practice onsite, and (c) is widely accepted in the industry.

A case study approach enables the collection and presentation of a rich description (Geertz, 1973) of the application and practice of attitudes toward safety training, without the express need to distance myself from the process. In acknowledging myself as a participant in this constructed work, and in interpretation, I am able to provide an insider's view of the personal meanings of events and relationships (Stake, 1994, 2005).

Case Study Research and Methods

Case study research strives for understanding through in-depth description of circumstances, individuals, and communities (Neuman, 2003). Sturman (1999) sees the distinguishing feature of case studies as a social group that develops its own characteristics, where such characteristics are not simply a loose collection of individual behaviours. Case study research aims to provide understanding of phenomena (in its own context) through identification, description, and presentation of in-depth data (Bromley, 1986). Stake (1994, 2005), whilst highlighting that there is no agreement on a definition of case study research, contended that a case study examines, in detail, a bounded system—or a case—at a specific time (or over a period of time), using multiple sources of data found in the setting. However, Yin (2009) contended that the distinctiveness of the case study serves as its abbreviated definition of "an empirical inquiry about a contemporary phenomenon, set within its real-world context—especially when the boundaries between phenomena and context are not clearly evident" (p.18).

Recognising individual attitudes toward safety training (and safety in general), and investigating this impact on the practice of safety within a construction site, requires identification and understanding of a wide range of components. Case study research accepts that both the environment of the bounded system, and the complex components within, are integral to understanding the case (Yin, 2012). Cresswell (2007) identified that a major challenge of case study research is in the identification of the case itself. Whilst providing no solutions as how to identify the case, Cresswell (2007), Yin (2012), and Stake (2005) all agreed that the case must be a bounded entity or environment.

This constructed work differed from previous safety-orientated, construction case studies (see Sijie, 2015; Kadiri, 2014; Zolfagharian et al., 2014; Long et al., 2004), as it was bounded by one construction organisation as the case to be investigated, as opposed to using the construction industry (or specific parts thereof—such as domestic housing or civil construction).

A single embedded case study approach (Yin, 2012) was used for this constructed work as it allowed for the identification and comparison of overlapping narratives of practice among the supervisors across

construction sites in Australia. This version of case study design allowed me to draw upon different understandings and different social, cultural and historical components of previous learning experiences, as well as different legislative and organisational requirements of safety training across different states in Australia. The current literature indicated that a wide range of components could influence safety-training effectiveness. For example, Waddick (2011), Wilkins (2011), and Zoller, (2003) indicated that management commitment, safety culture, and organisational maturity could all impact the effectiveness of safety training and, therefore, form an important aspect of this study. The embedded single-case study allowed for consideration of all aspects within a context, whilst still allowing for "the researcher to focus on an issue or concern" (Cresswell, 2007:74).

An Embedded Case of the Construction Industry

Stake (2000) identified that case selection is the most important factor in design. The selected case studies need to be chosen in a manner that provides for theoretical insights and assists in "illuminating and extending relationships and logic among constructs" (Eisenhardt & Graebner, 2007, p. 27). Each case selected in this constructed work needed to provide the best opportunity to learn (Stake, 1994, 2000). At

the time of site selection, the multinational organisation in which the case study was situated had over 20 active Australian construction sites, across four states, with more than 100 site supervisors available for interviews.

The decision to use four embedded case studies (QLD, WA, NSW, VIC) was strongly influenced by two factors. The first is the difference in legislative requirements across Australia. As previously identified in Phase Two, most of Australia has harmonised WHS legislation with QLD, NSW, NT, SA, TAS and the Australian Capital Territory (ACT), along with the Commonwealth jurisdiction, having adopted a model Act and Regulations, meaning that the requirements in these jurisdictions are very similar. VIC and WA have yet to adopt the new legislation; therefore, some areas of workplace practice have significant differences in requirements. This provided a unique circumstance to identify whether the legislative requirements influenced learning opportunities. The second influential factor in the decision to utilise four embedded cases was that, whilst organisational policy and procedure is similar across the states, each state operates as its own entity financially, and in some cases, strategically. This meant that operational components of the site, such as safety and training, could

have differences that affected or influenced training effectiveness. These factors combined, provided the practical boundary required for case study research.

The boundary of each embedded unit, within this constructed work, was in the state legislative jurisdictions of QLD, NSW, VIC, and WA. The case study organisation BuildUp Constructions, in which this constructed work was located, had broad overarching policy and expectations of the supervisor's role across each state, along with similar external environmental factors, such as union involvement, client expectations, and subcontractor relationships. However, clear differences existed between each state, in both legislative and operational components, such as safety requirements and project time constraints. These differences provided further opportunity to investigate influences on training effectiveness.

Participants and Sampling

The supervisors' perspectives

By its very nature, the construction of buildings requires many different people and experiences. However, supervisors with

responsibilities for site safety working on current projects within BuildUp Constructions' regions were invited to participate in this work, because of its focus on their attitudes and perceptions toward safety training. The importance of the supervisors' understandings, attitudes, and feelings towards safety and safety training was made evident in the works of Waddick (2011), as well as Wells and Chang-Wells (1992). They identified the level of commitment and motivation of the supervisor to be critical factors in the adoption and success of safety practice onsite. The supervisors are also the authorities on the safety activities within their areas of responsibility. Furthermore, they are recognised as the go-to leaders onsite, with significant positional and personal sources of power and influence over workers. Due to the complex nature of construction sites, with many different sub-contractors (often over 400 people), the supervisors often offer the only common reference point. The safety duties and specific work role of each individual supervisor cannot be delineated or defined due to the organics nature of their work, which is responsive to the day to day business of construction. Thus, as key players in the safety practice dynamic, with an influential role from a worker's perspective, supervisors who had participated in organisational and formal safety-training programs were selected and invited to participate in this

study. A timeline for the selection and interviewing of the participants is provided below.

Sample selection

A purposeful sample of 10 site supervisors was selected from the pool (over 20 individual construction sites) of current BuildUp Constructions' projects. Creswell (2005) described purposeful sampling as "a qualitative sampling procedure in which researchers intentionally select individuals and sites to learn or understand the

central phenomenon" (p. 596). Generalisations from this type of sampling are limited because the participants were specifically selected for their experiences; thus, they were not necessarily representative of all supervisors employed by BuildUp Constructions across Australia (Cavana et al., 2001). The limitations of the research design and areas for future research are considered further below.

To broaden variation, two levels of supervisors were represented in the sample: those promoted from labour or trade positions and those graduated from the BuildUp Constructions' graduate program. To authentically identify potential participants, discussions were undertaken with the safety managers in each region. To further maximise the sample variation, the participants represented five regions across Australia.

Rather than obtain a representative sample, the intention was to include examples from each region in Australia. The constructed work also utilized convenience sampling. Creswell (2005) defined convenience sampling as "a quantitative sampling procedure in which the researcher selects participants because they are willing and

available to be studied" (p. 590). The sample of participants consisted of supervisors who met the following criteria:

1. represented one of the current project sites groups,
2. experienced one or more safety-training programs,
3. were accessible to the researcher, and
4. were willing and available to be interviewed.

The interview sample was comprised of ten supervisors from 5 separate BuildUp Construction working sites. The sites were chosen due to the project timeframes, with the chosen sites at stages where the essential position of supervisor could be released for interview. At each site two supervisors meeting the criteria above was approached by the safety manager and invited to participate in the work; the initial 10 identified by the criteria agreed to participate. For their involvement in the work, the participants were provided with the research analysis and recommendations. The analysis identified issues with the current training practices within BuildUp Constructions in each region, and highlighted areas for improvement. The recommendations were likely to be of some interest to the supervisors,

as the work compared their attitudes and perceptions, contrasting them with organisational needs and requirements.

Sample Demographics

The ten supervisors interviewed for this work were all males aged between 25 – 60 from a range of cultural backgrounds. The primary language of all ten supervisors was English. Each supervisor had worked for BuildUp Constructions for at least five years and had participated in numerous safety training sessions mandated by BuildUp Constructions. The type and number of safety training sessions attended by each supervisor varied between sites, but all stated they had attended at least 10 different training programs.

Scope and Research Limitations

Many issues surrounding safety training in the construction industry, which were already described in the previous phases of construction, are not unique to Australia, but are of global importance, in terms of their links to safety practices and efforts to reduce fatalities and injuries (Burke et al., 2011). It is hoped that through analysis of the foundation of attitudes toward safety training, this work will bring attention to both the learning practices of supervisors and to the array

of workplace learning issues with which attitudes are intertwined. The scope of the research was limited due to funding constraints. There were many project sites and supervisors I wanted to interview, but who could not be reached due to limited resources. Therefore, while the research was national in scope, there was only one site from each region; thus, only five states of Australia (VIC, NSW, SA, WA, QLD) were represented.

In-depth interviews were conducted with 10 supervisors in order to consider and comprehend the complexity of attitudes, present in the workplace, toward safety training and learning. An emergent area of enquiry that draws upon qualitative approaches toward investigating attitudes and perceptions is illustrated in recent reports (SafeWork Australia, 2011a, 2001b, Zohar, 2008, Zohar & Luria 2003), however, there is little qualitative research using supervisor interviews which focus on the foundations of their attitudes toward safety training and workplace learning in Australia. While studies have been conducted on the effectiveness of specific safety-training interventions (Clouser et al., 2015; Caponecchia & Shields, 2011; Burke & Hutchins, 2008, Zohar, 2008), there have been no studies which reflected upon individual

supervisor's attitudes and perceptions toward these workplace training programs. The innovative aspect of this constructed work lies in identification and presentation of the foundations of the supervisors' attitudes, and the effects of those attitudes on safety-training and practice. The identification of these effects contributes to the knowledge of workplace training and safety practice.

Data Collection Methods

According to Bassey (1999), case study requires at least two different sources of evidence; meanwhile Yin (2012) contended that "good case studies benefit from having multiple sources of evidence" (P.10). In this constructed work, each of the four embedded cases consisted of two data sources: interviews and organisational documentation. The primary source of data was collected through ten semi-structured interviews, conducted at working construction sites in the four different states. The secondary source of data was the relevant organisational documents, such as safety and training policy and procedures, job descriptions, site safety plans, and safety course outlines provided by the national safety manager.

The "tactic" (Miles & Huberman, 1994) of using both a primary and secondary data source worked toward "reducing the likelihood of misinterpretation" (Stake, 1994:241). The organisational documentation with its robust legislative compliance focus is used as secondary data within this work to verify the interview data that could have a strong individual bias. Denscombe (2007) stated that official documentary sources, such as organisational policy and procedures, are likely to be authentic, credible, and representative. However, he cautioned about using documents without being wary of their validity. This will be considered later in more detail.

Interviews

Interviews are often the primary source of data when a case study approach is adopted (Cresswell, 2007). Eisenharbt and Graebner (2007), highlighted that interviews have the capacity "to gather rich empirical data, especially when the phenomenon of interest is highly episodic" (P. 27). Creswell (2007) supported this view of the capacity of interviews and added that they are appropriate when searching for rich, personalised information. There are, however, a number of different types or categories of interviews. The types of interviews, as described by Patton (1980), could be presented on an extreme

continuum, as shown in Figure 12, with one extreme being informal, conversational interviews with questions emerging from the immediate context and asked in the natural course of interviews, to the opposite end of the continuum, with the use of closed-question interviews, where the questions and response categories are predetermined, and the responses are fixed.

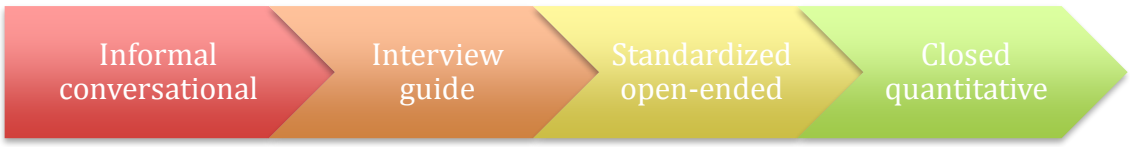


Figure 12: Interview Continuum

(Adapted from Patton, 1980)

Between the two extremes, as identified by Patton (1980), there is the guided interview approach and standardised open-ended approach. A major difference between these two categories lies in the flexibility offered by a guided approach. Whilst a standardised interview would allow each participant the opportunity to answer the same questions, thereby increasing the comparability of responses (Cohen, Manion, & Morrison, 2007), the interview type lacks the flexibility to probe into personal and individual circumstances. A guided approach allows for an interview in which the researcher follows broad predetermined

questions or identifies themes to discuss, but can provide the participants some flexibility to allow for more openness and, where appropriate, even allow interviewees to present their own experiences in their own time and manner (Denscombe, 2007; Saunders, Lewis & Thornhill, 2007).

In the research interview, reflexivity requires an analytic approach that accounts for and respects the different meaning brought to the research by the researcher and participant (Banister et al. 1994). Cohen, Manion, and Morrison (2007) highlighted that the interview type chosen should reflect the purpose of the research. In-depth interviewing is a qualitative research technique that involves conducting intensive individual interviews with a small number of respondents to explore their perspectives on a particular idea, program, or situation (Boyce & Neale, 2006). Applying in depth interviewing in this constructed work provided me with a means to gather the attitudes and perceptions of construction site supervisors, as it allowed me the opportunity to not just ask questions and receive answers, but to talk to and interact with the supervisors about a variety of subjects related to safety training. Gaining their trust was paramount

importance and central to my admittance to their world. However, I am aware that my background as a safety professional and my role as a trainer, together with my pre-conceived ideas about the ineffectiveness of safety training, has undeniable contributed to the research process and chosen methodology.

As this constructed work sought to identify the extent of impact and influence that individual attitudes have on safety training, a data collection tool was required that would allow for probing of specific topics that were raised, I utilised a guided approach (Patton, 1980). This approach provided me with the opportunity to use a smaller set of open ended questions based around topics related to safety training and the impact of safety in the workplace. The development of the questions was heavily influenced by Ellis & Berger (2003), who postulated interactive interviewing as an appropriate means for getting an in-depth and intimate understanding of people's attitudes and perceptions with emotionally charged and sensitive topics. An interactive interviewing approach, offers flexibility in eliciting responses from participants by providing the opportunity for the

researcher to use their own stories or experiences when asking participants questions (Ellis & Berger, 2003).

As my role as a reflective researcher was to prompt, probe and stimulate the supervisors' account of safety training, my own experiences would be of benefit to elicit responses, as such when framing and formulating the questions for the interviews I focused on my experiences participating in and leading safety training and generated open-ended probing questions designed to elicit experiences. Questions that used my own story as an opening; "I remember my first time at a safety course, it was… Tell me about your first time". Alvession and Skoldberg, (2000) identify that framing of the questions as interactive allows for the establishment of a close personal rapport and mutual relationship within the interview. Interactive interviewing was an effective method of prompting responses from the supervisors' as many times during each interview the response to a question started with "the same thing happened to me" or "I felt exactly the same way". The use of interactive questions within an in-depth interview (Patton, 1990, Ellis & Berger 2003) allowed my identity as a safety professional and trainer to become an

'insider' (Brislin, 1976). within the minds of the supervisors as I shared common experiences.

Each interview conducted with a site supervisor was approximately 60 minutes in length. The interviews were undertaken in the site office each selected working construction. In some cases, private meeting rooms were available for the interviews; however, in a small number of cases, an open-plan office or room, with site personnel and site noise, was the only available space. Interviews were recorded digitally using a Live Scribe recorder pen, the transcriptions of all interviews were produced, and each participant was sent their interview transcript for summary and accuracy purposes. During transcription and analysis, if clarification of any part of the interviews was needed, or if any further information was required, the supervisors were contacted by email initially, and then by phone, in some cases.

The guided approach, with a small list of semi-structured questions assisted in gathering unique, detailed accounts of personal attitudes and perceptions from each participant. It allowed for the flexibility of

participants exiting the interview in order to respond to issues onsite, as well as provided site management with a working timeframe of unavailability. Mauthner and Doucet (1998) suggest that findings do not emerge only at the last stage of the research, but there is a deepening of insight throughout the research process. During this constructed work, I found my own perceptions of the reasons for safety training ineffectiveness being altered due to the experiences and perceptions of the participants. Patton (1990) and Ellis & Berger (2003) both state that the guided approach allows for flexibility and reflective practice between each interview as emergent findings from intermediate stages inform subsequent interviews and analyses. Such was the case in this constructed work where participant responses in the first five interviews, and changes to my own perceptions of training ineffectiveness prompted the modification of some questions for subsequent interviews.

Official Documents

To enhance and attempt to verify some of the information gathered during the guided interviews, safety and training documentation from the construction company was collected, sourced, and used in the analysis process. Organisational documentation can, in some cases, be the only items that provide existence for phenomenon, such as job descriptions, organisational structures, or procedures (Prior, 2003). Atkinson and Coffey (1997) referred to these necessary items as document realities, identifying that they are created and sustained entirely in documentation. Prior (2003) stated that documentation has a "relatively low profile in any organisational system" (p. 60), however, becomes much more important when things go wrong. Cohen, Manion, and Morrison (2007) identified that documents are valuable when looking at phenomena and can support information gathered through other means, although, Merriam (1998) recognised that the accuracy and authenticity must first be established of any document used.

Organisational documentation, such as position descriptions, training policy and procedure, safety management system policy and procedure, WHS and OHS policy, and annual reports were used as a secondary source of data for this constructed work. These "document

realities" (Atkinson & Coffey, 1997) contained information about the activities and features of the construction site supervisor and their safety practice. These documents, although written by a range of different people within the organisation had been authorised by the senior management team, thus, they provided a method to verify some of the interview statements. The documents were useful in providing examples of how the organisation expected that the safety responsibilities and training activities were defined and implemented by the supervisors. For example, the safety management system for each site contained detailed information on the role responsibilities and specific training requirements for all site management staff, and the annual reports contained detailed information on major training and safety initiatives.

The documents used within this constructed work were obtained through three main sources. Initially, state safety managers were asked to provide a range of documentation relating to the role and safety responsibilities of site supervisors One manager openly provided the documentation; however, the remaining three stated that it was against organisational policy to provide documentation to third parties. In response, I sought and received permission from the senior

management team that provided me with access to any relevant safety and training documentation. An unsolicited scan of organisational documents in the public domain was also conducted, contributing both strategic and annual reports of the organisation to the data collected and analysed for this constructed work.

Analysis

Yin (2012) identified that the data analysis stage of case study is "probably the most troublesome" (p. 15), and suggested that researchers should look toward the motivation of the case study to determine the direction for analysis techniques, and that the analysis of the case study should be guided by the theoretical intentions underpinning the research which were originally reflected in the study design and research questions. This constructed work was guided by the notion that safety knowledge is socially constructed, and that individual attitudes and perceptions are contributing factors to the social interactions within workplace training and other learning opportunities. This concept informed the research questions and the design framework, and played a significant role in the data analysis process.

Yin (2003) stated that analysis "consists of examining, categorising, tabulating, testing or recombining evidence to address the initial propositions of a study" (p. 109). However, Welsh (2002) identified that there is a myriad of approaches to qualitative data analysis that have been both accepted and debated across the literature, although most seem to follow an underlying process, suggested by Creswell (2007), which consists of preparing and organising data, reducing the data into themes through coding, and representing the data in some form.

Across the literature, this basic process has been developed into a number of strategies for data analysis. For example, Creswell (2007) described three strategies (qualitative, quantitative, and mixed methods) used across narrative, phenomenological, ground theory, ethnographic, and case study approaches of research design. Bryman (2008) identified philosophical and technical issues as the two main approaches, but contends there are more. Yin (2003) suggested that, with case studies, there are three broad analytical strategies (theoretical propositions, rival explanations, and case description development) that can be used across five specific techniques:

- pattern matching,

- explanation building,
- time-series analysis,
- logic models, and
- cross-case synthesis (Yin, 2003, p. 116).

However, Cohen, Manion, and Morrison (2007) suggested that, whilst no one correct way of analysing exists, the approach taken by each researcher should be "fit for purpose" (p. 461). In some cases, a mixture or a bricolage of analysis approaches may be required to enable the researcher to respect the complexity of the meaning discernment and inquiry process by using any and all available analysis tools. Denzin and Lincoln (1999) suggested that a "combination of multiple methodological practices and empirical materials, perspectives, and observers in a single study is best understood, as a strategy that adds rigor, breadth, complexity, richness and depth" (p. 6).

To be fit for purpose (Cohen, Manion & Morrison, 2007, p. 461), this constructed work required an analysis technique that allowed the attitudes and perceptions of construction supervisors to first be identified, and then related to within individual and organisational

interactions and practices. These supervisor attitudes and perceptions toward safety training could not actually be seen, but they were represented in the language and discourse used, as well as in the day-to-day practice on the worksite. As such, this constructed work loosely followed a deconstruction (Rose, 1990; Burr, 1995), and thematic analysis approach (Braun & Clarke, 2013) in order to segment the texts (both the interview transcripts and organisational documentation) to determine how they were constructed. Safety practitioners and researchers such as myself often believe, or become accustomed to thinking, that organisational safety systems are given a privileged position over individual behaviour, as organisations establish rules and procedures that must be followed. This personal perception formed the bases of the formulation of the interview questions, but took a back seat during analysis as the aim of the work was to identify the participant's attitudes and perceptions.

Derrida (1981) suggested when investigating any phenomenon that, to understand its foundations, researchers must move past accepting societal and individual components as opposites and, instead, consider them (i.e., organisational systems and individual practices) as inseparable components of an issue, neither of which makes sense

without the other (Burr, 1995). The deconstruction of the safety system and single binary allowed the individual nature of the attitudes and perceptions of the supervisors to come to the forefront, in order to focus on the social nature of the interrelationship between safety attitudes and practice. Burr (1995) posited that an analysis involves identifying the subject's positions across a range of discourses, and examining their political implications; however, this constructed work loosely followed Rose's (1990) Foucauldian genealogy deconstruction, as the interview questions sought to trace the foundation of present attitudes, in order to examine how current safety practices were developed.

Analysis of Discourse

Discourse identification through a specific analysis process is rarely described in the literature; and, Burr (1995) believed that the actual identification process is largely "intuitive and interpretative" (p. 167). However, she described a two-step process, referred to as "the analysis of discourses" (p. 171), where the first step is a reading and re-reading of the text to search for, and place in groups, recurrent themes or sets of phrases. This first step is similar to the (Braun & Clarke, 2013) where the aim is for researchers is to delve deeply into the data by

repeated reading, viewing, or listening. The second step is to study those groups for the implications. This process is similar to an analysis strategy suggested by Miles and Huberman (1994), who separated the analysis of qualitative data into three distinct processes: reducing the data; displaying the data; and drawing and verifying the conclusions. Burr's (1995) two-step process combined the first two steps of the Miles and Huberman (1994) process.

As the purpose of this constructed work was to identify individual attitudes toward the complex issue of safety training, I used an analysis process that divided Burr's (1995) and Braun & Clark's (2013) initial step of reading and re-reading the text into two steps similar to the Miles and Huberman (1994) process of reducing and displaying the data. The process I undertook, as illustrated in Figure 13 (see below), included reading and re-reading each text; identifying patterns, themes, and important phrases; linking these to implications and literature; and, drawing conclusions. However, this process was not linear, as the reading of each text occurred concurrently while the implications of the themes and phrases were examined, and as the conclusions relating to the context of safety training were developed. The non-linear fashion of the process provided an opportunity to listen to the text whilst

reflecting on the literature, thus, allowing a range of important themes and implications to be identified.

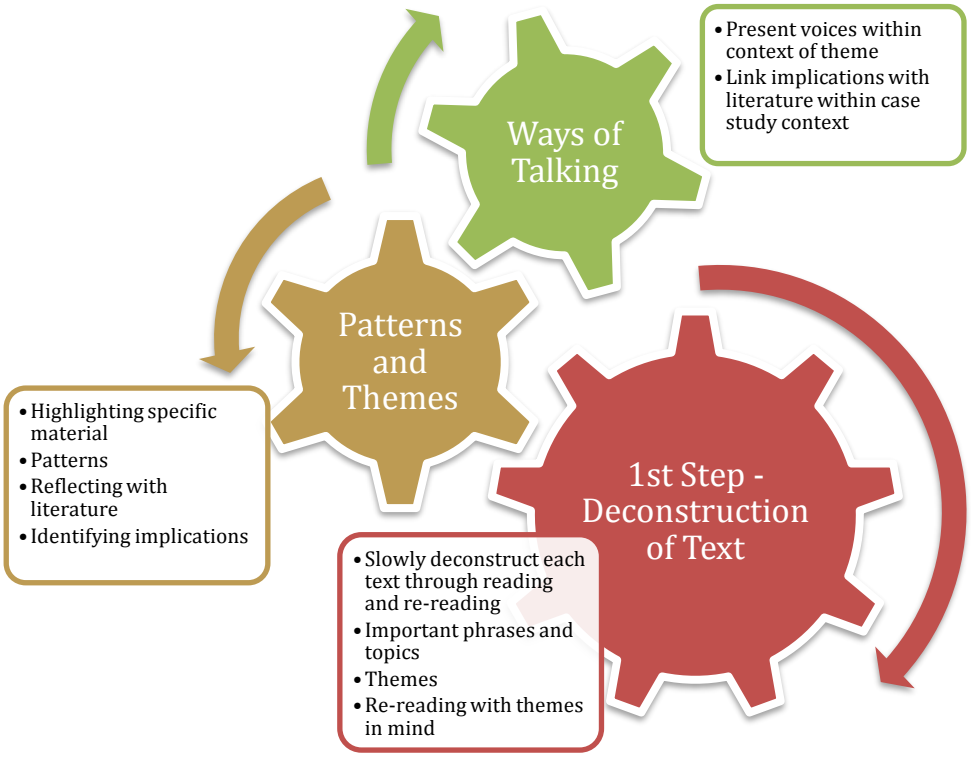


Figure 13 Data analysis strategy

Step One – Deconstruction of Text

Preceding the analysis of the text, the data needed to be presented in a manner which allowed the text to be studied and analysed in detail. Representation of the interview audible data was an interpretive process that preceded the analysis of data. The transcription process involved decisions about the level of detail to use (such as including or

discarding verbal interactions), data interpretation (distinctions and inclusions of tones, such as “whatever!” or “whatever … you say"), and data representation (“what are you doing” instead of “wachyadoong”). The meanings of expressions can be overpoweringly shaped by the way in which something is said, in addition to what is said (Bailey, 2008). The transcriptions involved careful listening to each interview audiotape, whilst transcribing into named Microsoft Word files, requiring an average of 4 hours of transcription for every hour of interview time. Jargon such as Subbie (Sub-contractor), EWP (elevated work platform), SWMS (Safe Work Method Statement), CW (construction worker), PM (project manager) was consistently used however, my “insiderness” (Brannick & Coghlan, 2007) of the construction industry enabled an easier understanding of the jargon within the stories from each supervisor and allowed for a presentation of detail at a level that researchers from outside of the industry might not be able to reach.

After the transcription, the initial analysis of each interview was performed. Each interview was read and re-read several times in order to become familiar with the individual supervisors and their nuances. During each reading, I searched for recurrent themes, or clear sets of

statements or phrases about safety and safety training. I looked for words and phrases that appeared to be rich in detail regarding links between training, practice, and organisational systems. I listened to the interview tapes to "hear" meanings, comments, and opinions and also to capture features of the interviews, such as emphasis, speed, tone of voice, timing, and pauses (Roberts, 2004).

During each interview reading, I utilised my personal experiences and knowledge to identify areas where interactions of power relations, safety practices, and foundations of attitudes toward safety training occurred within the text. This process could almost be related to a Freudian free association technique (Parker, 1994), as I divided stories within the data into different parts and looked for similarities and common issues. Using different colours of pencils, I highlighted different events or potential themes, as well as sets of words that described topics, problems, and issues surrounding safety, safety training, and the supervisors' practices in the workplace.

Step Two – Patterns and Themes

The initial text deconstruction was followed by further readings with a focus on identifying patterns, similarities, and differences across the

range of interviews. This process involved listing words and phrases on paper, then arranging the lists into coherent themes and patterns. This process allowed for the actions, activities, and systems to be highlighted for which the supervisors had specific attitudes (positive or negative). These actions were further apportioned into a number of themes. Whist a number of themes were identified throughout the interviews, my practitioner experiences of ineffective training, was in constant conversation with the current literature on improving training interventions. The choices I made to identify three specific themes over others had certain consequences, such as ignoring some stories from the supervisors. I did not focus on other aspects which I could have done, for example the various strategies that the BuildUp Constructions employed in ensuring supervisors attended legislatively required training (such as providing training on rostered days off). Looking back, I can see that I used some interview transcripts more than others because they were better examples of some of the themes that fitted the research questions. Figueroa and Lopez (1991) and Harper (2003) identify this removal of specific stories as a reflexive attention to the methodological process. The three dominant themes I selected from the interviews for further analysis were:

- Capability differences between supervisors

- The questions of safety training (including relevance and competencies)
- Organisational factors

The next step was to evaluate the themes' implications, using the research questions as the basis for exploring the data. Contradictions across the interviews were underscored, and I focused my questioning and reading on the lists and themes of the power interactions that were evident in the practice of safety and safety training. The themes, patterns, and interactions were then used, along with current literature, to identify implications for the supervisors, the organisation, and the construction industry. During this step, I also used BuildUp Constructions' documentation (i.e., training documentation, policies, and procedures) to substantiate some information gathered from the interviews.

Step Three – Ways of Talking

The final step in the analysis process involved representing the deconstructions of the text, the lists, and the literature in order to identify the "ways of talking" (Burr, 1995, p. 168) about safety and safety training. This step is not completely described by Burr (1995) or

Rose (1990), but is referred to by Miles and Huberman (1994) as the data display, which goes a step beyond data reduction (previous step) to provide an organised, condensed bricolage of information that allows for the findings of conclusions and recommendations. A display can be an extended piece of text, a diagram, a chart, or a matrix that offers a visual arrangement for deeper contemplation about the identified themes (Frechtling, 1997). A number of visual representations of data can be found in the literature: a comparison table (Spradley, 1980), a matrix approach (Miles & Huberman, 1984), and a hierarchal tree (Creswell, 2007).

During this step, I combined the attitudes and perceptions of the supervisors (into extended pieces of text) from the categories, implications, and interactions identified in the previous steps into major themes; and I linked them back to the literature, my personal experiences, and research questions. The visual representation of the data within the following phases is illuminated by phrases, direct quotes, and descriptions of attitudes, perceptions, and individual practices.

Reflexivity

Reflexivity has been increasingly recognised as a crucial strategy in the process of generating knowledge by means of qualitative research (Ahmed Dunya et al., 2011). As noted above, this work was carried out as qualitative case study drawing on ethnographic approaches. There are three interconnected methodological values guiding the ways in which I collected and analysed data.

First, I am one of the co-constructors of social knowledge. Thus, conducting interviews helps to formulate a discourse of how construction site supervisors see safety training and the process of research is that of knowledge production in which knowledge is created between the views of the researcher and the research participants. This is to say, I interpret the interviewees (research participants) and myself (the researcher) as co-constructors of social knowledge around safety training and its effectiveness (Hammersley and Atkinson, 2002; Finley, 2002). Given that my insider/outsider position, I tend to believe that the relationship between the researcher and the construction site supervisors is reciprocal and dynamic. The value of my research is generated from my interpretation of the

attitudes and perceptions generated within the interviews, particularly the interview data, as well as from exploration of 'the dynamics of the research-researched relationship, which is seen to fundamentally shape research results' (Finlay, 2002, 534). Finlay notes that reflexive analysis could come into play to 'examine the impact of the research and the participants on each other and on the research' (Finlay, 2002, 535). However, there are concerns here. The first is that reflexivity in respect to the researcher's social position and emotional responses to the researched (Mauthner and Doucet, 1998); and the second is that 'interpretation and representation of people's lives into the analytical foreground and is a solution to the challenges these issues raise for researchers and the researched' (Byrne et al: 2008: 3). To respond to this, when analysing interview data, I adapted Burrs (1995) intuitive and interpretative analysist process, in specific, requiring me to consider my reflexive accounts, which is concerned with the relationship and asymmetry between my experiences as a safety trainer and those of my participants participating in training activities.

Second, my aim was to provide opportunity to construction site supervisors to take a direct part 'in the production of sociological knowledge' (Alldred, 1998: 150) in regards to safety training. The

attitudes and perceptions of construction site supervisors were essential in my research as there is limited influential research concerning their experiences of safety training, and little of this is concerned with relationships between participant's attitudes and training effectiveness. However, I was aware that I could not assume that I already knew perspectives of the supervisors, even as an experienced safety trainer myself. In other words, my analysis could not be limited to 'the testing of explicit hypotheses' (Hammersley, 1998:8); accordingly, I should not theorise what construction site supervisors would say about their experiences with safety training.

The third principle was to be reflexive about the process of data collection and data analysis. The nature of the social constructivist approach is reflexive oriented. Reflexive analysis, as Finlay (2002) highlights, can 'give voice to those who are normally silenced' (p541). `Those who are normally silent' could refer to both the site supervisors that are forced to attend training and myself as a researcher who is often forced to provide ineffective training. One of the aims of being reflexive at the data collection stage and at data analysis stage is to 'expose researcher silences' (Finlay, 2002:541). However, breaking my silence also invites ethical questions such as: to what extent does my

personal experience influence my research; and how to maintain 'the balance between "insider" and "outsider" status'

Ethical Considerations

Ethical considerations are emphasised in any research work that may enable recognition or identification of its participants (Sturman, 1999). According to Charles and Mertler (2002), the researcher's ethical responsibility relates to beneficence, honesty, and accurate disclosure. This constructed work adheres to these principles throughout the research process by means of a clear and focused intention to contribute to the body of knowledge of workplace safety training, maintaining integrity in data collection, and representing the attitudes and perceptions of the supervisors through familiarising each research participant with the intention and design of the research.

My initial concern was between conveying detailed, accurate interpretations of the attitudes toward safety training and protecting the identities of the individuals who participated in the work. While this constructed work allowed me the opportunity to interact and engage with a number of supervisors and managers (without being in a position of authority) within the confines of a working construction

site, the opportunity carried with it a responsibility to protect the interests of these individuals, especially in terms of confidentiality with which their attitudes and perceptions, are represented and reported. Adding to this concern of conveying accurate interpretations was the potential power relationships that having previously been the facilitator of safety training for two of the participants. Elwood & Martin (2000) identify that in qualitative research settings it is widely acknowledged that the researcher has power over the researched and this power can be guided by larger social structures such as previous interactions. In recognition of this potential power relationship, and the ability of myself to change or misrepresent attitudes and perceptions about my own training sessions I conducted a member check (Guba, 1981) where participants were provided the transcribed copies of their interviews and my analysis.

As all participants worked for the same organisation in this constructed work, deductive disclosure, also known as internal confidentiality (Tolich, 2004), was a significant issue. Confidentiality breaches could easily occur as the traits of individual supervisors might possibly be identified upon reading of this constructed work or subsequent research papers.

During the interviews, the supervisors provided information that was contrary to organisational policy and legislative practice to me. As this information, in some circumstances, could result in negative consequences, it was essential that my representation of the supervisors' attitudes and perceptions be untraceable to any individual or specific site. In order to maintain trust in the researcher-participant relationship, I was required to carefully strip any identifying features of individuals and site-specific information from the transcripts, as well as the name of the organisation from this enquiry.

As the purpose of this constructed work is to identify and represent the attitudes and perceptions of supervisors toward safety and safety training in an effort to understand them in relation to the practice of safety training, the constructed work does not attempt to evaluate or criticise these attitudes—but, only present them in a format so they can be heard.

The confidentiality and protection of individual's identities outside of the organisation were not exposed at any time by this enquiry. The participants were assured that there would not be any negative

consequences as a result of participating in the constructed work. In accordance with Victoria University's policy and procedure, ethical clearance preceded any fieldwork. The ethics application was approved in April 2013 – HRE13-091. The data collection was undertaken in accordance with the university principles of human research ethics, and the participating construction organisation's Code of Conduct. Initial permission to undertake the research within the specific construction company was sought and gained from the construction Manager, who took the proposal to the senior executive team.

Across the different regions, the state OHS manager was the gatekeeper, as permission to gain physical access to each construction site was required from the senior project manager on each site. Participants were asked to volunteer their time and experiences, then consent was gained and recorded. There were no known risks or discomforts associated with this constructed work. Data was collected and the representations of the supervisors' attitudes and perceptions were reported in an honest, respectful, and informed manner that maintained the privacy and confidentiality of each supervisor. Confidential information was, and will continue to be, kept securely in

accordance with the Australian Code for the responsible conduct of research (NHMRC/ARC, 2007) for a period of five years. Such data is only available to the participants and authorised persons in accordance with relevant state laws, as well as with the policies of BuildUp Constructions and Victoria University.

Trustworthiness

An underlying aim of any research work, no matter the research design strategy used, is positive evaluation by peers, reviewers, and readers. Terms such as reliability and validity have long been used in the positivist paradigm to indicate the strength and rigor of research; however, in this constructed work, I take a social constructivist lens to understand safety and safety training from the perspective of site supervisors. This constructed work therefore, is not focused on claiming any "truth" or presenting results from unbiased and impartial facts. The accounts from supervisors are individual, local, and historically and culturally specific to each supervisor. The concepts of reliability and validity are inappropriate for judging the quality of social constructionist work (Burr, 2003:158).

Patton (1999) stated that the credibility for qualitative work depended on rigorous techniques and the credibility of the researcher, as well as the philosophical belief in the value of qualitative enquiry; and that these three elements could be met through a variety of techniques. In order to increase the quality of data collected and presented, I employed Guba's (1981) model of trustworthiness for qualitative research. Guba's model is based on the identification of four aspects of trustworthiness: truth-value, applicability, consistency, and neutrality. This model can be employed in both qualitative and quantitative research and, depending upon the type of research being undertaken, the model defines different strategies for assessing each aspect (Krefting, 1991).

Truth-value

Guba (1981) asks researchers to question how they can establish confidence in the "truth" of the findings within their work. It was my responsibility, as the practitioner and researcher, to ensure that the attitudes and perceptions of the site supervisors were accurately represented, and that these supervisors had (and still have) access to all records that pertained to their experience. In the carriage of this responsibility, I undertook a "member check" (Guba, 1981:80), in

which all supervisors were contacted by email for approval of the stripped transcripts.

The supervisors (through email) were also provided with draft copies of my analysis, which included my highlights of specific material, as well as identified themes and patterns. The supervisors were asked to make comments on my interpretations. This member checking process ensured that all supervisors had the opportunity to respond to any interpretations they felt were not representative of their opinions.

Applicability

The applicability of research generally refers to the level in which the findings can be applied to other contexts and settings (Guba, 1981; Krefting, 1991), or the generalisability of the results of a research study (Merriam, 1998). However, in this constructed work, I maintain that generalisability is not relevant, as the aim of this constructed work is not to generalise about site supervisors across all industries, but instead to look in-depth into one organisation in one industry, with a small number of participants, in an effort to gain a deeper insight into

attitudes and perceptions toward safety training. Lincoln and Guba (1985) identified that transferability is the responsibility of the person wanting to transfer the findings to another situation, and that this aspect can be met if the researcher presents sufficient description to allow comparison.

Consistency

Within quantitative research designs, reliability is the aspect concerned with consistency and stability, being generally assessed by the repeatability or replicative components of a study (Guba, 1981). However, this constructed work aims to learn from the participants and emphasise the uniqueness of their attitudes and perceptions toward safety training; therefore, variation—not replication—is sought. Consistency is a tricky aspect in trustworthiness due to the underlying belief in multiple realities, and the use of humans (who are constantly changing and evolving) as instruments for data collection (Guba, 1981). In an effort to meet this aspect of consistency (or dependability) during collection of data, a broad number of experiences were pursued with the supervisors, and further descriptions or clarification regarding atypical experiences were also

sought, even if they were outside of the construction industry or training-related topics. These experiences are presented in the findings and are considered to be important to the overall case study.

Neutrality

Guba (1981) identified neutrality as the degree to which the findings are a function solely of the participants and the research context and are free from other bias, motivations, and perspectives. Working under the positivist paradigm, neutrality is assessed by objectivity, and often means that the researcher remains distinct and disconnected from the research itself (Krefting, 1991). However, working from a social constructivist paradigm and using a qualitative approach to research design, it is often an aim of research to increase the value of the findings by getting closer to the subject or topic. As such, the emphasis of neutrality within qualitative research is shifted away from the researcher—and closer toward the collected data (Lincoln & Guba, 1985).

In an effort to meet neutrality within this constructed work, triangulation through data collection methods was used. Guba (1981) stated that a researcher "should provide documentation for every claim

from at least two sources" (p. 87). This constructed work used interviews as the primary source of data and organisational documentation as the secondary source, in order to verify data concerning organisational policy and procedure.

Funding Considerations

Funding for this study was received from BuildUp Constructions and was secured in my role as a OHS training practitioner employed by this organisation to deliver safety training. The funding consisted of $10000 per year (from January 2013 to December 2016), they were administered by BuildUp Constructions on a reimbursement basis and were used to support the data collection and subsequent analysis. The funding arrangement was initially offered by the organisation and an assurance and understanding that the privacy and confidentiality of all participating staff and company documentation would be strictly safeguarded and upheld according to university ethics requirements. All data pertaining to organisational priorities of construction were kept in a locked and secure cabinet and have subsequently been destroyed. As an agreement of receiving the funding, I agreed to make available the findings of the research in the form of an executive summary and that would report on the findings and results to be disseminated to professional bodies and at Construction Safety Conferences.

Phase Summary

During this phase of construction, the research methodology and methods have been presented. Although issues regarding safety interventions and workplace training have historically been investigated through a positivist lens, a variety of qualitative approaches have emerged in recent times. As this constructed work was focused on identifying and representing the attitudes and perceptions of supervisors toward safety and safety training, a qualitative approach was chosen as an appropriate means to address the research questions.

Interviews with 10 construction site supervisors from across Australia provided the data for this constructed work. Even though I had previous practitioner relationships and had known four of the ten participants of this study, the in-depth interviews offered insights into their professional worlds that I had only previously glimpsed. The analysis of the discourse provided a range of experiences and interpretations with regards to safety, safety training, and practice, along with ways of talking about safety and safety training.

In the following construction phase, I present and build this

constructed work by discussing the major “ways of talking” about safety in a case study format. The case study highlights these ways through themes and presents them brick by brick.

Phase Five - Bricks, Mortar, and Concrete: Safety Attitudes of Construction Supervisors

Bricks, mortar, and concrete comprise the bulk of the materials used to "construct" a building. They are the primary materials used due to their ease of production and low cost. Their shape, form, colour, and structure may change from level to level, especially within a high-rise construction, but they remain—as the heart, mind, and soul of a building. In the construction of a research project, the collected data acts as the bricks, mortar, and concrete. The analysed and presented data forms the heart, mind, and soul of the project.

Phase Introduction

In the process of interviewing site supervisors, it was clear that, whilst many had issues with the way their organisation managed safety training and safety, in general, the resounding attitude was that safety training required reform. The majority of supervisors communicated that, even though they understood that the safety interventions were

required, they believed that the interventions had limited success due to the prevailing attitudes toward safety in general, as well as to other major issues that were linked with safety behaviour and practice. These attitudes and other issues highlight that there were other ways of talking (Burr, 1995:168) about why safety-training interventions were not effective within the construction industry.

Identified by the supervisors as being important, both individually and across each embedded case, their narratives emphasise that safety interventions required reconsideration of not only legislative and organisational requirements, but also the realm of social, cultural, and historic issues. The analysis of the interview data identified three major themes (or issues or prevailing attitudes). The first was how the difference in capabilities between trade-background supervisors versus university-program background supervisors affected productivity and safety behaviour onsite. The second issue was the content and relevance of safety-training interventions, which included the development and delivery of training. The final issue was how organisational and industry structure, as well as internal expectations, affected safety behaviour and individual practice, and how this affected attitudes toward safety training, in turn.

These themes are presented using direct quotes of the supervisors in the following three phases along with documentary evidence in the form of organisational documentation (where relevant). Each theme is presented individually to highlight the attitudes and perceptions of construction supervisors toward safety training, and how safety is practiced on a construction site. Although presented separately, the three themes are interrelated, with each influencing and contributing to small understandings of the other, and consideration of each theme leading to contemplation of the others. Exploring and presenting these attitudes and perceptions was the primary aim of this constructed work and the central part of the analysis.

Theme One - Capability Differences in Supervisors

When discussing the practice of safety onsite, a prevailing perception identified by the supervisors interviewed was that there were considerable differences in the capabilities and understandings of supervisors, and that these differences affected the sites' safety performance. Traditionally, the role of a site supervisor focused on the building component, with a majority of the supervisor's time spent managing the actual subcontractors who undertook the physical

building works (Lang & Mills, 1979). However, serious problems of resource and personnel management, such as cost overruns, union stoppages, and long schedule delays, caused many building contractors (Hendrickson, 2008), including the case study organisation BuildUp Constructions, to move toward engaging site supervisors who had competencies in project management as evidenced within company position descriptions:

> "Construction Supervisor Skills and Qualifications:
>
> Project Management, Quality Management, Supervision, Managing Profitability, Delegation, Supply Management, ADA Requirements, Civil Project Management, Estimating, Attention to Detail, Quality Focus"
>
> BuildUp Constructions Site Supervisor Job Description 2014

This move within the construction industry followed other high-risk industries, such as aviation and oil production, when in the early 1990s, there was an increasing emphasis on competence in non-technical skills (e.g., leadership, project management, and decision-making), which were regarded as contributing factors to safe operations (Helmreich & Merritt, 1998).

Mason et al. (2009:7) suggested that organisational safety success comes from an understanding of the individual's "world of work." The

majority of supervisors interviewed for this constructed work viewed their world of work as knowledge of how the different materials, resource components, and trades worked to a timeline that resulted in a building constructed in a timely and safe fashion.

> I think it's very important, and not to say the end all, but I can't stress enough how important I think it is that you do have a trade background in this sort of role. Not to say that all the graduates who have been put through Uni and all that sort of stuff know a lot more. But equally, the practical experience that you get as a tradesman working on a site yourself, and the things you've got to deal with, and how you deal with things to try and minimise risks, or whatever, I suppose I can't stress enough how much I reckon that is important. And not just safety! I think it's just the common sense for a tradesman. It is common sense that things that people that go to Uni and learn, like project management or whatever, in general basically, they don't see or they don't know, I guess, how things go together as much, what's the sequence of works, and all that sort of stuff, which is not equally as important but it's very important for a project running smoothly and without having to rush. I mean if you get something wrong and you pull it out and do it again, you're going to be under the pump and people tired, working late and all that because, the bottom line I suppose for a project, is you've got a date to meet and you have to meet it. Otherwise, there's massive liquidated damages.
>
> Site Supervisor – Jacob

This perception, that supervisors with a trade background were more effective at their jobs—especially when dealing with safety issues, was not only prevalent among supervisors with a trade background, but

also among supervisors with a university background, as the following narrative presents.

> Yeah, what we had at Uni, most of it was just design work. But, we did have, like two specific units where we pretty much went through the whole [project]. We did a few management units which were theoretical, and then we had more of a practical unit where we did both design and management, so they tried to simulate what's out there in the construction industry. So we went through the tendering phase, then we did our designs and tended for other groups' projects. And it was all about pretty much managing them and then also getting technical information out of them, and also about safety methodologies, safety construction methodologies. So, there were a few management units, but nothing that really matches the industry experience that I'm getting now.
>
> Site Supervisor – Basil

Understanding the Supervisors' World of Work

This lack of gaining actual industry experience during a university course identified by this supervisor has the potential to not only affect the productivity and smooth management of a working construction site, but also its safety performance. ``The supervisor is the key man in industrial accident prevention. His application of the art of supervision to the control of worker performance is the factor of greatest influence in successful accident prevention" (Heinrich, 1959, p. 22). Heinrich's

(1959) idea of the "art of supervision" is linked with Mason's et al. (2009) concept of "world of work" where they highlighted that a high level of understanding of the work environment can lead to the prevention of safety incidents.

Mason et al. (2009) identified that prior experience and other employability skills, such as communication, are major components for workers and supervisors being capable of making productive contributions to organisational objectives in the short term. Whilst there is considerable literature available with regards to the benefits and employability of university graduates (see Wolf, 2002; Reay et al., 2005; OECD, 2011; Shaw, 2013), the general perception among the interviewed supervisors was that negative consequences, such as a lack of experience in building fundamentals, far outweigh the benefits.

> What I've noticed though, in this environment, is that a lot of the supervisors don't come from a trade background. A lot of the supervisors are young, whereas the workforce is older, and they find it more difficult. The younger people find it more difficult (a) through lack of knowledge, and (b) through being young. They might have been trained in the backroom skills, paperwork, etcetera, but they don't have the knowledge outside to be able to deal with the men and get the best outcome.
>
> Site Supervisor – Theo

This perception is the realisation of the industry-wide push to employ graduates for supervisory and management roles. Cuscadden, S (Personal communication, 2 September, 2014) identified that "largely due to the need for project management skills, it is now industry practice for large construction organisations to employ graduates as opposed to promoting tradesmen through the ranks." Holt, K. (Personal communication, 3 August 2015) confirmed this as she stated the following:

> Our policy is geared toward graduates. Most of the graduates we employ have construction management, engineering, or architectural qualifications. They go through a graduate program which takes them through a number of rotations like safety, facade, finishes, etc.… to expose them to the range of building processes. After their rotations, they become coordinators. Coordinators sit at the same hierarchal position as site supervisors. With further training and experience, they can be promoted into site management or project management positions. Or, if they want, they stay as site supervisors or coordinators.

However, whilst these policy decisions may be based on industry practice, the anecdotal evidence highlights, how university graduates lack a full understanding of building fundamentals and how this deficiency in skills has led to communication, safety, and morale issues on the worksite.

> I believe, to some extent, because when you come from that [Trade] background, I believe you know what it's like to be on the other side sort of thing. So, you know what it's like when you're getting direction [From Management], and you know how you want to be spoken to, and you know sometimes the capacity of what's involved with the job. Whereas they [the Graduates] can just go and throw orders around and not actually understand what actually is involved to get it done— "Let's just get it done." Whereas, when you come from the [Trade] background, where you've actually done it, sometimes there's a lot more involved that people don't even realise. I like that I come from that side because then you've got a better understanding with the trades. When you're actually going through the job or whatever, you've got a good understanding of where they're at.
>
> Site Supervisor – Pablo

Influencing Safety Practice

Throughout a construction project lifecycle, a number of interaction points exist that influence and determine the success of the project (Salleh, 2009). For example, during the early stages of a project, clients, architects, engineers, and managers who specialise in planning and design had a great deal of influence over construction outcomes (Directorate General for Regional Policy and Cohesion, 2000). Once building works commenced, the project or construction manager held the greatest influence over the success of the project, as the vast majority of delays occurred during this construction phase

(Ramanathan et al., 2012). However, when looking specifically at safety outcomes, it was the site supervisors and coordinators managing the workers that were in safety critical positions (Biggs et al., 2008) and held influence over outcomes (Flin et al., 2000).

Soft Skills

The supervisors interviewed for this work identified that a major stumbling block to effective onsite safety management onsite was the significant divisions between graduate planners and designers, and trade-qualified site supervisors. While technical competence in project planning remained the trend of industry practice, the practical building, organisational, and social factors that were prevalent in influencing the success and failure of construction projects (Biggs et al., 2008; Flin et al., 2000) was not being dealt with effectively in construction organisations.

Of great concern to interviewed supervisors was the lack of communication skills and respect given to colleagues and subcontractors by graduates and coordinators. For the project to be completed, organisation of a variety of tasks, resources, and up to 400 workers was required. The hierarchal system implemented on a

construction site leaves the site supervisor and coordinators with the day-to-day tasks of communicating and coordinating with the workers who are completing the tasks. In order for the construction supervisors to be effective communicators, they need the respect of the workers. Gillen et al. (2004) previously identified the link between respect and effective communication on construction sites.

This constructed work further highlights the respect issue, as many of supervisors interviewed identified that the subcontractors slacked off at every opportunity and pushed the boundaries when supervised by the graduate coordinators. The supervisors who especially mentioned that this was an issue were, generally, trade-qualified supervisors with more than 20 years of experience. These "experienced" supervisors identified that they often backtracked to other areas on the site (where less-experienced supervisors, coordinators, or graduates were working) to ensure that the workers were undertaking tasks safely.

> I tell you what, those graduates are full of attitude, and they just don't get the building side of it. The tradies just take the piss out of them, as they don't respect them at all. I don't know how many times I've had to explain to grads that the workers are taking the piss out of them.
>
> Site Supervisor – Sergio

> You see, a lot of my job at the moment is going back around and telling the blokes off for not doing it right. I say to them, come on fellows give him [the graduate] a break—give him a bit of respect—he is trying his best.
>
> Site Supervisor – Theo

> Well, I thought as a graduate engineer they tried to take advantage of my inexperience, but I always had a senior [Supervisor] above me to oversee that. But most of the time, they were actually really good. They actually helped me improve my general construction knowledge, something that I lacked coming out of university. Yeah, they were actually very good.
>
> Site Supervisor – Basil

However, the more experienced supervisors also displayed an inclination to teach and mentor the graduates, as the experienced supervisors indicated that with the right attitude and a willingness to listen and learn, some of the graduates had the capacity to become effective leaders.

> Some of them [Graduates] are good. We've got Tim here. Tim, when we built this one over here, he was working on the lower floors just doing office, laminating signs, all the shit jobs. Now he's the boss and I accept that. Good luck to him. I think it's fantastic. It doesn't worry me one bit. He's probably better at that [Managing] than supervising and that's his call. So, I'm fully supportive of the guys that come through those ranks, but they've also got to take the time to listen and learn—they need that building understanding too.
>
> Site Supervisor – Clive

Whilst none of the supervisors interviewed identified that they had participated in communication training, a search in the BuildUp Constructions training descriptions and conversations with the training coordinator identified a communications training course, open to all staff. The course description identified that improvement in peer communication was a learning objective.

> "Communication Skills:
>
> - Learning Aims:
> - Understand communication
> - Understand and apply principles of communication
> - Improve interpersonal and peer communication
> - Understand and apply principles of feedback"
>
> BuildUp Constructions Communication Training Course Description 2012

Industry Preference for Project Management Skills

Along with the attitudinal differences, communication and respect issues between graduate coordinators and trade-qualified supervisors were highlighted; the industry focus on project management skills could be a key factor to the decreased safety performance within the construction industry. An integral part of the onsite safety management is the monitoring of the management system activities. These activities

include the inspection and monitoring of mobile plant, such as cranes or elevated work platforms, used onsite. Safety legislation requires that a number of work tasks, such as design, verification, use, and inspections of (some) plant and equipment, be undertaken by a competent person. The legislation provided the following definition for a competent person:

> "Competent person means a person who has acquired through training, qualification or experience the knowledge and skills to carry out the task. A competent person has a more specific meaning in the following circumstances:
>
> - For design verification, the person must have the skills, qualifications, competence and experience to design the plant or verify the design.
> - For inspection of plant for registration purposes the person must have
>   - Educational or vocational qualifications in an engineering discipline relevant to the plant being inspected, or
>   - Knowledge of the technical standards relevant to the plant being inspected.
>
> For inspection of mobile cranes, tower cranes and amusement devices the person must have the skills, qualifications, competence and experience to inspect the plant, and be registered under a law that provides for the registration of professional engineers (in jurisdictions where such a law exists), or be determined by the WHS regulator to be a competent person."

(Safe Work Australia Code of Practice - Managing Risks of Plant in the Workplace)

Whilst further explanation of the practical interpretation of "training, qualification or experience the knowledge and skills to carry out the task" was not provided by the legislation, it is interesting to note that the competency was only required by the person undertaking the task. No expectation of competency existed for the supervisor of the people undertaking the task. Construction site supervisors were responsible for the safety of all work undertaken, including the use of plant and equipment and other high-risk tasks, and a lack of experience or understanding on how tasks were undertaken could result in significant safety issues.

> You know, it's my job at the moment to look after the guys doing the excavations. I've never operated that type of equipment; the closest I have been, is sitting in it when the guys have gone home. I have no idea if what they are doing is safe or not—I have to trust them.
>
> Site Coordinator - Bruce

> I tell you, those grads have got no clue sometimes. The other day I was walking past a guy operating a jackhammer. I saw that the electrical cord for the overhead lights was not a foot away from the jackhammer… I screamed at him to stop. There was a grad not three metres from him and he looked at me in wonder… He didn't have the sense to realise that the guy was about to electrocute himself or at the least pull the line of overhead lights down.
>
> Site Supervisor - Dylan

> You know all this safety-training stuff; we haven't done that before. At Uni, most of it was design and project

> management. Yeah sure, there were safety aspects, but mostly from a design perspective, not from a doing the task perspective. I'm responsible now for checking SWMS [Safe Work Method Statements] for my area. Really, how would I know that what is written in the SWMS is the safest way of doing the task? I know the PM or SM [Project Manager or Site Manager] is supposed to check my work, but I know he doesn't have the time; he just does a tick and flick. I've seen him do it. So, I'm reviewing a document that is one of the last barriers for safety interventions, and I don't fully know the task, and I don't have time to go looking for information to see if what the subbies have written is reasonably practicable or not.
>
> Site Coordinator – Jett

Organisational Needs

The participant narratives articulate perceptions of practice that highlight the salient issues that coordinators and graduates face. Even after completion of the graduate rotations, their experience is limited in identification of potential safety issues, especially with equipment they were not trained to use. The attributes of project management, which university graduates are providing to construction organisations, are not related to safety management, as Keep and Westwood (2003) identified. "There is a gulf between what supervisors do and are required to do by the organisation, and what theory, or even best practice models say they ought to be doing" (p. 43). This gap between the perceptions of supervisors and graduates and actual safety tasks (see Figure 14) has presented potential problems, not only

for site safety performance, but also for suppliers of safety interventions.

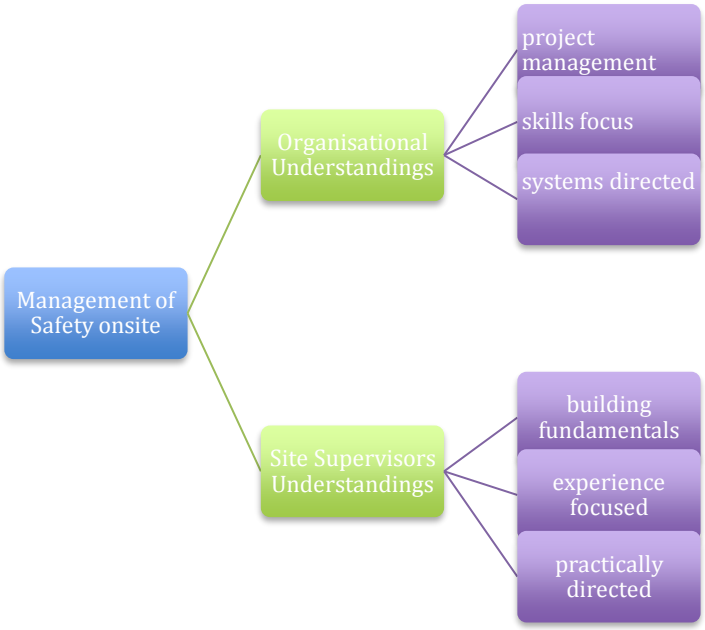


Figure 14: Supervisors Perceptional Gap

Safety interventions, such as training programs, were often developed and implemented due to a perceived legal or systematic need by the organisation. The perception was more often related to legislative requirements, or undesirable audit results, and linked to a negative safety culture, than actual onsite safety issues (Koivupalo et al., 2015). Thus, ineffective training issues, such as knowledge retention, transfer problems, and content relevance were more likely to occur (Hung et al., 2011), as one supervisor commented:

> For others, and for me seriously—it's wasting my time because we're not going to gain from it. Our line managers just do it [put us on the courses] because they have to. They are told to—it's part of the sites KPI. It's a tick box thing. I'm sure of that. They know we're not interested in it. I'm not interested in being there [in a training room] with a bunch of office workers hearing about how they can slip over on spilt coffee or whatever. It's just not relevant to us in this industry, and I'm not even going to remember it by the time I get back to work the following week.
>
> Site Supervisor – Theo

Competencies

Whilst not specifically directed at individual supervisors, a number of concerns were raised during the interviews with supervisors about the current competency-based training (CBT) system—specifically for apprentices. A number of concerns on CBT were identified in the literature, including assertions that CBT was "narrow" and "simplistic" (see Brown, 1993; Tanner, 2001; Louie et al., 2004). Whilst the majority of the supervisors interviewed for this constructed work held the perception that, with a trade background, they would be more effective, there were some undercurrents regarding the competency and capability of younger supervisors that had trade qualifications.

> Most of the carpenters that get trained through the system now, you wouldn't want them supervising or working on your site. The problem now is the apprentice system has changed. This competency-based, which is producing all the shoddy work you see today. That's my opinion. But you

> know we all talk about it—it's the opinion of most of us old school guys across the board.
>
> Site Supervisor – Sergio

> …but then you get the new supervisors that have been on the tools and they—I don't know—it's like they don't teach them properly anymore. When I was an apprentice, I worked hard. I had to do everything before I got signed off. Now it's different. All the trades have been segmented or something… like carpenters are either fit-out guys or roofing guys or framing… You know what—I learnt it all—but not these new ones they just do one…
>
> Site Supervisor – Jacob

> So even though they have a trade qualification they still don't really have those building fundamentals, especially if they have come from a domestic builder. Then they are chasing us around checking up on everything, but I guess at least the guys out onsite don't take the piss out of them like they do with the grads.
>
> Site Supervisor – Pablo

It is evident that these concerns about the qualification system, both at the trade and university level, can also affect at the site level. However, whilst recognising that they cannot control the capacities of the other people they work with, the supervisors interviewed highlighted that learning was an important and ongoing component of their role.

> Personally, I don't believe whether you've got one or the other would make you better at what you do but I guess that either one has the ability of different stuff. So, if you went to Uni, you know the theory about it but practically that's what you never learn. But, it's the other way around when you're an actual tradesman. You know how to put it together and bolt it together, but you don't know how to

> design it or program it, for example, or anything like that. I don't think there's one better than the other. I think they're both quite strong, it's just which one you learn, you need to then learn the other one that you haven't learned before.
>
> Site Coordinator – Jett

> You know, we need people that have different skills—some you learn at Uni, some you learn on the tools, and then some more you learn as you're going from others. Those graduates come through a fairly detailed training program. Maybe we need something like that for our younger tradie supervisors?
>
> Site Supervisor – Jacob

The supervisors' narratives clearly indicated that there are different "ways of talking" (Burr, 1995) about the range of capabilities required to effectively manage safety on construction sites. Practical educational backgrounds, effective communication skills, ability to command and receive respect, along with actual physical ability to identify and manage safety issues were highlighted as essential components surrounding supervisor safety capability. The supervisors interviewed for this work also indicated that organisational and legislative required safety-training interventions needed to address these components if improvement in safety performance was a goal.

Influencing Safety Training

Throughout the interviews, the supervisors identified the need for training interventions to consider and potentially address perceived capability differences. However, no literature existed in either the safety science or educational literatures to support their calls for change. Much of the safety literature relating to effectiveness in training interventions, focused on the methodologies (such as engagement levels) behind the interventions (see Burke et al., 2006, 2011; Robson et al., 2010; Caparaz et al., 1990), as opposed to the actual content of the training program.

These social and cultural components of addressing safety capability through training interventions were identified as important by site supervisors, whilst construction organisations remain focused on implementing interventions centred on safety behaviour or legislative requirements. This failure of construction organisations to recognise individual perceptions or attitudes highlights discrepancies in management commitment, indicating a move away from a consultative approach to safety, toward a return to the top-down approach to safety (Swuste, 2012). Added to this safety management dichotomy, were the

safety issues highlighted by differences between site supervisors' educational and experience background.

> You know I reckon that's one of the reasons why we think differently about safety training. When we come from things at different angles, you know like I'm from the tools so I understand the practical side and all the risks. They are from Uni so they understand the resourcing stuff but not really bout how the safety fits into it. … Of course, we think differently—if these graduates don't fully understand the practical job then how can they understand the risk involved—that's where safety issues occur. So, when we have to go to safety training, us tradie supervisors sort of understand better, but the grads and coordinators need more explaining, and then that makes it boring and repetitive for us.
>
> Site Supervisor – Alex

> I said before that the guys coming from Uni know a lot of stuff—but you know what they know? Not much really when it comes to actual supervision of the job. They think they know lots cause they have a Uni degree - "I spent four years learning at University—why do I have to go to more training?" I heard one of the grads here say that last week when training was announced. They then just sit in the training room and look at their emails and Facebook all the time. They think they know it all.
>
> Site Supervisor – Jacob

The examples, shown here by two supervisors who are trade qualified, highlight a commonly held belief on construction sites that there is a major gap between skills learnt through experience and knowledge gained through a university education. In my own practice as a trainer on construction sites, I have experienced the attitudes of young

graduates who believe they do not need safety training as they went to university.

Knowledge vs. Experience

A key idea, which flowed through the narratives, was the perspective that the knowledge and skills required for effective safety practice on construction sites had origins in a space where practical building skills were more highly regarded than theoretical skills. This perception, that one form of knowledge was better (or should be privileged over another), emphasise that the construction industry, like many other disciplines, is suffering from a major gap between theory and practice. University courses, now favoured by the industry, promote generic theoretical concepts, such as project management and organisational development. Vocational trade qualifications focus on specific competency and onsite experience to promote skills development. The knowledge versus experience binary focus of learning institutions, and their historical concentration on one hand (theoretical concepts) or the other (practical skills), coupled with attitudes of anti-intellectualism (Glasson, 2012; Bulbeck, 2005) from

the supervisors, have created ongoing issues for the implementation of safety-training interventions.

The anti-intellectualism perception seems to be intrinsically linked to those supervisors that come from a trade background and is best described as the difference between knowing how and knowing that (Kumar, 2011). Supervisors from a trade background perceive their knowledge to involve fittingness for practical action and understanding of the goings on within the site. Whereas the same supervisors perceive the graduates' knowledge to be a theoretical appreciation of the goings on.

The gaps between theory and practice that the supervisor narratives identify are not unique to the construction industry or the safety discipline. Literature suggested that most industries or disciplines were familiar with this phenomenon, such as the following: environmental and ecological management (Simonovic, 1992; Temperton et al., 2013), society studies (Murphy, 1991), medical education (Weller, 2004), education (Allsopp et al., 2006), corporate

finance (Baker et al., 2010), and safety science (Hopkins, 2014), to name but a few. The phenomenon is often presented as the gap between research and practice. Influencing public policy and practice is an aim for many researchers (Giles-Cortia et al., 2015) and high-quality evidence can highlight what needs to change and indicate the approaches most likely to be effective. Yet, OHS researchers are often frustrated that their research and recommendations are ignored by policymakers, regulatory authorities, (Hopkins, 2014) and practitioners (Moodie, 2009). Choi (2005) suggested that the gap is formed by attitudes and perceptions about use and accuracy. "Researchers are sceptical about the extent to which research is used to inform policies"; and, "policymakers are sceptical about the usefulness and accuracy of research" (Choi, 2005:635). At times, research findings did not support policymakers' agendas.

Whilst not specifically reflecting on the research supporting the construction industry, Brownson et al. (2005) indicated that, in heavily regulated and systems-orientated industries, policy-relevant research appears to be rare; and this may contribute to the research-system gap. As Green (2006) indicated, in order to have evidence-based policy

or system development, researchers need to produce policy and practice-based evidence. The views of policymakers and practitioners appear clear when published calls for evidence-based research echo loudly across a range of industries (Bruneel et al., 2010). Conversely, researchers (and their institutions) cite their own barriers, such as intellectual property, contract issues (Tartari, 2012), financial considerations (Hall et al., 2000), and long-term application (Owen-Smith & Powell, 2001) to effective research partnerships.

Describing the effects of this on-going debate between theory and practice within the construction industry is outside the scope of this work. However, the identification of perceived differences in safety management capabilities between university educated and trade qualified construction supervisors, does bring attention to the possibility that safety-training interventions need to recognise, address, and encourage cooperative and supportive learning if training programs are to be more effective. As discussed in Phase Three, safety-training interventions are frequently implemented by organisations to improve safety behaviour and safety culture, in an effort to maintain legislative compliance and decrease incident statistics.

Safety Culture

Current understandings of safety culture within the safety discipline are that the safety culture of an organisation is determined primarily by, not only management commitment, but also by the capabilities, leadership, and communication styles of managers and supervisors demonstrating that commitment (Biggs et al., 2013; Zohar, 2008; Dingsdag et al., 2008; Farrington-Darby et al., 2005; Glendon & Stanton, 2000). These received understandings are revealed in safety-training interventions through content development and delivery, which focuses on organisational values and implementation of safety management systems. An impartial acceptance of, and adherence to, these organisational values, by supervisors, is both expected and assumed by the organisation, and generally passed on to the training organisation that is contracted to deliver the intervention. This tendency to expect a specific opinion or perspective from their supervisors highlights that an organisation (or, in the case of construction, perhaps the whole industry), is only paying lip service to a notion of continuous improvement (Jiju, 2015).

> You know, I really don't get it sometimes, BuildUp Constructions has been at the top of the industry for a long time, and yet they still don't recognise that it's us that really control the safety onsite. The system is there and we know we have to use it, and we get trained to use the system - but the system doesn't make on the spot decisions, it doesn't tell us how to deal with an individual that is causing trouble—well it does, it says to get rid of them, but if we do that, the project is affected, so we can't! So, the system is mostly just words on paper.
>
> Site Coordinator – Jett

The supervisors interviewed for this work appeared to have strong views and opinions regarding perceived differences in the capabilities of their peers and the way the organisation handled (by not addressing) these differences. These attitudes and perceptions had formed the basis of the supervisors' safety culture, and been reinforced over the years through everyday routines and (potentially) hundreds of workplace conversations and experiences. However, all but one of the supervisors interviewed, demonstrated the willingness to discuss the issues with senior management. They all had the same underlying theme:

> That's the way we do things around here. We have always had to go to training, no matter what we say or don't say. Nothing changes because the training is not about learning—it's about compliance.
>
> Site Supervisor – Theo

The insistence "that's the way we do things" (and others like it), refers to the "complex, subtle practices that become ingrained in an organisation's culture" (Schwartz et al., 2011:2), to the point where they become part of its identity. When looking specifically at safety-training interventions within the construction industry it appears that, the continual reliance on legislative requirements to dictate training was the only characteristic considered. Individual capabilities, attitudes, perceptions, and in some cases, positive safety behaviour, were ignored by organisations when considering training interventions (Glendon & Litherland, 2001). This failure to recognise or address individual attitudes and perceptions, as the interviewees narratives attest is a significant contributing factor to the effectiveness (or lack thereof) of safety-training interventions.

Improving Safety Training

Safety-training interventions do not occur in a vacuum. They are designed within a framework of organisational or legislative requirements; and, their effectiveness can be affected by a range of complex factors such as commitment to change in practice and management obligation (Burke et al., 2006). The existent literature on

the effectiveness of injury-specific training for example, manual handling training reducing incidents of muscular-skeletal related incidents (Clemes et al., 2010). However, little research into the effectiveness of broader areas of interventions, such as general safety awareness training, safety culture improvement programs, or management training that are used to demonstrate compliance with audit or legislative requirements is available (Bahn & Barratt-Pugh, 2012a).

Literature (see Tabassi et al., 2012; Bunch, 2007) from the wider adult education and human resource development disciplines argues that training interventions at organisational levels, fail, in four major ways:

1. Inexperienced or unqualified practitioners provide flawed interventions;
2. Experienced and qualified practitioners provide flawed interventions because they do not have the power or influence to design a valid program;
3. Experienced and qualified practitioners provide valid interventions, but learning does not transfer to the job due to internal and individual factors, and;

4. Experienced and qualified practitioners provide valid interventions that produce positive transfer, but effectiveness is limited by organisational factors (i.e., lack of management support).

According to the supervisors, the safety professionals' failures are common among a wide range of safety training programs. There are substantial theoretical and practical understandings of the mechanism of failure resulting from unskilled safety practitioners (see Burke et al., 2007; Robson et al., 2010). There is a growing literature base on organisational factors that can impact effective safety training (see Bahn & Barratt-Pugh, 2012b; Tabassi et al., 2012). However, there is little identification of the entrenched individual values, beliefs, and assumptions that prevent effective training. The supervisors' descriptions of their experience support the need for further investigation into the common failings and the mismatch between training content and onsite practice.

> You know a lot of the safety training we have to do is not so great, cause the people delivering the course—they know all about safety and sometimes are experienced within

> construction, but really! They tell us that safety is the priority and that the systems are there to support us, but when we get back out onsite it doesn't work that way, the system is not the priority; the project is the priority! The company tells us that we just can't change the way the industry works—even if our company wanted to. We wouldn't get the tenders then, as we would be outpriced. And you know what, the graduates are the ones that believe that.
>
> Site Supervisor – Pablo

The identification that the industry needs to change reveals that some supervisors can see the way forward but the industry is not ready to make the necessary changes. The industry's inability to change influences the attitudes of supervisors and the subcontractors who are required to work under a system that in many cases has conflicting values to that of the workers.

Conflicting Values

The assumption, from the supervisors who participated in this work, is that industry and individual organisations do not truly value safety. It appears that the main priority for each organisation (and thus the industry) is the cost and completion of the project. Safety is considered separately—and only for legislative or reputational reasons. An organisation's values are important considerations as they are the

foundation behind decisions given to certain aspects of the organisation, such as project versus safety (Waddick, 2011), or quality versus quantity (Rousseau, 1990). Organisational values can also affect the preference for specific practices (including required safety-training interventions). But there is little regard for individual capabilities or individual values when organisations are implementing safety-training interventions (Aguinis & Kraiger, 2009).

No intervention will succeed in the face of conflicting values (Bunch, 2007) and, as such, safety training is developed with organisational values (of compliance and project priority) as their foundation. Conflicts occur when individual values of safety importance, or perceived supervisor capabilities, oppose that of the organisation. Training designed to encourage implementation of a complex safety system will not overcome or change individual practices without also focusing on the individuals' values as well.

> It's funny you know, us supervisors, we have been here for a long time, most of us have come off the tools and we know the ropes and we have certain skills. Then these graduates who undertake a long training program of doing all the

> paperwork and coordinating stuff and then become supervisors (or coordinators). So, there are both groups with different skills and knowledge but still we have to do more training on safety-specific stuff. It doesn't matter that I don't need it, or if the coordinator needs it or not. We still do it. None of us want to do it. I have asked the boss if I have to do it—by saying I don't want to. They make us do it! The project manager or site manager tells us we have to do it so that the project gets the right score on the audit. I don't even listen anymore. I sit there and make jokes at it all.
>
> Site Supervisor – Jacob

This narrative is indicative of the supervisory attitudes toward many of the training interventions (including safety training) implemented by BuildUp Constructions. The supervisors, having different ideas surrounding their capabilities and the perceived need for training, are disengaged; therefore, any opportunity for learning is lost. Construction organisations perceive that the training is successful as their objective is to ensure legislative compliance. However, the disengagement of the supervisors has long-lasting consequences on the organisation's safety culture (Tam & Fung, 2012) and provides for inconsistency in the effectiveness of any training intervention.

Consistency in Safety-training Interventions

Cheng et al. (2012) identified that having an effective professional development training program was one of the most important assets of

any organisation. The learning opportunities afforded by well-organised and consistent training programs can positively impact productivity and long-term sustainability of organisations (Ho & Dzeng, 2010). Investing in all staff across a range of generic and task-specific development areas, including health and safety, is both sustainable and rewarding in intangible cost savings such as morale and organisational culture improvements (Pouliakas & Theodossiou, 2013). With the dynamic and competitive external environments that organisations, such as BuildUp Constructions operate in, the need to develop consistent capacity for training and learning faster than competitors is required.

Currently within BuildUp Constructions, the safety team for each region, coordinates and resources a range of safety-training interventions with little or no input from other regions or staff members. Training needs analysis is based on organisational needs, whilst any individual needs are identified through an annual professional development process (personal communication – K. Holt, Safety Manager – BuildUp Constructions - 17th February 2014). However, as presented in the supervisors' narratives above, little regard to individual needs is given prior to attendance at any training.

The supervisors interviewed also identified a lack of consistency in delivered safety-training interventions. Some regions mandate safety training for all supervisors while others do not. There is no national preferred supplier of training, with each region having contracts or dealings with a number of training providers. Some regions provide task-oriented training (such as working at heights, or rigging) for supervisors monitoring those tasks, while other regions provide only mandated, safety training (such as health and safety committees).

As increasing numbers of supervisors and coordinators travel across the regions to participate in large (or specialist) building projects, the inconsistency identified in training interventions, coupled with individual factors, could lead to safety performance being impacted. In identifying factors that determine effectiveness of safety-training interventions, Burke et al. (2006) and Robson et al. (2010) both highlighted the importance of consistency across content, engagement levels, and management commitment. Waddick (2010), in his work on medium-sized construction organisations, also emphasised the importance in providing uniformity in learning opportunities.

The supervisors' narratives identified how safety practice onsite has its foundations in a number of different epistemological spaces. The industry practice of privileging knowledge primarily from an organisational logic, thus providing learning opportunities based on organisational and regulatory need, instead of individual need, adds to the issues faced within safety-training interventions. However, within BuildUp Constructions, these issues are further complicated due to the inconsistency in the provision of learning opportunities to supervisors and coordinators across Australia. Literature outside of the construction and safety industries indicated that organisational consistency in the provision of workplace training programs and learning opportunities is paramount to productivity gains (see Jeon & Kim, 2012; Sheehan et al., 2012).

The supervisors highlighted a need for BuildUp Constructions to look at their current training strategies across each region, in an effort to improve the development and delivery of safety-related training interventions. The development of a consistent national approach to required training for supervisors and coordinators could lead to improved training outcomes, such as improved productivity and safety construction projects. A consistent national approach, managed and

resourced centrally through the head office—or a contracted arrangement with a safety-training specialist could also lead to bridging the gap of perceived capability differences between trade-qualified and university-educated supervisors.

Phase Summary

During this phase of construction, the narratives of site supervisors identified that the development and delivery of safety-training interventions are hampered by individual and organisational attitudes and perceptions. Capability differences between supervisors with trade backgrounds and those with a university education have been identified, and found to directly impact safety practice onsite. These capability differences also indirectly impact the effectiveness of safety-training interventions due to individual needs not being identified, assessed, and addressed in training programs. The identification of capability differences between supervisors from different educational backgrounds leans toward the dichotomy of the gap between theory and practice, being prevalent, and whilst discussed in the literature in other industries, such as health care or human resources, has not been considered within the construction or safety disciplines. The potential

source and impact of this dichotomy on safety practice warrants further enquiry.

BuildUp Constructions can limit the impact of these capability differences by ensuring that their training programs identify and address individual needs. Actions, such as centralising training and increasing consistency in training programs across all regions, have shown to be successful within other industries (see Jeon & Kim 2012; Sheehan et al., 2012) and could be incorporated into the construction industry.

The following phase presents further reference to the narratives of the site supervisors, identifying their (generally negative) attitudes toward current safety-training programs. Burke and Hutchins (2008) identified both delivery consistency and content relevancy as essential components of workplace training programs, and the supervisors interviewed for this constructed work agreed. The need for mandatory training within the construction industry—often used as a precursor to the need to deliver safety training—is also discussed, as the narratives identify stronger motivations for training that should be recognised.

Construction Phase Six –Walls and Floors: Piecing the Narratives Together

The construction of a building is essentially just walls and floors on top of each other. The building project moves along at a fast pace from level to level with a new level being added each 8 – 10 days (depending on the weather). Much like how data moves along within a PhD thesis going through analysis to recommendations/results (depending on the literature).

Phase Introduction

In the previous phase of construction, the narratives of the construction supervisors suggested that safety-training interventions were hampered by a considerable (perceived) difference in the capabilities of supervisors whom were university-educated and those who were trained in the trade. The consensus was that these capability differences could lead to lack of engagement with safety in general and, consequently, a lack of engagement within specific training interventions provided by the organisation.

In this phase, the issues surrounding capability differences are joined with the attitudes of supervisors regarding the relevance of the content within safety-training interventions. The supervisors, with individual perceptions of their own training needs, are often frustrated with organisation-mandated safety-training programs. The supervisors' narratives describe common situations where their attendance at training arranged by the company was perceived as a waste of time, due to issues such as content, timing, or capability issues of the facilitator. As a result, the importance of safety training is questioned by the supervisors, learning opportunities are lost for future training programs and, in some cases, the overall attitude (and thus behaviour) toward safety is negatively affected.

Theme Two - The Question of Safety Training

As discussed in Phase Three, workplace training can be delivered through structured and formal means, including CBT, or unstructured training. In ongoing national productivity and training surveys, the Australian Bureau of Statistics (ABS) (1997 and 2009) identified that most organisations believed that training was an investment in both professional and personal development, and that it contributed toward

increased productivity. The most recent ABS survey (2009) revealed that 81% of organisations provide unstructured training. However, whilst this rate is quite high, the training is generally for new workers, dropping off significantly when workers (or supervisors) have gained some workplace experience (Richardson, 2004). The types of training or training content provided by organisations are not identified within the ABS (1997 and 2009) data sets. However, the 1995 Australian Workplace and Industrial Relations Survey (Mitchell & Mandryk, 1998), which focused on OHS data, identified that 95% of organisations provided some form of formal or informal safety training to their employees.

These data sets support the widely acknowledged idea that training is an important component of effectively managing safety in the workplace (Stuart, 2014; Waddick, 2011; IWH, 2010). However, little evidence exists as to whether the safety training is successful in meeting the goal of aiding safety management. Despite the high percentage of implemented safety training, Robson et al. (2010) identified that there is insufficient supporting evidence about the effectiveness of safety training on knowledge safety attitudes and practices of workers and managers. The narratives presented in this

phase emphasise a range of negative attitudes and perceptions toward safety training. The attitudes, I suggest, are originating from the lack of content relevance, the timing, and the reluctance of organisations to engage with staff in identifying training needs.

The Relevance of Safety Training

The narratives of the supervisors identified that if the content of safety-training programs or interventions was not relevant to them at any particular time, it did not help them manage safety in a different or improved manner. This perceived ineffectiveness of safety training was compounded when the supervisors were forced to attend training that they already believed to be unsuitable.

> But that's where safety training falls down, because if the stuff's not relevant, if it's not interesting, if it's not practical, then you come back from the training and you haven't learned anything, or you're not able to apply it and that's where the management will think, "Fuck, we just lost Jack for a day and he's learned nothing. That's bullshit. We wasted X number of dollars." But if you came back, full of information and practical solutions because the training was great, you learned something, and you were able to teach other people or show other people or make a safety improvement onsite, then the perception to training would be different.
>
> Site Supervisor - Alex

You know what the real problem is with safety training. Well it's that it's just not directed at the industry in the right way. Yeah sure, they call it a red card for the construction industry—but it's just bullshit really. What if they show me a picture or a video of some worker falling from a scaffold and tell me they [scaffolds] are dangerous and that there is all these regulations I have to know about, BUT what if I'm a tiler and I'm never gunna get on a scaffold…. I tell you, you have lost them – as soon as the information is not relevant to them their minds are gone… and you will have to work hard to get them back.

Site Coordinator – Jett

I was in this safety course once and some of the stuff that he said was relevant. Other stuff, I think it only applies to an office environment because it's different for them. He was saying having lunch is important because it comes in and it nourishes your body and all that stuff and keeps your mind healthy. I said, "Well, that's great but, mate, when you got 10,000 subbies out there" I'm exaggerating of course with numbers, "but when you got all the blokes out there ringing you on the blower and you're trying to have a bite to eat and they're ringing you," "Oh, can you come and have a look at this thing? Oh, we got a drama here, we need you to sort this out." And if you don't go sort it out, the problem's not going to fix itself. It's not just going to go away. It's going to still be there. So sometimes, it's just better to nip it in the bud. And you do miss lunch because it is a busy day. It might be all right for him. He's in an office. It's not as full on. Really what I'm trying to say is that the information in the course has got to relate to my industry, otherwise I'm better not being there.

Site Supervisor – Clive

I can't tell you how many safety training courses I have been to—starting years back with the old voluntary red card,

> that's now mandatory, and you know what? I have learnt more about safety on the job from the workers and my managers than I ever will in the classroom. We go to training because they say we have to—it's part of our job. I reckon they are wasting their money. Safety training needs to be relevant and provide the opportunity for our experience to be front and centre, not the professional's [trainers] experience. Even if the trainer is a construction person, his experience is not better… or worse… than mine.
>
> Site Supervisor Basil

The narratives presented here indicate that BuildUp Constructions, like most other organisations (Waddick, 2011), consider safety training to be like Freire's et al. (1998) banking model. The training interventions consist of the transfer of the knowledge. Knowledge is equated to information that can be bought and sold; and, learning is equated to a form of procurement or purchasing (Freire et al., 1998), which, in a safety-training intervention, implies a separation between the worker and the context. In the dominant model of safety training, workers are seated in a classroom-like setting and spoken to by safety experts, often with the support of slides, videos, and learning resources (i.e., participant notes and case studies).

In this traditional model, organisations and the safety professional conceptualise the workers as individual actors processing the information provided by the safety professional and modifying their behaviours or practice according to the provided knowledge. Based on this model, the cycle of learning to achieve the aim of improving safety behaviour is principally "problem-driven." Using this cycle (see Figure 15 - below), learning is triggered by an external stimulus (to the individual learner), such as a legislative change or an industry accident, processed by the organisation based on needs, and concluded through the delivery of a training session to the worker.

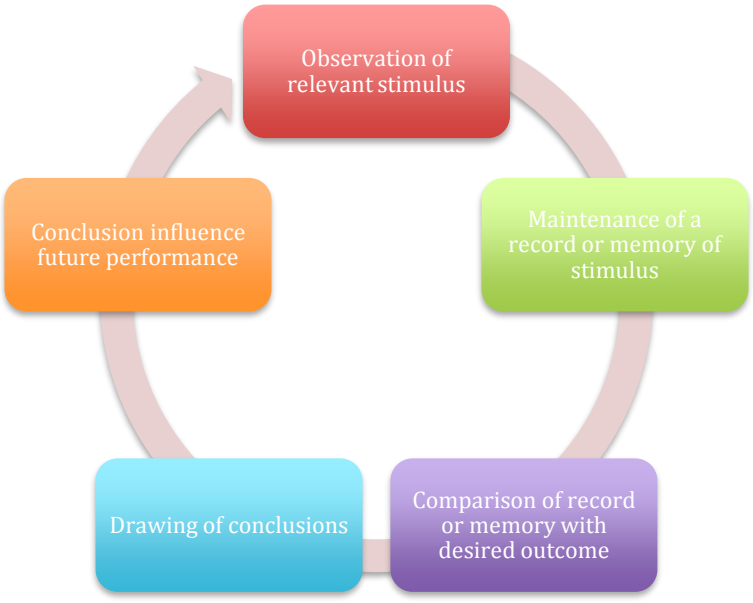


Figure 15: Organisational learning cycle

(Adapted from Turner, 1991)

However, as the supervisors' narratives suggest, in order for workplace training to be perceived in a positive manner, the relevance of the content, along with the social and constructive character of knowledge and learning, needs to be emphasised.

> I guess most of the courses that the management people put on, or with other or outside providers that we go to, they don't have it very directed to what you're working on, or even the industry that you're working in, which makes it a lot harder to understand. You can't put yourself at the scene. It's like even the examples of construction sites seem made up or not real life, as the actors seem to have all the time in world to deal with a situation – that's not real life – sometimes I have 100 things to deal with and all of them require a solution right now.
>
> Site Supervisor - Theo

Within the larger domain of workplace training, (specifically the human resource development [HRD] field and human resource [HR] management disciplines), the common precedent is that content relevance is a major contributing factor to training effectiveness and considered best practice (Burke & Hutchins, 2008). Successful HR sector training models have been identified, according to the major focus of the training interventions, including the following:

- strategic alignment of training with the organisation's strategy plan,

- structure and relevance description for the training,
- focused development of practical and engaging interventions, and
- assessment and transfer of learning to ensure trained skills are used on the job (Alvarez, 2004).

Outside the HR domain, a best practices training report (Berta & Baker, 2004) (focused on the health care industry), included a major focus on curriculum relevance, training methods, and training program evaluation. Whilst the guidelines produced may be impractical for all industries, sound evaluation and experimental practices were encouraged, such as using multiple sources of data along with specific, measurable indicators of behavioural change (as incorporated in observational checklists). No theoretical perspective for emphasising content relevance exists within the training or safety disciplines.

Best practice in safety, or specifically for the effectiveness of safety training, was limited to a couple of paragraphs in texts and can be found in out-dated practical guides for organising health and safety

training for your organisation produced in 1966, by the federal government. This 1996 guide was restricted to ensuring that those organising or arranging training interventions were checking for compliance, ensuring a reputable trainer was engaged, and providing checklists used to gauge one's level of compliance with the safety legislation. More recent information contained within textbooks for safety professional courses, provided some direction as to the provision of safety behavioural courses and how this could occur, but the focus was on organisational needs, not individual learning opportunities or needs (Dunn & Chennell, 2012).

The use of a best practice guide for safety training would not guarantee the effectiveness of training interventions, as there can be no silver bullet for solving problems across all organisations (Purcell, 1999). However, developed in consultation with construction specialists, workers, and management, across a range of construction organisations, a best practices guide, once implemented, could have a significant impact on effectiveness of training and influence on safety behaviour.

As identified in other disciplines such as HR (Burke & Hutchins, 2008; Alvarez, 2004) and Healthcare (Berta & Baker, 2004), the use of best practice guidelines agreed upon by each industry, that focus on content relevance, provide an opportunity for consistent training interventions that offer support to learners and aim to achieve individual and organisational requirements (Rylatt, 2001). The supervisors' narratives, along with the long-standing debate on safety-training effectiveness (see Robson et al., 2010; Burke & Hutchins, 2007) support the need for focused content relevance within the construction industry. A Best Practice Guide on Safety-Training Interventions could be a step in the right direction.

> "If you don't use something at work, what's the point of learning it?"
>
> Site Supervisor – Pablo

Legislative-Mandated Safety Training

The sociocultural aspect of learning is forgotten or unidentified in the traditional model of organisational learning and the delivery of safety training. The focus of the sociocultural perspective is on the roles that participation in social interactions (including workplaces) and

culturally organised activities play in influencing psychological development (Wells & Chang-Wells, 1992). The supervisors' narratives emphasise a priority on meeting legislative needs (such as organisational compliance) as opposed to meeting the needs of the individual workers; and, as such, opportunity for learning and influencing behaviour is lost. The implications for training effectiveness drawing on this model are far-reaching.

> It comes across to me that the reason we do training is just for compliance reasons. The auditor says we need it, or the legislation says we need it, the inspector says we need it cause some contractor over there fell over his feet. When it comes to safety training, no one asks us what we want or need. They just tell us we have to go. I'm not saying that is wrong—compliance with the legislation is important, but they don't even bother to ask.
>
> Site Supervisor – Sergio

> If I just needed training in something, if I had a problem with negotiation skills I could go up to whoever [Training Coordinator] and just say "Look, I need training for this," and no doubt, within a week, I would have something sent through saying "You're up." But I don't get a choice with the safety training—it's a must do we are forced to go and the safety coordinator doesn't give a reason for it, just the mandate to do it.
>
> Site Supervisor - Clive

The supervisors' narratives highlight that the focus of safety at workplace levels is determined by two major factors: (a) societal expectations (alluded to through the safety legislation), and (b) organisational interpretation of that safety legislation. The interpretation of the legislation as rules, guide organisations into developing policy and procedures regarding a wide range of safety-related issues (from dealing with hazards and risks, to consultation, to training). As construction is considered a high-risk industry, with an elevated proportion of injuries and fatalities compared to other industries, and an expectation from the wider society that workplace safety is important and necessary, it is understandable construction companies will yield to requirements for compliance (Bahn, 2008).

The mandatory approach to safety-training interventions is constructed by regulators and construction companies from, experiences, serious incidents, technological changes, progressed societal opinions, and client expectations (WorkSafe VIC, ND). Due to the characteristically dangerous environments within the construction industry, a gatekeeper of training confronts workers. Legislative training, permits, licences, and organisational certification processes,

act as precursors for entering a site and undertaking tasks. Compliance with safety legislation on licences and training is regarded as essential; and, organisations, regulators, and unions provide the highest priority for these issues. However, Bahn and Barrett-Pugh (2012b) opined that "mandatory training can offer an illusion of complete and continued compliance that is seductive and easily consumed" (p. 341).

From an educational and adult learning perspective, there is a continuing narrative that places an emphasis on motivation, contextual relevance, and sociocultural learning environments in personal learning (Knowles et al., 2011; Lock & Strong, 2010; Lave & Wenger, 1991; Kolb, 1984, 1976). Despite such a focus outside of the industry, safety-training design and development continues to privilege institutional (or regulatory) control over the following:

1. the selection of learners, through entry level programs, union membership, and required capabilities;
2. the content of learning, through regulatory requirements and performance criteria;
3. the goals of learning, through achievement of a certificate; and
4. the delivery methods and location of learning, through mandated

hours of learning and resources required.

This level of control positions those workers attending safety training as passive recipients of knowledge, rather than active members in their own learning process. Pratt (1998) identified that the problem with traditional transmission training was that it created difficulties in regard to transfer. Machles (2003:22-23) supported this by stating, "just because you tell a worker what would happen if they work in an unsafe manner, doesn't mean they will be motivated to perform safely." The narratives in this work confirm and extend these identified problems.

> I've been in this industry for 25 years now, and I have sat through a lot of safety training. It's not that its crap training, but… I don't know… it's like the trainer thinks that just cause he says it could happen—it actually will happen to the students in the class. It's a lot of "what would you say" conjecture. As I said, I've been working a long time, and so far, I haven't lost a leg jumping from a scaffold, or I've never seen an excavator overturn. People generally take care of themselves and of others, and the training seems to be wasted on most of us.
>
> Site Supervisor – Alex

The narratives support the question posed by Bahn and Barrett-Pugh (2012a), as to what extent is a regulated, mandated, and de-

contextualised learning process justifiable in terms of improving safety in construction workplaces, remains at the core of all mandated safety-training interventions. The pedagogical limitations, the difficulties in evaluating effectiveness against a goal of safety improvement, and the negative perceptions of learners surrounding context, individual need and benefit need to be addressed.

Previous research has identified the importance of mandated training for the construction industry, and its part in reducing the injury and fatality statistics—albeit, through evaluation processes unable to accurately identify direct impacts (see Bahn, 2008; Waddick, 2011). The industry places a significant amount of support behind mandatory safety training, and this is continually reflected in the universal coverage and emphasis placed within safety management systems, site rules, union agreements, and partnerships with training organisations.

The principles for mandated safety training appear sound, as their aim is to improve safety performance; however, little consideration is given to the "practice" of learning in these mandated situations.

Organisations contract a training company or facilitator to meet the legal requirements, but scant regard is paid for the needs of the site or individuals. The development and delivery of these mandatory training courses or interventions seems to be based on an assumption that people can "learn" safety because it is a separate object of knowledge (Gherardi et al., 1998, 2000). However, the narratives suggest that people only learn "safe work practices" as they are described by the legislation or the organisational requirements.

> I have to say, in all the safety training I've been in, I actually haven't learnt anything new. There isn't any light bulbs going off in my head, and me going I didn't know that at all. Well actually that's not true—in those management courses they send us to, I discovered that office people have no idea about construction. But seriously, the training is really about making sure that we are following the rules. It's not learning, it's not like going to tech school and using a jackhammer for the first time or being part of the team putting up a façade for the first time. That's the stuff you learn on the job. That's where the real learning takes place.
>
> Site Supervisor - Pablo

The focus on meeting legal requirements, and not considering other individual and organisational social or cultural factors, reduces the opportunity for training organisations or individual facilitators to improve practice and adds to the negative attitude toward safety

training displayed by the narratives in this work. The implications then are that the worker/participant attends mandated training session, sits through session thinking about the job he or she has to do on returning to site, and continues on with the job not considering the information contained within the session or any subsequent and necessary change to work practices.

> I think there are a lot of training things in this organisation. To be honest though I hate safety training generally cause it's so separate to work. I think that health and safety training is much of an ass covering exercise by the company as it is anything else. "We sent you on a training course. You know your responsibilities. You're a supervisor. If something happens on your watch or in your area, you're going to get screwed over. You'll be in prison. You'll be fined, the company will get fined, director gets a fine, site manager getting fined. That's on your head mate."
>
> Site Supervisor - Clive

> Most of us are too busy thinking about what is happening onsite to worry about what the trainer is saying. It's really a waste of money. It's just arse covering by the company. I dread having to attend safety training, always boring, legal mumbo-jumbo that means nothing to me.
>
> Site Coordinator – Jett

By providing training, the organisation is meeting their legal requirement. However due to this primary focus, the training can fail

to meet the principle of improving safety performance due to lack of practicality, relevance and engagement in the training session.

> It's like it is separate from the rest of operations. The safety practices and activities that we have to do, are part of our job, it's like in our position descriptions and we are accountable. But the safety training seems like it is an afterthought. Like—oh shit the auditor is coming we better make sure the safety committee has been trained—and then bang—you're off to safety committee training. No warning, no time to consider the project, no nothing. Just off you go.
>
> Site Supervisor - Theo

The supervisors' narratives suggested that the mandated safety training developed and delivered for the construction industry was (and continues to be) ineffective. The training programs aim to reduce injury statistics and promote positive safety performance; however, because they fail to provide opportunity for successful learning to take place, they cannot achieve that aim. This ongoing failure to include the social dimensions of learning can act as a building block to negative attitudes towards training. To improve practice, a turn from this traditional model of training is required.

For safety training to become more effective, it needs to build on and become distinctive from other workplace training by recognising and incorporating a range of social-cultural aspects, such as influences from previous learning environments, and social values of safety that provide the capacity to adapt, change, and innovate. Safety training needs to become a tool, which organisations can utilise to gain competitive advantage through the promotion of a positive safety performance.

The supervisors' narratives talk of "dread" and "hate" toward attending safety training. The implications of these perceptions, such as causing disruptions or non-participation in class due to a lack of motivation, have been felt by training practitioners (Waddick, 2011) and identified as a primary reason behind ineffective transfer of safety knowledge (SafeWork Australia, 2013b; Mans & Cagno, 2013; Gherardi & Nicolini, 2002). The supervisors' narratives indicate that the practice of safety training needs to not only focus on individual skills, experience, and learning capacity, but also on the relevance, need, and timing of mandated training programs.

Organisational Safety Training

Another reason behind the overall negative attitude of supervisors toward safety training is the perceived lack of identification of the individual need for safety training. Combining with the previous phase, where perceived differences in supervisor capability due to educational and practical backgrounds was apparent, the narratives presented below identify further frustration centred on individual training needs.

> You know what really shits me, it's when I have to sit in stupid training sessions—especially safety training like identifying hazards—with blokes that are half my age…. I know all this stuff, and yet here I am, year after year, sitting around wasting my time in a training session at head office or some remote training organisation that doesn't even know what an alimak is.
>
> Site Supervisor – Clive

> When I'm out on the job, I'd give my right arm to look, listen, and learn from the older site supervisors, but in a training session, when they are talking about things that used to happen in the good old days, before we were ruled by safety systems, it shits me. I hear the same old attitude all the time—why do I have to change? I never got hurt from the old guys. It's like HELLO—welcome to reality here. We now have labourers and tradies that don't give two shits about anyone but themselves. We live in a different world, and they (the oldies) have to learn new ways of doing things.
>
> Site Coordinator - Bruce

The link between individual safety behaviour and mandatory safety-training programs has received scant attention in the OHS or construction industry. Previous Australian research indicated a high percentage of organisations in favour of legislative mandatory safety programs (Bahn & Barrett-Pugh, 2012a) and identified links to improvement of safety performance (Caponecchia & Shields, 2011).

Legislative-mandated safety-training programs in the construction industry are mostly concerned with workers undertaking the task; there is no legal requirement for managers and supervisors to undertake any training, unless they are physically involved in the tasks onsite. However, organisations across the industry will implement a wide range of safety-training programs that are often based on what the organisation perceives as being important. Decisions on what safety-training staff will undertake may be included in the strategic planning of the organisation, may be dependent on the trend in incidents across the industry, may be based on best practice, or may be left to the current safety manager and based solely on a budget (Holt, K 2015, personal communication, 27 February)

> I asked the PM [Project Manager] the other day why I had to do a Cert IV in Safety and his reply was— "cause the old safety manager came from Leighton's—and that's what they did there, so he just implemented it here."
>
> Site Coordinator – Bruce

The supervisors interviewed for this constructed work were employed by a single entity, BuildUp Constructions. They worked on a number of different sites across four states. However, the supervisors' access to safety training, preferred suppliers, and delivery methods, differed significantly due to varying local policy, procedures, and site rules, which were implemented across each state. Despite the differences in mandated and implemented training programs, a similar negative perception about the actual need for training existed. Previous narratives presented the frustration that some supervisors had with being forced to attend training that they perceived to be irrelevant. The narratives below highlight the differences between the state's training policy, and the overall lack of consultation or individual needs assessment.

> I don't get asked to attend training. They just say I have to go. I'm fairly sure during our performance review they ask what training I want, but I have never asked for any training. They just send me off to do safety courses. I think the training coordinator lets the SM [Site Manager] and the next thing, I'm off to training at head office or somewhere.

Site Supervisor – NSW

So, as a supervisor, I have a lot of safety training I have to do like Cert IV in OHS, working at heights, confined spaces, EWPs, and other stuff I can't remember.

Site Supervisor – VIC

I had training in the legislation and committee training, and that's it I think. It's a while ago, so I'm not really sure exactly what it was. But that's it – no training in what I need, like what are the scaffold requirements, or what load can that excavator carry. I could probably ask the SM to do a scaffold course—but the time away from site would be the biggest issue.

Site Supervisor –NSW

As a coordinator on the graduate program, I have been through a heap of training modules, none of them specifically safety orientated. They are run by the HR team, but I did do the Cert IV in OHS—up at the mine site, cause we had to. Now that I'm back on a site, I'm not sure what training is available. I've finished the graduate program so I guess I just wait till I'm told what is required.

Site Coordinator - WA

There's probably more training we could go to and do. So, there's no point in saying "What other training do you want to do or what do you need to do?" I wouldn't know what else to do unless maybe you looked it up and saw what training was available. A lot of these ones [Graduates] go out to confidence speaking or talking in public, all that sort of stuff, which you need to do onsite. Do I need to do that? Yeah, probably, but I'm not one to put my hand up to do "I'll do it. I'll do it." (… Laughing …) I don't see a need to do it.

Site Supervisor – VIC

These narratives indicate that a wide range of training opportunities were available to site supervisors and coordinators; however, the opportunities differ from state to state. Many of the supervisors interviewed did not know what training opportunities were available, or did not know where to look for training. This lack of knowledge indicates that the BuildUp Constructions does not identify individual learning needs of supervisors in any systematic process, such as through a learning needs analysis. BuildUp Constructions' 'Victorian Training Requirements by Position' document identifies a range of required training based on hierarchical site positions, with each position's training requirements adding to the previous (see Figure 16).

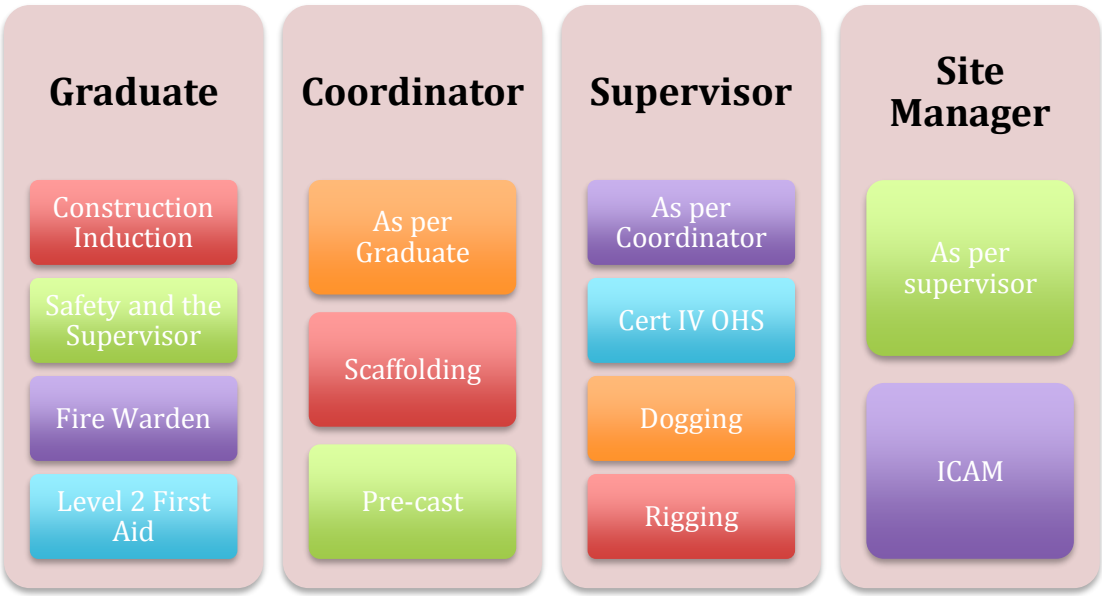


Figure 16: VIC training requirements by position

The safety-training requirements documents from other states could not be sourced through the gatekeepers; however, some supervisors indicated that training specific requirements did not exist.

> I'm not sure what the other states do, but I know they aren't providing training like we do here in Victoria. I've been trying to get these courses standardised for a long time, but it doesn't happen.
>
> (Personal Communication—Victorian Safety Manager, 12th February 2015)

> You would have to check with each state as to what training they provide. Safety is managed at a state by state level due to the differences in legal requirements.
>
> (Personal Communication—National Safety Director – BuildUp Constructions – 16th May 2014)

As a different safety manager administers each state, decisions surrounding safety training are left to individuals. This lack of a company-wide policy means that different safety requirements are developed and implemented. Therefore, some supervisors undertake training that is not available to others; and, none of the training appears to be dependent on the needs of the individual. The impacts of this are negligible until a supervisor from one state travels to other sites to work on projects, and the different training requirements could become a potential issue. Grinchnik et al. (2009) identified that staff movement across regions where standardised training was not

implemented, led to knowledge and skills gaps that could result in significant management system flaws. Continuous improvement in all systems (including safety) cannot occur until alignment of the organisational policy across the entire organisation is implemented (Anand et al., 2009). The standardisation of training requirements is outside the scope of this work. However, the identification of this issue does add to potential negative attitudes toward safety training or morale issues within the organisation.

This issue, coupled with the previous identification of a reluctance to participate in training due to perceived content irrelevance, could identify a major contributing factor to the negative attitudes toward safety training. The narratives also indicated that supervisors employed by BuildUp Constructions had (or could have potential) knowledge or skills gaps in their practice as safety training was determined by organisational needs only. Positive links between organisational needs and safety-training effectiveness have been identified and highlighted in research (Montesino, 2002; Kruijver et al., 2000). However, Burke and Hutchins (2007) identified that (whilst further empirical studies are required) strategically linking training to

organisational goals can improve training transfer and, therefore, result in improved practice. Yet, it is noted that this research (Burke & Hutchins, 2007; Montesino, 2002; Kruijver et al., 2000) has failed to consider the mandatory nature of such training and the individual motivation behind the training examined.

Those interested in improving safety culture and practice (See Woods & Buckle, 2013, Jones et al., 2013; Parker et al., 2006) further support the call for identification and use of individual needs and motivations when implementing safety interventions. It was clear from the narratives presented in this phase that the supervisors were not consulted about their individual needs or received any specific purpose for organisational-mandated safety training.

Whilst organisational needs have been identified as important, and linking them to training interventions may improve the opportunity for effective transfer, some supervisors within this constructed work identified that personal motivations were more likely to influence positive attitudes toward safety-training interventions. Previous

research (Grossman & Salas, 2011; Burke & Hutchins, 2007) stress the links between personal motivation to learn and effective transfer of skill or behaviour change. However, within the context of safety training, there is little research that identifies this link.

> Like I said, depending on how strong I feel about something, if there was something for instance about the safety or whatever about power or something like that, and my brother died from power, and I think, "Well, power's bloody dangerous." I've always thought that, mind you, but I'm way more precautious around power and that nowadays than what I would have been before that happened. Not that his was sticking a screwdriver in a thing. It was a power line and so on, but still. I'm just a little bit more sensitive around that topic nowadays, so if you're the trainer and you're telling a story about a power accident—I'm gunna listen and take note.
>
> Site Supervisor - Jacob

> Do you remember that day where you were taking our class onsite and we were doing an inspection and we heard that scream? I can still remember it, even though it was on the site next door. That guy almost lost his leg; the union has looked after him though. That's the type of thing that makes me think about safety onsite, not training or the company rules—but him. I bet you tell that story in class now. I don't really care about the legal stuff. I'm sure the boss does, but I care about those blokes out there and myself…
>
> Site Supervisor - Alex

> But it's not just the relevance and context. There's stuff that I've done that isn't relevant to my job, but I've chosen to do them to understand somebody else's job better, for example, rigging, I've done the dogman course. I've never been a dogman but I got my dogman's ticket to understand the safe way to pick up a load. I chose to do that many years

> ago. This company benefits from it and I'm always the one to be looking after the crane crew now, but I didn't renew it, I didn't need to because I never wanted to or never been a dogman but to understand the degrees of how to pick up a load, the knots and what you need to do. It was a personal thing that I done way before this company.
>
> Site Supervisor - Basil

It is clear from these narratives that personal motivations are a key driver behind safety practice and the desire to attend training sessions. Combined with the importance of content relevance, an understanding of mandated safety programs and a desire to be responsible for their own training needs, the supervisors interviewed for this constructed work clearly identified major issues with the current safety training interventions that contributed to negative attitudes toward training. The narratives support Albert and Hallowel's (2013) suggestions that current safety-training programs primarily rely on instructor-centric pedagogical approach, which are insensitive to the adult learning process and are ineffective. Apart from the safety regulator's requirement to consider the adult learning principles, there is little empirical evidence available that would suggest that the principles are widely applied across a range of safety-training programs. However, some research (see Waddick, 2011; Burke et al., 2006) suggests that the use of personal experiences, real life incident investigations, and

case studies, along with engaging participants with videos and stories of accidents and injuries, have been used successfully within safety training for some years.

The narratives in this constructed work identified that these engaging methods seemed few and far between, and that the call for the integration of andragogical-based learning techniques into safety-training programs (Albert & Hallowel, 2013; Wang et al., 2010) on a wide-spread basis is needed. Again, the previously discussed use of a best practice guide for construction training could be an effective solution to address these issues.

Capability of Trainer

Another critical factor in facilitating effective training interventions, which links with the relevance of safety-training interventions identified through the narratives within this constructed work, is the experience and industry knowledge of the trainer.

> Those modules that the HR people do—they are ok. But seriously, those people need to understand the construction industry—or, at least be prepared to listen and adapt to the way we have to do things in the construction industry.

Site Supervisor – John

The level of experience and capability of the facilitator received some attention in the literature across a wide range of industries and professions, including health (Kruijver et al., 2000), management studies (Holladay & Quiñones, 2007), HR (Alvarez, 2004), and psychotherapy (Bennett-Levy & Lee, 2014); however, no empirical evidence on the effect of trainer experience and background exists within the OHS or construction industry literature. The supervisors interviewed for this constructed work perceived the trainer's practical background and experience in the industry to be a critical component for the success of safety-training interventions.

> You know we need trainers that don't cover up these health and safety regulations with big text, but explain it to you in a relevant context. You know like if the guy on scaffold does something wrong and you haven't done your daily inspection, you could be in trouble because… like that—a scenario that could actually happen. But for that to occur, the trainer needs to understand how the construction industry works.

Site Supervisor – Pablo

> Well since I have to be at the training, I guess the training better be interesting and relevant… No, really it's all about the trainer, he or she I guess, has to know about the job, I mean really know the job, or at least about the industry, they really should be from the industry – though you would have to pay the trainers a lot more to get them off the tools and into a trainer's uniform… it's just the way you can see it. If you have been there before and experienced it, then you

> can tell it like it is, not use general stuff and expect me to be able to relate it to my job.
>
> Site Supervisor – Dylan

Under the current Australian Skills and Quality Authority (ASQA), any RTO delivering vocational competencies must ensure that the people delivering the training must have:

- Vocational competencies at least to the level being delivered;
- Current industry skills directly relevant to the training; and
- Current knowledge and skills in vocational training and learning that informs their learning (Cert IV in Training and Assessing).

(ASQA 2015)

The ASQA standards require RTOs employ suitably qualified trainers. Potential problems arise when this is applied to the safety discipline, as RTOs generally employ safety professionals whose training experience is limited. The evidence of these problems within the construction industry is reported through evaluation studies where comments, such as "Death by PowerPoint," "Boring," "Too technical" (Wilkins, 2011: 1022), "that might work in the chemical industry but not in this office," or "that's so not our site" (Stuart, 2014: 412) is supported by the perceptions of the supervisors in this work.

As a discipline, OHS standards and competencies exist to develop the skills, knowledge, and experience of a safety professional. The professionals' qualification at any level from Certificate IV through to undergraduate however remains general. The competencies required for a safety professional are described by the recent introduction of the Body of Knowledge.

> The OHS Body of Knowledge is the collective knowledge that should be shared by Australian generalist OHS professionals to provide a sound basis for understanding the causation and control of work-related fatality, injury, disease and ill health (FIDI). This knowledge can be described in terms of its key concepts and language, its core theories and related empirical evidence, and the application of these to facilitate a safe and healthy workplace.
>
> (HaSPA, 2012: Cover Page)

The body of knowledge has been developed to provide a range of learning objectives that can be covered by educational organisations when developing and delivering safety competencies. This body of knowledge has a focus on developing the technical skills of an OHS professional and limited focus on the development and delivery of training. The development of the safety professional skills in development and delivery of safety-training interventions is left to the

competencies surrounding minimum training competency the Cert IV in Training and Assessment.

A wide range debate into the ongoing problems and issues with this competency has been previously identified (see Wheelahan & Moodie, 2011; Skills Australia, 2011; Clayton et al., 2010; Department of Education and Training, 2009); however, entering this debate is outside the scope of this work. Still, the relevance of the capacity or competency of trainers remains an interesting angle in the attitudes and perceptions of construction site supervisors, and one that could require further research. For the purposes of this constructed work, the issue of trainer competency and capacity to work within the construction industry remains as a contributing factor to training ineffectiveness and adds to the reasons why the supervisors had negative attitudes toward safety training. This was highlighted by one of the site supervisors:

> You know what, I'm sorry I know you are a safety trainer, but really there are some major problems with your job. I wouldn't like to be you. You come from what—a defence background—that's great. But you don't really understand my industry, do you? No, well that's the problem, you may know safety like the back of your hand, and you may have some great stories to tell, but seriously, it's bad enough that

> I'm forced to come to training that I don't need, and then to have a trainer—who (I'm sure your great at your job) doesn't truly understand the pressures that I have… The project is my life, and I don't think that people outside the industry can see or understand that.
>
> Site Supervisor – Dylan

Theme Summary

It is evident from the findings in this constructed work that safety training is in need of much reform if it wants to achieve its aim of improving safety performance. It has become clear that current safety-training interventions put in place by BuildUp Constructions were not effective. Whilst being interviewed, most of the construction supervisors were animated when discussing specific training courses that they had attended, and a few were easily able to recall both positive and negative stories about the course and, in some cases, the facilitators teaching the training course.

The overwhelming perceptions from the supervisors, across all regions, was that, whilst they perceived safety to be an essential part of their role, most of the training they had attended was ineffective in helping them improve safety behaviours onsite. All supervisors were able to identify at least one safety course that lacked relevance to the

construction industry. One supervisor was able to articulate the relevance issue perfectly:

> We are focused on our projects; this is our life – for like two years it's my one and only - supervise workers building a 40-story building. I know it's got challenges, safety challenges, and production challenges—but it's my life. And, if you're going to give me information on how to improve safety, then you have to get on board with my life and make sure that whatever you have to say is related to what I'm doing.
>
> Site Supervisor - Alex

Further investigation is required to identify, develop, implement, and evaluate suitable safety training processes and methodologies that will provide an active, social, and culturally acceptable role in training for learners that will prompt ownership and encourage transfer of knowledge into work practices. Future exploration into how the content and relevance behind current mandated safety-training programs can be developed into engaging material that will entrench safe behaviours and processes into workplace practice during and after learning opportunities is required.

Phase Summary

The narratives presented in this constructed work extended the previous literature that emphasise the importance of content relevance in training effectiveness and provides new information as to the potential origin of effectiveness issues. Whilst not diminishing the need for mandated safety training, this work identified that a focus on individual needs and an acceptance that learning happens within a complex sociocultural environment are important considerations. Regulators, construction companies, and especially RTOs, need to increase their capacity for understanding sociocultural attributes and incorporate them into the development and delivery of safety-training interventions. The following phase of construction will explore some of the organisational- and industry- related factors in more detail.

Phase Seven - "Fitting Out" the Services: Influences on Safety-Training Interventions

The fit out of a building is when the services and specific requirements of the office or apartment are fitted in to an open space. Fit outs are generally completed by the principal contractor, but advice and recommendations from the designer and the client are taken into account. No two fit outs are the same. Much like in the construction of a PhD, the fit out could be in the form of recommendations to industry or government, or an indication toward the need for further investigation on the topic.

Phase Introduction

In the previous phase of construction, the supervisor narratives articulate concerns surrounding the relevance of the training content and the need for regulators, RTO's and organisations to consider the individual needs prior to implementing safety interventions. Whilst the

overwhelming opinion of the supervisors was that training is an important component of managing safety on a construction site, a negative attitude was still prevalent. The perceived irrelevance of the content, the mandatory attendance, and the delivery issues such as classroom-based activities, all culminated in the minds of supervisors to only enlarge the negative attitude toward safety training and safety in general that leads to practice that overlooks important safety considerations such as completing risk assessments.

The narratives presented in this phase of construction explored the range of sociocultural factors, both organisational- and industry-related that added to the difficulties of providing effective and engaging safety-training interventions. Organisational and cultural factors have been identified as important to improved safety behaviour (Saari, 1990; Shannon et al., 1997; Geldart et al., 2010). However, the extent of importance, levels of interactions, or consequences if they are not applied, have not been widely explored.

Theme Three - Organisational Factors

Organisational factors, such as management commitment, workforce empowerment, active senior management participation, good

management-employee relationships, and the implementation of a management system are commonly touted as essential components of a positive and mature safety culture (Shannon et al., 1997; Geldart et al., 2010; Ismail et al., 2012). The identification of these and other organisational factors stems from research into the influences affecting the reduction of injury rates, and as such, the data relies and reports on the presence of each organisational factor (i.e., Is there management commitment? Is there good consultation? Is there a working management system?) For example, Gershon and his colleagues (2000) surveyed approximately 1,000 hospital workers across compliance, safety culture factors, and numbers of exposure incidents. Their results identified safety climate factors such as management commitment and compliant systems "were an important contextual variable in the hospital environment and is correlated with employees' compliance with safe work practices and with workplace exposure incidents" (Gershon et al., 2000, p. 216). However, in identifying the importance of the safety culture factors, the researchers discovered that the cross-sectional design of the survey could not preclude the determination of causality, meaning that whilst they could identify associations between perception, behaviour, and organisational factors, they could not determine if the factors influenced behaviour, or if the behaviour

influenced the factors (Gershon et al., 2000). This example highlights the need for both researchers and organisations to focus on not only the presence of any specific factor but the influence that these factors have on the workforce.

Safety Systems and Management Commitment

The narratives presented here identified that, whilst the presence of organisational factors, such as an audited management system and management commitment, is important, a more telling influence is the ongoing application of these factors on a day-to-day basis. A common thread from the supervisors was the willingness of sites to push aside the documentation or processes from the management system when external time pressures are apparent.

> They [the company] have all the documentation and the systems that are certified. We get audited all the time. Safety to us is number one… but quite often when things, especially when we're tight on the program, we tend to lose the motivation for safety a bit, but most of the time that I've seen, we're big on safety for the critical things. But you know in tier one organisations, there are limited incidents involving critical risks cause we deal with them. It's the smaller risks that cause the incidents.
>
> Site Supervisor - John

> Well you know they do a lot of talking, and there is a lot of paperwork and procedures that tells us what to do and how to

> do it. They send us to training to learn what to do and how to be safer and how to manage the contractors. But really, when push comes to shove, if it's not gunna kill someone, then the project timeline comes first.
>
> Site Supervisor - Tom

> Well I haven't been here that long, but there just seems to be such a focus on the safety paperwork. We have audits. We have to fill this out, do this, do that, but I don't get it. Why should I be on the top of workers all the time for their safety, when really the company only care about getting the job done. There is no real money for the little safety things. What about dealing with manual handling or work stress? If they really cared about safety, they wouldn't have supervisors working 16 hours a day, 6 days a week, to get a project completed."
>
> Site Coordinator - Dylan

It appears from these narratives that the occurrence of organisational factors, such as safety systems and management commitment, whilst present in BuildUp Constructions, are lacking in their application and do not meet the expectations of the supervisors' perceptions. It also seems that the safety practices of BuildUp Constructions (in the form of commitment and demonstrated through the system) are negatively affecting the attitudes and perceptions of the supervisors. The main objective of implementing a safety management system is to systematically manage the planning and implementation of a company's safety policy (Koivupalo et al., 2015). Management systems do not need to be certified; however, construction organisations (such as BuildUp Constructions) tendering for large government projects will

require certification. Certified systems differ according to the organisations, but all will detail the activities and systems that set and prioritise the company's safety goals. As discussed in Construction Phase Two organisations that have an implemented and certified safety management system will look toward the safety policy for commitment and direction on implementing safety interventions.

The safety policy for BuildUp Constructions' organisation (extract presented below) meets the audit criteria for an effective management system policy, as it identifies legal and consultation requirements, is signed by the most senior position in the region, and provides direction as to the safety priorities of the organisation. This policy is meant to provide the direction for the management of safety on all multiple construction sites.

> BuildUp Constructions cares for the people we work with, ensuring their safety and wellbeing, providing support and helping them achieve their goals. BuildUp Constructions is committed to designing, planning and providing a safe and healthy working environment for all employees, contractors and visitors. We are committed to having a mature safety culture that is driven by senior management.
>
> BuildUp Constructions' Occupational Health and Safety Policy - 2015

The senior management commitment has long been discussed as an important factor in the management of safety. Park and Butler (2001) reported that an active role of senior management in safety issues was a significant factor. The supervisor narratives presented here question the true commitment of the multiple construction senior management and the policy that directs action.

> So, I think we try to keep a good track record. Yeah, I think we do safety well; but obviously, things can always improve. I think as a high-profile company doing high-profile projects, we can't afford to lose lives, or have major incidents. Other times, we can improve, and mostly I've seen we just do it for

> compliance. It's more of a compliance thing. Like the guys [contractors] just fill out their documents, tick-and-flick kind of thing. And I guess we, as supervisors, should question them. And that's kind of our role as well, just to question them, ask them what they're doing and making sure things are being done as to what their documents say. But we just haven't got the time, and we let it go a lot. It's a bit of luck really that something major doesn't happen more regularly."
>
> Site Supervisor - Clive

> I know the policy is there, and all the safety procedures, but when I see the PM and the SM walking around, and their focus is on the big things, it just doesn't seem right that I should have to deal with them either. I have to learn from them. It seems to me that if the bosses don't worry about the little things—well, except for safety walk day, then everything is about keeping the union reps happy. I guess that's a bit of the reason why I'm not that happy about doing training, if the bosses don't really care, why should I have to sit around in class – it's a waste of my time.
>
> Site Coordinator - Jett

These supervisor narratives highlight the negative consequences that mixed messages can send. The development of negative attitudes and perceptions towards safety training and safety practice is evident due to the inaction toward lower level risks demonstrated by senior management. Yueng-Hsiang et al. (2004) identified that whilst the safety policy of an organisation is just one aspect of a wider safety system, the benefits of the positive enactment of safety policies far outweigh other system-related factors of safety culture. The results in their (Yueng-Hsiang et al., 2004) work identified that supervisors and

workers were receiving “mixed messages” (p. 501) on safety due to the contradiction between what was documented in procedures, what was provided for in resources, and what safety practices were highlighted by supervisors.

The supervisor narratives presented in this work identified similar contradictions between documented procedures, statements of commitment, and the lack of focus placed by the organisation on managing or preventing lower level safety risks. Mixed messages received by both workers and supervisors have been identified as contributing factors to other safety issues, such as the increasing issue of absenteeism and the ongoing issue of presenteeism (Jourdain & Chenevert, 2014), not using Personal Protective Equipment (Clouser, Swanberg, & Bundy, 2015), and negative risk perception issues (Lingard, Cooke, & Blismas, 2012) in the workforce. Presenteeism - the problem of workers being on the job, who are not fully functioning because of medical conditions or a lack of motivation, can cut individual productivity by one-third or more and can affect safety objectives (Goetzel et al., 2004). In fact, presenteeism appears to be a much costlier problem than its productivity-reducing counterpart, absenteeism (Hemp, 2004). Mixed messages and the common

contradiction between documented procedures, policy, and safety practices also contribute to the negative attitudes in safety-training programs. Waddick (2011:13) explains:

> As a trainer and consultant in the field of OHS, I notice several conundrums with which many people struggle. This results in the situation that people often have little or no intrinsic motivation to embrace OHS discourse, but view it as imposed duties that curtail their freedom and autonomy. This then creates and feeds into a cycle of rules and enforcement to conduct; OHS is relegated to a low-level unimportant and marginal status that must be complied with when those with power and authority insist.

From my own experience in the safety classroom, I come across story after story of workers and frontline supervisors who want to embrace safety in a more positive manner, but are continually fighting against safety decisions based on productivity and compliance, rather than individual safety concerns, even though most organisations have mission statements or policies touting vision zero or zero harm. The messages received in the workforce appear to contradict the attitudes and perceptions discussed and formed in the safety-training classroom, thus perpetuating the negative attitude toward safety training.

> I'm fairly sure it was in your class that we were discussing the need to take action on manual handling injuries, don't they

> account for over 50% of all serious injuries across all of Australia? [me: Yes, that's about right. Last year's figures were about 53%.] Well, I don't know what our figures might be, but I can tell you that we do nothing to deal with these types of injuries. They say that they want no injuries or incidents onsite, but yet we do nothing to deal with the potential for manual handling injuries? I don't get it. So why bother with training me if I can't go back to the site and do something about it?
>
> Site Supervisor Theo

The narrative above indicates that whilst the "practice of safety" is a supervisor's responsibility, the decisions surrounding that practice are firmly situated outside the control of the supervisor. This reinforces Geldart et al. (2010) call for more focus to be placed on the decisions and actions of senior management because "ultimately, it is the attitude and values of top management, and the manifestation of those attitudes in the form of operational policies and informal actions, which contribute to safer workplace and positive behaviours" (p. 569). The consequence of the contradiction between practice and policy is that training content for organisational specific interventions is generally developed based upon the system and documentation, making the content delivered to the workforce inconsistent as compared to practice, thus adding to the negative attitudes toward training, as it could be seen as being out of touch with reality.

Internal Training Practices

A less prevalent, but still challenging, issue that was identified as having some influence on the attitudes toward safety-training interventions of the supervisors within this constructed work was that of the range of different training requirements and policies that BuildUp Constructions has. It is evident from internal policy documentation that each region runs safety training in isolation from other centralised training requirements, such as professional development, or the graduate program. From a business perspective, decentralising units has the capacity to encourage growth in individual sectors (Camillus, 2008), promote competition in the industry and within the organisation (Lamm, 2002), and allow for efficient management of safety legislation (Maqsood, 2006). The reasons behind, and consequences of, the strategic business decisions of BuildUp Constructions are outside the scope of this work, however, the supervisors identified the effect of the training differences across the various regions of BuildUp Constructions as being a factor in the ongoing development of negative attitudes toward safety training and safety in general.

BuildUp Constructions have four separate business units within Australia that span across five states. Documentation accessed for this work identified that the regional safety manager administers the safety training for each region. This is delegated to a safety coordinator in some regions. The consequence of this management strategy is that the safety-training requirements for supervisors are different across the regions. A significant example is that in one region (Victoria) all supervisors and site management are required to undertake and complete the Certificate IV in WHS, a qualification course that aims to promote valid decision-making and improve safety performance. Whilst this qualification is not required in other regions, except in Western Australia (WA) when working on mining sites, leaving about one third of supervisors and managers in WA with a safety qualification and the others without. These differences in training requirements are not found elsewhere in the operational side of BuildUp Constructions. The Graduate program (which includes elements of safety) and other professional development or human resource development (HRD) training requirements and needs are managed by a central training coordination team. The centralisation of HRD training within any organisation indicates a systematic process that allows for efficient

management and early identification of training requirements (Gherardi, Nicolini, & Odella, 1998).

The differences in training policy, whilst not a direct influence on all supervisors interviewed for this work, factored into the minds of some and appeared to be a factor in the negative attitude directed toward safety training. The supervisors that have worked across regions have identified that this can cause capacity differences and jeopardise the safe and timely running of a project. However, it is difficult to ascertain if these differences would have had negative consequences on the safety or specific safety-training interventions implemented at any given site.

> You know what's annoying—it's that the systems and procedures aren't unified as a company. I know each site has its own protocols and requirements, but a baseline requirement of us, as a company, should be more unified. I've jumped from two divisions of the company. We could borrow things from other projects, gain more experience or learning from other sites or regions. The safety regulations and systems on the last project were so different. I had to complete a Cert IV in OHS, but that is not a requirement back down here, and it should be, because the knowledge gained in that course has helped me significantly in my decision-making capacity.
>
> Site Supervisor - Jacob

> So, you're telling me that if I went to work in Victoria, I would have the opportunity to complete a Cert IV in OHS, as well as doing the scaffolding, dogman, and crane courses. Wow, that would be good, makes me think about moving. I don't know if those opportunities are available to me here. They could be helpful.
>
> Site Supervisor – Alex

Whilst differences in training systems were identified in this constructed work, it is recognised that each region within BuildUp Constructions' organisation is managed as a separate business unit that, whilst reporting to higher management is necessary, each region's manager has individual authority and responsibility to run their region as they see fit. Although some safety policies (and therefore some training interventions) are dispersed from a centralised management position, the majority of responsibility for arranging and mandating safety training rests in the hands of the regional safety manager.

> I worked for BuildUp Constructions in the UK and in Dubai, and now here. It's the same company; it's the same projects—putting up buildings. But, there are different systems, different rules, and in some cases, a totally different way of managing safety. Of course, there are legal differences, but aren't we supposed to be leaders in our field? Don't we strive for best practice? Seems to me that we just do only what we have to in each region.
>
> Site Supervisor – Jeff

The notion that each region is doing "only what we have to" in regards to safety training, firmly indicated that in some regions the organisation was limiting safety training to specific legal requirements. The decentralised approach that BuildUp Constructions has for safety training allows each region to make decisions based on costs and legal requirements, not on the commitment to safety in general. Biggs and his colleagues (2006:185) indicated, "knowledge of safety and the ability to identify and manage risks is the fundamental platform." Little or no consultation with supervisors was undertaken (although consultation is a legal requirement in itself), and supervisors were then forced to participate in the training, regardless of their own needs or capacities.

It appears from the company documentation and the supervisor narratives presented here, that safety managers in each region were applying (or mandating) their own norm to the safety reality. The safety requirements they set became interlinked with the regional notions of organisational [safety] governance (Rose, 1999; Foucault, 1977), and thus, the concept of individual training requirements was lost within the "normalcy" (Lock & Strong, 2010) of organisational

training requirements. The legal requirements of safety, "crowd out" (Parker, 1999) any chance that identifying and addressing individual learning needs could be beneficial to the overall safety performance of an organisation. This "crowding out" further frustrated supervisors who had the opportunity to work across the regional boundaries of BuildUp Constructions, as they could identify a range of capacity differences, either in themselves or their colleagues.

The narratives presented here indicated that these potential capacity differences added to the reasons why some supervisors felt that the training they were mandated to do was irrelevant. The internal organisational factors identified and presented here as contributing to the development and ongoing demonstration of attitudes toward safety training, were further complicated by the presence of external and industry-related factors.

Industry Factors

It is commonly recognised that safety behaviour, practice, and attitudes are influenced by factors external to the workplace (Robson et al.,

2010; Wagner, 2010; Burke & Hutchins, 2007; Reason, 1990). A significant factor that supervisors identified in this constructed work as being relevant and significant to the development of their attitudes and perceptions toward safety and safety training was the risk perception displayed by the industry as a whole. For the supervisors in this constructed work, the subcontractors, in their somewhat blatant disregard of safety rules or procedures, exhibited the overall negative risk perception of the industry.

Risk perception is defined as the subjective judgement that one builds about the frequency and severity of particular risks (Gurcanli, Baradan, & Uzun, 2014). These perceptions are an individual's subjective assessment of acceptable risk and must be carefully solicited in a consistent fashion to quantify and compare among risk tolerances (Hallowell, 2010). The subjectiveness of the assessment of acceptable risk, is presented on a regular basis for the construction supervisor, as highlighted below.

> I'm saying that I've experienced over and over again. We can't control it really; it's just the way of the industry. You do all that risk stuff and their SWMS and toolbox them [Contractors] up here. But then I've got to go and look after something else too. You walk down and you come back and

> he's moved it [in this specific case a ladder to an inappropriate position], and he hasn't got the prop up to stop it from tipping over. And, you're like, "Mate." It's five times in a day and then you kick him offsite. I want to be able to say, "Get rid of that idiot." But what do you do? I mean he knows. I've told him. I've showed him. I've trained him. He's read something he probably didn't read, can't read, but he signed it. But we certainly talked him through it so he didn't have to read it. So, he knows. What more can you do? And if he fell off, you'd end up in court no doubt, but you pull out all the right paperwork that's reasonable, but what good's that? That didn't stop him from dying.
>
> Site Supervisor – Basil

> Well, you know that the whole industry is to blame for this risk-taking culture and behaviour. In the early days, and as kids, we were told how dangerous the job was, but we were given time and the people resources to do things in the safest way possible. But now, even with all the technology advances, we have more pressure to do the job faster and cheaper, and we add safety on at the end.
>
> Site Supervisor – Theo

The supervisors' narratives stress two aspects of the industries risk perception – that of changes in technology and the attitudes of subcontractors; yet, the perception of risk is not absolute (Starren et al., 2013). Previous studies have shown that it can be adapted to a more positive manner by prior knowledge of accidents (Gucer et al., 2003; Fortner, 2000), as well as the worker's experience (Mohamed et al., 2009). The level of perceived risk depends, among other factors, on the type of risk that each worker is exposed to (Rodriguez-Garzon et al.,

2015). Although the concept has been widely researched, limited work within the high-risk industry of construction has been undertaken (Lu & Yan, 2013). All supervisors interviewed for this work identified that the lack of a high level of risk perception is a significant contributing factor for the high level of incidents onsite.

The concept of risk perception has also been included in theoretical models of preventive health and safety (Janz & Becker, 1984) and in the protection motivation theory (Rogers, 1975). Both of these models identified that workers will adopt a protective behaviour if they foresee adverse consequences. However, the narratives presented in this work appeared to identify that even with the potential for adverse consequences, subcontractors would still place themselves in danger to get a job done.

> So, I would say at least three times a day I would see a subbie acting in an unsafe manner. When I discuss it with them—well, when I yell at them for doing the wrong thing, they just stare blankly at you or try and blame it on someone else. Sometimes it is because of someone else, like if there aren't enough lead hooks available, they will just leave their leads on the ground. And I guess that is fair enough, but most times there are lead hooks, or they can rig something up. They know that someone can trip on their lead and break their arm falling, but they just don't care. It's quicker and easier for them to just leave the lead on the ground. These subbies just don't see the risks. I guess they have no ability to perceive the

> consequences, or they think it won't happen? I know that a tripping hazard is a low risk using the matrix, but it's a massive problem for the guy that breaks his arm and has to rely on compo for 6 weeks.
>
> Site Coordinator – Jett

> And so, I guess that's when I feel like you probably do when you're training when no one is listening. When we have to train the subbies, like in an induction, or a SWMS review session or a toolbox—something like that. Because they perceive the risk to be low, they just don't care. And it seems no amount of me yelling or screaming or negotiating with them can change that. It's like they have been brainwashed to just get the job done. The whole industry is like this, more so over in the domestic market, but the civil guys are the same as us commercial guys as well, the subbies only do as you want them to do when you're watching them—or, if it is a major high risk, like jumping the crane or something.
>
> Site Supervisor - Pablo

The narratives highlight the frustration that most supervisors felt when dealing with the safety behaviour of contractors. This frustration existed across all regions. Every supervisor interviewed for this constructed work, provided stories and experiences that related similar feelings as described above. The frustration of dealing with individuals or groups of contractors who do the wrong thing, take shortcuts, or put themselves at unnecessary risk, appeared to place a great deal of stress on supervisors, and contributed to a negative attitude toward safety interventions and safety training. This negativity

is partly due to the increasing focus on managing safety risks at the source and not dealing with the inappropriate behaviour (Waddick, 2011), and partly due to the prevailing attitude that the industry is inherently dangerous and "you just have deal with it" (Dingsdag et al., 2008).

This industry perception—whilst being fully identified and defined in the literature—goes beyond positive or negative attitudes toward training and lower levels of risk understanding. It appears to be the heart and soul of the industry. In my experience the industry perception is focused on building in a manner that is faster than before. A focus on getting the job done quickly and as cheaply as possible, a focus on getting the structure up first and fixing the defects later, the project gets handed over to the client on the right day at the right price, and a focus that safety is just a compliance measure, not part of what we do. This perception can be seen and heard across all BuildUp Constructions' sites and seemingly across all major construction organisations:

"That's just the way we do it." Jett

"We have always done it that way." Bruce

> "They do, we do it, the whole industry does it." Pablo
>
> "If we tried to be safer then no-one would hire us. It's not the way the industry does it." Theo
>
> "No company would tender a job that focus on dealing with all the risks, it would cost too much. No one would pay." Basil
>
> "Build faster, bigger, and cheaper—that's the way." Clive

> Really, it just would cost too much and would slow the project down. They say it's not practical, so we use ladders and scaffolds. And then, because it's easy to grab a ladder or to reach out and not get down and move it, people take risks and get hurt. And we let them do that because it's quicker and easier for us. It costs less.
>
> Site Supervisor – Alex

The identification, analysis, and discussion of the industry perception is outside the scope of this constructed work; however, it is interesting to note that publically the industry (and as such, individual organisations within) appears to have a strong commitment to safety. Organisational annual reports identified improving safety performance, thousands of dollars spent on training, and implementing other interventions. Yet, a recent report published by Safe Work Australia (2015) indicated that the industry may have some significant issues:

> About half of construction employers and workers agreed that risks are unavoidable in construction workplaces. In general, workers were more accepting of risk taking than employers. Workers were also more likely to indicate that conditions in their workplace prevent them from following safety rules. This may be supported by the finding that less than one third of workers agreed that they never accept risk taking even if the work schedule is tight, compared to almost three quarters of employers. (p. 6)

This report suggests that one-quarter of employers and two-thirds of employees are happy to accept risk taking when the work schedule is tight. It is this risk-taking behaviour that has been identified by the supervisors in this constructed work as being a significant factor that adds to the negative attitude toward safety in general and safety training.

> Look, really you know me. I actually liked your training. You engaged with us, debated with us, gave us reasons to do the right (or should I say safe) thing, but there is so much more to it than us making a decision. I hate the training because it shows me what I could be doing, but the job won't really let me do it. It's the whole industry that in essence is fighting against your information. It's the client that wants the biggest and best building at the cheapest price in the shortest amount of time, and our company saying they can do it at that price in that timeline. So, we talk with the unions about long-term jobs for the boys. We get the cheapest contractors in to do the task, and they get supervisors like me in to manage it all. The training doesn't really count; all that counts is the project being completed on time and under budget. Of course, we do it safely, but that's not part of it really.
>
> Site Supervisor - Sergio

Phase Summary – Organisational and Industry Influences

It is evident that the organisational and industry-related factors identified within this work had a significant impact on the attitudes of supervisors toward safety practice and, in particular, safety training. The narratives also emphasise that these factors can have a significant influence on the development of negative attitudes and negative safety behaviour. It is commonly accepted that management commitment, in the form of policy and designated responsibilities, has positive influences on safety behaviour in the workplace. However, the findings in this constructed work indicated that this commitment was quickly overlooked when other organisational factors, such as project timelines and the bottom line were affected. Whilst it is clear through BuildUp Constructions' organisational documentation that the safety priority is put on the critical risks for each project, the implementation of these procedures and systems activities that supervisors were responsible for, did not match with site practices. This contradiction caused time delays, conflict with contractors, and increased stress on supervisors, as well as created ambiguity between systems and actual work situations.

This ambiguity also existed in BuildUp Constructions' organisational policy and systems related to safety training. The narratives presented here indicated that there were significant differences in the training opportunities for supervisors across Australia. Whilst it is not a focus of this constructed work to discuss the centralisation or standardisation issues of BuildUp Constructions' organisational training systems, it should be noted that differences in safety interventions across regions were perceived negatively by safety regulators when the capacity of the supervisor is under scrutiny. Whilst limited literature exists on the influences that organisational and industry factors have on training perceptions in the construction industry, some supervisors interviewed for this constructed work identified the differences as being an added frustration to their role. The following phase of construction will identify the growing need for a new approach that can address the factors affecting the attitudes and perceptions of supervisors toward safety practice and safety training.

Phase Eight - Applying the Finishing Touches: Recommendations and Closing Remarks

All construction must be completed at some stage, and handover of a completed building by the principal contractor is generally done after the finishing touches have been added. Buildings and spaces are cleaned inside and out, paint is dry, and the landscaping has been completed. However, in the construction of a PhD, whilst a handover of the final product (thesis) does occur, the researcher is just beginning their lifelong learning journey.

Phase Introduction

The previous phases of construction have contributed rich examples of personal attitudes and practical narratives that show positive and negative perceptions how the supervisors are constantly placed in workplace training situations that pay no heed to sociocultural or individual learning aspects. In Australia, current research and practice in workplace and adult education largely emphasises content relevance and sociocultural factors as important considerations in the

development and delivery of effective adult education programs (Billett, 2011). In this constructed work, I have demonstrated that, in order to be effective, safety training requires a holistic approach that incorporates a range of factors outside of the general legislative compliance.

A summary of the research findings is provided in this phase, that focuses on the holistic, embodied, and social aspects of construction supervisors' perceptions toward the manner in which organisations arrange and deliver required legislative and organisational safety training. In this concluding phase of construction, I will explore the consequences of future practice for RTOs and construction organisations by outlining the necessary conditions for required legislative safety training to be more effective. I will analyse the contribution to knowledge from the results of this work by demonstrating that the attitudes and perceptions of supervisors' reveal that their requirement for safety knowledge is both mindful and embodied. In providing evidence that individual context can affect training and learning opportunities, I will recommend further research into increased consideration and inclusion of adult learning principles,

as well as other social, cultural, and historical factors, for safety-training interventions.

This work sought to unearth the foundational principles that determine attitudes and perceptions of construction supervisors toward safety training, and trace the impact that these attitudes have on organisational values and safety practice. Identified in the participant narratives is a mismatch between individual supervisors and organisational learning needs, and the identification that workplace learning in the safety discipline is negatively influenced by a number of aspects that need to be addressed.

The primary purpose of this research was to investigate the relationship between construction site supervisors' individual attitudes and perceptions, as well as organisational values and management practices, in terms of workplace-based safety-training interventions, in an effort to identify areas where training interventions could be improved. This purpose was framed around and focused upon three central research questions:

1. To what extent are the attitudes and perceptions toward safety-training interventions influencing the effectiveness of such training in the construction industry?
2. What are the foundations for these current attitudes and perceptions?
3. To what extent are these attitudes and perceptions affecting the relationship between organisational values and expectations and safety practice?

Through investigation of these questions, I was able to identify training-related issues that, within one major construction organisation, are causing supervisors to develop, and perhaps even perpetuate, negative attitudes towards training that could result in negative safety practices. Previous studies on the effectiveness of safety-training interventions (Robson et al., 2010; Burke et al., 2006; Taylor et al., 2005) identified that safety training can have beneficial effects on attitudes and perceptions of participants; and this, in turn, motivates safer behaviours in the workplace. This constructed work concluded that the attitudes and perceptions of participants entering training have a major influence on the effectiveness of the training intervention, and require addressing.

Influencing Effectiveness of Safety Training

A strong theme that resonated across all interviewed supervisors was that safety training, whilst necessary, was not effective and could be improved. However, it was also identified during these interviews that the purpose of much safety training undertaken within the construction industry was not clear, and this made it difficult to ascertain if training was effective. Most supervisors indicated that their overall attitude towards safety training had been formed prior to working for BuildUp Constructions, and that further opportunities to develop or change that attitude were reliant on factors such as work environment, management commitment, and union influence. These factors, all of which are external to the training room, have previously been identified (see Taylor et al., 2005) as important when focusing on changes in behaviour after training has taken place. However, the supervisors interviewed for this work indicated that these factors need to be considered prior to, and during, training delivery; and, in some cases, they need to be addressed when designing and developing training content. It is clear from the narratives that content relevancy and consideration of individuals' capacity and learning needs are the strongest influencers of the development of attitudes towards safety training. As one supervisor articulated,

> It's like even the examples of construction sites seem made up or not real life, as the actors seem to have all the time in world to deal with a situation, that's not real life …sometimes I have 100 things to deal with and all of them require a solution right now and that's what the training should help me with.
>
> Site Supervisor—Theo

As previously discussed in the dominant model of safety training, workers are seated in a classroom-like setting and lectured to by safety experts, often with the support of slides, videos, and learning resources (i.e., participant notes and case studies). The training has been arranged by the organisation, with limited or no consultation with the workers. It is expected that workers attend the training and, in many cases, the purpose of the training is to meet legal or auditing requirements. The narratives presented here demonstrate that this dominant model of safety training "crowds out" (Parker, 1999:63) individual factors, and fails to consider potential historical and cultural shared views of safety in the construction industry. The legislative requirements of safety have become the accepted way of understanding training interventions; and, these are intrinsically bound within the power of the Regulator and the need to comply by the organisation.

This continued use of the dominant model of safety training begs the question of, what is the purpose of safety training? If the purpose is primarily compliance, then training interventions will always be effective, as the physical delivery of the intervention provides demonstration of compliance. However, if the purpose of the training is to promote positive safety behaviour, to improve safety behaviour, to enhance performance, or to provide opportunities for transfer of knowledge (i.e., learning from incidents), then this work has established that within BuildUp Constructions, and possibly across the entire industry, training is not effective.

Beyond the safety industry, formal learning interventions in the workplace are "designed and delivered with the expectation of improving either organisational or individual performance" (Burke & Hutchins, 2008, p. 107). In order to achieve this, content, design and delivery methodology, engagement levels, and evaluation are all focused on learning processes, and the opportunity for transfer of knowledge (Anderson et al., 2000). By combining what has already been identified by supervisors in previous phases, with the thinking of educational theorists and adult education specialists (see discussion -

Phase Three), it is clear that the environment in which learners are functioning (such as the workplace), and its context (including, but not limited to, the social, technical, and political), need to be considered if training is to achieve its purpose.

The supervisors' narratives presented in this work indicate that, safety training is not effective if the purpose is enhancing safety performance. The supervisors have implied that their attitudes towards safety training, whilst in many cases are negative, are perpetuated by the continued organisational and industry practice of providing training that is irrelevant, out of context, and detached from individual needs.

Foundations for Safety Attitudes and Perceptions

My experience of delivering safety training to the construction industry for seven years prompted this enquiry. Initially, I assumed that individual attitudes and perceptions were the major contributing factors for ineffective training. I, along with many of my colleagues, often debated the reasons for people's resistance to safety training. Common responses given were that workers in the industry "weren't so good in school," or "they didn't like school when they were young so they don't like it now." It was these types of excuses that trainers used

(myself included) to justify bad evaluations, limited participation, or ineffective training sessions. However, the supervisors interviewed suggested that, whilst some of them did not enjoy school, or had bad early education experiences, these factors were not the foundation for their negative attitudes toward safety training.

During the interviews, the supervisors were encouraged to discuss the establishment of their attitudes and perceptions towards safety training and safety, in general. All of them expressed the importance they placed upon safety and safety practice; however, when discussing how other supervisors' attitudes affected safety practice, everyone identified a variance within the management levels especially between executive management and site management. These variances, combined with other organisational factors (such as training policy, delivery styles, and relevance, along with production over safety), were identified as being more influential on safety attitudes and perceptions than any individual factor.

Organisational Factors

The supervisors interviewed for this work indicated in their narratives that the major contributing factors to ineffective safety training and

lack of onsite safety performance were organisational and industry factors, such as policy and practice around safety training, delivery styles, content relevance, compliance focus, and management perception of production over safety.

While the interviewed supervisors entered the workplace with their own individual attitudes, values, and perceptions about safety, these may be influenced by the current workplace culture, and further eroded by external pressures. In line with Illeris (2011) a strong theme that resonated from the interviews was that most supervisors do not share the same values on safe practices in the workplace as their bosses and the senior management of the organisation, as this participant narrative demonstrates:

> You know it really depends on what stage the job is at, and how it is all going…If it is all going well, then we probably are thinking the same way about safety you know like… keep it up, however if we are behind, or there is external pressure coming in then we are really just focusing on getting the job done.
>
> Site Supervisor—Jett

External pressures can be quite significant, including budgetary matters, legislation requirements, the impact on the current state of the industry and nation, and the organisation's relationships with the

clients and subcontractors whom they retain. Clients in the industry can demand specific standards of safety on the worksites, but their safety values can differ; and generally, the budget will be the overarching factor. The client puts considerable pressure on the contractor to complete the work on budget and on time.

Legislatively, as previously discussed, BuildUp Construction is required to take on the responsibility for safety on the worksite. However, the values surrounding safety in the workplace, safety responsibility, and focus, do vary across the roles. The supervisors interviewed identified senior management's view to generally be one of high-risk management and production. The union position is generally focused on safety, but that can become murky with industrial relations matters. The subcontractors are focused on ensuring they can perform their work when desired, seemingly without concern for other workers. Yet, at the supervisory level, the focus is to please everyone around them, so sometimes safety wins; and other times, production wins the focus race.

The narratives indicate that one of the major influences on individual attitudes towards safety is the industry-wide production over safety perception. This perception is not evident in organisational policy, as

all company documentation indicates safety as a number one priority; however, day-to-day operations at the site level (although influenced by senior management and organisational practices) indicate the effect of the perception.

The supervisors continually referred to the conflict with pressure for production acting as the most important aspect in the workplace, with safety being secondary in many cases. Although safety professionals and management would cringe at the thought of safety being subordinate to production, this appears to be the reality on the worksites, according to the supervisors. The pressure to build at a faster pace makes production more important than safety across the industry. When pushed about this perception, the supervisors were reluctant to provide specific examples, however, most did say that production over safety was not a conscious decision; it was based more around the pressures of the job.

> I don't believe that anyone would deliberately take a known safety risk they are just not conscious; they don't see it.
>
> Site Supervisor—Tom

The perception of production over safety has been identified by the supervisors is the major influencer of safety practice onsite. This issue has links across all factors previously identified (see previous phases), including legislative compliance, capability differences, and competing influences, and thus, warrants further investigation to determine the level of influence and effect it may have on safety practice.

This pressure of production over safety (when required) influences the attitudes and perceptions (and practice) of the supervisors onsite. Then, in training situations, safety is promoted as being the most important factor on the worksite. The consequence of this, as reported by the supervisors, is that when participating in safety-training sessions where the focus is a procedural or legislative requirement that safety comes first, they lose interest and disengage from the training, as it does not reflect the reality they experience on the site. Thus, the training becomes ineffective.

This lack of reality links directly to the other contributing factors of ineffective safety training—the issues surrounding content and delivery method. All interviewed supervisors indicated that they had experienced a multitude of safety-training interventions that were irrelevant, boring, repetitious, lacked engagement, and where the

person delivering the training had limited (if any) experience in the industry. The supervisors reported that these negative experiences were, and continued to be, a primary factor in the ongoing negative attitudes toward safety training, as this narrative clearly demonstrates:

> To be honest though I hate safety training generally cause it's so separate to work.
>
> Site Supervisor—Clive

The supervisors' attitudes and perceptions, are echoing that of past research (see Wilkins, 2011; Stuart, 2014) proving these difficulties are not just found within one organisation. Content relevance, engagement methodology, and trainer capability/experience have been identified as central problems by the interviewees. Thus, it is evident that the safety-training profession, along with the individual organisation, needs to address these issues and implement solutions, if they wish to move towards more effective safety-training interventions.

Implications for Practice

This work's initial contribution to practice drawn on the work being

the first case-study of its kind to be conducted in the construction industry that specifically focuses on the individual attitudes and perceptions toward safety training. The interviewed supervisors provided narratives around the values they hold individually, and seemingly collectively, about the ongoing issues of training interventions. This work has identified some of the individual, social, and cultural factors that need to be taken into account when designing and developing safety training from a construction organisation's and training organisation's perspective.

From a training organisation perspective, presented and highlighted are the ways in which the training profession lacks engagement and relevancy toward an industry that legally and morally requires effective interventions. For the safety-training profession, a design and delivery framework, or a set of minimum safety-training standards, needs to be adopted. This framework could help to better understand the industry, not only for trainers, but also other external players, such as clients, developers, and regulators.

The use of such a framework to assess the industry's safety-training effectiveness and performance is a way forward for safety-performance improvement—which should be at the centre of every training

intervention. Training organisations could support the industry by ensuring that the framework could operate across the wide scale of organisations connected to the construction industry. The development of such a framework could also increase public awareness of the industry which, in turn, could affect the way that younger workers' attitudes are developed.

This constructed work has also underscored the preceding, and other minor issues for the training profession that may be intrinsically known, but not identified as important to individual training organisations or trainers. Armed with the identification that safety training is boring, repetitive, and irrelevant to participants, the training profession in the safety industry has an opportunity to improve training interventions and make a lasting impact on safety practices and individual behaviours.

The narratives presented have illuminated some critical issues for BuildUp Constructions, potentially creating some consternation for senior managers, and also highlighted some possible concerns of which the industry was aware, but may have preferred to remain hidden. By interviewing ten supervisors across the country, in which personal narratives have emphasised negative perceptions, this work has

managed to shatter the façade of the organisation and to achieve a genuine indication of what supervisors think about safety, in general, and more specifically, training. Those who may gain from the identification of

- the capability differences between trade-qualified and university-trained supervisors,
- the safety-training opportunities which vary across the country,
- the general negative attitude towards the delivery of safety training, and
- the problems surrounding production over safety,

are the state and national safety and training managers, as well as the senior managers who will need to make the commitment for training. The issues for BuildUp Constructions in mediating this work are outlined below.

First, the construction organisations, their contractors, their subcontractors, and the Unions face considerable external pressures financially with continued production. With the decline of the construction boom, the weaker economy has resulted in less work, often to the detriment of the many smaller players within this industry; the lowest price wins the subcontract. When the pressure of low

returns for a subcontractor is combined with the need to bring the job in on budget and on time, safety, and more specifically safety training, can be the first area compromised by the shortcuts deemed necessary to compete. These financial and production pressures can affect the safety values for subcontractors, which influences the behaviour of their workers. The result is that the supervisors from the principal contractor (such as BuildUp Constructions) then need to address such behaviours.

Second, managerial support and commitment is often touted as the key to good safety performance (AIG, 2014; Burke et al. 2011). Supervisors on construction sites enter the workplace with their individual values, which are often quite positive about safety. These values and attitudes are then influenced by the current workplace culture (or behaviour) and, often, the external pressures and internal processes erode the positive attitude. Management can appear to support safety over production, but circumstances often mean management compromising itself by contradicting its own policies and procedures. Supervisors are the key to safety on site, but they, in turn, may undermine management's safety over production value because of production pressures. The catch-22 situation is that the safety attitude of the subcontractors is determined by the supervisors' and managers'

commitment to safety over production; but each time production over safety occurs (even for low risk issues), the subcontractors and workers change their attitude and behaviour. The result is the growth of negative attitudes towards safety, leading to the ineffectiveness of any training intervention brought forward.

Third, evident within the literature and through general practice, the general opinion is that the construction industry needs to improve safety performance. For this to occur, safety needs to be industry driven; however, legislative and audit compliance remains the key driver for most safety-training interventions. New legislation has been passed in most states that provides opportunity for organisations to be proactive in safety performance; however, anecdotal evidence suggests that the major driver for organisations to deliver safety-training interventions remains compliance.

The fourth issue is that clients and developers are demanding that work be completed in record time. Workers, under this exerted pressure, have less time to make safety a priority; they become fatigued and prone to making errors. Although safety professionals and management cringe at the very thought of safety being pushed aside for production, the reality on the worksites is very different. The pressure

to produce at a faster pace is placing production over safety in many subcontracting and major organisations in the industry. The value within the industry is safety over production; but, in some cases, the developer, or the result from the previous job, sets the standard. This is not a deliberate move away from safety, but rather a pressure for on-time completion of the project. Many supervisors believe that the pressure for production is mainly a product of developers and societal greed.

The final issue is that the attitudes and perceptions in action on BuildUp Constructions sites are the final result of the original management values, the safety culture as it is acted out in the workplace, the formal training a supervisor receives, and the tenacity of these values against the supervisor's subjectivity when faced with an unsafe or high pressure situation. BuildUp Constructions appears to be making efforts to improve their safety culture through implementing training interventions and investing both time and money to facilitate the change; however, this is not happening at every site. Supervisors that move between sites, across regions, or who interact with supervisors from different regions, are finding significant differences in training opportunities, delivery styles, content, and relevance. This lack of standardisation of training interventions can affect the moral and

culture toward not only training interventions, but also the organisation.

At the heart of the narratives presented is an indication that supervisors generally have an encouraging and positive attitude toward safety, in general, and safety-training interventions. However, these attitudes are only present when the site is working well. As soon as external financial or time pressures are applied, or training interventions become boring, repetitive, and not relevant, the positive attitude changes. There appears to be an on again-off again conflict between being safe and being compliant, perhaps best described by one supervisor:

> If safety was a core value in my workplace, there would be no need to prioritise it.
>
> Site Supervisor—Jett

Recommendations for Further Research

The presentation of the narratives, and the identification of a range of attitudes and perceptions towards safety training do suggest that opportunity exists for a change in the way safety training is developed and delivered. The extensive literature review in Phases two and three

outline the existing models and theories relating to learning styles and the broader area of workplace learning. Whilst these provide a useful framework for design and development of training interventions they may not be adequate to deal with the complexities surrounding interventions in high-risk areas such as the construction industry. This work can be seen as a commencement of the journey into better understanding the social, cultural and historic components that can influence safety training.

First, this study could be replicated in the other Tier one, two, and three construction companies to provide a wider range of narratives, stories and perceptions. Adding to the collection of stories would provide richer understanding. Second, this study could be replicated in the industry in countries other than Australia. The construction industry across the world is similar in its complexities, with financial, legislative and production issues. Identifying attitudes and perceptions from supervisors around the world could assist training organisations to understand and improve training interventions that are presented to a multi-cultural workforce. Third, this enquiry could be replicated in other industry groups, such as manufacturing or transportation where safety-training interventions are also provided primarily for compliance reasons, thus providing a comparison between each

industry's safety values, and how these are demonstrated in the workplace.

The development of a safety-training framework, or standard, identified as a solution above, could be used by other researchers and transferred to other research studies, so as to investigate the potential for improvement of interventions in the workplace, and the factors that facilitate the discourses, artefacts, and rules that seem to be perpetual within training.

Attitudes, perceptions and values change from individual to individual, workplace to workplace, organisation to organisation, and country to country. Further ethnographic research could investigate the influences and components that impact on the development of such attitudes, perceptions and values across a broader area of the workplace and provide stories and narratives that could be used to improve the development of safety-training interventions.

Contribution of the Work

This five-year case study investigated the attitudes and perceptions of construction site supervisors to generate an understanding of the factors that influence effectiveness of safety-training interventions

within the industry. The findings extend the current understanding in the field of safety-training effectiveness by Cohen and Colligan (1998), Burke et al. (2006), and Robson et al. (2010), who found that safety training is largely ineffective if personal, cultural, and historical factors are not taken into account when designing, developing, and implementing interventions.

The particular contribution of this work to the workplace safety training field is its illumination of the individual attitudes and perceptions of supervisors in the practice of safety and safety training, as they try to meet their roles and responsibilities set by the needs of the organisation, as well as manage and develop their own values. The work specifically indicates how the formation of attitudes and perceptions is heavily influenced by organisational responses to industry issues, such as time and financial pressures, and how these factors then influence any training intervention established by the organisation.

The supervisors' narratives presented highlight the need for reconceptualisation of models of the production of safety attitudes, as a discursive battlefield between the pressures of production and the need to work safely exists in the construction industry. This work has

illuminated the significant issues faced by the industry when it comes to emphasising safety before production pressures; and it has provided a starting point from which the industry can advance to produce more effective training interventions.

The Final Handover

The most important outcome of this work is the opportunity it affords BuildUp Constructions (and other similar construction companies) to examine its practices and its values surrounding safety-training interventions, and to examine its workplace safety values in practice. This examination of their processes may lead to improvements in training effectiveness and, potentially, the improvement of safety behaviour across the industry, thus resulting in lower fatality and injury rates now encountered by the industry.

> It's just pure luck that we don't kill more people—what you do though, the passion you put into our training sessions, it's changed me … I won't walk past a safety issue no matter how small - and that's the way we all should be.
>
> Site Supervisor—Jett

As a safety practitioner, I am both daunted and encouraged by the attitudes of the supervisors presented in this work.

Phase Nine - All Hail the Workers

Workers are the backbone of a constructions site. They are the ones who do the work, who pour the concrete, lay the cables, man the cranes and slog it out in the environment. Each construction site can have as many as 800 workers during its peak operations, and each one, casual or full-time, management or labourer, tradesman or engineer is listed on a site attendance sheet each and every day. The list, much like a reference list of the PhD thesis shows who has contributed to the construction of the building.

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Appendix A: Report for Host Organisation

Safety Training: A report into the attitudes and perceptions of site supervisors

Marilyn Hubner

Table of Contents

Executive Summary
Over the past three years a research project that focuses on safety training in the commercial construction industry within Australia. It sought to reveal how the attitudes and perceptions of construction site supervisors can be mediated to produce effective safety-training situations and, as such, move toward reducing the injuries and fatalities that plague the construction industry. The main results from this work identified that:

- The resounding attitude was that safety training required reform
- There are considerable differences in the capabilities and understandings of supervisors that are trade qualified and those that are university qualified
- All training content needs to be relevant
- There are significant differences in the training opportunities for supervisors across Australia
- No company-wide safety training policy or procedure
- Commitment to safety is quickly overlooked when other organisational factors, such as project timelines and the bottom line are affected

Identified through the data is a mismatch between individual supervisors and organisational learning needs, and the identification that workplace learning in the safety discipline is negatively influenced by a number of aspects that need to be addressed. As a result, the major recommendations for Multiplex are:

- Conduct a safety training needs analysis for all levels of organisaiton considering legislative, organisaitonal and individual requirements
- Develop and implement safety training policy and procedure across entire organisaiton
- Ensure safety training content is engaging, relevant and consistent across entire organisation
- Invest in further research to ascertain best practice in safety training
- Invest in the development of a Best Practice Guide for Safety Training

Introduction

Safety-training interventions are common across all Australian workplaces due to the legislative requirement to provide a safe working environment. As a safety practitioner, I often work with workers who are *forced* to attend training programs and, as a consequence, do not want to participate. In my ten years of delivering safety training, attitudes of 'boring', 'irrelevant', and 'already know it all' are common barriers to effective training.

As such, I sought to unearth the foundational principles that determine attitudes and perceptions of supervisors toward safety training, and trace the impact that these attitudes have on organisational values and safety practice. I sought to reveal how the attitudes and perceptions of construction site supervisors can be mediated to produce effective safety-training situations and, as such, move toward reducing the injuries and fatalities that plague the construction industry.

Identified in the data is a mismatch between individual supervisors and organisational learning needs, and the identification that workplace learning in the safety discipline is negatively influenced by a number of aspects that need to be addressed.

Methodology

The purpose of this constructed work is to examine how construction site supervisors' attitudes and perceptions toward safety training are developed, influenced, and integrated into practice, as well as how these attitudes and perceptions may affect the effectiveness of mandated and organisational arranged safety-training programs and courses. The research questions, behind the inquiry were:

1. To what extent are the attitudes and perceptions toward safety-training interventions influencing the effectiveness of such training in the construction industry?
2. What are the foundations for these current attitudes and perceptions?
3. To what extent are these attitudes and perceptions affecting the relationship between organisational values and expectations and safety practice?

The primary source of data was collected through ten semi-structured interviews, conducted at working construction sites in the four different states across Australia. The secondary source of data was the relevant organisational documents, such as safety and training policy

and procedures, job descriptions, site safety plans, and safety course outlines provided by the national safety manager.

Results

In the process of interviewing site supervisors, it was clear that, whilst many had issues with the way their organisation managed safety training and safety, in general, the resounding attitude was that safety training required reform. The majority of supervisors communicated that, even though they understood that the safety interventions were required, they believed that the interventions had limited success due to the prevailing attitudes toward safety in general, as well as to other major issues that were linked with safety behaviour and practice. The analysis of the interview data identified three major themes (or issues or prevailing attitudes):

1. The first was how the difference in capabilities between trade-background supervisors versus university-program background supervisors affected productivity and safety behaviour onsite.
2. The second issue was the content, compliance and relevance of safety-training interventions, which included the development and delivery of training.
3. The final issue was how organisational and industry structure, as well as internal expectations, affected safety behaviour and

individual practice, and how this affected attitudes toward safety training, in turn.

Theme One – Capability Differences

When discussing the practice of safety onsite, a prevailing perception identified by the supervisors interviewed was that there were considerable differences in the capabilities and understandings of supervisors, and that these differences affected the sites' safety performance. The supervisors interviewed for this work identified that a major stumbling block to effective onsite safety management onsite was the significant divisions between graduate planners and designers, and trade-qualified site supervisors.

While technical competence in project planning remained the trend of industry practice, the practical building, organisational, and social factors that were prevalent in influencing the success and failure of construction projects was not being dealt with effectively in construction organisations. It is evident that these concerns about the qualification system, both at the trade and university level, can also affect at the site level. However, whilst recognising that they cannot control the capacities of the other people they work with, the

supervisors interviewed highlighted that learning was an important and ongoing component of their role.

The consensus was that these capability differences could lead to lack of engagement with safety in general and, consequently, a lack of engagement within specific training interventions provided by the organisation.

Theme Two – Content and Compliance Relevance

The data collected identified that if the content of safety-training programs or interventions was not relevant to them at any particular time, it did not help them manage safety in a different or improved manner. This perceived ineffectiveness of safety training was compounded when the supervisors were forced to attend training that they already believed to be unsuitable. This data extended the previous literature that demonstrates the importance of content relevance in training effectiveness and provides new information as to the potential origin of effectiveness issues.

The data collected emphasised a priority on meeting legislative needs (such as organisational compliance) as opposed to meeting the needs of the individual workers; and, as such, opportunity for learning and

influencing behaviour is lost. From an educational and adult learning perspective, there is a continuing narrative that places an emphasis on motivation, contextual relevance, and sociocultural learning environments in personal learning.

If the focus on meeting legal requirements, and not considering other individual and organisational social or cultural factors, reduces the opportunity for training organisations or individual facilitators to improve practice and adds to the negative attitude toward safety training displayed. The implications then are that the worker/participant attends mandated training session, sits through session thinking about the job he or she has to do on returning to site, and continues on with the job not considering the information contained within the session or any subsequent and necessary change to work practices. Thus, the training is ineffective.

As previously discussed, the supervisors identified the willingness of sites to push aside the documentation or processes from the management system when external time pressures are apparent. It appears from the data collected that the occurrence of organisational

factors, such as safety systems and management commitment, whilst present, are lacking in their application and do not meet the expectations of the supervisors' perceptions. It also seems that the safety practices (in the form of commitment and demonstrated through the system) are negatively affecting the attitudes and perceptions of the supervisors.

Theme Three – Organisational Structure

The data collected indicated that a wide range of training opportunities were available to site supervisors and coordinators; however, the opportunities differ from state to state. Access to safety training, preferred suppliers, and delivery methods, differed significantly due to varying local policy, procedures, and site rules, which were implemented across each state. However, many of the supervisors interviewed did not know what training opportunities were available, or did not know where to look for training. This lack of knowledge indicates that Multiplex does not identify individual learning needs of supervisors in any systematic process, such as through a learning needs analysis.

As a different safety manager administers each state, decisions surrounding safety training are left to individuals. This lack of a

company-wide policy means that different safety requirements are developed and implemented. Therefore, some supervisors undertake training that is not available to others; and, none of the training appears to be dependent on the needs of the individual. The impacts of this are negligible until a supervisor from one state travels to other sites to work on projects, and the different training requirements could become a potential issue.

The data collected also revealed the frustration that most supervisors felt when dealing with the safety behaviour of contractors. This frustration existed across all regions. Every supervisor interviewed for this project, provided stories and experiences that related similar frustrations. The frustration of dealing with individuals or groups of contractors who do the wrong thing, take shortcuts, or put themselves at unnecessary risk, appeared to place a great deal of stress on supervisors, and contributed to a negative attitude toward safety interventions and safety training.

It is evident that the organisational and industry-related factors identified within this work had a significant impact on the attitudes of supervisors toward safety practice and, in particular, safety training.

The narratives also highlight that these factors can have a significant influence on the development of negative attitudes and negative safety behaviour. It is commonly accepted that management commitment, in the form of policy and designated responsibilities, has positive influences on safety behaviour in the workplace. However, the findings in this project indicated that this commitment was quickly overlooked when other organisational factors, such as project timelines and the bottom line were affected. Whilst it is clear through organisational documentation that the safety priority is put on the critical risks for each project, the implementation of these procedures and systems activities that supervisors were responsible for, did not match with site practices.

Whilst limited literature exists on the influences that organisational and industry factors have on training perceptions in the construction industry, some supervisors interviewed for this project identified the differences as being an added frustration to their role.

Implications and Recommendations

Multiplex has the opportunity to use the data collected in this project to advance safety performance through improved safety training interventions. The data collected identified that training differences, content, consistency and relevance across the organisation are major issues. Multiplex can limit the impact of these issues by developing and implementing a safety training policy and procedure that all regions abide by. Actions to undertake this could include:

- Undertaking a safety training needs analysis
- Developing relationships with RTO and private training companies capable of delivering consistent programs
- Centralising safety training into current HR training space
- Creating a safety training coordinator to manage program

Multiplex can become a leader in the field by funding on-going research in the field of safety training and interventions. The data collected in this project, along with the long-standing debate on safety-training effectiveness support the need for focused research into content relevance, and the impact of industry factors.

A practicable by product of this project could be the design and development of a best practice guide for safety training. A financial sponsorship from Multiplex could allow for the consultation of construction, safety and training specialists, workers, and management, across a range of construction organisations, and development of a best practices guide. Once developed, a best practice safety guide could have a significant impact on effectiveness of training and thus influence the safety behaviour for the entire industry.

Conclusion

This project investigated the attitudes and perceptions of construction site supervisors from Multiplex to generate an understanding of the factors that influence effectiveness of safety-training interventions within the Construction industry. The findings extend the current understanding in the field of safety-training effectiveness by various authors, who found that safety training is largely ineffective if personal, cultural, and historical factors are not taken into account when designing, developing, and implementing interventions.

The particular contribution of this project to the workplace safety training field is its illumination of the individual attitudes and perceptions of supervisors in the practice of safety and safety training, as they try to meet their roles and responsibilities set by the needs of the organisation, as well as manage and develop their own values. The work specifically indicates how the formation of attitudes and perceptions is heavily influenced by organisational responses to industry issues, such as time and financial pressures, and how these factors then influence any training intervention established by the organisation.

This project has illuminated the significant issues faced by the industry when it comes to emphasising safety before production pressures; and it has provided a starting point from which the industry can advance to produce more effective training interventions.

The most important outcome of this work is the opportunity it affords Multiplex (and other similar construction companies) to examine its practices and its values surrounding safety-training interventions, and to examine its workplace safety values in practice. This examination of processes may lead to improvements in training effectiveness and, potentially, the improvement of safety behaviour across the industry, thus resulting in lower fatality and injury rates now encountered by the industry.