Engaging With Change: Investigating Strategies of Professional Learning in a Victorian School

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ABSTRACT

In the current climate of educational change and with the implementation of new initiatives within the Victorian Education Department, such as the Victorian Essential Learning Standards (VELS) and the Principles of Learning and Teaching (PoLT), educational leaders have begun to reassess the forms of professional learning that teachers and staff members are involved in.

This is not isolated to schools as the education industry world wide is developing new outlooks for staff training and development. With researchers such as Cuban, Hargraves and Fullan investigating different forms of professional learning, workplace change and strategy, changes in global professional learning opportunities are evident across a variety of industries.

The purpose of this study is to gain a better understanding of which styles and formats of professional learning are the most effective in a local context. Different scenarios of professional learning are described and interrogated and the impact of each practice is considered.

The study provides an insight into the different types of professional learning that are available to the teaching staff, allowing for a more diverse range of professional learning practices in one school. The researcher worked with the teaching staff in a school to ascertain which professional learning styles had a greater and more positive impact on curriculum and teaching practices within the learning environment.

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This thesis is dedicated to

my beautiful husband Dean and baby Sophia for being with me every step,

Dr Nicola Yelland for her expertise and believing in me,

and the wonderful teachers I have worked with who do all they can to improve and add excitement to the teaching and learning of the students they teach.

DECLARATION

I, Jennifer Tara Bowden, declare that the Master by Research thesis entitled Engaging With Change: Investigating Strategies of Professional Learning in a Victorian School is no more than 60,000 words in length, exclusive of tables, figures, appendices, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.

Jennifer Bowden

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Introduction to the study

> *To me learning is like a river. It starts as a trickle of a stream in the mountains. As it goes on it gathers speed and power and water and then, as it draws near the sea, it widens and deepens and slows down like learning does when we get older, but still has enormous power.*
>
> *(Betts cited by Atkin, 2001, p.8)*

1.1 Background Information

The study reported in this research was designed to investigate professional learning environments which were initiated so that teachers could participate in the educational change process that is a part of their contemporary role.

Education has been undergoing dramatic processes of change throughout the past century. As the world has changed in the 21st Century so have the demands on education, systems and the teachers who work in them. The purpose of school and education are to prepare students for the lives and demands ahead of them. Education has been successful in the past in preparing people with basic skills required for workplaces suited to the social systems of the time. However, now we live in new times with new demands on the

way people think and do things, therefore we need to transfer this need to schools and cater for it in the education system.

The idea of change in an educational environment is not new, and is in fact inevitable in all forms of professional life. The research on change processes is not isolated to educational change. It has been extensively researched across all forms of work place and management change, and each context can learn from the principles derived and experiences learned.

Fullan (2005) has completed extensive research into the different styles of educational reform and their impact on the curriculum. He discusses the importance of effective planning for sustaining change to ensure there is a strong shared understanding between all organisations behind the change. Further, it is essential that there is strong leadership driving change in schools. He feels that resistance and sustainability are essential elements in an effective change process. 'Resilience is perseverance plus flexibility, but you need a modus operandi. The big plan is sustainability, and what keeps sustainable superintendents going is the combination of moral purpose along with building leadership in others" (Fullan, 2005, p. 18).

Cuban (1998) also identifies the importance of effective school reform and the difficulty involved "judging an innovations success or failure". He generates three main criteria for policy makers to evaluate educational change. They are effectiveness, popularity, and fidelity. He also identifies adaptability and longevity being the two criteria used by

educational practitioners in evaluating educational change. Furthermore Cuban discusses the importance of a joint understanding between policy makers and practitioners about that. “What emerged as crucial in evaluating school reforms is what criteria are being used to make judgments, whose criteria they are, and how schools change reforms as they are implemented.” (Cuban, 1998, p. 453)

Most importantly teachers need to investigate and initiate educational change to ensure their curriculum and teaching practices are relevant and applicable to the diverse and growing needs of the future. Yelland (2006) advocates the need to have a relevant curriculum as it has

> important ramifications for schooling since we should have the capacity to demonstrate that we have an education system that enables students not only to be current in their knowledge but also be able to generate new knowledge as a part of their everyday experiences. (Yelland, 2006, p 42)

She further discusses the importance of the need to change the curriculum and teaching practices to build upon the traditional basics of education so that students have the skills to successfully operate within their future environments.

> The old basics of reading, writing and arithmetic that were taught by rote and practised until mastery was demonstrated in more examples was not enough. There is now a recognition that an educated population is one that needs to show

> the capacity to be innovative and creative, as well as being able to work collaboratively, and flexibly on authentic tasks that have been generated by the students themselves as well as the teachers. (Yelland, 2006, p 42)

The research reported here was completed in the researcher's own educational setting, a Victorian State Primary School. The purpose was to observe primary school teachers as they took part in a range of professional learning opportunities that were designed to assist them to implement specific changes into their teaching curriculum. In this way it was hoped that through the research, it would be possible to observe the manner in which teachers adapted to changes in the curriculum and teaching program when presented with different professional learning scenarios, so the process of change could be better understood.

The researcher recognised that professional development of teachers was a key aspect of promoting effective change in schools. In the case of this research the term *professional development* refers to the training in which teachers take part to gain knowledge of and become more skilled at contemporary ideas in isolation to previous or future practice. The term *professional learning* encompasses the training day or afternoon but also the reflection of previous teaching practice, planning for the implementation of the new knowledge and skills and consideration of how this has impacted on teaching practice. Professional development is restricted to actual training "package", where professional learning covers the whole learning process of the training.

The focus of the research was the changes to both curriculum and pedagogies. This was specifically in those areas in which professional learning opportunities had been presented to teachers. These were related to the implementation of the new Victorian Department of Education's Victoria Essential Learning Standards (VELS) (2007) currently being implemented into all Victorian schools. The VELS curriculum was initiated in November 2003 as apart of the Blueprint (2004) for Victorian Government schools.

Throughout the research period the main curriculum areas that were presented with new professional learning were Mathematics, Information Communication Technologies (ICT) and Spelling. These areas were identified as areas of need in the school's 2005 Annual Review and 2006 Strategic Planning Document.

The review documents indicated that it was important to focus on Mathematics, as Mathematics, specifically number results in annual Achievement Improvement Monitor (2005 & 2006) (AIM) tests for students in Year 3 and 5. Maths and number were identified as an area in need of improvement. Therefore this was an area that needed to be a focus of curriculum improvement and would be a priority of professional learning.

The school had invested significant financial resources in the school's Information Communication and Technology (ICT) program. However, the majority of staff members felt under skilled and lacked confidence to participate effectively in curriculum development associated with the innovative and appropriate use of ICT. The leadership

team, consisting of the principal, assistant principal and the two leading teachers, felt it was important to provide professional learning to teachers to improve their understanding about the uses of ICT in the curriculum, and a more effective use of the technologies and resources available at the school.

Finally, it was found that a variety of diverse methods were being used to teach spelling across the school. This was identified as being a possible reason why standardised spelling test scores were not optimal and when linked to incidental reading and writing accounts indicated a decline in effective spelling strategies over time. This was based on standardised tests and teacher's observations. The leadership team decided to implement a whole school initiative related to spelling that was appropriate to the current Early and Middle Year Literacy practices within the school.

1.2 Overview and Aims of the Research

The aim of the research was to identify a range of professional learning scenarios, use them in the context of reform in the school and then evaluate their impact in terms of changes in practice being achieved. The scenarios were trialled and evaluated by the researcher and the teachers had input into each of the scenarios.

The outcomes of the study were related to the identification of which professional learning scenarios had the most positive impact on a teacher's teaching and learning practices. Based on the literature (Cuban 1998) and in discussion with teachers, it was postulated that those Professional Learning Scenarios which impacted on a teacher's planning, teaching and learning and assessment of learning over a sustainable period of time would have a positive impact on teaching and learning outcomes for students.

1.3 Educational Change

The most obvious and radical change in education and worldwide reforms have been changes to technologies. The impact of Information and Communication Technology (ICT) and computers in educational policy has had a great impact on education policy, curriculum and classroom practice. It can however be questioned how effectively ICT has been assimilated into an educational curriculum.

1.3.1 Educational Change and Policy and ICT

The Operation for Economic Cooperation and Development (OECD) report Schooling for Tomorrow Learning to Change: ICT in Schools (2001) has created directions for schools who wish to successfully incorporate ICT into the curriculum. They recognise

that the integration of ICT into schools is imperative, requires reorganisation and curriculum change. The following points outline their policy for curriculum change incorporating ICT.

Directions for Policy:

- **Radical Curriculum Change** is needed in the internet age.

ICT offers some gains for traditional curricular delivery, but its full educational potential cannot be realised without radical changes in school structures and methodologies.

- **Student's assessment** must be compatible with ICT – enriched learning.

To continue with existing patterns of assessment will act as a brake on the imaginative use of ICT…..The persuasive adoption of ICT not only *requires* different assessment procedure but *provides* a variety of means.

- **Digital literacy** is now a fundamental learning objective for all.

Digital literacy is a vital part of the foundations for lifelong learning and must have a high priority within the curriculum.

- Schools must be **fully equipped** and supported for using ICT.

Effective use of technology requires suitable levels of equipment, for use on demand within each classroom, and readily available out of lesson time.

- Schools need plentiful **educational software** of quality and easily accessed information on it.

Teachers need a comprehensive supply of quality educational software to be readily available, with easily-accessed on-line information about it, concerning subject coverage, intellectual level and ease of use.

- ICT in schools requires an **extended professional role** for teachers.

Teachers face a far more demanding professional role as managers of the ICT enhanced learning environment. They have a range of technical and pedagogical skills, with continuos up-dating to match advances in the technology.

- School **leadership and management** must be fully committed to adopting ICT.

The school must be reorganised so that working with ICT becomes integral and unexceptional, with a move away from the traditional individualist and isolated models of teaching, an emphasis on digital literacy for all.

- **Links school, home and community.**

The most effective learning environment is one based on a dynamic partnership between home and school, formal and informal, teacher and taught. (OECD, 2001, p. 15 – 17)

To incorporate the above directions into school policy, a significant amount of educational change must be implemented. This change would need to consist of "the economic, the social and the pedagogical" (OECD, 2001, p. 10) support that teachers in the classroom have from school leadership and the school board.

This type of change outlined would take a considerable amount of time to successfully be implemented. It requires the coordinated support of the Department of Education, school regional offices, school leadership teams, school teachers and the greater school community.

The purpose of this study was not to implement such widespread changes but, by using ICT as a vehicle for change, to evaluate which professional learning scenarios allow teachers to feel more confident in implementing change, sharing their knowledge and using new strategies on a long term basis in their learning and teaching.

1.4 Research Questions

The research investigated which methods of teacher professional learning best impacted on teacher's personal teaching and learning practices and how these could be best enhanced to impact on the students' learning experiences.

This was to be evaluated by the leadership team through observing qualitative changes through observations and interviews and quantified data such as standardised state wide testing in Mathematics, ICT and spelling; effective changes in teacher's planning and assessment, and ability for teachers to implement innovative teaching practices and

professional learning into the classrooms. This was also to be evaluated by teachers as they were to be surveyed and questioned about the impact of different professional learning scenarios on the teaching and learning practices in the classroom and which scenarios were most effective in giving rise to effective change.

The research investigated those professional learning scenarios which were deemed as effective because they impacted on teaching and learning practices. The school leadership staff had decided that it was important to focus on professional learning that encourages staff to reflect on their professional practices and be responsible for their learning. The purpose of the study was to investigate which styles of professional learning were the most valuable and sustainable, that is used consistently and over the period of years, school wide.

Important questions to be answered throughout the study relating to the impact of professional learning on curriculum were:

- Did the professional learning have an ongoing impact on the teachers' teaching and learning and how?
- Was the teacher likely to share their new knowledge with other colleagues and in what contexts?
- Could the researcher make a distinct observation about the change in the teaching and learning practices teachers employed with their children?
- How much choice should the teachers have in the direction and content of their professional learning?

- Was it important that teachers' previous practice was valued and built upon as a part of the change?
- Was it important that teachers worked in teams to implement change as a part of their professional learning or were they more effective as individuals?

The key research question to be investigated was:

- Which professional learning incidents are most effective in stimulating teachers to engage in change?

It was important that the following questions that related to the style of professional learning be answered throughout the study.

- Did the style, format and content (power point, discussions etc) of professional development impact on its effectiveness?
- Was it important to include theory in presentation or did the teachers feel overwhelmed by theory?
- Was it important who the presenter of professional learning was? Was professional learning more effective if delivered by an outside "expert" or a fellow teacher?

1.5 Overview of Thesis

This chapter examines the concepts and contexts of the research project. The concepts and contexts involved teachers' professional learning scenarios and the implemented educational change into the teaching and learning environments.

Chapter Two reviews the literature relating to educational change, different formats and styles of professional learning, the primary school curriculum, and changes in s

Chapter Three describes the context of the research, methodology and research design, examining case study and action research. It explain the setting of the research, research instruments, data collection used and analysis methods.

Chapter Four presents the data with analysis and findings of the study. This information follows the presentation of each professional learning scenario as a case study and evaluates their effectiveness. Each of the three professional learning scenarios is examined. There is an examination of an action research project teachers took part in and its impact on professional learning.

The final chapter (Chapter Five) analyses the results of this research project. It discusses the impact that professional learning has on teaching and learning, and describes which

professional learning strategies are most effective in specific teaching and learning contexts.

CHAPTER TWO - LITERATURE REVIEW

2.1 Introduction

In this chapter, literature relating to the research will be reviewed. The topics of educational change relating to school systems are identified and their relevance will be reviewed. Methods and styles of professional learning are considered and their contexts are examined. These styles were;

- whole staff professional development session delivered by an outside professional.
- whole staff professional development session delivered by a peer.
- in class modelling session delivered by a peer.

The study also encompassed action research in which all classroom teachers were introduced to action research by a peer (leading teacher) in a professional development session. This was introduced as a form of professional learning and the teachers were required to complete an action research project relating to their personal teaching and learning.

The chapter will also examine the curriculum in which change is being implemented, the VELS (2007) and Curriculum Standards Framework II (CSF II) (2002), Policies of

Learning and Teaching P – 12 (PoLT) (2006) and specifically changes in Mathematics, Information Communication Technology (ICT), and Spelling teaching and learning strategies. These areas are being investigated as they emerged as areas of focus in the school's Annual Implementation Plan (2005 & 2006).

Additionally, as this study related to Mathematics and numeracy, ICT and the area of spelling in the context of becoming literate, a review of the literature in each of these will be foregrounded.

2.2 Educational Change

As mentioned in the introduction, it is evident that effective educational change is dependent on how effective a professional development session is. Cook (1997) discusses the importance of successful professional development and its ongoing effect on job performance over time.

> The ultimate worth of professional development for teachers is the essential role it plays in the improvement of student learning. That means that educators must pay attention to the results of professional development on job performance, organizational effectiveness, and the success of all students. Each professional development effort should be accompanied by a well-designed evaluation plan for determining its effectiveness. Because of the complexity of current changes in

education, this plan should focus extensively on the use of ethnographic research. It also should extend over time in order to describe and give value to the interrelationship of individual change and systemic change in education. (http://www.ncrel.org/sdrs/areas/issues/educatrs/profdevl/pd500.htm)

Over the period of the research a variety of different professional learning scenarios were investigated to assess which were most effective in promoting effective educational change in the teaching and learning curriculum. Models and theories of educational change were investigated and implemented into the staff professional learning plan.

It would seem to be apparent through anecdotal observations, conversations with teachers and the literature (eg Cole (2004) Fullan (2005)) that change occurs best when:

- an effective plan is developed to support professional learning.
- the change has time to develop and considers long term goals with a shared vision from all involved
- the benefits of the change embrace the knowledge, strengths and values of the wider community.

Therefore, if there is going to be effective school improvement it should originate in a "bottom up" system in which the teachers responsible for implementing the program have an ownership for the change.

> Successful, sustained change, then, can only come about through those who are responsible for its implementation and it is because of this, of course, that so much importance needs to be attached to the acquisition of new knowledge and skills on the part of teachers, and to impact on their attitudes, beliefs and values. (Halsall, 1998, p.40)

Hassall (1998) advocates that teachers need to have confidence and a belief in the "new knowledge and skills" under consideration that are being implemented as a part of the change process. They need to partake in effective professional learning and believe that the teaching of these "new knowledge and skills" was of utmost benefit to the students they were teaching. They need to feel valued for the professionalism and previous knowledge during the professional learning process.

2.2.1 Tri Level Developmental Change

Fullan's (2005) theory of a Tri Level Development of change and his Eight Elements of Effective School change are important and relevant to this study as the changes being implemented were all government initiatives. The Tri Level Development system was created around the education systems of the United States, Canada and the United Kingdom and essentially analysed change at a regional level where most policy decisions were made. Fullan focused on the capacity of regions and schools to work together to implement the most effective and sustainable form of that change that improved

outcomes for children and schools. It was important to analyse how his Eight Elements of change related to the context in which this particular study took place, the Victorian Department of Education's implementation of the Blueprint and related curriculum change.

Fullan also discussed the 8 Elements of Change (see Appendix 1) required for successful change to be implemented into the teaching and learning curriculum. The elements of changed can be considered as needing the following components.

They should;

1. Serve the public with a moral purpose and be considered as worthwhile (to stakeholders).
2. Be committed to the change on all levels (eg state, region, school).
3. Use networks to build lateral thinking.
4. Be accountable and transparent in review.
5. Involve learning that is continuous and focussed on problem solving.
6. Have short and long term goals that are committed to all by relevant personnel.
7. Be cyclical in planning, action and evaluation
8. Be dependent on a high level of leadership from the various leaders across the school.

In the case of this research study the Eight Elements of change were relevant to the school because the implemented change;

1. Was serving the public with a moral and worthwhile purpose through improving ongoing educational outcomes.
2. Was being implemented throughout the system of education as a part of the Victorian Education Department's Blueprint; "The Blueprint provides the framework for an effective Victorian government school system - a system with effective teachers, effective leaders and effective schools." (http://www.sofweb.vic.edu.au/blueprint)
3. Was dependent on curriculum and local school networks as the professional learning would impact on the school's curriculum and have a broader impact on the networks supporting the school. The school is dependent on these networks for curriculum support and funding.
4. Was accountable through the annual school review and the teachers' performance review process.
5. Depended on professional learning that the teachers were responsible for and therefore needed to be continuous and involve problem solving.
6. Depended on short and long term goals outlined in the schools annual review and the teachers' performance review process.
7. Depended on a cyclical nature through action research and planning .
8. Required many teachers to act as curriculum leaders and be responsible for change across the school.

Figure 2.1 Fullan's Tri Level Reform

(http://www.det.nsw.edu.au/media/downloads/reviews/futuresproject/report/r_comppaper5.pdf)

The research reported here was concerned with the examination of change from the perspective of a classroom teaching and learning program. For change to be effective it must happen simultaneously at the school level and be supported through region and finally state initiatives, as discussed by Fullan (2005). However, in order to successfully obtain and achieve effective change outcomes in the classroom, ideas proposed by a school leadership team were structured to incorporate an adapted Fullan's Tri Level Development model in a system that considered

1. State and Regional aspects
2. Leadership Teams
3. Classroom Teaching and Learning Programs

Thus in this instance, the Tri Level Development was adapted to include the classroom context, including the teacher and the teaching and learning program. In this case the three levels needed to be changed based on teachers' perception of change, as opposed to a government's perception and role in the process. The impact of state and regional change has on a teacher's classroom practice is perceived as being similar and can therefore be encompassed in one level. The school leadership team can be perceived as another change agent. Finally, an adapted model includes the teachers themselves, their planning, classroom teaching and learning as the third change agent in curriculum reform.

Table 2.1 presents this adapted model and shows how the Tri Level System functions and operates in the specific context of this study. State or Regional Initiatives impact on a school's leadership teams priorities and the school charter which in turn directly impacts on classroom Teaching and Learning programs.

Level	System	Program
State and Region	Victorian Department of Education and Training (DET) Southern Metropolitan Region (SMR)	VELS PoLT Early Years and Middle Years Mathematics Mandated Programs Optional Programs
School Leadership Team	Overport Primary School Leadership Team	School Charter Priorities Annual Goals
Classroom Teaching and Learning Programs	All classroom grades	Planning and Programs What is actually taught etc.

Table 2.1 Fullan's Tri Level Development in Victorian Schools

In Fullan's original model the expectation is that educational change comes from a government initiative and is implemented through the planning of a school's leadership

team. In the specific context of this study there was an expectation that classroom teachers would respond to the leadership team's planning and would be responsible in creating their own plans that incorporated curriculum change. This was already established in the school's context and through the classroom teachers' planning, teachers analysed students' needs and planned accordingly. In this manner the above table is reversed as students needs impact directly on the classroom teaching program which guides the School Leadership Team, and in turn impacts on the priorities of the region and state initiatives.

2.2.2 Collaborative Projects

Halsall (1998) discussed the importance of collaboration in the process of implementing school effectiveness and change. He believed that it is important for teachers to be part of collaborative projects rather than working as individuals in isolation or competing against each other. He also believed that schools who are most effective in their implementation of a culture of change, value a variety and high amount of leaders within the school who work as educational managers as well as classroom teachers. This opposes a "top down" model that dictates change rather than requiring all school members to have a collective commitment towards shared values, vision and purpose.

2.2.3 Teacher Improvement and Professional Learning

Professional learning and teacher improvement has been at the forefront of global, national and local educational discussions in recent times. A high amount of resources and energy have been put into attempts to improve the effectiveness in which teachers teach. Hammond (1998) suggests teachers are the most important factor in the learning process.

Cole (2004) explains that most professional learning focuses on *what* we need to change rather than *how* it needs to be changed.

> It appears that most PD (professional development) focuses on the why and what to change and not participants learning how to implement improvements. To state this in another way, most formal training (professional development) is development for performance (acquiring knowledge, skills and attitudes necessary before change can be made) rather than development of performance (professional learning to support a change in practice. (Cole, 2004, p.4)

In this way, whilst he recognises that it is important for teachers to understand the content of what needs to be taught, they also need to be aware of why they are teaching content and more importantly how they are teaching it. Additionally, they need to be reflective in the teaching process and be able to be decision makers. Teachers need to have tools of

observation, analysis and planning to be effective in their professional lives. Therefore, in delivering effective teacher improvement through professional learning opportunities, teachers need to be challenged with new teaching skills, rather than simply provided with educational curriculum and content.

In the context of this study this is supported by the Victorian Education Department where initiatives such as Innovations and Excellence (2002) and Teacher Professional Leave (2002) have been created to enable teachers to take part in investigations. These initiatives also allow teachers to collaborate across schools and networks to establish new teaching and learning skills and maximise sharing of new learnings.

Fullan (2005) suggests effective teacher development and professional learning has been found to be most effective when it is a whole school initiative, which has specific professional learning plans in place. The leadership goals should be transparent and well-known by the staff and all teachers should have professional learning plans that are consistent with the school professional learning plan.

Newmann, King & Youngs (2000) state that the combined capability for a whole teaching staff to improve, will be achieved through:

- Developing the teachers' skills
- Improving the quality of ongoing interaction amongst staff
- Achieving a coherent focus
- Mobilizing resources

- Developing school leadership.

Newman King and Young (2000) imply that teachers need to feel that their skills are current and relevant to the curriculum. They need to be able to have the skills and the means in which to partake in quality interactions about educational change. The focus of change needs to be clear and valued by all involved in the change. Resources (teaching tools, information, expect teachers etc) need to be readily available and utilized appropriately and school leadership should be vast and varied with a common goal and approachability.

2.2.4 Adult Learning

There is no question that the aims, scope and type of format of professional learning has dramatically changed over the past decades. McKenzie (2001) describes the difference between traditional forms of professional learning or "training sessions" and more innovative forms of professional learning as "adult learning".

> If we shift school cultures to support adult learning, professional development is experienced as **a personal journey of growth and discovery** that engages the learner on a daily and perhaps hourly basis. In the best cases, andragogy includes an emphasis upon self-direction, transformation and experience. One learns by

> doing and exploring . . . by trying, by failing, by changing and adapting strategies and by overcoming obstacles after many trials.
>
> (http://fno.org/mar01/howlearn.html)

He compares this to traditional training sessions in which the learning is more than likely completed outside the context and ignores the transfer of new learning. The successful of adult learning depends on the transfer of new learnings and is reliant on the learner taking responsibility for the direction and goals of the learning.

The fundamental beliefs of adult learning according to McKenzie (2001) are:

1. **The learner makes choices** for a rich and varied menu of learning experiences and possibilities.
2. **Learners must take responsibility for planning, acting and growing.**

In this manner, adult learning follows the basic principles of Action Research. (See Section 2.4.2. Methodology of Action Research.)

Adult learning strategies are fundamentally more successful than training sessions because they are tailored to the learning styles, preferences and needs of teachers in ways more likely to win their commitment than the approach of more typical of training methods.

McKenzie (2001) identifies the following strategies and projects that he regards as being effective for improving curriculum:

- **Professional Development Plans** Individual growth plans which are road maps to guide a teacher's learning in which the teacher identifies 2-3 main areas of growth along with the activities and strategies which will help promote this growth.
- **Study Groups** Teachers working together in teams to improve their teaching and learning curriculum. Study groups are normally based on working towards the goals of Professional Development Plans and meet regularly to assist their peers in their learning.
- **Curriculum Development/ Intervention Teams** A mix of teachers with different goals in their Professional Learning Plans and teaching pedagogy but work on the same curriculum area. In this way teachers who are more comfortable, dedicated and experienced in their adult learning can assist those who are beginning their learning journey
- **(Technology) Coaches, Mentors and Cadres** Just as in all other aspects of life (sporting careers etc) it is important for a novice to be assisted by a more experienced teacher. This coach has the responsibility of assisting the learner on their learning journey and sharing knowledge, insight and experience.
- **Informal Support Groups and Support Staffing** This is ensuring that staff members other than specialist staff have the ability to support teachers in need. This is vitally important if a need is immediate and the specialist staff are unavailable

- **Excursions; School Visits, Work Place Visits, Conferences etc** Typically, teachers are very isolated in their ability to interact with others in their professional environment or observe the styles and strategies in other classrooms and workplaces. An opportunity to visit another school or even an entirely different work place may provide a vast range of new ideas, considerations and strategies.
- **Online Learning** many teachers find benefits in completing online learning whether it is personal research or further studies through online institutions.
- **Orchestration** The most effective approach is to blend the strategies together. This is achieved through a carefully planned approach in which strategies work collaboratively together to be most effective and have the greatest impact on learning.

2.2.5 Voluntary Change

Richardson (1998) suggests that contrary to popular opinion on teachers' resistance to change, that teachers are in fact very willing to take part in educational change or reform. "Teachers often resist change mandated or suggested by others, but they do engage in change that they initiate: what I call voluntary change." (Richardson 1998, p 1) She disputes that teachers are recalcitrant and resist any form of change, but that they simply

refuse to take on change that they do not believe is of the highest benefit to the students they teach.

Strategies may be introduced from policy makers, but unless a teacher believes the strategies will support effective leaning they will not be implemented. For example, school may insist on a whole language approach to spelling that abolishes spelling lists and the strategic teaching of phonics. However, unless every individual teacher truly believes that this is the best strategy to use, and more importantly that it is more effective than strategies that have been previously used, it is unlikely the new strategy will be effectively practiced in every classroom. On the surface, new strategies may appear to be implemented in individual classrooms but a teacher will use their autonomy and innovation to ensure that the strategies they believe are the best are still a part of the teaching and learning program, regardless of whether they are documented in the curriculum.

Richardson (1998) offers the suggestion that teachers are very willing to take on "voluntary change" if it follows what makes sense and what students need and what is working well. She noticed in her own studies that specific contexts were more conducive to successful change.

> In a long-term collaborative study of teacher change, my colleagues and I found that when a teacher tries new activities, she assesses them on the basis of whether they work: whether they fit within her set of beliefs about teaching and learning,

> engage the students, and allow her the degree of classroom control she feels is necessary. If she feels the activity does not work, it is quickly dropped or radically altered. (Richardson, 1998, p. 2)

This practice appears to be much like an action research cycle without the documentation.

2.2.6 Summary

It thus becomes apparent that in planning professional learning scenarios, decisions and plans, policy makers and teachers must include the points made thus far. These include posing the following questions, for example;

- Does the educational change have support of the Department of Education and Training (DET), Southern Metropolitan Region (SMR) and the school leadership team? *Fullan (2005)*
- Do the teachers value the change and understand the importance behind it? *Yin (2005)*
- Are there many school leaders working on collaborative projects with teachers implementing the change? *Halsall (1998)*
- Are teachers able to use effective skills, communication and resources to implement the change? *Newmann, King and Youngs (2000)*

- Does the professional learning promote an understanding of *how* to implement change? *Cole(2004)*

As discussed by Richardson (1998) the main influence on any form of educational change will always be at the classroom level. Governments, Education Departments, Regions and school leadership teams can direct funding, and create policies and reform, but the real impact of educational change will be at the individual classroom level through the individual classroom teacher.

2.3 Professional Learning

As mentioned in the introduction, our world is changing, and the requirements regarding the needs and priorities of the workforce has changed. The requirements of schooling and education need to change and therefore teachers needs to alter their approach to teaching and learning, planning and their professional learning.

Richardson (1998) summarises that due to global change;

> We therefore need teachers who approach their work with a change orientation: an orientation that suggests that constant reflection, evaluation, and experimentation are integral elements of the teaching role. We now expect teachers to alter curricula on the basis of new knowledge and ways of knowing, to

> change styles of teacher-student interaction depending on needs of the student population, and to change methods when research indicates more effective practice. This requires teachers who are inquirers, questioning assumption and consciously thoughtful about goals, practices, and contexts (Richardson, 1998, p.3)

The nature of teachers' Professional Learning has changed over time as the role and expectations of teachers have evolved. Teachers are no longer expected to operate within their classrooms simply as a classroom teacher, but are required to simultaneously manage curriculum and make decisions as collaborative teams about a variety of issues. Green (1998) identifies the way in which teacher professional learning has changed over time. She feels that traditionally, teachers were involved in short courses or workshops in which the focus was on individual teachers' needs and would only impact on individual classroom curriculum. Over time teachers have become more involved in school based professional learning in which the whole school teaching staff participates in professional learning that connects whole school needs and directly impacts on whole school curriculum.

Green (1998) also discussed the impact the changing role of teachers, their work load and expectations have had on their professional learning. Teachers have been required to acquire new skills, mainly managerial and administrative whilst "on the job". This type of professional learning is often needs based and fast paced and does not allow for planning or reflection. Teachers can be part of affiliations and networks or be in a

mentoring relationship in which they will learn new skills. Many teachers are also involved in higher education, improving their qualifications through research or courses. This form of professional learning will only impact on the wider school if it is a school leadership team priority.

Finally, Green (1998) identifies a new type of professional learning emerging in schools. This is where groups of teachers work together on collaborative action research. This research, whether formal or incidental, is normally based around the event of case studies. The outcomes of this research have the potential to impact on the wider curriculum and can lead to effective and realistic school improvement via:

- Class demonstrations
- Whole School Staff Professional Learning delivered by an expert
- Whole School Staff Professional Learning delivered by a peer
- Teacher action research

(See Section 2.4.2. Methodology of Action Research for more detail on Action Research)

2.3.1 Misconceptions of Professional Learning

Cole (2004) argues there are many misconceptions concerning the notions of ‘professional development’ vs. ‘professional learning’. ‘Teachers need to be made more

aware of the range of development options available to them and the ways in which they can assist their development. They should be supported by their schools to participate in activities that are likely to provide outcomes different form those generally derived from the ubiquitous training program." (Cole, 2004 p. 5)

Cole feels that it is understandable that schools have relied on traditional forms of professional development as it has been a successful form of training in the past. He describes the misconceptions of what professional development or training should consist of.

'Some misconceptions about professional development training

Professional development

- Is delivered by an expert
- Is a training event or activity
- Is delivered beyond the school
- Is costly and time consuming
- Is a necessary disruption to teaching
- Results in improved teaching and learning'(Cole, 2004, p.6)

He advocates that professional development should be re-examined in schools, since he feels we are missing the point of developing teachers' skills because most formal training

(professional development) is development *for* performance (acquiring knowledge, skills and attitudes necessary before change can be made) rather than development *of* performance (professional learning to support a change in practice). (p4)

2.3.2 How Teachers Change

As previously stated in Section 2.2.5 (pp 28 – 30) Richardson (1998) regards teachers as being very willing to change their practices in order to facilitate better learning outcomes for their students. Throughout her research she has investigated many forms of professional learning and their short and long term impact on teaching and learning outcomes.

Richardson (1998) in fact suggests that teachers are very motivated to implement change on a voluntary basis rather than being directed, if they believe that the change will be effective and worth while for their students. She explores two types of professional learning models, the first being a more traditional model, The Training Model.

She stated:

> The more traditional form of staff development begins with someone from outside the school determining that a process, content, method, or system should be implemented in the classroom. The form of staff development most suitable for achieving change mandated by outside forces is the

> training model, which can be a deficit model. The training model has a clearly stated set of objectives and learner outcomes. These outcomes can be teaching skills, such as using learner-generated material or teaching critical thinking processes. (p.4)

Richardson (1998) has found that this model is only effective if teachers believe that the practices that they are learning will be effective (normally based on their previous practice). They must regard the content and the new practice as being exciting to learn. Teachers must feel that a practises' long term implementation will only be effective if there is a structure in place to ensure the momentum of the practice continues to be exciting for learners (both teachers and students over time). If the practice is not followed up with a strategy to ensure momentum, teachers will move back into using old practices.

> We believe that the innovative practices teachers learn will not be maintained unless teachers and students remain interested and excited about their own learning. A good staff development program will create an excitement about learning to learn. The question is how to maintain momentum, not merely maintain previously learned behaviours. (Stallings & Krasavage, 1986, p. 137).

Richardson believes it is important to question the long term goals of professional learning practices. Is it important to have a long term strategy that ensures momentum of the professional learning practice or will the current energy and enthusiasm towards the

practice be sufficient to ensure the practice is implemented until a period of time when a more innovative strategy is established?

Richardson (1998) has developed a second model which is more supportive of the theory that teachers are more likely to make voluntary change based on their personal practice. The model, named The Reflective, Collaborative Model is explained as;

> Reflective and collaborative staff development models … have a set of similar characteristics. They are not based on a deficit model of change. They assume that reflection and change are on-going processes of assessing beliefs, goals, and results. They are designed to help develop and support a change orientation. The desired outcomes of such models are not pre-specified behaviours and skills. The purpose is procedural: to create an ecology of thinking, deliberation, and experimentation. The goals, therefore, may be unstated at the beginning of the process. In these models, change is not considered to be static. That is, a change made by a teacher during the staff development process may not be in place the next year. In fact, it is hoped that teachers will continue to change after completing the staff development. Each teacher is free to follow her own lines of inquiry and change. The group is not necessarily expected to decide on the same change. The outcomes of interest are not just changes in behaviours and actions, but also changes in the rationale and justifications that accompany the new practices. Thus, a measure of success is the degree to which teachers take responsibility for their actions, assume ownership of their practices, and are able

> to articulate these actions and their justifications to another person. (Richardson, 1998, p. 5 – 6)

This model allows teachers the autonomy to follow personal passions and lines of inquiry in their teaching. It can be assumed that through using this model of professional learning, the excitement and engagement in the new learning of practices will be ongoing as teachers have been given choice in investigating their professional learning, reflecting on current practices and in implementing effective change.

In using Richardson's Reflective, Collaborative Model teachers became more reflective in their teaching practices and more willing to experiment with educational change, confident in the decision making processes and responsible for classroom teaching practices. A culture of ongoing "change orientation" had been established within the teachers' learning environments.

A disadvantage of using this model is that as it encourages autonomy, self direction and independence and may not be effective in implementing strategic whole school plans and school-wide teaching practices as it requires teachers to follow their individual belief which can be very diverse across a school community.

Richardson (1998) believes that it is important to create a "Community of Practice" when implementing school wide teaching and learning strategies. "What is necessary is the creation of a sense of autonomy and responsibility that goes beyond the individual class

and moves to the school, program, and community levels." (Richardson, 1998, p.7) She suggests that this can be achieved by teachers working together to understand what happens to their students as they move through the school and given teaching and learning programs which all have a common goal. In this way teachers investigate students' needs over time in a program rather than an isolated approach where they investigate and reflect on the students' needs in their classrooms. This would shift the focus on to a collaborative rather than autonomous approach.

2.4 Action Learning

In this study action research was initiated as a part of the professional learning program within the context. Teachers were introduced to the concept of action research and were required to complete an action research project based on their personal teaching and learning practices. The school's leadership team decided the action research project was to be introduced by a leading teacher who had experience through completing personal action research projects.

2.4.1 Action Learning – Teacher Initiative

The origins of Action Research can be traced back to the 1940's to the studies of Kurt Lewin (1944), dubbed the father of Action Research.

> We doubt if it is possible to provide one coherent history of action research. Many writers on action research trace its origins back to the social experiments of Kurt Lewin in the 1940s, through the socio-technical experiments begun at the Tavistock Institute and in particular their application to practices of social democracy and organizational change. (Reason & Bradbury, 2001, p.3)

Action Research has been utilized through a variety of industries as a method to initiate, monitor and implement change. It is a well recognised form of academic research and recently has been acknowledged by the Victorian Education Department as an effective form of research and manner of initiating educational change in Victorian classrooms, schools and regions.

The Victorian Education Department's report, named Research@Work (2005), identifies the effectiveness of Action Research in educational settings and schools. They endorse the use of practitioner based research by teachers in schools, as educators have a unique perspective.

> At the school level, practitioner research is seen as having the potential to foster collaborative work practices that can lead to improved teaching and learning

practices, and ultimately, improved outcomes for students. Teachers are well positioned to undertake school-based research.

Researchers who are also educators bring a unique perspective to research because of their knowledge in relation to:

• the educational institution and its culture;

• how the educational institution operates at both formal and informal levels;

• knowledge of sensitive issues within the educational institution;

• working relationships and alliances at institution and community levels; and

• the background, needs and interests of their students.

Issues associated with practitioner research include:

• practitioner bias in gathering and analysing data;

• the researcher holding a position of power or authority (e.g. having the ability to coerce others); and

• interpretations of situations to reinforce existing or preferred practice.

Such issues can be addressed by the researcher having a range of strategies in place. These could include:

• sensitive and ongoing monitoring of the environment to ensure that current and emerging issues are appropriately addressed;

• working with an external researcher, supervisor or colleague who can provide critical and independent feedback;

• addressing any feelings of anxiety that develop within the workplace;

• drawing on and sharing the ‘voices’ of the school – teachers, students, parents and stakeholders; and

• capturing situations that are relevant to the research through innovative practices including multi-media presentations including photographs, videos, music, performances; and

• using the technique of ‘triangulation’ to gain perspectives from several groups. (Department of Education and Training, 2005, pp. 13 – 14)

Schools are being encouraged to take part in Action Research as a part of teacher Professional Learning through program such as the Policies of Learning and Teaching (PoLT) as described and the Teacher Professional Leave program. These programs encourage teachers to be reflective practitioners and teachers are given leave time to reflect and implement change within their educational settings.

2.4.2 Methodology of Action Research

Richards (1998) discusses teachers’ willingness to adapt to change and draws strong parallels between her notion of “voluntary change” and action research in support of change. Action Research is not a new concept, however, it has become quite a popular strategy in educational settings in recent times.

Action Research is a form of research that involves the practitioners themselves taking part in the research, where the practitioner is aiming to implement or promote change through a series of reflective and purposeful practices.

Schumuch (1998) describes the difference between Action Research and Traditional research in Figure 2.2.

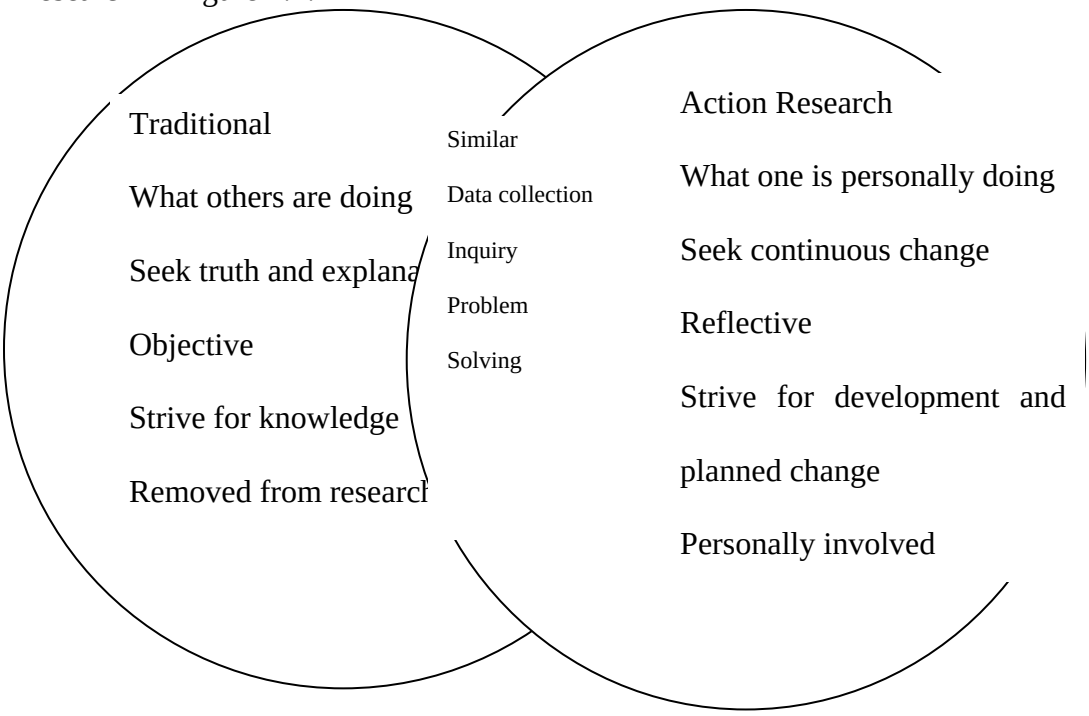

Figure 2.2 Two Kinds of Research

Therefore the main differences between action research and traditional research are when 'action research' practitioner;

- Is purposefully involved in the research context.
- Is seeking change in the research setting
- Reflects on current practice

Action Research is described by Grundy (1998) as a journey where the practitioner has a goal in mind, an idea of the destination, a plan of the route to be taken, takes tools to assist the journey and records events along the way. At the end of the journey the practitioner reflects on the journey and how the next journey will be altered or changed as a result. The next journey takes place with given changes in place and thus the research is cyclical. Figure 2.3 is Kemmis and McTaggart's (1998) *Action Research Planner.*

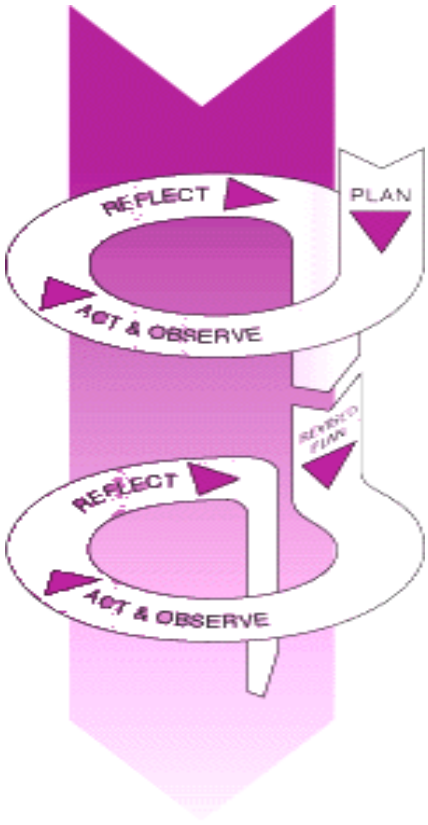

Figure 2.3 Action Research Planner

The Action Research begins with a *Reconnaissance* in which the researcher takes time to assess the context of the research. “Reconnaissance often consists in going backwards and forwards for a while between reflection and collecting evidence. Often the target of action can be agreed upon through discussion (reflection). People sit around and talk about their perceptions of what has been going on and the problem that they perceive.” (Grundy, 1998, p. 19)

After time and reflection is spent on the Reconnaissance the *Planning* phase of the research arises. The “planning arises out of reflection and is based upon evidence about what has been occurring and about our own practices. It also obviously points forward to action.” (Grundy, 1998, p.19) When planning, the action that will be undertaken in the research is considered, as well as the tools with which to collect evidence.

The *Acting* phase is derived from the planning phase. It is important to recognise that the acting needs to be flexible as it takes part in the real world which is inevitably unpredictable. In action research, the subjects are not passive in the process; they are, in the case of school based action research the students and the teachers and are “involved in the planning and in carrying out the action.” (Grundy, 1998, p. 20) It is also not easy to determine when the acting phase ends and the next phase begins due to the realist structure of the study.

Grundy (1998) suggests that the *Collecting Evidence* phase of the Action Research cycle is where the "research" is most evident. She explains the phase as;

> There are many different ways of creating evidence about what occurred when we took the action that we planned. Making and recording systematic observations of what went on is important. We can ask someone else to act as an observer. When we observe it is important to have thought through what specific aspects we want to observe. It is also important, however, that we keep our observations open, that we expect the unexpected. (Grundy, 1998, p. 20)

There are many different forms of evidence that can be collected such as;

- Observations
- Surveys
- Interviews
- Questions
- Documentation (planning, agendas, students' work samples etc)

Observation is the most frequent of these forms of evidence and an ongoing journal of practice is commonly used. Many forms of evidence may not seem relevant at the time but upon further reflection will prove to be very useful.

The final phase of the cycle is the *Reflection.* "Evidence does not 'speak for itself'. It needs to be interpreted, and reflection involves the interpretation of evidence. More

broadly, reflection is a process of making rational judgement about what occurred and how worthwhile it was, on the basis of our interpretation of the evidence." (Grundy, 1998, p. 20). In the reflection phase the researcher is able to make clear judgement about the evidence that has been collected.

When the reflection phase is complete the knowledge gained from the cycle can be utilized to provide the motivation for the next cycle in the process. Therefore the Action Research process moves onto a new planning phase and the cycle begins again.

The Action Research Process, due to its dynamic nature, is not always the technical process described above. It is important to remember that researchers and practitioners must be flexible in its' approach. Grundy (1998) explains that it is not like a recipe for making a cake where the steps are disconnected and linear, but a cyclical approach where the processes interlink and the final outcome is unknown.

Teachers were introduced to the mentioned concepts of action research and completed action research projects throughout the research period (see Section 4.6 Action Research).

2.5 Informational Communication Technology (ICT) and Mathematics

Throughout the study teachers took part in a variety of formal and informal professional learning scenarios that developed their understandings of the teaching and learning of numeracy. This included;

- Distinguishing between Mathematics and numeracy.
- A consideration of unidimensional and multidimensional tasks (Yelland 2005) in Mathematics that can promote numeracy.
- Incorporating ICT practices into Mathematics, teaching for more invigorating pedagogies.
- Incorporating the new VELS (2007) curriculum into planning
- Using effective assessment tools such as the Early Years Numeracy Interview (2001) to inform planning, and teaching and learning practices.

McKenzie (2001) argues that there is minimal effect on practices when resources such as computers and specific programs are implemented in schools and classrooms without effective strategies in professional learning to support them. He argues that many ICT programs fail in schools because their staff members have not been given effective opportunities to learn new skills and take responsibility for the curriculum, learning and teaching.

He states:

the focus should be on teaching and learning strategies that make a difference in daily practice – on activities translating into stronger student performance. As a result of these practices and the use of these new tools, students should be able to;

- Read, reason and write more powerfully
- Communicate productively with members of a global community
- Conduct thoughtful research into the important questions, choices and issues of their times
- Make sense of a confusing world and a swelling tide of information
- Perform well on the new, more demanding state tests required *for inferential reasoning.* (http://fno.org/mar01/howlearn.html)

The above points are highly important as they are skills that are taught through the introduced curriculum (VELS) required by students to be successful in their later education and professional future lives.

2.5.1 Mathematical Skills and Numeracy

The study included a focus on the impact of curriculum changes in Mathematics and ICT. Mathematics is defined as "as the 'school subject' in which the children experience the skills and knowledge base (Yelland, 2005 p 232) Where numeracy is defined as "the application of these in a variety of formal and informal contexts." (p.232) Thus when students are completing Mathematics activities they are learning skills and context that

they can apply to be successfully numerate. Part of the goals of this study was to increase teachers' understanding that the teaching of Mathematics is not only the teaching of skills, but teaching students how to use those skills in different contexts and providing a variety of real life contexts in which students could practice applying acquired skills.

2.5.2 What is numeracy? What makes an effective teacher of numeracy?

In completing the Effective Teachers of Numeracy project Askew (1997) defined numeracy as "the ability to process, communicate and interpret numerical information in a variety of contexts." (Askew, 1997, p. 93)

He defines effective numeracy teaching as

> teaching that helps children;
>
> - Acquire knowledge of a facility within numbers, number relations and number operations based on an integrated network of understanding, techniques, strategies and application skills;
> - Learn how to apply this knowledge of and facility with numbers, number relations and number operations in a variety of contexts. (Askew, 1997 p. 93)

Askew (1997) found that there was very little difference in between the teaching methods schools used and the effectiveness of teachers. Highly effective and moderately effective teachers could use similar teaching organisational styles to those who were less effective. A distinguishing factor was "the amount of continuing professional development in Mathematics education that a teacher had undertaken was a better predictor of the effectiveness than the level to which they had formally studied Mathematics." (Askew, 1997, p. 96)

In completing his research about effective numeracy teachers he identified three different types of orientations towards the teaching of numeracy. These orientations related to a teachers' belief system about the teaching of numeracy rather than the strategies and resources used to teach numeracy.

The first orientation was *connectionist* where highly effective teachers paid attention to:

- Connections between different aspects of Mathematics, for example, addition and subtraction or fractions, decimals and percentages;
- Connections between different representations of Mathematics: moving between symbols, words, diagrams and objects;
- Connections with children's methods – valuing these and being interested in children's thinking but also sharing their methods. (Askew, 1997, p. 98)

In the *connectionist* orientation teachers believed it was important for students to have a variety of strategies and methods but most importantly be able to decipher the best method to use as the most important skill of all.

The second orientation was *transmission* in which the teacher's belief was more focused on the role of the teacher. The teacher placed more prominence on the teaching rather than the learning. This was where the belief was based on students learning through set routines and methods and where topics were presented in isolation from each other.

The third orientation was *discovery* where the teacher's beliefs centred on the pace of the learning being set by the students, and learning was based on students' "readiness" to understand and discover new concepts. Thus all students' strategies are valued as equally important.

Askew found that teachers all had some kind of blend of the different orientations; however in most cases one orientation was more prominent. He found that those teachers who had a higher prominence of a *connectionist* orientation were the most effective, those with a disposition towards a *discovery* orientation were effective but not as effective as a *connectionist* orientation, and finally those who mainly had a *transmission* orientation were the least effective of the three.

> Teachers may find it helpful to examine their own belief systems and think about where they stand in relation to these three orientations. In a sense, the

> connectionist approach is not a complete contrast to the other two but embodies the best of both of them in its acknowledgement of the role of both the teacher and the pupil in lessons. Teachers may therefore need to address different issues according to their beliefs. (Askew, 1997, p102)

Most importantly Askew (1997) identifies that it is not the strategies employed by a teacher but the beliefs that underpin them. The type of teacher professional learning is very important if it only focuses on strategy and techniques it will not make as much of an impact on a teacher's practice as would professional learning that challenges a teacher's belief system about the teaching and learning of numeracy.

2.5.3 Contemporary Policy Issues In the Teaching of Mathematics

There is no doubt that the quality of teaching in school mathematics is closely aligned with teacher expertise and confidence as well as having relevant and appropriate curriculum content. . Reynolds and Muijs (2000) argue the importance of curriculum in the teaching of Mathematics in citing a well – known as *School Matters* research study by Mortimore (1988) in which it is evident that "the effect of a school attended by students was a ten times greater influence on progress over time in mathematics than the impact of family background. In reading, the influence was only four times greater than that of home." (Reynolds and Muijs, 2000, p 18). Thus the educational factors

surrounding the mathematics curriculum are highly important and have an extreme impact on educational outcomes of students.

Important factors that influence the educational outcomes of mathematical teaching within an educational context include the amount of whole class or supervised teaching rather than the time students are required to work independently. This is because when teachers are presenting Mathematics curriculum they spend more time and energy ensuring there is quality in their presentations, make more quality contact with the students involved and provide quality activities that enhance students' development as was found in the *School Matters* study by Mortimore (1988).

> Rather than a "lecture and drill" approach to teaching, the effective teacher involves students in higher order thinking and thought provoking class discussions that are challenging and relevant to the students involved. This is in comparison to relying on the curriculum materials and text books to develop the students' learning as they work independently. Therefore a higher proportion of teacher and student interaction, whole class communication and questioning are much more beneficial than a higher proportion of class time being spent on individual work. (Reynolds and Muijs, 2000, p 18).

Reynolds and Muijs (2000) discuss the importance of effective cooperative group work in enhancing higher ordering thinking and mathematical skills and understandings.

> By co-operating in small groups children can share their own ways of thinking and reflect on them and on the thinking and ideas of others. This exchange may encourage students to engage in higher order thinking. Co-operative small groups force the accommodation of opinions of various members, and students must therefore search, engage in problem solving and take one another's' perspective. The fact that a group contains more knowledge than an individual means that problem-solving strategies can be more powerful. (Reynolds and Muijs, 2000, p21)

However for this teaching strategy to work, students must have the skills and strategies to be able to work effectively as a group so that all members benefit from the mathematical knowledge that can be gained. Regardless of the students' mathematical understanding, if they have effective problem solving and co-operative group work skills there will be a high level of educational benefit for all group members involved.

It appears that it is very important to find an effective blend for teaching and learning strategies that are of most benefit to the students involved. However, Reynolds and Muijs (2000) reflect on the importance of policy in the implementation of an effective Mathematics teaching and learning curriculum. They appreciate that regional policy-making directed at schools is not as effective as those made at a school level or classroom based level because of the variety and difference between classrooms and school within a region. This further outlines the importance of effective teacher professional learning in which teachers are given ownership of their teaching practices and can see the

importance in implementing effective teaching strategies that they feel are effective and will make a positive impact on the educational outcomes of the students they teach.

2.5.5 Unidimensional vs. Multidimensional Tasks

Yelland (2005) discusses the importance of implementing a Teaching and Learning program in which children have an opportunity to engage with a variety of "multidimensional" tasks, whist still respecting the need for "unidimensional" tasks. Unidimensional tasks are those activities that have a "mechanical and rote learning focus" and multidimensional tasks are "authentic problem solving tasks".

Whilst unidimensional tasks are effective in teaching students fundamental mathematic skills, multidimensional tasks encompass a wider range of skills that will be internalised through a more "hands on" and realistic approach to learning. Therefore teaching "unidimensional tasks" could be seen as teaching mathematical skills, and teaching and learning using "multidimensional tasks" would be providing opportunities for students to become numerate.

Children are more engaged in their learning when tasks are authentic and when they are in control of their learning. Students are also able to challenge their learning whilst completing "multidimensional" tasks and these learning activities can meet the needs of

every child within the learning context or classroom. It important to note that when students are in control of their learning whilst completing "multidimensional tasks" teachers need to ensure they are scaffolding the knowledge for the most effective Teaching and Learning to take place. This is perhaps the biggest challenge for teachers who rely on traditional teaching methods.

Multidimensional tasks are inclusive of learning outcomes and standards from other traditional learning areas. Teachers may find planning using multidimensional tasks challenging as;

- the students often control the learning,
- they have to be more creative in their planning and include a wide variety of standards from different learning areas,
- traditional teaching tools such as worksheets are rarely used,
- traditional time lines (eg Early Years one hour numeracy block) need to become more flexible.

Thus the implementation of more multidimensional tasks into the current programs imposes change. An important part of the study was to investigate and examine the teachers' ability to manage the change and the extent to which the change is implemented.

2.5.6 Numeracy in the 21st Century

Zevenbergen (2004) discussed the importance of using ICT in the classroom context. She explains that "new technologies or information communication technologies (ICT) can provide different opportunities for thinking about and extending the Teaching and Learning of mathematical skills and processes." (Zevenbergen, 2004, p.6)

Much of her discussions of the thinking involved in ICT can be linked to the new standards set by the Department of Education VELS (2007) curriculum. This curriculum encompasses standards in thinking such as;

- They evaluate the final product and describe how well it meets its purpose. Information Communication Technology Standard Level 3
- Students use a broad range of thinking processes and tools, and reflect on and evaluate their effectiveness. Thinking Standard Level 3
- Students identify numerical data as discrete or continuous and construct column and bar graphs to display frequency data of ordinal categories. Mathematics Standard Level 3

It was the aim of the school leadership team in this study to improve the learning outcomes of students across the school, mainly Years 4 – 6. In Mathematics, a variety of methods had been attempted however there was little evidence of effective change in school data. As a member of the school leadership team, curriculum and professional

learning coordinator and as coordinator of the Level Three teaching team, the researcher wanted to influence teaching and learning Mathematics programs so they included;

- Information Communication Technology as resources for learning,
- More "multidimensional" tasks whist still respecting the need for "unidimensional" tasks and establish foundational skills.
- An variety of VELS domains rather than just Mathematics.

2.5.7 Early Years Numeracy Interview

The Early Years Numeracy Interview was created as one of three forms of assessment to assist teacher judgement of students during the Early Years (Prep – Year Four) of schooling. The other forms of assessment should be teacher observation and peer and self assessment.

> The Early Years Numeracy Interview is a one-to-one interview where the teacher summarises what each student can do in relation to the stages of mathematical growth that are outlined in the Early Years Numeracy Program and linked to the Curriculum and Standards Framework - Mathematics. Analysis of the responses provides the teacher with a starting point to consider when planning to meet

student learning needs. (p.1.)

(http://www.sofweb.vic.edu.au/eys/num/numinterview.htm)

The interview gives students an opportunity to work through a variety of hands on tasks. The interview is aimed at being a non threatening assessment tool in which students are able to move through appropriate tasks that determine a students understanding of concepts, skills and the preferred strategies they use to complete tasks. The successfulness of task completion and explanation of preferred strategies will determine much of the assessment interview they complete. Once a student finds difficulty on a particular section they will be referred to a different area until the interview is completed.

Figure 2.4 The Early Years Numeracy Interview in practice

The interview was based on findings from the Early Numeracy Research Project (1999 – 2001) which was a joint research project between the Victorian Education Department, universities and educational associations to investigate best teaching practices in numeracy.

The stated aims of the Early Numeracy Research Project were the following;

> • to assist schools to implement the design elements as part of the school's Mathematics program;
>
> • to challenge teachers to explore their beliefs and understandings about how children develop their understanding of Mathematics, and how this can be supported through the teaching program; and
>
> • to evaluate the effect of the design elements and the professional development program on student numeracy outcomes.
>
> (Department of Education and Training, 2001, p.3)

Over a three year period researchers were involved in case studies across a variety of schools in which they observed the teaching and learning practices of Mathematics. The knowledge gained was used to inform Early Years Numeracy practices in schools and formed the basis of the Early Years Numeracy Interview.

The main areas investigated were;

• the development of a framework of "growth points" in young children's understanding of Mathematics across a range of mathematical domains;

• the development of associated assessment instruments, designed to show growth across these domains, as measured by movement through the growth points;

• delivery of focused professional development;

• implementation of appropriate school support structures;

• monitoring of student achievement and growth over time; and

• documenting effective practice of teachers, professional learning teams and schools. (Department of Education and Training, 2001, p.3)

2.5.8 Summary

The literature in this section outlines the importance of innovation in the teaching of Mathematics. Most importantly it draws upon the importance of quality professional learning and the importance of teachers understanding why they are using teaching strategies in the curriculum. It is important to challenge teachers opinions and beliefs about the teaching of Mathematics, rather than impose strategies and change, as teachers are more likely to take part in a higher quality of teaching practice if they believe it is the best practice, rather than being imposed upon with a strategy created by a school's leadership team, region or education department. It also discusses the importance of

using effective assessment strategies to inform teaching and learning and having a strong understanding of how these strategies can successfully enhance curriculum planning.

2.6 Spelling - A Whole School Approach

One of the professional learning scenarios was presented by a professional employed by the school to deliver their expertise in the area of spelling.

2.6.1 Whole School Spelling Continuum

Snowball and Bolton (1999) have recognised the importance of a whole school approach to spelling where common elements such as teaching practices, spelling lists, and spelling rules are addressed across a school as a continuum. They recognise the importance of including strategies that are common across a school so that students are not confused by an inconsistent approach to Spelling.

> All of this inconsistency is not helpful to children, because what this means is that each year they need to adjust to a new way of dealing with spelling. Children who do not find it easy to learn have a particularly hard time, and parents are apt to wonder if the school has any sort of plan at all for this part of the curriculum. (Snowball and Bolton, 1999, p. 1)

It is important that teachers understand that the aim of teaching spelling is for children to become literate and to be able to effectively use spelling techniques for purposeful writing and literacy practices that have meaning. In this way their practices "focus on the ways that children can learn through an approach that encourages;

- inquiry,
- thinking,
- the forming and testing of hypotheses,
- the development of responsibility,
- the ability to reflect and articulate what has been learned, and
- the ability to transfer knowledge and understanding from one situation to another." (Snowball and Bolton , 1999, p.3)

Snowball and Bolton (1999) recognise that the overall goals of a good spelling program are to give students ability to;

- understand that the primary purpose for learning about spelling is so others can read their writing,
- know that their writing is valued regardless of the stage of development of their spelling,
- develop an interest in words and spelling strategies that will help them to write and learn any word,

- learn specific words that they use frequently and so become able to correctly spell these words automatically, and
- know how to use a variety of resources to help with spelling.

Therefore it is very important for students to understand that it is worthwhile to become good spellers so that they can spell and use words that have meaning to themselves, to communicate effectively in their everyday writing. It is also important that they have a range of spelling strategies and recourses that they can rely upon to assist them to spell any word, and that they have a word bank of spelling words that they know how to spell and can rely upon (eg 100 Most Used Words).

The following practices are described as being *essential principles* for Snowball and Bolton (1999) in the teaching of spelling in primary schools.

1. *Frequent Purposeful Writing* – Giving students the opportunity to write on a daily basis for a variety of meaningful opportunities will allow them the chance to experience and explore spelling strategies.
2. *Opportunities for Children to Read Each Other's Writing* – Allowing students to have an audience for their writing, giving the writing purpose and more meaning. Giving students the opportunity to read their writing to others and the different experience of reading the writing of students' peers and allowing them to make constructive comments.

3. *Many Opportunities to See and Read Print* – Children can "notice and recall" what words look like by being given the opportunity to partake in a diverse range of reading activities (eg shared, independent reading). They are able to discuss different spelling rules as well as gain a better understanding of the importance of spelling in meaningful experiences.
4. *Assessing Children's Writing to Inform Reading* - Effective analysis and observation of students' writing and spelling gives an insight into the spelling strategies they use and their understandings. Observing a child when they are writing in a meaningful context can be much more useful than a score on a standardised spelling test. It is important to use this analysis to inform future teaching, planning of spelling lessons and small focus groups.
5. *Modelling Spelling Strategies* - An effective form of teaching spelling strategies is to model spelling to students. Whether being modelled, shared or in interactive writing sessions teachers can demonstrate a variety of specific strategies whilst completing the writing process. Students will be provided with a valuable insight into the strategies used when spelling a word. With beginner writers it may be in listening for the sounds in the words and with more accomplished writers the use of a base word to create compound words, or the use of resources such as a dictionary.
6. *Encouraging Risk Taking* – It is very important that students are given the opportunity to take risks in their spelling to develop their vocabulary and spelling skills. Students need to know the difference between risk taking and being

"sloppy" in their work. It is also important that students recognise that all published work should contain correct spelling.

7. *Linking Spelling to Reading and Writing* – Teachers need to purposefully plan flexible teaching and learning situations in which spelling is linked to the reading and writing process. This is most effective in shared reading and writing experiences.
8. *A Process of Inquiry*- The process of inquiry and discovery are important in establishing strategies and meaning in students' understanding of spelling. Giving students the opportunity to explore and discover spelling rules and strategies gives them greater ownership of the process.
9. *Using Children's writing to Demonstrate Strategies* – Positive examples of students' work is an approach to promote classroom discussion about students' use of spelling strategies in their own work.
10. *Focus on Strategies* – A successful spelling program focuses on the teaching of specific spelling strategies rather than 'word lists'. Students need to understand strategies and be able to use these strategies in a purposeful way. Therefore the introduction of spelling strategies needs to be strategic and the use of 'word banks' needs to come from these spelling strategies.
11. *Every Teacher Teaches Spelling* – A school wide focus on spelling should ensure that spelling is dealt with in most curriculum areas. This is because reading and writing skills are used in most curriculum areas. All teachers should be aware of the whole school approach and use similar strategies.

12. *Informing Parents* – Parents need to be informed and involved in the spelling focus and strategies used by school. In the same way that it is important that strategies are similar across classrooms parents should have a good understanding of the spelling process so that students are not receiving mixed messages from home.
13. *Classroom Environment* – The organisation of the classroom is significant in planning, students should have access to a variety of resources to assist them with their spelling (eg dictionaries, computers, word list, classroom displays). Every classroom should have resources of class generated word lists and a storage area where they can access writing tools and resources. The classroom organisation should be effective so that students understand the classroom routine and systems.
14. *Spelling In Perspective* – It is imperative that spelling is 'important but not overemphasised'. Students should understand the importance behind good spelling but also feel free to take risks in their learning.

Snowball and Bolton (1999) advocate that it is important to follow all of the above principles in establishing an effective whole school approach to the teaching and learning of spelling in primary schools.

Many educators such as the Tasmanian Education Department, have utilized the principles outlined by Snowball and Bolton (1999). The Tasmanian Education Department outlines the following spelling principles which can be directly correlated to

the principles of Snowball and Bolton (1999). They advocate the research of Snowball and Bolton and make reference to their research in their website.

The six principles are;

Principle One - Spelling is learnt as we use it

Principle Two - Learning to spell is part of the developmental process of learning to write

Principle Three - Errors can be viewed as diagnostic and developmental signposts

Principle Four - Exploring words and vocabulary are part of learning to spell

Principle Five - Independence and self-evaluation are essential in spelling development

Principle Six - Effective spellers use a number of different strategies interactively in order to spell correctly

(wwwfp.education.tas.gov.au/English/six.htm)

2.6.2 Early Years Literacy

The Early Years Literacy project was introduced after extensive research into good practice in Victorian schools. It is understood globally the importance of the significant gains in literacy in the early years of schooling. The Victorian Education Department prioritised research to develop a program that highlighted best practice in literacy in the early years to be implemented across all Victorian government schools.

> In Victoria, as in other education systems around the world, the improvement of literacy levels is a high priority. International research suggests that students, who leave the early years of schooling unable to read and write, make little gains in later years.
>
> The Early Years Literacy Strategy is a comprehensive and strategic approach to literacy achievement in the early years of schooling. It involves implementation of the research based Early Years Literacy Program, supported by multilayered professional development and a series of conferences. Statewide minimum standards for literacy have been identified and accountability processes established for government primary schools. (Department of Education and Training, 1998, p.3)

Figure 2.5 Implementation of the Early Years Literacy Program

(Department of Education and Training, 1998)

Figure 2.5 identifies the elements of the early Years Literacy program in which the teachers are involved in effective professional development where they are delivered the same strategies, resources and planning to develop a program suited to the needs of individual children in their classrooms. The classroom program is well-structured and follows a well-developed purposeful plan. Parents are educated about the basis of the literacy program and are encourage to assist in the educational process and students are provided with additional assistance when required as determined by a variety of observational and standardised evaluations.

Similarly to Snowball and Bolton's Whole School Spelling Approach, the Early Years Literacy program advocates the teaching of spelling strategies as a strategic part of the writing program and not as a separate entity. Spelling should be taught in real situations and in a purposeful writing context, not isolated from the writing program. The writing

needs to be authentic and should show students the meaning behind the process. “When teaching writing, teachers need to ensure that the contexts for writing are authentic.” (Department of Education and Training, 1998, p. 3)

An important part of the writing process is for children to take on roles to facilitate their writing. The two major roles are the ‘authorial’ and ‘secretarial’ roles. In the authorial role the “writer deals with the process of organising ideas and information to communicate to a known audience and would include planning for writing composing and revising.” (Department of Education and Training, 1998, p. 4) In this case students can take risks in their spelling whilst relying on strategies. The secretarial role deals with the obvious features of writing, such as editing, spelling, grammar and punctuation. During the secretarial role students focus on ensuring they have used the correct spelling.

Like Snowball and Bolton the Early Years Spelling Program encourages students to strive to use correct spelling in their writing. “High teacher expectation is an important factor in the development of conventional spelling. Teachers will need to assist students to develop a number of ways to analyse and record new or unfamiliar words and should observe noticeable improvement over time.” (Department of Education and Training, 1998, p. 7)

In the Early Years Literacy program teachers are expected to continuously monitor and assess students to ensure the learning program is effective and to inform the planning.

"It is essential teachers carefully monitor and assess students to;

- gain a clear picture of each student's writing development
- plan appropriate teaching and learning experiences
- assist in grouping students for explicit teaching to meet their individual learning needs." (Department of Education and Training, 1998, p. 54)

In summary, the Early Years Literacy project advocates the teaching of spelling to be;

- embedded in the writing program,
- a variety of authentic, diverse and frequent writing tasks completed,
- planned strategies that are developmental and based on the students needs,
- have a whole class, small group focus and whole group conclusion organisation in lessons,
- modelled strategies through specific modelled and shared writing,
- established classroom routines and firm organisation,
- involved the 'authorial' role in which students may be creative and take risks in their writing and the 'secretarial' role in which they focus on high expectations,
- and effective assessment practices that inform teaching practices.

2.6.3 First Steps

The First Steps Literacy program was developed by the Western Australian Department of Education in 1994 and has been widely used as a Literacy resource. The program is based on a developmental continuum of learning outcomes which tracks students' learning and is accompanied by a variety of specific strategies to assist students learning that cater for the students at a particular point of need.

The First Steps indicators and suggested activities have been based on the following theoretical assumptions;

- Language learning takes place through interactions in meaningful events, rather than through isolated language activities.
- Language learning is seen as holistic; that is, each mode of language supports and enhances overall language development.
- Language develops in relation to the context in which it is used; that is, it develops according to the situation, the topic under discussion, and the relationship between the participants.
- Language develops through the active engagement of learners.
- Language develops through the interaction and the joint construction of meaning in a range of contexts.
- Language learning can be enhanced by learners monitoring their own progress.

- The way in which children begin to make sense of the world is constructed through the language they use and reflects cultural understanding and values.

(Education Department of Western Australia,1994, p.3)

All of these assumptions can be identified in the research of Snowball and Bolton (1999) and the Early Years Literacy Project (1998).

First Steps and the Education Department of Western Australia (1994) also considers the following factors as underpinning all effective teaching and learning activities in spelling.

1. *Problem Solving* – Children are able to expand their understandings of spelling by solving a problem.
2. *Embeddedness (Contextualisation)* - The context of the teaching and learning situation needs to be linked to realistic situations.
3. *Working Memory (Mental Space)* – It is important to give time to learning a new skill so that the learner does not have to think consciously about the skills learnt.
4. *Interaction* – Students need the opportunity to talk about their new understandings of strategies and skills and have discussions about their learning with both adults and their peers.
5. *Time* – learners need regular opportunities to experiment with new learners and time to consolidate their understandings.

2.6.4 Summary

The literature discussed supports a well-balanced approach to spelling that includes a holistic approach blended with an approach that includes specific modelling of strategies and skills. It is important for the program to have consistency throughout the school community, across classrooms, grade levels and with parents who are well educated in the school's program. The program must be well structured and include school-wide planning to ensure balance across the school.

An effective program would ensure that the child is able to experience spelling in 'real life' and meaningful experiences where they are able to see the importance of having strong spelling skills. This also incorporates the importance of students being able to use thinking skills to make their own assumptions about different spelling rules and strategies. Students should have a level of spelling competency so that they are able to confidently transfer their understandings to different literacy contexts.

In planning a successful spelling program it is essential to ensure there are many opportunities to model specific strategies, rules and spelling skills and be inclusive of class generated 'word banks'. Risk-taking when students are attempting to spell should be encouraged however teachers should insist on accuracy in their personal displays and when modelling to students, as well as when students are publishing written work. Effective assessment, be it standardised testing, teacher made tests or anecdotal

observation, is an essential part of an effective spelling program and should guide teachers planning.

2.7 Chapter Summary

The research project identified areas of professional learning relating to educational change processes using the contexts of Maths, ICT and Spelling. Throughout the period of the research current trends in education in Maths ICT and Spelling identified in this chapter were presented to the teachers involved. Further detail on the professional learning journey is discussed in Chapters 3, 4 and 5.

CHAPTER THREE

Context & Methodology

3.1 The Learning Environment

In this chapter the environment in which the research was completed will be discussed. It will cover the educational context including the students, teacher, and school in which the change took place. It will also discuss the changes to educational curriculum, both departmental and at a school level, and the specific scenarios in which the change was researched.

Finally this chapter will also discuss the form of research, being case study, and the different methods of data collection used.

3.1.1 The Researcher

Throughout the period of research the researcher has been a classroom teacher within the Victorian education system, teaching Year Three - Six. She was also employed as a Leading Teacher with the portfolio of Curriculum and Professional Learning

Coordinator. This role included implementing the new VELS curriculum into the teaching and learning curriculum, the introduction of PoLT, responsibility for staff Professional Learning and Development, ongoing implementation of Early Years (EY) and Middle Years (MY) teaching and learning strategies across the school and whole school leadership planning and administration.

The researcher was predominately involved in curriculum change and teachers' professional learning and had been concerned with the teachers' ability to respond to recent and complex educational reforms. The processes associated with professional learning had been examined and a need to identify the most relevant and effective forms of professional learning were identified as a part of the process.

The teachers at the school were encouraged to explore the new teaching practices presented and investigate planning new teaching and learning sequences. The focus of the research was to observe and describe ways in which teachers attempted new teaching practices and their attitudes towards the changes. The teachers were asked to give written responses to emailed surveys relating to professional learning. Their attitudes and opinions about the different modes of professional learning were analysed along with their professional practice in teaching and learning at the conclusion of the professional learning.

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3.1.2 The Learning Environment

The school is a government primary school with a population of approximately 410 students. There are seventeen classrooms and grades are multi-aged, organised into classes that correspond with the Victorian Essential Learning Standards (VELS). (See Appendix 2 for correlation of VELS levels to traditional grade levels).

Teachers range in age and experience, with a recent change from a predominately experienced staff to a staff with a high percentage of graduate teachers. The teachers vary from being complacent about their teaching program to enthusiastic and willing to actively implement change. The school leadership team was eager to embrace and lead change to enhance the teaching and learning program within the school.

At the time of the research, the school's three year charter priority was the *improvement of Numeracy and Literacy through teaching and learning.*

However, the school leadership team, including the researcher, had the following priorities in teaching and learning in 2005 & 2006. (See Appendix 3 for the school's 2006 Annual Implementation Document)

- Improving Numeracy CSF II report outcomes in Numeracy (3 – 6)
- Improving Numeracy results in AIM data (Year Five)
- Implementation of the VELS curriculum
- Improving the use of ICT throughout the school
- Improve the school's Spelling Curriculum

3.1.3 The Leadership Team

Over the period of the research there were major changes to the school's leadership team with the school principal leaving the school, a relieving and subsequently new principal being appointed as well as the promotion of another leading teacher into the role of assistant principal. At the very end of the research, two experienced teachers were appointed as acting leading teachers and were invited to be a part of the leadership team. Therefore there were only two members of the original leadership team who where consistently part of the research, including the researcher.

The Table 3.1 shows how Fullan's Tri Level Development System can be adapted to include the researcher's teaching context. In this case study, the teaching and learning is influenced by the initiatives of the Victorian Department of Education and Southern Metropolitan Region, as the school teaching and learning program is influenced by the school's three year charter and the 2005 and 2006 Annual Implementation document. Table 3.1 shows how the State and Region directives impact on the school's Leadership Team's planning which directly impacts on the classroom teaching and learning program. However it also shows how the students' needs equally impact on the teaching and learning program. In this way the table is not only a "top down" but a "bottom up" model.

During the study the researcher focused on the impact of new teaching and learning initiatives on the third level of the model, the classroom teaching and learning programs, and observed the manner in which classroom teachers adapted to implemented change. The research analysed which of the different levels of teaching and learning management (DET and Regional Initiatives, School Leadership Charter and Priorities, Classroom Teachers and Students) had the greatest impact on the teachers' classroom teaching and learning program.

Level	System	Program
State and Region	Victorian Department of Education and Training (DET) Southern Metropolitan Region (SMR)	VELS PoLT Early Years and Middle Years Mathematics CSF II
School Leadership Team	Overport Primary School Leadership Team	School Charter Priorities Annual Goals
Classroom Teaching and Learning Programs	All classroom grade in CSF Level 3 and Level 4	Planning and Programs What is actually taught etc.
Students	Students be taught	Lesson content Student attitudes Learning outcomes

Table 3.1 Fullan's Tri Level Development System in the School's Context

3.1.4 The Curriculum

In the time that the researcher had been a leading teacher at the school (2002 – 2006) the school and staff had made progress towards positive educational change and had embraced new teaching and thinking practices such as "The Thinking Curriculum", Early Years and Middle Years Literacy and Numeracy practices, ICT practices and most recently the new VELS curriculum and PoLT. These had all been Victorian State Government initiatives. However, teachers indicated that they often felt overwhelmed by the complexity and frequency of new teaching practices and they wanted to feel more comfortable in knowing they were making effective changes in their teaching and learning to support their students' learning outcomes.

Teachers were also attending professional learning seminars and workshops and feeling perplexed about the most effective manner in which they could implement new knowledge and share this new knowledge with colleagues to positively impact on the curriculum.

In the initial trials of the new curriculum the staff found the most challenging changes were the new VELS inter-disciplinary standards such as Thinking, Communication and Information Communication Technology (ICT). The staff had not been formally required to plan, teach or assess such standards in the past. Other domains such as English,

Science and Mathematics had standards similar to the well-known CSF II outcomes. None of the teachers had been exposed to the VELS curriculum in their university education and thus there was a requirement for teachers to be provided with professional learning opportunities. They were also challenged with including the principles from PoLT into their teaching and learning programs.

As ICT, Mathematics and spelling were the main vehicles in which professional learning were presented, the teachers' attitudes and feelings towards changes in their teaching and learning in this area were important. Many teachers felt perplexed about the use of computers and ICT within their classrooms and teaching programs. Others who had a greater knowledge of ICT, still felt mystified as to how to strategically teach students skills to best enhance learning outcomes. The researcher's challenge was to present and analyse professional learning scenarios which teachers would use to create effective change in their teaching and learning programs.

3.2 The Victoria Department of Education – Curriculum

The context of the study was in an Australian state (Victoria) in which a new set of teaching standards had recently been introduced. Teachers were experimenting through planning, teaching and assessing using the new standards. The research occurred at a time when the transition from the preceding curriculum and standards to the introduced

standards was being made. Throughout this time the teachers were continuing to implement the principles of Early Years and Middle Years English and Mathematics. The senior grades had trialed innovative teaching practises related to Innovations and Excellence and "The Thinking Curriculum" and were using Middle Years practices in their curriculum.

This school's curriculum was varied and innovative incorporating teaching practises that had been introduced in Victoria over the past decade. The school needed a system in which these innovations were incorporated into an efficient planning, teaching and assessment structure.

3.2.1 The Principals of Learning and Teaching (PoLT)

The school in which the research was being conducted was in the process of implementing the Principals of Learning and Teaching (PoLT), introduced by the state government. The researcher was the PoLT coordinator and was able to use surveys and data collected as PoLT coordinator to aid the research and make decisions about the best way to implement professional learning in the school.

The Principles of Learning and Teaching P-12 initiative aims to:

- build consistent, comprehensive and improved pedagogical approaches within and across schools, while still allowing flexibility, innovation and local decision making at the school level
- focus teaching to meet the diverse needs of students
- strengthen learning communities within and beyond the school.

(http://www.sofweb.vic.edu.au/blueprint/fs1/polt/)

Throughout the study, data such as Teacher Questionnaires, Student Perception Surveys, Student Learning Surveys and Curriculum audits were completed to gain a clear understanding and audit of the school progress towards implementing the Principles of Learning and Teaching. This data was particularly relevant to the study as the implementations of the principals depended on effective professional learning techniques. (See Appendix 4 for the Principals of Learning and Teaching.)

3.2.2 Victorian Essential Learning Standards (VELS)

The Victorian Essential Learning Standards (VELS) was implemented into the researcher's school in 2005. The purpose of the VELS was to compliment the Victorian CSF II curriculum and provide a series of measurable standards that promoted the PoLT.

It is summarised as;

> The Victorian Essential Learning Standards describe what is essential for students to achieve from Years Prep to 10 in Victorian schools. They describe what students should know and be able to do at different stages of learning and provide a clear basis for reporting to parents and for planning programs.
>
> Implementation of the Standards commenced at the beginning of 2006. Initially schools will report against English and Mathematics with other domains to be reported against in 2007 and 2008.
>
> The Victorian Essential Learning Standards should be considered in conjunction with the Curriculum Planning Guidelines, the Principles of Learning and Teaching P-12, the advice on Assessment and Reporting and examples of school practice in the Knowledge Bank.
> (http://www.sofweb.vic.edu.au/blueprint/fs1/learnings.htm)

In particular, VELS gives appropriate standards for teachers to integrate the teaching and learning of different learning areas. It encourages teachers to integrate the standards and

plan to teach dimensions such a Thinking, Communication and Information Communication and Technology; these standards are not traditionally planned for and were not formally addressed in the CSF II.

The implementation of VELS is of particular relevance to the research of this project as it was dependent on teachers' ability to react to educational change. The implementation of VELS meant that teachers had to be open to educational change and embrace the new initiatives of teaching and learning. The implementation of VELS was also dependent on the quality of professional learning provided to the teachers involved.

3.3 The School Educational Context

3.3.1 Using Data to improve Maths Outcomes

The school had identified the Victorian Education Departments' Early Years Maths Interview as an essential assessment tool. This assessment tool was utilized to assess every student in Years One to Four and gain a better understanding of their knowledge, skills and approach towards Mathematics. As it takes approximately one hour to interview individual students, and the interview is most effective when completed by the student's classroom teacher, the process of effectively implementing the interview took considerable financial resources.

The school felt that the use of the interview was of great benefit to teachers and students alike but needed to see evidence of the use of assessment in informing the planning and teaching and learning practices of individual classroom programs.

Previously, teachers had used the data gained from the interview to inform their teaching and learning on an incidental basis. For example, if it was evident from the interview that a student did not understand how to skip count by two, the teacher would ensure that the student was given opportunities to practice this skill and perhaps be grouped with other students who had a similar need when this skill was targeted later in the teaching and learning program.

The teachers needed to be given an opportunity for professional learning in which they could analyse the data more effectively and use it to be more effective in their planning. This could be presented along with new and innovative teaching practices that focused on particular areas of need for their class as identified in the interview. In this way the data would be used to create whole class teaching and learning programs that benefited all students.

3.3.2 The School's ICT Context

The children had access to a technology room with 16 computers (approximately one per two students) and four computers in their classroom. Although teachers were willing,

they only occasionally used classroom computers in their teaching and learning programs and this was for a variety of reasons. The reasons listed below were observed in teacher discussion and interviews;

- Unreliability of classroom computers
- Access to computers for students was difficult
- Knowledge of computer programs within the school
- Teacher apprehension
- Negative ICT experiences
- Inadequate teacher knowledge of ICT
- Previous use of ICT programs did not enhance teaching experiences

At the beginning of the study the school's ICT teaching and learning program was disconnected across the curriculum. Teachers planned and taught English, Mathematics and Integrated Studies programs in isolation. The school's ICT program was not formalised across the school and teaching was mainly incidentally, planned to support, rather than guide, teaching and learning. It was used as a reward for student behaviour and effort. For example, if the students were learning about angles in Mathematics they might play a game during their scheduled ICT time that related to angles.

An aim of the professional learning was to empower teaching staff across the school, focusing on the Year 3 – 6 classroom teachers, to feel more comfortable in implementing

a teaching and learning program that was inclusive of the VELS standards. The focus was on ICT standards but included Thinking and Communication standards. The integration of Mathematics and ICT standards was paramount to improving the teaching and learning across the school and it ensured a better blend of VELS across the school.

Teachers were planning term Mathematics programs based on the CSF II and had started to implement VELS. However, the implementation of standards was isolated to the Mathematics domain and planning didn't overlap with the traditional learning areas. Teachers were trying to implement a more open-ended approach to Mathematics teaching and were attempting to implement evaluations that were open-ended or "multidimensional" (Yelland 2005). The majority of evaluation tasks were standardised tests or closed "unidimensional" activities that had a limited capacity to evaluate the scope of learning both vertically (across CSF II levels) and horizontally (across CSF II outcomes and VELS standards).

A culture of team planning was in place across the school and teachers planned and evaluated teaching and learning in collaborative teams. This was not formally acknowledged as collaborative action research but did follow many of the principles.

3.3.3 Whole School Spelling Approach

The school had recognised a need to have a whole school approach to spelling. Across the school there were a variety of different methods utilized in classroom spelling programs. This ranged from a whole language approach to spelling, where students were immersed in language, to an approach where generic lists were used along with commercially produced worksheets.

Due to a high influx of new staff in the school, many being graduate teachers, there was a range of different spelling programs being utilized. The school leadership team realised there was a great need for a consistent approach across the school that;

- highlighted positive practises that were already being used in classrooms,
- reinforced the ideas behind the Early Year and Middle Years Literacy Projects,
- introduced a variety of different innovative teaching practices to improve the teaching and learning of spelling across the school.

This approach of an incorporation of practices had to be completed in a manner that valued the positive teaching and learning practices already used in the school and ensured students' results in standardised testing and attempts in their written work were being upheld, if not improved upon.

The leadership team decided to utilise the expertise of an expert outside of the school who would have a more objective insight into current practices and be able to share knowledge of innovations. The expert could also share knowledge of other educational environments where these practices were being utilized effectively.

3. 4 The Scenarios

Throughout the research the researcher introduced a variety of Mathematics, ICT and Spelling teaching innovations to the teaching staff. These new practices were introduced to the staff through a variety of scenarios. The scenarios were;

- Improving Maths through more effective assessment across the curriculum - Whole School Staff Professional Learning delivered by a colleague.
- Improving the Integration of ICT - Class demonstrations.
- Improving The Teaching of Spelling -Whole School Staff Professional Learning delivered by an expert.

3.5 Case Study

The research took place within the researcher's own school. For the period of the research the researcher was the Curriculum and Professional Learning Coordinator and

administrator of learning areas. The researcher was directly involved in the research and was a leader of curriculum change. The researcher used an action research case study format of research as she was involved in the ongoing change.

Yin (2003) describes a case study as

> the method of choice when the phenomena under study is not really distinguishable from its context. Such phenomena may be a *project or program* in an evaluation study. Sometimes, the definition of this project or program may be problematic, as in determining when the activity started or ended. (Yin, 2003, p.4)

This was true of the project, as not only did the researcher base the study on the ability of teachers within her own school to adapt to change, she observed her own ability to react to change. The researcher was instrumental in introducing and implementing change within the school. The research was what Yin (2003) defines as *Exploratory Research* where the researcher explained the events that happened as a part of a cause and effect relationship. In this case, it was the manner in which teachers reacted to the implementation of a new curriculum and teaching practices.

As an integral part of a case study, action research was employed. Action Research has recently been employed by many Victorian schools to improve educational practices. Bassey (1998) discusses the importance of teachers' personal research in educational change and the direct impact teachers' personal research has on education.

> "Educational Action Research is an inquiry which is carried out in order to understand, to evaluate and then to change, in order to improve some educational practice. It is a form of research that people can do by themselves, about themselves, and for themselves. In schools all over the country it is being carried out by teachers as a tool for school improvement and for enhancing classroom practice. (Bassey in Halsall, 2004, p 93)

This is also supported by Baird's (1992) discussions on the use of action research in school to improve teaching. Baird maintains the importance of educational research is imperative to improving teaching and learning in schools. He insists that it is very important for the teachers to be involved in the research as they have the best knowledge and control of the teaching and learning within their school. The teachers are involved in the research and gain information that positively improves the teaching and learning process as well as the teacher's confidence. He advocates collaborative educational research to maximise the most positive changes in schools.

3.5.1 Data Collection Process

The collection of data in a case study had to be flexible, varied and of significant quantity and quality. It must not rely on a preferred qualitative form of data but be able to use a variety of data that is relevant to the research and situation.

> The richness means that the study cannot rely on a single data collection method but will likely need to use multiple sources of evidence, a continuing priority is to consider case studies as a method not implying any preferred data collection.(Yin, 2003, p.4)

Throughout the study, a variety of different strategies were used to collect data. This data was created and collected as a normal part of teaching and learning, Hopkins (1985) suggests the following data as valuable resources to collect when completing a case study analysis;

- Field Notes – anecdotal notes by the researcher relating to the introduction of professional learning scenarios
- Audio Tape records – of teacher/researcher interviews
- Pupil Diaries – reflections of student learning
- Interviews – relating to curriculum change
- Video Tape Recordings – of professional learning scenarios
- Questionnaires – relating to teaching attitudes
- Photography – of professional learning scenarios
- Documented Evidence – planning documents

The data collected in this study was made in accordance with varied and differentiated case study protocol. It included teacher written questionnaires, interviews, photography

of scenarios, documented evidence of teachers' planning and the professional learning incidences.

3.5.2 Questionnaires

Questionnaires were completed with staff members at the conclusion of professional learning scenarios. These were responses and a reflection about the scenarios presented and asked the staff members to reflect on;

- how valuable they felt the professional learning was.
- if they felt it would impact on the classroom curriculum and to what extent.
- how it compared to other professional learning scenarios.

These questionnaires were emailed to staff members and were a voluntary response. The responses were completed at the end of each professional learning session. The teachers were encouraged to be critical and reflective and respond in a narrative format.

The emails were not anonymous; however teachers did not take the opportunity to write anonymous responses. Once responses were received they were coded so they could not be recognised as anyone particular staff members response. The researcher was a peer and was on the school's leadership team; therefore responses could have been biased knowing they were to be comprehend by a member of the school leadership team

A sample of a survey given to teachers can be seen at Appendix 5.

3.5.3 Interviews

Throughout the study classroom teachers volunteered to participate interviews. These interviews were in conjunction with the Policies of Learning and Teaching (PoLT) interviews as they were related and relevant in context. The PoLT interviews gave the teachers an opportunity to discuss their personal observation about their implementation of the Principles of Learning and Teaching. Interviews took place over one hour and were structured to included questions prescribed by the DEET in the PoLT interview (see Appendix 6 for and example of PoLT interview questions) as well as individual questions related to the teacher being interviewed.

The volunteer teachers met with the researcher and discussed the various methods of professional learning scenarios that had been presented over the year. The teachers responded to a variety of open-ended questions related to the scenarios and were given the opportunity to share their feelings. The teachers were also encouraged to share any additional ideas they had about professional learning and scenarios they felt would benefit the teaching and learning in the school.

3.5.4 Photography

Throughout the research each professional learning scenario was video taped or photographed. This was carried out in order to document the process of professional learning and to maximise the information obtained, giving the researcher an opportunity to reflect, analyse and compare the processes.

3.5.5 Documented Evidence

The researcher collected a variety of documented evidence throughout the study, including teaching and learning planning documents. These documents provided evidence of the changes to planning over time. Other documents included handouts and planning for professional learning scenarios, student work samples, action research documentation and the VELS, PoLT and CSF II documents.

3.6 Data Analysis

The method of data analysis in this study varied according to the type of data collected. The main focus of data collection was the views and opinions of the teaching staff involved in the research, therefore the questionnaires were most pertinent to the study.

The information was gathered to provide a story or "narrative" of the study and gave an insight into which scenarios were best suited to improving teaching and learning practices and embracing change within the teaching context.

The descriptions that constitute data in the study were provided by the teachers who participated. Additionally, comments and observations of actions were recorded by the researcher. As such, the data analysis involved evaluation of observations, teacher's comments, interviews and teacher practice over time.

3.7 Action Research

Throughout the study the researcher introduced the concept of Action Research to the staff. Teachers completed a variety of individual and personal action research projects

(see Appendix 9) relating to personal professional learning practice and the changes in professional learning across the learning environment over the research period. The findings from the action research projects gave further depth and understanding to the study as the gave an insight into the teachers knowledge and understanding of their professional learning journey's.

3.8 Summary

This chapter has explored aspects of the context considering the researcher, the learning environment and broader educational change in the Victorian Education system. The chapter has also discussed features of the research, the methods of research forms of data collection and data analysis. The next chapter describes the implementation of the research and the results arising.

CHAPTER FOUR

Results and Discussion

4.1 Introduction

This chapter will report on the findings of the study. Each scenario will be described and reported on, with selected vignettes, to describe the scenario and manner in which the curriculum content was embraced by the staff and the effectiveness of change on the curriculum. Each story is presented to show the features that were introduced in the professional learning scenario and may be analysed through a variety of different data sources.

Traditional professional development involves teachers attending professional learning workshops, lectures or seminars off campus. In recent times the value of this type of professional development has been challenged.

It is imperative for the teaching and learning of new knowledge that the teacher has an opportunity to share new knowledge with a valued peer or peers. Teachers need to talk about the knowledge that they have gained to reinforce their understandings. They also

need to be able to experiment with the new knowledge in a safe context so they feel comfortable about taking risks in their teaching.

When a whole staff is involved in professional learning, normally as a part of a whole school strategic plan, maximum gains can be made. The whole teaching staff have had exactly the same knowledge presented to them and are therefore able to professionally engage in discussions about teaching techniques and strategies. Furthermore, the school leadership will be more inclined to allow teachers to experiment with strategies and share their evaluations with the teaching staff as a whole.

> Research clearly indicates that a whole-school approach to professional development is needed, one that is coherent, on-going, site-based, targeted at improving school-wide practices, aligned with school learning goals, and tailored to the people and the place. (*http://www.plotpd.com/Home.htm)*

In addition to the discussion of the three professional learning scenarios, action research will be described and discussed as it emerged as an outcome of the research. The three forms of professional learning were not studied as separate scenarios in the investigation, but were an important part of the research. As the research evolved, the school and the researcher started to explore different forms of professional learning to enhance the planned professional learning and development. Although not all aspects, such as action research, were planned, they became an integral part of the professional learning process.

4.2.1 The Scenarios

The professional learning scenarios that were presented to teachers are discussed next. They were chosen because they provided professional learning opportunities that were relevant to the curriculum, encouraged collaboration and encouraged teachers to take responsibility for their professional learning.

The three scenarios were:

Maths – Further developing the teachers' understanding of the Early Years Numeracy and Middle Years Numeracy programs, through professional development delivered to the group by a *peer*.

ICT – Introducing ICT programs into the teaching and learning program, through Professional Development in the form of a Classroom Demonstration by a *peer*.

Spelling – A whole school approach to spelling with the aim of students becoming more literate, through Professional Development delivered by an outside *expert*.

4.2.2 Action Research - Teachers as reflective practitioners

Much has been discussed on the benefits of teachers working as reflective practitioners through action research in education change. Teachers are, by nature, action researchers and it is only natural for good educators to be involved in action research, if not only through intuition.

"Action research is any systematic inquiry conducted by teacher researchers, principals, school counsellors, or other stakeholders in the teaching/learning environment, and how students learn." (Mills, 2003, p.5) Where teachers take part in the *plan, teach, evaluate* cyclical model intuitively, the project formalises the process. When completing an action research project, teachers are required to document their thinking whilst planning, use data collection methods to evaluate their teaching, and discuss their evaluations before starting the process again.

> Action research is research done *by* teachers *for* themselves; it is not imposed on them by someone else. Action research engages teachers in a four step process.
>
> 1. Identify an area of focus.
> 2. Collect data.
> 3. Analyse and interpret data.
> 4. Develop an action plan. (Mills, 2003, p.5)

It is very important that teachers involved in an action research project are able to choose an area of focus that is important to them, collect data in a meaningful manner, and have knowledge of effective analysis and interpretation techniques as well as assistance from experts and peers who will help them create a new action plan.

4.3 Scenario One – Whole School Professional Development delivered by peers (Maths and Numeracy)

The goal of this scenario was to provide teachers with a better method and realistic tool to interpret and use data collected in the Early Years Numeracy Interview. All teachers in charge of students in Years One to Years Four had completed the interview with students and had a variety of data and assessment information about the students they taught. The aim of the professional learning scenario was to explain how the data could be better analysed to assist more effective planning, and teaching and learning scenarios.

All teachers, regardless of whether they currently taught Years One to Four, were involved in a professional development session which was presented by a peer, a fellow teacher. The teacher had taken part in a variety of professional development sessions outside the school relating to how to use information and data gathered from the Early Years Maths Interview.

The professional development session was completed in an afternoon scheduled meeting time (regularly used for in-school professional development) and took approximately one hour. The teachers who had previously completed the interview were asked to bring their current data, and those who didn't have any current data were given copies of unspecified and nameless data from another grade to refer to. Teachers were trained to analyse data so that they could organise students into groups that identified specific strengths and weaknesses.

The main presentation introduced a tool in the form of a spreadsheet where student results were plotted against questions or indicators from the interview. In turn, questions or indicators could be identified with a particular "growth point" of mathematical understanding. The tool allowed teachers to group students who may have had difficulty answering a particular question in the interview together. Therefore all students were assigned to a particular group according to their specific needs and "growth point". This meant that teachers could plan focused teaching opportunities relating to that group. (See Appendix 6 for the Early Years Numeracy Interview Spreadsheet Assessment Tool and Relevant Growth Points.)

For each "growth point" there was also a range of strategies that could be employed to help teach a given concept. For example, in the strand of Number, students may be assigned to four different groups. The lesson would start with a whole class discussion and then students would work in their ability groups on a range of different activities,

each targeting a specific point of need. The lesson would then end with a whole class focus in which students could share what they had learnt.

The growth points for Addition and Subtraction Strategies identified in the interview are displayed in the figure below. Students are assigned to one of these “growth points” and are presented with a variety of relevant strategies to move them onto the next "growth point”, extending their understanding.

1. Count all (two collections)

Counts all to find the total of two collections.

2. Count on

Counts on from one number to find the total of two collections.

3. Count back/count down to/count up from

Given a subtraction situation, chooses appropriately from strategies including count back, count down to and count up from.

4. Basic strategies (doubles, commutativity, adding 10, tens facts, other known facts)

Given an addition or subtraction problem, strategies such as doubles, commutativity, adding 10, tens facts, and other known facts are evident.5. Derived strategies (near doubles, adding 9, build to next ten, fact families, intuitive strategies)

Given an addition or subtraction problem, strategies such as near doubles, adding 9, build to next ten, fact families and intuitive strategies are evident.

6. Extending and applying addition and subtraction using basic, derived and intuitive strategies

Given a range of tasks (including multi-digit numbers), can solve them mentally, using the appropriate strategies and a clear understanding of key concepts.

Figure 4.1 Early Numeracy Report Growth Points for the Domain of Addition and Subtraction Strategies

The objective of the tool is to provide teachers with a straightforward approach to assigning students to ability groups, providing a variety of practical teaching activities to focus on a particular concept or skill, along with flexibility to reassess students.

Teachers were given time within the professional development session to analyse the results of their grade (or the provided data) and create focus groups based on "growth points". As a part of the professional learning experience teachers were then expected to use this information, along with the strategies provided, to plan meaningful teaching and learning experiences and activities using focus groups, based on the results of the Early Years Numeracy Interview.

The presenter, being a peer, was available to staff to assist them in their planning and provide further follow up. However, there was no official mandate in place and teachers were responsible to follow up on the professional development session and to use the knowledge for their own the professional learning in their planning themselves.

There were a variety of levels of implementation of the strategies presented. Those teachers who did not teach children in Years One – Four completed grouping for the data they were provided with. However, they felt that the practice and strategies were not relevant to their personal teaching practice as they did not use the interview, nor have children in the prescribed year level in their grade.

The prep team stated the presentation was;

> *Not really relevant to our team but good for us to be part of for future reference and for us to evaluate what we are teaching in Prep as foundation skills for the children's numeracy capability and what they will use in this formalised testing the following year(s).*
>
> *Teacher Group Prep October 2006*

A teacher from a Year Five and Six class stated that the presentation;

> *gave an insight into the process before the students come to Level 4. I had some idea of the interview but this gave me more clarity. Could easily be a useful diagnostic tool for students who are experiencing maths difficulties in Level 4.*
>
> *It was not really very useful in relation to our current or future curriculum as it is not wholly relevant to Level 4.*
>
> *Teacher A October 2006*

It was obvious that teachers who did not teach students in the relevant grade level found the presentation an insight into the survey, but did not use it or any of the strategies presented in their planning or teaching and learning.

The professional development session did have a greater impact on the planning and teaching and learning practices of those teachers who were directly involved with students who completed the interview.

One teacher felt that the presentation as a tool was very valuable, however that they were already using similar methods in their classroom. They also felt that there were many constraints including time, resources and space that inhibited the use of focus groups to the extent that was described in the presentation.

> *Theoretically my children can be placed into several teaching groups aimed at their exact abilities. However this is extremely difficult to actually achieve in a classroom situation due to time constraints and room space. However the fact that I know where my children's abilities lie allows me to plan more appropriately and to focus on different groups throughout the course of the year rather than splitting them up into many groups each day of the week.*
>
> *Teacher B October 2006*

A group of teachers involved in the research that were all teaching in the Year One – Four area reflected that they enjoyed the presentation and felt that the spreadsheet tool was particularly useful.

> *It was great to see the presenter's tool and how she has used it to place students into groups. It was also really good that we were given time and help to use our own results to place students into ability groups. We now know how we can use the data and can plan lessons that will target students "growth points" with relevant activities.*
>
> *Spelling Group A October 2006*

It was evident that, because time was given through the professional development session, all teachers had used the spreadsheet tool to place students in ability groups. However, when asked if they had put the practice into place and used their focus groups, one teacher stated that they hadn't been able to be as effective due to a variety of constraints.

> *It is great having the groups and knowing where students are at. Sometimes we use the ability groupings and refer to the strategies that were covered in the PD session. Mainly teachers have relied on the ability groups created before the PD session as it is hard to remember to change grouping every day depending on the concept you are teaching. We haven't implemented the groupings or strategies into planning. It has been completed on more of an incidental basis.*
>
> *Teacher C October 2006*

The teachers felt that the formal implementation of strategies and student groupings could have been more effective if there had been mandated planning or further ongoing assistance. They use the strategies of the professional learning incidentally but not formally as it was not mandated.

As the professional learning schedule developed over the year, teachers all took part in an action research project. One teacher decided to make Early Years Numeracy her focus and effectively utilised information and tools from the professional development session to enhance her professional learning. She effectively analysed

and used the data to create effective groups and used presented strategies to enhance her teaching and learning program.

She felt that;

> *discussion of the EYN interview data was good and creating groups from the data was very useful. The content of the PD session was appropriate to the current curriculum. I have based my Action Research project on EYN and found that the information discussed was very useful.*
>
> *Teacher D October 2006*

In implementing ability groups to focus on specific growth points she felt the professional development sessions enhanced her use of focus groups and gave her more information about how to place students into ability based focus groups.

> *The groups are flexible and the achievement of understandings and skills in the EYN interview has changed the groupings. The PD (Professional Development) was great and the information has assisted in my planning. The viewing of the video and the flexible groupings has helped the planning of the Numeracy activities and planning of activities.*
>
> *Teacher D October 2006*

It was obvious that this teacher had been most effective in implementing the professional learning. As it was a part of her action research project, she was in

control of her learning. She reflected that the action research component of her professional learning was the key to its success.

> *I have used ideas from my Action Research project in my teaching. I have restructured my EYN block. I have made open-ended activities a main feature to help students extend their understandings, along with effective ability based grouping. Real life questions are used to give the lessons a more relevant meaning.*
>
> *Teacher D October 2006*

4.4 Scenario Two – Class Demonstration (ICT)

In this scenario the goal was to improve the use of ICT across the curriculum. An ICT educational software program was chosen and presented to the teachers. The researcher presented a lesson to nine classes across the school. The lesson had an ICT and Mathematics focus. There were four Year Three and Four, and five Year Five and Six classes. The lesson was presented in the school's ICT lab consisting of 16 computers in the class's regular ICT time. The classroom teachers were expected to take part in the lesson, watch the demonstration and experiment with the learning tools that were introduced over the period of the research. They were told that the purpose of the lesson was not only to introduce the students to a new ICT software program, but as a professional development opportunity to involve teachers in the

learning process so they could gain a better understanding of the program, its relevance to the curriculum, and the teaching and learning opportunities it presented.

The lesson presented was an introduction to a piece of educational software called Kahootz ICT program. The Victorian Education Department has endorsed the Kahootz program and funded site licenses for all Victorian government schools. The school had possessed the software for over twelve months and some teachers had experimented with it but had limited knowledge of its potential.

The aim of using the Kahootz program was to give the teachers an opportunity to amalgamate multidimensional maths tasks, as previously described by Yelland (2005), with innovative ICT practices.

Kahootz is a program which allows students to create backgrounds, settings, characters, movements, animation, texts, input video, sounds and images and scene changes to create animations. Students can choose from a variety of scenes and place objects in those scenes. They may change the appearance of the scene and objects. Along with moving the objects they can navigate around the scene and link movements and new scenes to add variety and interests to their animation. The potential use of Kahootz is unlimited and it can be used across all aspects of the schools' curriculum. Students can create eBooks, represent science experiments, write reports and create movies using the program.

Figure 4.2 Kahootz Images as created by students

Preparing our students to be active participants in the knowledge economy is a key challenge facing schools today. Digital content and creation tools play a central role in integrating ICT into the curriculum, developing innovative practices and transforming the way students learn.

Digital Content and Creation Resources can lead to positive impacts on teaching and learning and support the Victorian Essential Learning Standards.

Digital content supports:

- active and critical learning
- decision-making
- experiential learning
- visualisation
- simulation
- game formats
- investigation and inquiry
- modelling

- problem-solving
- research

> Victorian government schools have access to digital content, digital resources, digital content creation tools and a range of professional learning resources. DE&T's vision of student learning sees these digital content or learning objects and digital resources as tools at a teacher's disposal. These resources will open a new range of learning opportunities for students. DE&T is building upon the impetus created by learning objects by providing students with the ability, freedom and applications to produce their own digital content, demonstrating their understanding of curriculum concepts through Multimedia Authoring tools like Kahootz.
>
> (http://www.kahootz.com/kz/templates/home,About.vm?navItem=common/home)

Students can choose different objects, scenes, scenarios, movement and transitions when creating animations. The students are challenged and must use thinking skills such as; active and critical learning, decision-making, experimental learning, visualisation, investigation and inquiry, problem solving and modelling of ideas to be successful in the use of the program. They must be familiar with computer and animation simulations and game-like formats.

In completing the activity the students were exposed to a variety of VELS standards that had not to date been planned for in the school's term planning as the teachers had

not been given time to effectively understand or plan with them. Many of the ideas presented had not been covered in traditional teaching methods and were therefore a new innovation for most teachers observing the lesson. (See Appendix 7 for VELS standards in ICT).

The lessons started with an explanation of the Kahootz program, displaying some of the programs tools to the students. This was a basic introduction where children were shown how to choose a background or scene, change the colour of that background and navigate around the 3D scene. After initial experimentation time they were also introduced to the objects and characters that could be placed in the scenes and shown how to change the animation and appearance of these objects and characters.

The students were then given an opportunity to explore the program and "experiment" with the software. There were not any restrictions on the tools they were allowed to use and there were no expectations of what they should create before the end of the lesson. The students worked in pairs and were encouraged to discuss their findings with each other and their peers sitting close to them. The lesson was completed with a whole class discussion about what they had learnt.

In experimenting with the software the students were introduced to new ICT skills as well as a variety of VELS Thinking, Communicating, Design, Creating and Technology, Mathematics, Arts and Interpersonal standards. (See Appendix 7 for Victorian Essential Learning Standards in ICT Levels 1 – 4)

The students spent the 30 minute lesson experimenting with the animation program and were given the opportunity to communicate with each other and share the skills associated with their new learning. The classroom teacher was also invited to experiment with the program and was therefore given the opportunity to observe the lesson and learn alongside the students. The teacher was encouraged to pair-up with a student and have a "hands on" learning experience, rather than simply observing the students.

This was the extent of the teacher's professional development. It was anticipated that teachers would further explore the program and discover the impact it could have on their teaching and learning programs, thus making the scenario a professional learning experience. The teachers were sent links to curriculum support, examples of students' work and ideas to enhance the use of the Kahootz program across the curriculum. However, no further formal support or mandated expectations were given to staff members in assisting them with implementing the program.

Staff were given time and professional development towards learning about and implementing the new VELS standards into their curriculum programming. Two staff members attended outside professional learning sessions based on Kahootz and shared ideas with the school staff.

The teachers commented that they enjoyed the professional learning session. They felt it had many benefits and enjoyed the professional learning format and the opportunity to be a "learner" and observe their students learning. They enjoyed learning alongside

the students and learning from the students sharing their skills through experimenting with the software.

> *If it wasn't for them I would have absolutely no idea about the program. It was like a role reversal with the students as my mentors but I didn't mind it a bit. It was interesting to see how they explained things to me and to each other as they discovered new and fascinating tricks.*
>
> *Teacher E November 2005*

> *I feel I benefit from having another teacher come into my classroom and model best practice; it is a great way for us to learn. There should be more of it!!! (it would be great for) Early Years Mathematics and Literacy Coordinators and Middle Years Mathematics and Literacy Coordinators to model best practice in other grades, although these teachers would need time release for this to occur, but the benefits would be great.*
>
> *Teacher F November 2005*

Most of the teachers involved in the research felt that they could incorporate the ideas presented in the class demonstration into their teaching and learning programs, however they were unsure of how to implement it. This may have occurred because the teachers were only becoming familiar with the new standards at the time. The following comments were a sample of those made when the teachers were asked about how they felt about the ideas presented and how the program assimilated with VELS.

This does fall into line with VELS in a number of ways but mostly due to the emphasis on ICT in VELS.

Teacher F November 2005

Sorry I haven't looked at VELS but off the top of my head I would say Kahootz has a lot of the thinking and working together type aspects going for it and the interest level was definitely high.

Teacher G November 2005

The lesson was presented as a unique presentation and was not supported by any other forms of professional learning. Teachers were expected to complete professional learning in their own planning time. The teachers were given the opportunity to use the program in their classroom or when they used the ICT lab. The teachers planned their teaching and learning curriculum using the VELS outcomes. However, they were never explicitly shown how they could use the Kahootz animation program to cover the standards in their planning.

Since the Kahootz program has been introduced in the school, it has only been used in the teaching and learning program as an incidental lesson, or by students when they have been able to complete "free choice" activities on the computer.

Teachers reflected that they thought the program was excellent, however, they articulated that they needed direction or modelling in how to utilise the program to effectively cover the curriculum.

Teachers also felt the curriculum was crowded and felt that it was hard to have effective time on computers for the children to use the program effectively and they were unaware of how to use ICT facilities effectively to store animations and related data.

> *Due to time constraints children were unable to fully utilise the program. It would be good for further follow up PD's on maths.*
>
> *Spelling Group A October 2006*

They felt that if there was an ICT teacher who took responsibility and had an understanding of the planning needed to use the program effectively that it would be an excellent teaching and learning tool in the schools' context. However, it was challenging to use the program effectively with the restraints that were in place.

> *I feel the content was appropriate because it utilises students' skills in navigation, creativity and ICT. Students did get a lot out of this presentation and students are continuing to build on this new knowledge. It has helped me realise the need for ICT planning and that each level should look at skills that can be concentrated on during a 2 year time span.*
>
> *Teacher D October 2006*

4.5 Scenario Three – Whole School Professional Development (Delivered by an expert)

Scenario Three took place over two separate sessions. The school recognised that there was a need to improve the whole school spelling program. The school's 2005 Annual Review and 2006 Strategic Plan pointed to a need for a whole school approach to spelling and a need to increase teachers' awareness of spelling teaching techniques. This was for a variety of reasons;

- there was not a consistent program across the school, spelling results in writing were below state average.
- teachers were asking for assistance in their spelling practice.
- current practice did not reflect the schools pedagogy of a thinking curriculum and creating learning practices that challenged individuals.

An outside expert who was highly recommended by the region and other schools was engaged to complete two professional learning sessions with the staff. Both sessions ran for two and a half hours.

The outside expert had a vast knowledge of Victorian Early Year's Literacy and Middle Year's Literacy practices. As a part of her preparation she had investigated the current practises within the school and ensured she had a clear idea of the expectations of the teaching staff and school leadership team.

In both professional development sessions the outside expert;

- Recognised and valued the current understandings and practices of the teaching staff.
- Provided theoretical background to support the practices she was introducing.
- Modelled practical examples of how the introduced theory and practices could be used in the given context.
- Provided resources to assist in the implementation of new theory and practice.

The outside expert used a spelling theory developed by Snowball and Bolton (1999). The program meets the needs of schools and districts that want to put systematic teaching in place without compromising the principles of constructivist learning. Recognizing the professional expertise of classroom teachers, the authors consistently urge teachers to consider the suggested plan in relation to their children's spelling needs.

In the first session the outside expert introduced Snowball & Bolton's (1999) spelling continuum. This was particularly relevant to the teaching staff as they wanted to find a continuum that could be used to ensure that students were being taught consistent and relevant spelling patterns, rules and practices throughout their primary years. Snowball and Bolton's spelling continuum was created to assist teachers in the American primary system. However, we felt that its basic principles could be adapted to suit the current school's learning context.

At the conclusion of the first session the teachers were very enthusiastic about the continuum.

They commented

> *I really enjoyed the session …..… the Snowball and Bolton spelling continuum is excellent. It appears to be a great way to map the teaching and learning of spelling across our school. It is really good to see the American example.*
>
> *It was good to see the Snowball and Bolton continuum. I think it would benefit the school if we had something like it. …. It would be good to see an example of a Victorian school that had adapted the model.*
>
> *Teacher C October 2006*

The aim of the second session was to provide scaffolding for the staff to create their own adaptation of the model that could be used practically across the school. This was supported with reflections on current practice and discussions about current theories and research.

Throughout both sessions the outside expert shared many effective spelling strategies with the staff. The strategies covered much of the theory discussed in Section 2.7 Spelling – A Whole School strategy. The expert Covered theories of Snowball and Bolton (1999), the Early Years Literacy Project (1998) and Western Australia's First Steps program (1994).

This included ideas such as;

- consistency in approach across the school and home.
- well-structured planning.
- ‘real life’ and meaningful experiences.
- use of thinking skills to enhance knowledge.
- transference of knowledge into other literacy situations.
- modelling specific strategies, rules and spelling skills.
- class generated ‘word banks’.
- encouragement students risk taking.
- insisting on accuracy in published work.
- effective assessment to inform planning.

Figure 4.3 An example of class generated “word wall”

Figure 4.4 An example of class generated "word wall"

Figure 4.5 An example of class generated "word bank"

During the second session the outside expert provided a variety of resources to support the staff. This included items such as spelling and word pattern lists, spelling rules, Early and Middle Years Literacy resources and new resources in best practices. The outside expert also brought a model of a spelling continuum that had been adapted by a Victorian school.

The staff worked in their teaching teams and created maps to add to their school's continuums. Due to time constraints, the combining of these maps to create a cohesive spelling curriculum was completed at an English meeting by the English leaders in each area in consultation with their teams.

The spelling continuum was then distributed to classroom teachers throughout the school to use in their planning. Teachers were able to refer to the continuum on planning days to ensure they were being effective when planning spelling activities. The continuum was put into place across the school. Teachers referred to the continuum with the aim of covering content in the following areas across the year;

- Letter Knowledge
- Phonological Awareness
- High Frequency Words
- Visual Strategies
- Meaning/ Word Structure
- Assessment Strategies

(See Appendix 8 for the school's Spelling Continuum)

Teachers would use the continuum to plan relevant and effective spelling activities in their terms and add more detail in their weekly planning. For example, in term planning, the Year Five and Six teachers chose a variety of high frequency words, strategies and rules to focus on for the term with the aim of making as specific focus on these in weekly planning documents. They also completed a spelling analysis in which students completed a teacher-made test of 100 words based on the term integrated unit and were able to use these words in their weekly spelling list. Students were then retested on these words at the end of the term.

The Year Five and Six teachers' weekly approach to spelling was to complete a 'flash card' activity with words from a 'word bank' covered in the week before and add these words to a class 'word wall'. Students would choose ten spelling words from the word bank, previous writing or reading activities, a class list based on integrated topics, or a class generated list based on the previous weeks spelling focus. These ten words were to be learnt over the period of the week and tested through flexible peer tests at the end of the week. A modelled writing lesson that focussed on a given spelling strategy would be given. For example, a writing lesson that focused on 'ious' words as in serious and included using a dictionary to check for accuracy. There would be a spelling lesson, often from a commercial spelling book based on the week's rule or strategy, to be completed in the students' Literacy block. Students would be required to find words in their writing and reading activities to add to a class 'word bank' which would be revised the following week.

Similar strategies were being employed across the school. Teachers were using the school's continuum to ensure there was uniformity in the words, rules and strategies being taught, along with the flexibility to cater for individual needs. Teachers also referred to strategies presented by the outside expert ensuring a consistent approach to spelling across the school.

The professional learning covered;

- the two professional development sessions with and outside expert,
- the creation of a school based continuum to enhance understanding and planning,
- teacher planning and assessment using the school's continuum, and
- the strategies presented in the professional development session and assessment practises that guided more effective teaching and learning.

In addition, two groups of teachers had decided to focus on spelling to complete their personal action research projects. This enhanced the professional learning and the spelling program throughout the school.

Overall this professional learning scenario was successful. It had a direct impact on the teaching and learning practices of all classroom teachers and could be measured through a change in planning and assessment documents. Visually there were many resources and displays around the school that were inclusive of strategies presented. There was a definite improvement in the consistency of teaching and learning practices across the school and teachers were more confident in the strategies they were employing. Although it was to early to judge long term improvements to

spelling in writing school wide against state benchmarks, incidental and anecdotal assessment indicated an improvement in spelling practices and strategies used school-wide. There had not been a formalised system of educating parents about new practices in spelling in the school; however this was to be completed in the near future. The records and information gained from the observations of the teacher's and student's learning process formed the data for the case study about professional learning.

Teachers commented that they felt it was a positive experience to have an outside expert deliver the information to the staff. They reflected on her knowledge and expertise as well as being able to give practical examples. Teachers felt it was positive that the expert challenged their own practices and enjoyed the presenter's style of presentation.

> *It was good to have (an expert) come to school and PD the teachers about Spelling.*
>
> *Teacher D October 2006*

> *I think she made us reflect and think about the way we teach spelling. She made us question whether we actually teach spelling and whether the kids are engaged in their learning of their spelling. It was a similar format to previous PD but we liked her questioning techniques and her sense of humour.*
>
> *Prep Group October 2006*

Yes, this was great, because it was interactive. It was also extremely positive, not only because (the expert) is a motivating and enthusiastic presenter, but also because the majority of the staff were keen to know about the spelling strategies and ideas.

Teacher C October 2006

An expert will always command your attention as I feel you want to challenge their ideas and inquire about their experience to see if their theories are legitimately tried and tested.

(The experts) delivery was quite surprising to me as she did not bombard staff with academic language and unfamiliar terminology. I appreciated her practical examples and her reflections on her own practice.

Actually demonstrating the way, by modelling how to introduce and deliver an idea or theory really inspires you and gives you the confidence to have a go.

Prep Group October 2006

The teachers involved in the professional development session felt that the presenter had many practical ideas to complement the theories presented and the continuum created.

The main thing I got from that PD was again the need for a Scope & Sequence and for a program to be successful it needs to be a <u>whole school</u> program. Support from all levels and agreed understandings and skills need to be recorded for each level for planning needs.

Teacher D October 2006

New things have been developed at the school since the projects have commenced. Word walls, spelling rules/generalisations introduced each week; creation of new spelling list related to integrated studies topics, word books, etc.

Teacher D October 2006

(The expert) commented on the visual aspect of spelling and having a lot of words around in the classroom for students to refer to. I have made words that my current students have trouble spelling or misspell often, accessible and in view on the wall in the classroom. Students have their own wordbooks, which they refer to in writing activities. The whole term's spelling words are displayed on the wall. Students know where to look for the words. The location of these words has not changed.

Teacher D October 2006

(The experts) examples ranged across the ages which impressed the prep team as, often being at the lower end of the school, where the children are not

necessarily all working independently, makes it difficult to implement some of the involved ideas they offer.

(The expert) definitely inspired our word walls which have encouraged us to display more language and get the children to be more resourceful in trying to find spelling or even a useful cue for a writing piece. We have also used this idea of a language rich environment to develop treasure tables and socio-dramatic corners in our cubbies. We have also noticed that the children are using a wider vocabulary and 'borrowing' written words from around them for their writing.

Prep Group October 2006

Teachers also commented that the program had impacted on their teaching and learning, assessment and planning, and that this was evident in their daily practice.

Spelling is planned for in the Grade3/4 Literacy planner. A spelling rule/generalisation is focused on each week. A spelling focus is included in a writing session each week. Students are encouraged to use dictionaries and their word books to find the correct spelling of a word or find the meaning. Learning Centre activities will incorporate spelling activities.

Teacher D October 2006

A great team makes the planning, assessment and teaching ideas more updated as we constantly share and develop and redevelop what we are doing everyday. Anne did reinforce that what we are aiming to achieve is well

thought out and this praise of what you are already doing is welcomed as we were not considered to being doing things that contravene what she was sharing but rather compliment what she was presenting and this is consolidation across all areas listed above. Encouragement is all you need to keep teachers going and wanting to achieve more and Anne's respect of what you are already doing is uplifting.

Prep Group October 2006

One teacher did not find the professional learning scenario as effective as others. That teacher did not have their own class and had a leadership role in literacy across the school. This may have meant that they had a more objective view. They felt a more specific program would have had a greater impact on the school.

The professional development session had Informative and stimulating ideas but it didn't change how we teach spelling at the school. Looking at Sound Waves, THRASS and Spalding would have a greater impact as they are about changing to a whole school approach to Spelling and this did not achieve such a change. It didn't have an impact – there was no real WOW factor to the PD.

Teacher H October 2006

When asked if she felt if the professional learning had an impact on the school's teaching and learning curriculum the teacher's response indicated no real change.

No. We did change the continuum but it was really just tidying up what we were already doing. It didn't address any overlaps across areas or really set out what we should be teaching at each level.

Teacher H October 2006

Overall, teachers felt the professional learning experience was worthwhile and had sufficient positive impact on the teaching and learning, assessment and planning school-wide.

4.6 Action Research

Throughout the period of the research it became evident that there was a need for more professional discussion and responsibility taken by teachers for their own professional learning. This observation by the school's leadership team, along with increased interest in emerging reports of success from the Victorian Education Department and an inclusion in the schools Principles of Learning and Teaching professional learning program, lead towards an interest in action research and the impact such projects would have on the school's teaching and learning environment.

The leadership team decided to design a program for teachers in which they would take part in an action research project. This was initiated by a professional development session in which teachers were introduced to the theory behind action

research. Teachers were given the task to embark on their own personal action research project.

The aim of the project was to;

- Improve teachers' teaching and learning outcomes in a specific area.
- Improve teachers' ability to be reflective practitioners.
- Give teachers an opportunity to take more responsibility and autonomy for their own professional learning.
- Increase the level of professional discussion of teaching and learning practices in meetings and in teachers' conversations.
- Allow teachers to explore and experiment with the concept of action research.

During the professional development session, teachers were given time to brainstorm ideas about areas they would like to research. Teachers were encouraged to choose an area that was important to them. They were given the choice of whether to work in a team or as an individual.

By the end of the professional development session all classroom teachers had decided on an area to focus on and had created teams, or decided to work as individuals.

The areas of focus were:

- Middle Years Spelling (team)
- Early Years Spelling (team)
- Early Years Numeracy (individual)

- Thinking Oriented Curriculum (pair)
- Positive Discipline Strategies (team)
- Reading Assessment (individual)

A document adapted from the PoLT professional development sessions attended by the researcher was created to give teachers effective and straightforward parameters for their action research projects (See Appendix 9 for the teacher's Action Research Plan). The teachers were given the document to complete as they embarked on their research. The document required teachers to choose a focus research question, identify a PoLT principle that related to the research, state desired outcomes, anticipate challenges and strategies to combat these challenges and identify relevant resources. Throughout the research, teachers were to complete three cycles of action research and document these cycles in meetings, as well as identify research findings at the end of the research.

There were meeting times set aside for teachers during their "professional learning teams" times in which they could meet with their teams and work on their projects. The aim of this time was to discuss implemented changes, analyse effects on teaching and learning, and further consider the next cycle of change. Over the period of the action research there were three official meeting times, however teachers were encouraged to meet incidentally and regularly. Teachers were also required to make brief reports on their progress in staff meetings.

Ongoing support was given to the staff by the researcher who had previous experience in action research. The researcher was available to teachers in the "professional

learning team" meetings and ensured that teachers were aware of the requirements. Their projects were extremely flexible and the goal was to make this first experience with action research a positive experience so that the teachers would feel comfortable, knowledgeable and optimistic about completing similar projects in the future.

As a side project, teachers were also given a full day to observe a school that had implemented a similar program to their research. Teachers approached a variety of schools, watched teaching and learning in progress, and spoke to practitioners to gain a better understanding of how their topic of choice was operating successfully in a similar learning environment.

After a period of approximately six months, teachers were required to complete the given documented report and share their findings and experiences with their fellow teaching staff. Over the period of the action research project, there had been a change in the school leadership, with the appointment of a new principal and acting assistant principal. The new leadership team was impressed by the project and felt that its success should be celebrated with a lunch.

Teachers gathered for a celebration lunch and presented their experiences with fellow staff members. The region's Senior Executive Officer was also invited to take part in the celebration. The achievements of the project had been shared with local primary schools and the researcher was asked to present the school's journey at two local primary schools who were interested in embarking on similar projects in the future.

Figure 4.6 Teachers celebrating and sharing their action research projects

Overall the project was a great success. Teachers who were reluctant and felt confronted by the project were pleasantly surprised by their personal learning journeys, and those who had been extremely enthusiastic proved to be outstanding leaders. By and large all teachers displayed an improvement in their personal teaching practice in the specific area they focused on and this was evident throughout their

teaching and learning programs, planning, assessment practices and displays in classrooms.

The reflective and professional nature of conversations about teaching and learning improved in structured meetings and was also noted in general staffroom discussions. Teachers felt they had control over the professional learning they took part in and that they were responsible for the path they chose to take to improve their personal teaching and learning practices. There was a very positive outlook towards action research. Teachers enjoyed taking part in the project, were proud to share their learning journey and were enthusiastic about taking part in such a project in the future.

Teachers' responses were very positive when asked to discuss the professional development sessions that accompanied the action research project. They gained from being exposed to the theory and felt given examples and the document given to record the action research process was very beneficial.

> *Action research has been the best thing to establish staff networking. It is great to see staff blending and talking/sharing different ideas and philosophies. The format was easy to follow and made staff feel confident about undertaking the project. The provision of examples were very beneficial as they provided staff with a reference. The format was clear and to the point with the slide show guiding staff step by step through the process.*

Prep Group October 2006

> *This was extremely pertinent for me. It was presented in a particularly relaxed and non-threatening way, and (the presenter) was very positive about action research, reiterating often that it is a tool to formalise what effective teachers are already doing. (The presenter) always runs sessions in which you feel comfortable to contribute or ask questions, and she is thorough in her explanations and sharing of information.*
>
> *Teacher I October 2006*

However, some teachers felt overwhelmed as the presentation took place along with other new concepts.

> *There were too many PD concepts in one day and needed more time to understand what was required as much stuff were unclear. Teachers were unsure of expectations as this was a new concept. When we started to work on the project we were able to gain a greater understanding.*
>
> *Spelling Group A October 2006*

Teachers felt the action research project was relevant to their teaching and learning program and that their involvement in the project had positively impacted on their teaching and learning curriculum.

The content was / is very valuable. The information allows me to reflect on my teaching approaches and areas which I can focus on to improve my student learning.

Teacher B October 2006

The Action Research project is appropriate to my current planning. I think the school visit was incredibly useful and I have gained a lot from it. I have used aspects of the school visits in my current teaching practice.

Teacher C October 2006

I have used ideas from my Action Research project in my teaching. I have restructured my EYN block. I have made open-ended activities a main feature to help students extend their understandings along with effective ability based grouping. Real life questions are used to give the lessons a more relevant meaning.

Teacher D October 2006

The Action Research project has impacted my planning, teaching and learning because I listen more to what my students want to learn as well equipping them with the knowledge of number, measurement, etc..

Teacher D October 2006

The content was appropriate as it took as step by step through the project which each teacher is expected to undertake this year. The project has enabled

us to look more closely at our teaching practises and make improvements to enhance the children's learning. We have taken on board many of the ideas observed and have started to implement some. Many more will be implemented next year when revising and preparing the *new curriculum.*

Prep Group October 2006

In summary, the action research project emerged as an excellent form of professional learning. It helped enhance professional learning scenarios that were already being completed in the school and encouraged teachers to take more responsibility for their professional learning. Most importantly, teachers became reflective practitioners and were able to have a more professional approach to their reflective practices in discussions with others.

4.7 Chapter Summary

In this chapter each professional learning scenario and the impact of that scenario on teaching and learning was discussed. Throughout the research it became evident that a very import key to the success of professional learning scenarios was ongoing support through meetings, resources, time and expertise given to the professional learning. The action research projects that emerged over the time of the research proved to be an extremely valuable way of ensuring professional learning was sustained.

CHAPTER FIVE

Conclusions

5.1 Introduction

The following chapter will reflect on the research questions posed in Chapter One and discuss a selection of strategies for implementing educational change through professional learning. These strategies will be based on research from the literature reviewed in this project and the evidence gained from the three professional learning scenarios and action research projects completed. Finally, a variety of recommendations for implementing educational reform through professional learning will be made.

5.1.2 Research Questions

The research questions were addressed throughout the research and as a part of the literature review and case study. The data collected and literature reviewed did not discretely match each specific question but overlapped, and could be aligned with the strategies for successful professional learning, which have been recognised as a part of the study.

In this chapter the questions will be considered in relation to the strategies for implementing educational change through professional learning. For the purpose of organisation each question will be briefly discussed and then reference will be made to the section in which further details relating to the strategy can be found.

Did the professional learning have an ongoing impact on the teacher's teaching and learning and how?

The professional learning scenarios that were most successful in having an ongoing impact were those in which;

- The teachers had input or initiated the change (Section 5.2.3).
- There was collaboration between teaching and leadership staff and across schools (Section 5.3.1).
- The teachers understood why the change was taking place and believed in the change processes (Section 5.3.3).
- Teachers were responsible for the change and had autonomy in the selection of teaching and learning process (Section 5.3.4).
- Teachers took part in or used the professional learning as part of an ongoing action research project (Section 5.4.1).
- There were effective resources such as time allocations for meetings and preparation, and financial support for time release and materials that might be needed (Section 5.5.1).
- There was ongoing support from recognised experts who challenged teachers to consider new ways of doing things that had immediate and direct benefits on their teaching practices (Section 5.5.2)

Was the teacher likely to share their new knowledge with other colleagues and in what context?

Teachers were more likely to share their knowledge from professional development and personal practice if;

- They were a part of a team in their professional learning context and were required to collaborate with their peers to contribute to a whole school approach. (Section 5.3.1)
- Teachers were given choice and autonomy in structuring opportunities for their professional growth. (Section 5.3.4)
- Teachers completed an action research project and were required to share their knowledge with others (Section 5.4.1.)
- Classroom demonstrations and excursions were a part of the professional learning. If teachers observed others they felt more comfortable and confident in sharing their ideas. (Section 5.4.2)
- Meeting times and times to share and discuss learning were a part of the strategic plan of professional learning. (Section 5.5.1)
- Support was given by peers and experts, so in turn teachers felt more willing to share their ideas. (Section 5.5.2)

Could the researcher make a distinct observation about the change in the teaching and learning practices teachers completed with their children?

The most distinctive and observable changes in teaching and learning practices took place when all strategies were implemented. Therefore for the most effective

educational change to take place through the professional learning policy should reflect all of the strategies discussed in Sections 5.2 to Section 5.5.

How much choice should teachers have in the direction and content of their professional learning?

The research showed that teachers were more inclined to implement change if they had contributed to the direction and content of their professional learning. Whilst it was important to follow State and Regional directives (Section 5.2.1) and policies formed by individual leadership teams (section 5.2.2), teachers were more disposed to implement change if they had been involved in the decision making process (Section 5.2.3). Furthermore, it was very important for teachers to have strong understanding and belief in the change process (Section 5.3.3) and this was often related to teachers being a part of the decision making process relating to professional learning.

Was it important that teachers' previous practice was valued and built upon as a part of the change?

The teachers were more inclined to adapt to change if the professional learning sessions acknowledged their previous learning. This was mainly evident through teachers' responses to the style and content of professional development sessions. Teachers shared that they appreciated when a presenter demonstrated consideration of previous understanding of teaching and learning practices. (Section 5.3.2)

Was it important that teachers worked in teams to implement change as apart of their professional learning or were they more effective as individuals?

Teachers worked much more effectively when collaborating on a professional learning project than when they worked as individuals. When teachers were working towards a common goal in groups, there was more evidence of effective change. These groups could be flexible and span year levels as well as be focussed on one year level. (Section 5.3.1) This was also apparent when teachers had the opportunity to work in teams for action research projects (Section 5.4.1).

Did the style, format and content (power point, discussions etc) of professional learning impact on its effectiveness?

Teachers commented that they preferred a variety of presentation strategies outlined in Section 5.3.2. It was most evident that having a range of styles, formats and content as well as presenters, rather than focusing on one individual strategy, ensured more effective change.

Was it important to include theory in presentation or did the teachers feel overwhelmed by theory?

Teachers felt it was important to introduce educational theory, especially if it was legitimately tried and tested. (Section 5.3.2) They felt that theory needed to be presented alongside practical examples and strategies so that they had a sound rationale for their actions.

Was it important who the presenter of professional learning was? Was professional learning more effective if delivered by an outside "expert" or a fellow teacher?

Teachers enjoyed having a balance between outside "experts" presenting professional learning and professional development sessions and classroom demonstrations and excursions provided by their peers (Section 5.3.2). It became very evident that a major part of the professional learning process were the observations (Section 5.4.2) collaboration, sharing and discussions that took place as an evolving part of professional learning (Section 5.3.1 and 5.5.2). Learning from peers through partaking in action research projects (Section 5.4.1) also emerged as an effective form of professional learning. Therefore, whist teachers stated that they enjoyed a balance between presentations by outside "experts" and their peers, they also said that they learnt much more from their peers whilst being involved in a collaborative aspect of professional learning on an ongoing basis.

5.2 Educational reform – Who decides on the change?

An important question in educational reform is who decides on what needs to be changed? Who makes the policies and decides on the strategies to employ changes in educational curriculum and teaching and learning across schools?

There are three very important groups to be considered when implementing educational change. This is discussed in Chapter 2 with regard to Fullan's (2005) Tri Level Development of Change which was modified to be inclusive of teachers as change agents.

Accordingly, there are three significant groups to be considered when developing educational change and policy;

1. State and Regional Departments
2. Individual School's Leadership Teams
3. Teachers

All three of the above groups have an important part to play in successful educational reform and their suggested guidelines and principles for change should be taken into account when planning professional learning.

5.2.1 State and Regional Departments

It is important to recognise State and Regional Departments for their part in creating policies in educational change. These departments have the resources to make decisions about what they deem to be educationally important in their jurisdictions and in wider educational settings. They have the expertise and assets to be able to make the decisions and allocate resources in order to ensure the quality of education and whether it is appropriate given the social conditions in which they exists.

5.2.2 Individual School Leadership Teams

At an individual school level, leadership teams are very committed to utilising resources and expertise to create strategic plans in educational reform that are best suited to the individual context and educational environment. They have a superior understanding of the learning environment in which change is being implemented and the needs of the stakeholders, these being students, teachers, administrators and the wider community.

They have an understanding of the needs of the students and what goals and plans will best suit their specific educational needs. The team knows the expertise of the teaching staff and what types of knowledge has been previously gained, where there has been success in educational change and professional learning in the past, and the culture of the teaching staff. They are also aware of the expectations from the wider community of the schools' educational outcomes.

Individual schools' leadership teams are able to make strategic decisions about where to allocate funding and who will be the managers of change. They can refer to strategic planning documents and indicators such as state wide testing results, student, teacher and parent surveys, and students' educational outcomes to make effective decisions that take into account the individual schools' context.

Leadership teams are also in direct contact with teachers, students, parents and the wider community and therefore need to be transparent in their decision making and are more accountable.

5.2.3 Teachers

Teachers are the change agents and the "front line" of educational change and reform. It is extremely important to listen to teachers' opinions and ideas about educational change. It is also important that teachers are included in the decision making process about educational reform. Teachers are often overlooked in the change process and this is the most prevalent indicator in unproductive change. What has been highlighted in this study is that unless teachers can see the immediate benefits of the initiative, they feel that time constraints limit their capacity to be innovative.

Halsall (1994) advocates the inclusion of teachers in the decision making process. He believes in a 'bottom up" approach to change where teachers are a leading influence in policy creation relating to change. If teachers are a part of the decision making process they have a greater confidence and belief in the policies and a better understanding of why policies are being implemented

5.3 Educational Change

5.3.1 Collaboration in Educational Change

Partnerships and collaboration are considered as being extremely important in creating effective educational reform. The importance of collaboration between all interested parties in educational change, being state and regional departments, school

based leadership teams and teachers, is indisputable. Cuban (1998) also examines the significance of collaboration between 'policy makers' and 'practitioners' in creating effective change. He believes that a joint understanding between policy makers and practitioners is very important and that the criteria in which judgements are made to decide on policies need to be clear and relevant to all involved.

Halsall (1994) discusses the importance of a collective commitment toward educational change in which all teachers are education managers in the decision making process. He is an advocate of a "bottom up" rather than "top down" approach to change.

Not only is it vital to consider collaboration between all levels of educational systems when introducing change, it is also important to recognise collaboration between practitioners making the change. Richardson (1998) believes that teachers must work together towards a common goal for utmost improvement to be achieved through professional learning. Teachers, especially when given the opportunity to be responsible for their own professional learning, need to ensure they are working towards a common goal that gains support and momentum, rather than individual pursuits that may lose passion and energy. A whole school approach that appreciates individual needs is paramount to success.

Teachers in the research also commented that working in a team empowered them to feel more confident in their professional learning. They felt that teamwork meant that they were constantly improving and reflection on their planning, teaching and

learning and assessment. Teachers were involved in reflection and professional discussions about practice.

5.3.2 Styles and Content of Professional Development

Three forms of professional learning were investigated in the study along with the investigation of professional development styles. Professional Development sessions presented by peers, outside experts and classrooms demonstrations were all initiated and followed up, with each teacher choosing an action research project for their own personal practice.

Cook (1997) suggests that successful professional development sessions are well-planned, give teachers time and resources to implement goals and take into account the long-term goals of the school. The professional development should also embrace and support the previous knowledge of the staff involved in the professional development.

The teaching staff involved in professional development indicated that they felt that sessions that used the following strategies were the most effective professional development presentations. Presentation strategies that were effective;

- Introduced and used well-supported and legitimately tried and tested theories without “bombarding” teachers with unknown information.
- Used practical examples and reflections of personal practice.

- Included demonstrations and modelling of practices to give teachers an appreciation and confidence in strategies.
- Presented a variety of strategies that could be practised immediately.
- Had realistic outcomes that were relevant to the current educational context.
- Appreciated previous practice, current knowledge and teacher's beliefs.
- Were relevant to the teacher's current educational environments.
- Had a presenter who was personable and obviously passionate about the topic or strategy being addressed.

5.3.3 Practitioners Understanding and Belief of the Change Process

Teachers implementing change and taking part in a professional learning process must have a deep understanding and belief in the change process. Cole (1994) debated that teachers need not only have an understanding of 'what' the new policies and changes are, but 'how' and 'why' change is taking place. He believes that this understanding is paramount to effective change and teachers must be reflective decision makers in a process that is transparent to all involved.

Richardson (1998) advocates that teachers only initiate change when they believe in the policies and strategies being introduced. 'Voluntary change', where teachers choose to take place in the change because they understand and believe in it, is an effective way of ensuring better change and professional learning outcomes.

5.3.4 Teacher Responsibility and Autonomy

Professional learning where the practitioner makes the choice and takes responsibility for the planning, acting, and their personal professional growth, rather than simply partaking in training sessions outside of the educational environment, is defined by McKenzie (2001) as adult learning. McKenzie (2001) advocates adult learning as an effective form of professional learning in implementing change with a much higher success rate than traditional forms of learning such as external training session.

Richardson (1998) is also a supporter of such change and suggests in her Reflective, Collaboration Model that the most effective forms of change are through processes that are ongoing and developed by teachers themselves. The effectiveness of change can be successfully evaluated by observing the manner in which teachers articulate and take ownership for the change. In this case, teachers couple collaboration with other teachers and teams with self-direction and autonomy to make the most valuable advances in their personal professional learning processes.

5.4 Observations of Practice

5.4.1 Action Research

Many of the interviews responses to surveys indicated that the major influence on teachers' professional learning and in implementing curriculum change was the use of action research. In every professional learning scenario those teachers who

approached the professional learning alongside their action research project had the most success in implementing change.

Teachers in this study stated that they enjoyed being able to choose the focus of their research and the flexibility of the projects. It was however also very important to teachers that there were clear parameters and expectations of the projects so they could be accountable for their professional learning.

Action Research proved to be an outstanding success in professional learning in the researcher's school. It has also been recognised through the Victorian Education Department as an effective form of professional learning. The Victorian Education Department has endorsed and supported action research through the Research @Work (2005) project, PoLT professional learning and initiatives currently being implemented in schools and the Teachers Professional Leave projects funded to assist teachers and schools in implementing change.

5.4.2 Demonstrations and Excursions

The research also found that a highlight of the professional learning for the period of the research was the opportunity teachers had to go on an excursion to visit another school. Teachers felt they gained much knowledge from observing areas of interest in a similar educational setting, being able to discuss with other practitioners strengths and weaknesses of programs and being able to see programs in action. Many teachers

commented that this was the most significant factor for enhancing change in their professional learning and in action research projects.

Teachers also felt that incidental opportunities to observe demonstrations of teaching practice was an excellent form of professional learning and enhanced their understandings. The class demonstration in which the presenter demonstrated teaching strategies to a class, whist their classroom teacher observed and participated in the lesson, was a great success.

McKenzie (2001) supports the use of demonstrations and excursions in professional learning and believes it is pivotal in the success of programs.

5.5.1 Resources

As with almost every instance of education, and in every work place, the careful use of resources are imperative to the success of any project. Likewise in this research project it was very evident that professional learning was dependent on the availability of resources to the projects.

Through interviews with teachers, surveys and observations of practices it became evident that there needed to be able resources in;

- Time. Teachers needed time to consolidate their understanding, plan and evaluate strategies. Teachers commented that their time was very precious and the prevision of time was crucial to the success of projects. They also required time to effectively reflect and evaluate their professional learning projects.

- Meeting Time. Teachers needed time structured to meet with other teachers to collaborate on projects. This was not only within the school but with other teachers, the wider community and outside agencies.
- Funding. Teachers needed to have access to financial resources to fund their projects. Funds were required to allow teachers to purchase equipment such as ICT programs and learning resources, complete activities and create resources through photocopying, printing and laminating.
- Professional Development and Training. The more teachers learnt and reflected on their personal practice, the more essential it was for them to be able to source and attend professional development. This could be in the form of traditional off-campus training, online internet research or training or being able to observe others professional practice.

A predicament with the allocation of resources is that they had been previously budgeted for and due to financial constraints it was very difficult to free resources. Many teachers felt it would have been beneficial to have flexibility to utilise financial resources to benefit their personal projects. Teachers would have appreciated the responsibility to make decisions about how best to spend financial resources to support their personal professional learning.

5.5.2 Ongoing Support, Challenge and Reflective Practice

Teachers felt that an imperative part of the success of professional learning was an ongoing approach. Those professional learning scenarios that required ongoing

assistance and mandated planning and evaluation were most successful. If teachers were left to follow professional learning as individuals without a structured goal and accountability, they were more likely to lose focus and their professional learning would slowly diminish. Those that were supported with ongoing assistance, meeting structures, and were required to report back and share learning with peers, along with being accountable to the leadership team, were the most successful.

Teachers also appeared to flourish in their professional learning journeys when their ideas and practises were challenged and they were forced to reflect on their professional practice.

5.6 Recommendations

In analysing the data gathered throughout the period of the research and in considering literature examined, the following recommendations could be made to a school when deciding how to implement educational change through professional learning scenarios.

Recommendations for effective change through professional learning;

- School based **decision making** needs to consider viewpoints of State and Regional Departments, school leadership teams and the teachers involved in the educational change.

- Well-planned and effective **presentation styles and format of professional development** should include theory, practical examples, demonstrations, realistic outcomes, be relevant and appreciate teachers' beliefs.
- Ensure there is a strong **understanding and belief** by practitioners in the change process whereby they realise not only 'what' is involved in change but also 'how' and 'why'. In this way the change is voluntary rather than mandated and will be more effective.
- Teachers are **responsible and autonomous** for their professional learning and the change processes inherent to it. They will decide what aspects of new initiatives will be incorporated into their work and how this will occur. Those initiatives which add to their workload will be deemed as irrelevant and only adhered to in a tokenistic manner for reporting purposes
- Employing **action research projects** in which teachers are responsible for professional learning and have flexibility alongside parameters for accountability can be a productive way to focus on new initiatives for a sustainable period of time.
- **Observation** of effective teaching practices in other education environments or **demonstrations** of specific teaching strategies, can give teachers new incentive to try out new initiatives as they can see the practical benefits of their implementation.
- The provision of **resources** in the form of money, time, the organization of meetings and professional development sessions needs to be carefully planned. Teachers should be responsible for, and have choice about the use of the resources.

- Professional Learning where **assistance, challenge and reflection is ongoing** and encouraged. Professional Learning where teachers are accountable for outcomes are usually most effective.

In summary, like with so many things in our profession, there is no one clear formula for implementing educational change into a school through professional learning. However, we need to be aware of the myriad of options available so that effective school based decisions can be made that suit the particular needs of that community of practitioners. Many diverse viewpoints must be considered as all schools are different. A better understanding of the needs and beliefs of all stakeholders is an essential part of effective educational change.

> *To me learning is like a river. It starts as a trickle of a stream in the mountains. As it goes on it gathers speed and power and water and then, as it draws near the sea, it widens and deepens and slows down like learning does when we get older, but still has enormous power.*
>
> *Betts cited by Atkin (2001) p.8*

Professional learning is ongoing, and like the course of a river constitutes a long journey across the time span of a teacher's career. Education systems increasingly demand more of teachers as professionals as the world becomes more complex and the skills needed to become useful citizens increase exponentially. Teachers are also

increasingly noting that they feel pressured to enact a crowded curriculum in the context of diminishing resources. This can often lead to frustration and disenchantment with their professional responsibilities. In contrast, when a new initiative is seen to be beneficial in terms of improving the learning of the students in their classes, they embrace change and instigate it immediately. The ways in which educational authorities do this will be important for the success or otherwise of the innovation. One way to ensure such success is to directly involve teachers in the process of decision-making and the other is to provide resources for ongoing professional learning which is school based but provides contexts for broader experiences so that teachers are enabled to do their important work more effectively.

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APPENDICES

APPENDIX ONE – FULLAN'S EIGHT ELEMNTS OF CHANGE SUMMARISED

1. Moral Purpose
Moral purpose is about improving all student outcomes, raising the bar and narrowing the gap, it is about improvement for the good of the greater community.

2. Get the basics right
This means improving the basics being, literacy and numeracy in elementary and high schools.

3. Communicate the big picture while providing opportunities to influence it
Communicate the bigger picture, listen to responses respond to feedback.

4. Intelligent accountability
Being accountable and being transparent in the use of data and using data to create strategies for learning.

5. Incentives collaboration and lateral capacity building
Building relationships and setting goals with systems beyond the school. This may be the region, state or country.

6. The long lever of leadership
Promotion of good leadership across the system through providing mentors and coaches in leadership.

7. Design every policy whatever the purpose to build capacity too
Ensuring the policy, whether short or long term, has the resources to sustain it.

8. Grow the financial investment in education
Investing smarter so that success from current investment can be used to fund future needs.

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APPENDIX TWO – VELS Levels and Student Grade Levels

The following information is adapted from the Victorian Department of Education & Training's Website. It correlates VELS levels with traditional grade levels and summarises expected teaching and learning at each level.

Levels 1 and 2 (approximately Prep to Year 2)

The foundation knowledge, skills and behaviours that children must develop in Levels 1 and 2 to become successful learners at school are:

- English (reading, writing, speaking and listening)
- Mathematics
- the arts (creating and making)
- interpersonal development (with an emphasis on socialisation)
- health and physical education (movement and physical activity)

Level 3 (approximately Years 3 to 4)

At Level 3, students begin to respond to information, ideas and beliefs from contexts beyond their immediate experience. Consistent with this development, additional standards across a range of domains in the three strands are introduced.

Students are also expected to achieve standards in science, the humanities, thinking processes, design, creativity and technology, personal learning, and civics and citizenship.

Level 4 (approximately Years 5 to 6)

Standards are introduced in the remaining domains of Languages other than English (LOTE), History, Geography, Economics and Communication. Students at this level should be able to achieve the full range of knowledge and skills required by the Standards.

(http://www.education.vic.gov.au/aboutschool/stages/default.htm)

APPENDIX THREE – School's Annual Implementation Plan

Part 1 – Goals and Targets

School Goals (from School Charter)	School Targets(from School Charter)
• **Student Achievement:** to ensure that all students are challenged and supported by teaching and learning programs and strategies to achieve outcomes appropriate to their abilities and levels of schooling. • **Curriculum provision:** to provide programs that enable the development of all students across all KLA's. • **Environment:** to provide a safe, attractive, caring and positive environment within a culture which values success for all, pride, respect, acceptance and self-esteem.	• **Student Achievement:** to be at or above Like School Group (LSG) and State Means in English and Mathematics, and increase the percentage of students at or above their CSF levels in English and Mathematics at Years Prep, 2, 4 and 6. • **Curriculum Provision:** to increase parent response to Student Reporting variable of the Parent Opinion Survey to be above State Mean. • **Environment:** to increase the percentage of students agreeing and strongly agreeing with the statements relating to Connectedness to School in the Attitudes to School survey.

Part 2 – 2006 Annual Implementation Plan

Key Improvement Strategies and Significant Projects	What the activities and programs required to progress the key improvement strategies	How the people, budget, equipment, IT, learning time, learning space	Who the individuals or teams responsible for implementation	When the date, week, month or term for completion	Achievement milestones the practice measures or lead indicators that describe success
Teaching and Learning, especially Literacy and Numeracy.	• Participation in Frankston Federation of School's Innovation and Excellence initiative. • Continue with regular Professional Learning Team meetings. • PoLT training for 2 staff members. • Reestablishment of Curriculum teams involving all staff members. • Visits to other schools to observe and identify best practice in Literacy and Numeracy.	• I&E funding • These are scheduled fortnightly • CRT release provided by Innovations & Excellence cluster budget • All teachers to be allocated to a curriculum team and a leader appointed to each • Allocated Curriculum Day • Use resources such as the SEO & Regional Office for contacts at schools which have shown improvements in these areas .	• Level 4 team • Area Leaders • Curriculum and Assessment & Reporting coordinator • The Curriculum Coordinator will meet with each of these leaders. • PD coordinator	• Monthly meetings by the I&E coordinators and by the Federation principals. • Fortnightly meetings • Beginning Term 2 • Fortnightly meetings throughout the year • Term 3	• Achievement of the measures outlined in the I&E Strategic Plan document. • Improvement in Student Achievement levels in Literacy & Numeracy. • Demonstrated PoLT measures by teachers in classroom practice via observation, questionnaires & the Annual Review. • Agenda & minutes from these meetings demonstrating adherence to PoLT strategies. • Reports from the visits to staff meeting • Evidence of change of practice because of these visits.

Key Improvement Strategies and Significant Projects	What the activities and programs required to progress the key improvement strategies	How the people, budget, equipment, IT, learning time, learning space	Who the individuals or teams responsible for implementation	When the date, week, month or term for completion	Achievement milestones the practice measures or lead indicators that describe success
	• Continued implementation of VELS, including the incorporation of VELS into planning and assessment documents.	• Teaching teams to develop units on planning days using VELS proforma developed in 2006. • Involvement of consultants from SMR to work with teachers in the classrooms & in planning times. • Adherence by the Level coordinators to the specific aims in numeracy & literacy as outlined in the 'Things to be Accomplished 2006' document	• Level coordinators • Curriculum leader in conjunction with the Level coordinators • Level Leaders • Assistant Principal & Principal through the Level co-ordinators meetings and the Annual Review Process	• Planning day each term plus level meetings each fortnight • On planning days each term • Term 2 & 3 • Fortnightly (level meetings) & at Annual Review meetings terms 2 & 4	• AIM results, benchmark data, teacher assessments • AIM results, teacher assessments & benchmark data
To improve parent perception of Student Reporting	• SMART program • New DET Report Card	• Funds allocated to the SMART reporting system to bring it into line with the new State Report Card	• Assessment & Reporting coordinator in conjunction with the Assistant principal.	• Term 2	• Parent survey • Anecdotal feedback through parent/teacher conferences

Key Improvement Strategies and Significant Projects	What the activities and programs required to progress the key improvement strategies	How the people, budget, equipment, IT, learning time, learning space	Who the individuals or teams responsible for implementation	When the date, week, month or term for completion	Achievement milestones the practice measures or lead indicators that describe success
	• Improve moderation within all levels	• Have Overport appointed as a intake school for the new reporting system. • Continue staff PD in this area and the development of CATS and vertical & horizontal moderation systems	• Principal • Assessment & Reporting coordinator	• Term 1 • Terms 2, 3 & 4	
To improve Student Connectedness to School.	• Continued development of the 'You Can Do It' program • Development of the Level 4 Reflections program throughout the school. • Greater responsibility to senior students, House Captains. • Development of values system in each classroom. • Expansion of the extra-curricular program school wide	• Time allocated in the PD schedule (internal) • Time allocated in the PD schedule (internal) • PD leading on from the development of staff values PD 2005 • Timetable additional rooms to be used for lunchtime & after-school sessions	• Welfare coordinator • You Can Do It coordinator • PD coordinator in conjunction with the Level 4 teachers. • Level 4 teachers, SRC coordinator & principal • Class teachers • Appointment of a extra-curricular co-ordinator	• Throughout the year • Term 2 • Throughout the year • Term 1 • Term 1 to run through the year	• Attitudes to School Attitudes to School Survey results • Classroom teacher observation
Absence data	• Improvement of rates that have increased above the state mean	• More stringent monitoring of absences	• Prin, AP's & classroom teachers	• Each term	• Decline in absence rates

Key Improvement Strategies and Significant Projects	What the activities and programs required to progress the key improvement strategies	How the people, budget, equipment, IT, learning time, learning space	Who the individuals or teams responsible for implementation	When the date, week, month or term for completion	Achievement milestones the practice measures or lead indicators that describe success

APPENDIX FOUR – Principles of Learning and Teaching (PoLT)

The Principles of Learning and Teaching P-12

Students learn best when:

1. The learning environment is supportive and productive.
   In learning environments that reflect this principle the teacher:
   - 1.1 builds positive relationships through knowing and valuing each student
   - 1.2 promotes a culture of value and respect for individuals and their communities
   - 1.3 uses strategies that promote students' self-confidence and willingness to take risks with their learning
   - 1.4 ensures each student experiences success through structured support, the valuing of effort, and recognition of their work.

2. The learning environment promotes independence, interdependence and self motivation.
   In learning environments that reflect this principle the teacher:
   - 2.1 encourages and supports students to take responsibility for their learning
   - 2.2 uses strategies that build skills of productive collaboration.

3. Students' needs, backgrounds, perspectives and interests are reflected in the learning program.
   In learning environments that reflect this principle the teacher:
   - 3.1 uses strategies that are flexible and responsive to the values, needs and interests of individual students
   - 3.2 uses a range of strategies that support the different ways of thinking and learning
   - 3.3 builds on students' prior experiences, knowledge and skills
   - 3.4 capitalises on students' experience of a technology rich world.

4. Students are challenged and supported to develop deep levels of thinking and application.
   In learning environments that reflect this principle the teacher:
   - 4.1 plans sequences to promote sustained learning that builds over time and emphasises connections between ideas

- 4.2 promotes substantive discussion of ideas
- 4.3 emphasises the quality of learning with high expectations of achievement
- 4.4 uses strategies that challenge and support students to question and reflect
- 4.5 uses strategies to develop investigating and problem solving skills
- 4.6 uses strategies to foster imagination and creativity.

5. Assessment practices are an integral part of teaching and learning.
   In learning environments that reflect this principle the teacher:
   - 5.1 designs assessment practices that reflect the full range of learning program objectives
   - 5.2 ensures that students receive frequent constructive feedback that supports further learning
   - 5.3 makes assessment criteria explicit
   - 5.4 uses assessment practices that encourage reflection and self assessment
   - 5.5 uses evidence from assessment to inform planning and teaching.

6. Learning connects strongly with communities and practice beyond the classroom.
   In learning environments that reflect this principle the teacher:
   - 6.1 supports students to engage with contemporary knowledge and practice
   - 6.2 plans for students to interact with local and broader communities and community practices
   - 6.3 uses technologies in ways that reflect professional and community practices.

(http://www.sofweb.vic.edu.au/blueprint/fs1/polt/principles.htm**)**

APPENDIX FIVE – Professional Learning Survey

Overport Primary School – Professional Development Feedback June 2006

Over the past year there have been a variety of different forms of Professional Development at Overport.

The following forms of Professional Learning have been utilised to present new ideas.
Please comment on the following Professional Development Sessions and how effective they were to your teaching and learning.
If you did not attend the Professional Learning Session please leave it blank or share ideas you may have heard from others.
All comments will be confidential and teachers will not be named:

Class Demonstration - Kahootz and Microworlds

1. *How did you feel about the style of Professional Development presentation?*

2. *Did you feel that the content and knowledge was appropriate to your current and future curriculum? Why?*

3. *Have you used ideas or theories to enhance your teaching and learning program? How?*

4. *Tell me more about the ideas and Professional Development and its impact on your planning, teaching and learning, and assessment?*

Whole School Professional Development (with an expert) - Spelling PD

1. *How did you feel about the style of Professional Development presentation?*

2. *Did you feel that the content and knowledge was appropriate to your current and future curriculum? Why?*

3. *Have you used ideas or theories to enhance your teaching and learning program? How?*

4. *Tell me more about the ideas and Professional Development and it's impact on your planning, teaching and learning and assessment?*

Whole School Staff Professional Learning (delivered by a peer) - Early Years Maths - After the Interview PD Sessions

1. *How did you feel about the style of Professional Development presentation?*

2. *Did you feel that the content and knowledge was appropriate to your current and future curriculum? Why?*

3. *Have you used ideas or theories to enhance your teaching and learning program? How?*

4. *Tell me more about the ideas and Professional Development and it's impact on your planning, teaching and learning and assessment?*

Action Research

1. *How did you feel about the style of Professional Development presentation?*

2. *Did you feel that the content and knowledge was appropriate to your current and future curriculum? Why?*

3. *Have you used ideas or theories to enhance your teaching and learning program? How?*

4. *Tell me more about the ideas and Professional Development and it's impact on your planning, teaching and learning and assessment?*

Summary

Compare the Professional Learning Styles.

- Class demonstrations
- Whole School Professional Development (with an expert)
- Whole School Staff Professional Learning (delivered by a peer)
- Action Research

    1. *Which do you feel are most effective? Why?*

    2. *Which do you feel are least effective? Why?*

    3. *Which styles (including others than already stated) of Professional Development do you feel are effective in improving school goals and teaching and learning? Why?*

APPENDIX SIX – Early Years Numeracy Interview Spreadsheet Assessment Tool and Relevant Growth Points

Jeremy	Jackson	James	Freyer	Francis	Evan	Elliot	Emily	Daniel	Connor	Bridget	Amanda	Early Years Numeracy Interview Indicators	Points of Growth
												Know some numbers but has difficulty stating then in sequence above 10	C 0
												Rote count the number sequence to 10 but are unable to reliably count a collection of that size	
												Can conserve number	
												Read and record some ingle digit numbers	PV 0
												Recognise simple patterns	
												Can place objects in order 1st to 5th	
												Count a collection of around 10 objects	
												Recognises models of numbers from 0 – 10	
												Compare two small collections	AS0
												Know numbers before and after a given number to 10	
												Rote count the number sequence to at least 20	C1
												Confidently count collections of around 20	C2
												Read, record and interpret single digit numbers	PV1
												Count to find the total of two collections	AS1
												Find the total in a multiple group situation referring to individual items only	MD1
												Count on from one number to find the total of two collections	AS2
												Choose appropriately from strategies including count back, count down to and count up from in subtraction situations	AS3
												Count by 1s forwards/ backwards from various starting points between 1 and 100	C3
												Know numbers before and after a given number up to 100	
												Read, record and interpret and order two digit numbers	PV2
												Add and subtract single digit numbers using basic facts and strategies	
												Count from 0 by 2s, 5s and 10s to a given target	C4
												Count from any two digit number by 10	
												In addition and subtraction problems, use strategies such as doubles, commutatively, adding 10, tens facts and other known facts	PV3
												Model all objects to solve multiplicative and sharing situations	AS4
												Solve multiplication and division problems where objects are not all modelled or perceived.	MD2
												Given a non zero starting point can count by 2s, 5s and 10s to a given target	C5

												Read, record, interpret and order numbers beyond 1000	PV4
												In addition or subtraction problems, use strategies such as doubles adding 9, build to next 10, fact families and initiative strategies	AS5
												Can solve a range of multiplication problems using strategies such as commutatively, skip counting and building up known facts	MD4
												Can solve a range of division problems using strategies such as fact families and building up know facts	MD5
												Count from a non-zero starting point by any single digit number	C6
												Can apply counting skills in practical tasks	C6
												Can extend and apply knowledge of place value in solving problems	PV5
												Given a range of tasks (Including multi digit numbers) can solve them mentally using the appropriate strategies and a clear understanding of the concepts	AS6
												Solve a range of multiplication and division problems (including multi digit numbers) in practical contexts	MD6
C = Counting PV = Place value AS = Addition and Subtraction MD = Multiplication and Division													

A. Counting

0. *Not yet able to state the sequence of number names to 20.*
1. *Rote counts the number sequence to at least 20, but is not yet able to reliably count a collection of that size.*
2. *Confidently counts a collection of around 20 objects.*
3. *Counts forwards and backwards from various starting points between 1 and 100; knows numbers before and after a given number.*
4. *Can count from 0 by 2s, 5s, and 10s to a given target.*
5. *Given a non-zero starting point, can count by 2s, 5s, and 10s to a given target.*
6. *Can count from a non-zero starting point by any single digit number, and can apply counting skills in practical tasks.*

0	1	2	3	4	5	6

D. Strategies for Multiplication and Division

0. *Not yet able to create and count the total of several small groups.*
1. *To find the total in a multiple group situation, refers to individual items only.*
2. *Models all objects to solve multiplicative and sharing situations.*
3. *Solves multiplication and division problems where objects are not all modelled or perceived.*
4. *Can solve a range of multiplication problems using strategies such as commutativity, skip counting and building up from known facts.*
5. *Can solve a range of division problems using strategies such as fact families and building up from known facts.*
6. *Can solve a range of multiplication and division problems (including multi-digit numbers) in practical contexts.*

0	1	2	3	4	5	6

APPENDIX SEVEN – Victorian Essential Learning Standards in ICT Levels 1 – 4

Information Communication Technology VELS Standards

Level One

At Level One students:

- learn the safe use of ICT tools:
    - leaving electrical connections alone,
    - sitting upright in front of a computer,
    - handling storage devices such as disks and memory sticks carefully.
- learn the correct terms to name ICT equipment.
- become familiar with common icons on the computer desktop.
- develop hand–eye coordination through using a mouse to control the pointer on the screen.
- work with different types of data such as text, numbers and images, to create simple information products and share their ideas. (with assistance)
- develop their navigation skills by responding to stimulus in multimedia resources that develop literacy and numeracy skills.
- find and compare examples of ICT equipment at home.
- investigate the purpose of ICT symbols and icons.

Level Two

At Level 2 students

- manipulate text, images and numeric data to create simple information products for specific audiences.
- make simple formatting changes to improve the appearance of their information products.
- retrieve files and save new files using a naming system that is meaningful to them.
- compose simple electronic messages to known recipients and send them successfully.
- use ICT to locate and retrieve relevant information from a variety of sources. (with some assistance)

Level Three

ICT for visualising thinking

At Level 3 students:

- use ICT tools to list ideas, order them into logical sequences, and identify relationships between them.
- capture these thinking strategies by saving the visual evidence to a folder, retrieving the files and editing them for use in new, but similar, situations.
- explain how these strategies can be used for different problems or situations.

ICT for creating

At Level 3 students:

- organise their files into folders classified in a way that is meaningful to them.
- explain the purpose of passwords for accessing files stored on networks.
- use tools to create text-based products designed to communicate information to a particular audience.
- use ICT tools to capture and save images. (with minimal assistance)
- use simple editing functions to manipulate the images for use in their products.

- create multimedia products to assist in problem solving across the curriculum.
- carry out ongoing modifications to their work to correct the spelling of frequently used words and to rectify simple formatting errors.
- evaluate the final product and describe how well it meets its purpose.
- load or access, navigate and interact with multimedia resources to assist their learning across the curriculum and explain the difference in the way these multimedia resources help their learning compared with non-electronic resources.

ICT for communicating

At Level 3 students:

- initiate and compose email messages, access received emails, save them in a folder and compose and send a reply.
- locate information on an intranet, and use a search engine and limited key words to locate information from websites.

Level Four

ICT for visualising thinking

At Level 4 students:

- apply ICT tools and techniques to explore processes, patterns and cause-and-effect relationships, and to test hypotheses in a range of new situations.
- explain how these strategies help them to understand concepts and relationships.

ICT for creating

At Level 4 students:

- independently use a range of skills, procedures and functions to process different data types and produce accurate and suitably formatted products to suit different purposes and audiences.
- select relevant techniques for minimising the time taken to process data, and apply conventions and techniques that improve the appearance of the finished product.
- modify products on an ongoing basis in order to improve meaning and judge their products against agreed criteria.
- create and maintain an up-to-date, logically structured bank of digital evidence of their learning.

ICT for communicating

At Level 4 students:

- use ICT to exchange meaningful messages with collaborators and store the messages in organised folders to assist in reflection on their communication skills.
- successfully upload their work to a protected public online space.
- explain how ICT assists them in acquiring advice and sharing knowledge.

APPENDIX EIGHT – School's Spelling Continuum

The teaching of spelling should be integrated into all areas of the curriculum. It should be taught in context and be purposeful, building on the known and working towards the unknown. It needs to be taught in a supportive environment.

Level One

Letter Knowledge	Phonological Awareness	High Frequency Words	Visual Strategy	Meaning/ Word Structure Strategy	Assessment Strategies
Write 26 upper and lower case letters	Hearing and recording most of the sounds they hear in words, including some blends such as 'th,' 'sh,' 'ch.'	Write own name	Build on from the known to the unknown through word families, eg. the, they, them.	Building word families eg. play, plays, playing.	- At a glance. - Weekly work samples - SEA test and CAP. - Anecdotal notes - Let's Begin program - Guided Reading kit/strategies - Key Words - Letter ID
Recognise letters have a variety of sounds in words.	Record sounds in sequence when spelling words.	Create an awareness of high frequency words and be able to write some correctly.	Building words where rime has the same spelling pattern: eg w-ent, s-ent, t-ent.		

Level Two

Letter Knowledge	Phonological Awareness	High Frequency Words	Visual Strategy	Meaning/ Word Strategy	Assessment Strategies
Confident recording of letters and sounds	Being able to hear and record sounds in words.	Develop a bank of high frequency words based on the 100/200 most used	Use strategies such as Look, Say, Cover, Write, Check to	Building word families eg. play, plays, playing.	- Observation Survey. - First 100 words test.

		words.	learn the spelling of difficult words.		- Weekly Spelling test. - Spelling book activities. - SA Spelling test. - At a Glance. - Work Samples.
	Exploring sound groupings and blends. Sh, th, ch, ck, a-e, i-e, o-e, u-e, ee, oo, ow, er, ea, ay, ar, ear, or, air, oy, oi, aw, ou, ie	Days of the week, months, numbers.	Building words where rime has the same spelling pattern:eg w-ent, s-ent, t-ent.	Common plural rules such as adding es, changing 'y' to 'i' and adding 'es'	
	Homophones, especially their, there, they're; to, too, two; which witch.	Topic specific words	Changing other letters to form new words, eg. hit, hot, hat.	Simple contractions such as : I'm, he's, I'll, isn't, can't, don't, didn't.	
		Selecting and learning class high-frequency words from all curriculum areas plus words of choice.	Exploring common spelling patterns: oe, ir, ur, ough, aw, er, ui, oy, ey, ue, ei, iew, are, ear, ere, eir, our.	Using simple dictionaries. Exploring compound words.	

Level Three

Letter Knowledge	**Phonological Awareness**	**High Frequency Words**	**Visual Strategy**	**Meaning/ Word Strategy**	**Assessment Strategies**
Check letter sound relationships	Homophones, especially their, there, they're; to,	Review and establish 100/200 high frequency	Explore common spelling patterns: oe, ir, ur, ough, aw, er, ui,	Building word families: plays, played, player	- Spelling test of 200 high frequency words.

	too, two; which witch.	words.	oy, ey, ue, ei, iew, are, ear, ere, eir, our.	etc.	- Daily writing - At a glance - SA Spelling test - Work Samples
Check for correct letter formation.	Exploring sound groupings – ay, ear, or, air, oy, oi, aw, ou, ie.	Days of the week. Months of the year. Number words.	Explore words shapes as a tool for remembering how to spell a word correctly	Common plural rules such as adding ‘s’, adding ‘es’, changing ‘y’ to ‘i' and adding ‘es’.	
	Forming generalisations such as the most common sounds (see Developing Spelling Power – A Curriculum for Primary Schools.	Selecting and learning class high frequency words from all curriculum areas plus individual words of choice.	Mnemonics as a spelling tool.	Prefixes: un, re. Contractions: where’s, haven’t.	
	Word chunking and syllabification	Numbers. Maths words. Topic words. List words.	Use strategies such as Look, Say, Cover, Write, Check to learn the spelling of difficult words.	Using dictionaries. Investigating stronger words; using a thesaurus.	
				Some compound words.	

Level Four

	Phonological Awareness	**High Frequency Words**	**Visual Strategy**	**Meaning/ Word Strategy**	**Assessment Strategies**
	Revise word blends covered in 3/4	Selected Weekly/ term word banks related to the Integrated and maths Curriculum	Look, Say, Cover, Write, Check	Apostrophes To show when letters are missing (eg haven't) Ownership or possession; • For single nouns that end in an 's', add apostrophe and then another 's' (eg Ross's car) • For single nouns that do not end in a 's' s, add an apostrophe and then 's' (eg the cat's basket) • For plural nouns that end in 's', add the apostrophe after the word (eg the teachers' staff room) • For plural nouns that do not end in an 's', add the apostrophe and then 's' (eg the children's books)	- 100 word unit pre-test. - 10 word pre-test and post-test weekly - 50 word spelling CAT – beginning, middle and end of year. - "At a Glance" - 100 word unit post test. - Ongoing observation of class work.
			'eu' as in amateur 'eous' as in	Rules • 'ic' words	

			hideous ‘eigh’ as in weigh ‘eign’ as in foreign ‘ier’ as in fierce ‘io’ as in violence ‘ious’ as in serious ‘iour’ as in behaviour ‘ign’ as in malign ‘oe’ as in canoe ‘ous’ as in enormous ‘shion’ as in cushion ‘tion’ as in question ‘tious’ as in ambitious ‘ue’ as in glue ‘ui’ as in guide ‘ua’ guard	• ‘able’ • ‘our’ to ‘ou’ • ‘all’ and ‘well’ to ‘al’ and ‘wel’ • ‘full’ to ‘ful’ • No English words end in v or j	
				Word study • Homophones • Synonym • Suffixes and prefixes • Acronyms • Palindromes • Anagrams	•

APPENDIX NINE– School's Action Research Plan

ACTION RESEARCH PLAN
PRIMARY SCHOOL 2006

<table>
<tr><td colspan="2">Name:</td></tr>
<tr><td>PoLT Principle and Component:
(eg: 1.1 The teacher builds positive relationships through knowing a valuing children)</td><td>Research Focus:
(eg: To increase the use of incidental spelling mistakes in students weekly spelling lists)</td></tr>
<tr><td colspan="2">Desired Outcome:
(eg: to make spelling experiences and teaching more relevant to students learning, to increase individual students spelling achievement, to increase overall spelling targets)</td></tr>
<tr><td colspan="2">Anticipated Challenges
(eg: parent understanding, record keeping, timetable restraints)</td></tr>
<tr><td colspan="2">Anticipated Strategies
(eg class word bank, use of journals etc)</td></tr>
<tr><td colspan="2">Recourses
(this could include PD, mentoring, peer coaching, digital resources, texts, professional reading, school visits)</td></tr>
<tr><td>School Visit
Date 21st July
School (eg xxx Primary School)
Contact (eg Jen Bowden)</td><td>Anticipated Outcomes
(eg: to observe a spelling lesson in action and discuss methods used by teachers)</td></tr>
<tr><td>Peer Coaching
Date (Interview) (eg 20 August)
Date (Observation) (eg 22 August)
Peer (eg Deborah Madder)</td><td>Anticipated Outcomes
(eg: to observe if students are on task when completing peer testing and to make suggestions that may assist this lesson)</td></tr>
</table>

Summary of Research Findings Learning Team Meeting One: Learning Team Meeting Two: Learning Team Meeting Three:
Research Findings: (Summarise what you have discovered and a personal reflection. This may include suggestions for the future, planning implementation, resources etc)

Please attach any resources or documents you would like to discuss.

APPENDIX TEN – PoLT COMMONENT MAPPING Sample

PoLT Component Mapping

Teacher Questionnaire

Class this refers to _____ Learning area in question _____

For each question circle on the scale below where you believe your current practice stands, and asterisk (*) where you would like your practice to be within three years.

Keep in mind that 5 is not intended as the 'right answer'. Teachers may differ in the extent to which these aspects should form a major part of their effective practice.

Score description: 5 = To a great extent 3 = To some extent 1 = Not really

1 The learning environment is supportive and productive.

	5 4 3 2 1
1.1 Do you work to build a positive relationship with each student?	
1.2 Do you create a learning environment which promotes value and respect?	
1.3 Do you use explicit teaching strategies to support students to have confidence in themselves and take risks with their learning?	
1.4 Do you work to ensure each student experiences success through supporting and valuing their work?	

Note your current strengths in this Principle	Note aspects of this Principle you would like to work on

2 The learning environment promotes independence, interdependence and self-motivation.

	5 4 3 2 1
2.1 Do you encourage and support students to take responsibility for their learning?	
2.2 Do you use strategies to encourage and support students to collaborate?	

Note your current strengths in this Principle	Note aspects of this Principle you would like to work on

3 Students' needs, backgrounds, perspectives and interests are reflected in the learning program.

	5 4 3 2 1
3.1 Is your program flexible and responsive to the values, needs and interests of individual learners?	
3.2 Do you use teaching strategies that support students' different ways of thinking and learning?	
3.3 Do you plan your program to build on students' prior knowledge and skills?	
3.4 Do you capitalise on students' experience with contemporary technologies?	

(http://www.education.vic.gov.au/studentlearning/teachingprinciples/onlineresource/default.htm)