THE ROLE OF THE LEARNING TECHNOLOGY COORDINATOR IN THE PROFESSIONAL DEVELOPMENT OF TEACHERS AS THEY INTEGRATE LEARNING TECHNOLOGIES INTO CLASSROOM PRACTICE

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STATEMENT OF SOURCES

This thesis contains no material published elsewhere or extracted in whole or in part from a thesis by which I have qualified for or been awarded another degree or diploma. No other person's work has been used without due acknowledgement in the main text of the thesis. This thesis has not been submitted for the award of any degree or diploma in any other tertiary institution. All research procedures reported in the thesis received the approval of the relevant Ethics Committees where required.

M.M. O'Donnell

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ABSTRACT

This research study investigated the professional development of teachers as they integrate learning technologies into classroom practice. In particular, the study was concerned with the specific role of the learning technology coordinator in this professional development process.

The views of classroom teachers were sought concerning factors in their professional development which they found useful together with the relevance of the role of the learning technology coordinator. So too, the views of the learning technology coordinators and principals were sought regarding effective professional development as teachers integrate learning technologies into classroom practice. Two processes were used to ascertain these views. Focus groups and interviews were conducted at the LaTTiCE (Learning and Teaching Technologies in Catholic Education) and Navigator schools. The Navigator and LaTTiCE school were specially funded pilot schools for the integration of learning technologies into classrooms. These technology rich schools provided detailed data from a specific group of people. A survey was also sent to randomly selected primary schools in Melbourne to see if similar responses would be gained from the general population of schools less privileged in terms of learning technologies and the associated professional development.

Analysis of this data led to some important insights related to the professional development of teachers as they integrate learning technologies into classroom practice and to the specific role of the learning technology coordinator in this process. This study found that the main reason why teachers integrated learning technologies into classroom practice was to benefit their students and to improve their own skill levels. The important factors in the professional development of teachers integrating technology were that it was collaborative, embedded in practice, ongoing over time, had the support of the principal and was supported by a learning

technology coordinator. This study focused on the role of the learning technology coordinator and found that the most important aspect of this role was related to the professional development of teachers and the coordination of the school's technology program.

These findings led to recommendations that priority be given to funding at a system level for a school based learning technology coordinator to be appointed in each primary school and that principals provide for this coordinator to focus on the professional development of teachers integrating technology into classroom practice.

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CHAPTER 1

DESCRIBING THE CONTEXT OF THE STUDY

1.1   Beginnings

In June of 1995, I was appointed to my first principalship. The school was St Pius X Primary School in West Heidelberg with an enrolment of 204 students and a teaching staff of fifteen. The warm welcome I was given by staff, parents and children as I took up the appointment at the beginning of 1996 made me determined to do the best I could as the new principal of this school. However, some major challenges were clear from the very beginning. Over 60% of the children came from single parent homes where no family member was employed and 75% qualified for education maintenance allowance as a result of low income. Poor school attendance, poor motivation of students and many discipline problems were commonplace despite a very strong welfare and pastoral care program which had been in place in the school for some years. The teachers put a great deal of time and effort into controlling and attempting to motivate the children who did attend regularly and trying to help those who came less frequently to keep up. Children were seated in desks, in rows, and in all cases whole classroom teaching was the normal teaching strategy. Discussions with teachers during the first six months of my principalship revealed a common desire to improve the teaching and learning in place in the school. By the end of 1996, we had made some minor improvements but I felt that we were merely chipping away at the edges and that some catalyst was needed to jump start us into some real change. I did not know it at the time but in December 1996 this catalyst presented itself in the form of the LaTTiCE project.

Four years later as the year 2000 drew to a close, a very different situation existed at the school. Attendance had improved dramatically. In general terms, discipline was no longer a problem and the increased motivation of students was remarked upon by parents and teachers

and evidenced by the fact that many children arrived at school early or stayed in at recess to work on their projects. The classrooms looked and operated differently. The desks and straight rows had gone, children worked in groups or pairs or with the teacher, and the emphasis had changed from teacher centred to child centred; from the input of the teacher to outcome of the children. I would argue, along with the teachers and parents of St Pius X, that the implementation of the LaTTiCE pilot project was a major contributing factor in this change process.

1.2   The LaTTiCE Pilot Project

The LaTTiCE project was the Catholic Education Office (CEO) answer to the Navigator project set up by the then Victorian Department of Education (DOE), now the Department of Employment, Education and Training (DEET).

The Navigator project was launched in October 1995. It comprised three secondary colleges and four primary schools. Bendigo Senior Secondary College was one of the initiators of the Navigator project. Bendigo College had presented, in 1994 to the Minister of Education, a college action plan to undertake whole school reform including the integration of Information and Communication Technologies (ICT) now often referred to as Learning Technologies (LT) into all school areas.

The action plan from Bendigo Senior Secondary College, together with the then Minister's recent study tour of America where he had been impressed with the findings from the ACOT (Apple Classrooms of Tomorrow) research in relation to improved student achievement and the effects of situated professional development, gave rise to the Navigator project. The seven Navigator schools were to be pilot schools in integrating learning technologies into their schools. The aims of the Navigator project were:

1. Create a network of exemplar schools with accessible models of new learning environments where there is access to technology in every classroom.

2. Share with others what is learned in creating these environments.

3. Provide evidence of additional learning outcomes in a technology rich environment.

4. Provide a premium professional development resource for teachers and principals across the State.

A little over a year later, in December 1996, the CEO invited six primary schools in Melbourne to form the LaTTiCE pilot project. LaTTiCE was an acronym for 'Learning and Teaching Technologies in Catholic Education'. St Pius X was invited to be one of these LaTTiCE schools. As with the Navigator schools, the LaTTiCE schools were to be pilot schools in integrating learning technologies in their school environments. The aims of the LaTTiCE project showed great similarity to those of the Navigator project. They were:

1. To establish models of best practice in learning and teaching using information technology.

2. To develop skills and confidence of teachers and parents as they assist students in the use of information and communications technologies.

3. To share learning and guide others in Catholic Education so that benefits will be available to other teachers and schools.

I would argue that implementation of the LaTTiCE project at St Pius X School contributed greatly to dramatic changes in the teaching style of teachers as well as the attitude and

achievement of the students. My principal colleagues in the other five LaTTiCE schools experienced similar changes and have argued along the same lines that the implementation of the LaTTiCE project was a significant factor in this change. These changes and arguments have been documented and will be analysed in the course of this study.

What was it about the implementation of the LaTTiCE project that produced such dramatic change in a relatively short period of time? The LaTTiCE project identified two specific needs from the outset:

- The provision of the technology including technical support.

- The professional development of staff to enable them to use the technology to improve student learning.

I will suggest that both of these became essential to the successful implementation of the LaTTiCE project. Without the technology and the technical support there would have been no technology rich environment, and without the professional development of teachers, the technology would not have been used effectively.

I further suggest that, from my experience as a principal of one of these LaTTiCE schools, the professional development model adopted by the LaTTiCE project was highly successful. The professional development model involved the principal, a learning technology coordinator and four classroom teachers in a combination of off-site professional development, school based professional development and classroom based professional development. In the first year, the off-site professional development input took the form of a practicum of four days for this school group at a Navigator school, a visit to other technology rich schools, as well as some basic software education professional development. The school professional

development comprised a regular weekly group LaTTiCE meeting run by the LT Coordinator and at least one hour each week for each teacher to plan with or learn new skills from the LT Coordinator on a one-on-one basis. The individual classroom professional development involved the LT Coordinator working in the classroom alongside the teacher for at least one hour each week as he or she implemented technology rich activities with the children. The professional development for the second and third years of the project followed a similar pattern with the main change being in the off-site professional development which focused on models of learning and planning for technology rich classrooms.

From my particular experience at St Pius X, I would suggest that the role of the LT Coordinator was critical to the successful professional development of teachers. This led me to ask the question – is this the case in other schools? Is this simply my perception, or is this role of the LT Coordinator in the process of integrating learning technologies into schools really vital? When the opportunity presented itself to carry out some research for the fulfilment of a doctoral degree, I decided that an investigation of the role played by the LT Coordinator in the professional development process of teachers as they integrate learning technologies into their classrooms would be interesting and extremely valuable.

1.3   The Research Statement

The major purpose of this study therefore became the investigation of the role of the school based learning technology coordinator (hereafter referred to as the LT Coordinator) in the professional development of teachers as teachers seek to integrate learning technologies into classroom practice in primary schools.

The key phrases in this Research Statement were 'teacher professional development' and 'the integration of technology into classroom practice'. The former phrase has been defined by

many researchers and writers during the last twenty years and the definitions vary from broad and general to narrow and specific. In the case of the phrase 'integrating technology into classroom practice', the definitions are far fewer, much more recent, and fairly similar. For the purpose of this study, I chose a selection of definitions which illustrated how the phrases are used in this particular instance.

Conners (1991, p. 54) defines teacher professional development as "the sum of all activities, both formal and informal, carried out by the individual or system to promote staff growth and renewal." He elaborates on this definition by suggesting that teacher professional development is a complex process "in which teachers improve and develop their instructional skills, and their curriculum development, implementation and evaluation skills." Conners explores the definition even further arguing that teacher professional development must enable teachers to develop a range of attitudes and beliefs that support effective teaching practices and that it is a continuous, career-long process.

Supporting this view, Costello (1991, p. 131) claims that professional development of teachers is a career-long issue which will occur throughout the teacher's career as they face the challenges of the job. Professional development, he states "mainly occurs and is manifest on the job through the work teachers do."

Jackson (1992, p. 62) suggests that teachers' professional development is more than simply change. Change could be negative, decreased enthusiasm for example. Jackson states that teacher development involves changes that are desirable and positive such as "increases in ability, skill, power, strength, wisdom, insight, virtue, happiness and so forth." Quite a list, however, for the purpose of this study. These definitions are a little broad. Drawing on the

above literature and work of other writers, the definition of teacher professional development used in this study was:

'that post-graduate development of teacher's knowledge, skills, attitudes or insights which will support effective teaching practice'.

Turning our attention now to the second key phrase of this research statement, it is clear that writers and researchers have similar interpretations of what is meant by the integration of technology into classroom practice. Bennett (1989) conducted a research study to investigate the use of computers in Catholic primary schools in the Sale Diocese. The first of his ten recommendations is that inservice be provided for teachers to discover how computers can be integrated across the curriculum. Bennett found that attempts were being made to use the computers as a tool in many curriculum areas in classrooms. This he defined as integrating computers into classroom practice

Plomp and Pelgrum (1991) conducted a similar study across eight European countries but their findings were quite different from Bennett. They found that the teaching of students about computers was still prevalent rather than their integration into the curriculum and classroom practice. However, Plomp and Pelgrum's interpretation of the phrase 'the integration of computers into classroom practice' was very similar to that suggested by Bennett. The emphasis is on using the computer to learn rather than learning to use the computer. This was the emphasis used in this study as we defined the integration of technology into classroom practice as:

'the process involved in using the technology as a tool to facilitate learning across curriculum areas in classroom practice'.

This definition will be further discussed in a more detailed analysis of the literature in the next chapter.

In summary, this research study aimed to investigate the role of the LT Coordinator in the professional development of teachers as the teachers sought to integrate learning technologies into classroom practice in primary schools. In this research study, it was understood that professional development of teachers was 'that post-graduate development of teacher's knowledge, skills, attitudes or insights which will support effective teaching practice'. Further, it was understood that in this research study the integration of learning technologies into classroom practice was defined as 'the process involved in using the technology as a tool to facilitate learning across curriculum areas in classroom practice'.

CHAPTER 2

REVIEW OF RELATED LITERATURE

2.1   Introduction

The general research statement was "to investigate the role of the school based LT Coordinator in the professional development of teachers as they integrate learning technologies into classroom practice". This statement comprised three specific parts:

1.   The integration of learning technologies into classroom practice by teachers

2.   The professional development of teachers in this area

3.   The role of the LT Coordinator in this process

I will take each of these in turn and present a review of some of the related literature which gave direction to the conduct of the research study. In this way, the broad general statement was transformed into a series of manageable research questions which formed the basis of the investigation.

2.2   The Integration of Learning Technologies into Classroom Practice

The integration of learning technologies into classroom practice at St Pius X School did, over a period of less than four years, change the face of teaching in the school.

Thirty years ago, Kay, Dodd & Sime (1968) suggested that computers in schools would change the role of the teacher in the classroom and indeed, in most cases this has happened but not in the way predicted. Contrary to the supposition that children would become isolated in single cubicles engaged in programmed tasks, today children using computers in primary schools are often engaged in learning with their teachers and peers in an interactive way.

Bishop's (1993) study, which investigated the changing role of primary school teachers following the introduction of computers into primary schools, suggested that teachers discovered the computer to be a very useful tool and were integrating it into the curriculum in general and their classroom practice in particular. Her survey of 31 Catholic and Government schools in Victoria resulted in questionnaires being received from 418 teachers. From an analysis of these questionnaires, Bishop argued that teachers did not become the authors of programmed activities as Kay and colleagues suggested they would, but that they changed the "originally intended role of the computer which now plays an important part in supporting the pedagogical aims of the teachers rather than the educator supporting the computational aims of the machine" (1993, p. 112). Bishop's findings suggested that teachers now worked with their students as facilitators of learning, encouraging problem solving and enquiry learning, peer tutoring and group work, and organising cooperative learning groups.

Findings from the Vanzetti and Atkins (1992) study support those of Bishop. Their study of twenty schools in the Australian Capital Territory indicated that changes in teaching methodology were beginning to emerge and that the style of teaching had changed. Vanzetti and Atkins found that teachers who integrated technology into their classrooms saw this as making a positive contribution to teaching and learning. The vast majority of teachers surveyed in this study were convinced of the value of using technology to provide an improved learning environment for their students.

More recently, a report in the US based Apple Classrooms of Tomorrow (ACOT) project was released (Apple Computer, 1995). This report on the first ten years of the project investigated the effects of fully integrating technology into classrooms. The report was the culmination of the work of researchers at twenty-five universities who studied twelve Kindergarten to Year

12 classes in ACOT schools. The key findings in ACOT schools included students mastering basic skills in maths computation, reading and vocabulary in 30% less time; improved high school completion rates; and absenteeism rates falling from 8.4% to 4.7%. In schools where 15% of students had previously gone to college, this figure rose to 90%-100%. Grade 2 children who could write only nine to eleven words per minute by hand were able to type 20-35 words per minute and produce more sophisticated essays than previously, and rather than children being isolated as had been feared, the ACOT findings revealed active collaborative environments.

Even more recently, a report conducted by the Australian Catholic University, evaluating the Victorian Navigator Schools project, also suggests marked improvements related to student achievement (Clarkson, Dunbar & Toomey, 1999). This evaluation focused on the seven Navigator schools in the project as the integration of technology moved them towards paths of whole-school reform.

The investigation, which took the form of case studies, suggested that "student learning outcomes in all the schools have substantially improved during the duration of the project" (Clarkson et al., 1999, p. 5) and, furthermore, social and personal development outcomes were in evidence such as investigating, researching, independent and autonomous learning, as well as outcomes related to student attitudes and values. This report also notes improvements in staff morale and leadership skills of teachers.

It could be argued that it is not the integration of the technology that produces these improvements but the focused teaching which is part of the process of integrating the technology. Nevertheless, if improvements of this nature result, it could be suggested that teachers may be motivated to integrate technology into their practice.

My own personal experience as part of the LaTTiCE project supports this line of thinking, that teachers take on the challenge of integrating learning technologies into their classrooms because they believe that an improved learning environment for their students will be the result of this change. However, many teachers may have quite different reasons for integrating learning technologies into their classrooms. Some teachers may simply have no choice in the matter; they may have been told to use such technologies with their students. The reasons given by teachers for integrating learning technologies into their classroom practice was, therefore, seen as important in exploring their views regarding subsequent professional development. Hence, a key question to introduce this research project was;

- "Why do teachers integrate learning technologies into their classroom practice?"

Although this is an important question, because it may lead to the reasons why teachers engage in professional development, it did not sit at the heart of the general investigation. The core element of the research statement was the professional development of teachers and the role of the LT Coordinator in this process. A review of the literature surrounding professional development of teachers both in general terms and in the area of integrating learning technologies into classroom practice was used to direct questions for the next part of the research study. As part of this literature review, further literature related to why teachers integrate technology into their practice will be presented, suggesting that the integration will benefit students and hence will give rise to teachers willingly engaging in professional development in this area.

2.3   Teacher Professional Development

Remarkable new technology is introduced into the school system and experts predict education will be revolutionised. The technology will, as never before, allow widespread dissemination of new concepts and ideas that stimulate young

> minds and free teachers for more creative pursuits. Yet, the magic fails to materialise, and within a few years articles appear in the popular press asserting that the failure obviously arises from the teachers not being skilled enough in the new technology. (Excerpts from the New York Times article by Peter Lewis in the 1840's describing the introduction of the blackboard, cited by Sutton 2000, p. 2)

We could all be forgiven for assuming that the quote above related to the integration of learning technologies into classroom practice and that the rebuke to educators and systems was that teachers needed more professional development in order to use the new technology effectively. Actually, almost two hundred years ago there was also a need to be reminded that teachers needed professional development if they were going to embrace new resources and use them to benefit their students. Sutton (2000) goes on to state that "it is a matter of perspective, and it is incumbent on our generation to harvest the potential power of technology in classrooms across America" (p. 2). Sutton is speaking for the Software and Information Industry Association so it is hardly surprising that she goes further to suggest investment in instructional software, alongside professional development programs aimed at the use of learning technologies which will benefit the children.

Vojtek and Vojtek (1997) agree with this stance that staff development must accompany the introduction of technology into schools, and sadly they report that this is not happening in many districts of the United States. "Most districts have chosen to spend money on hardware and software to get computers into students' hands. They have not budgeted funds to train teachers how to integrate the technology into classroom teaching and learning" (1997, p. 2). They follow this up with a very strong statement insisting that "the only way to ensure that technology is effectively integrated and institutionalised into the teaching and learning process is to provide sufficient time, resources, training and technical support for teachers through staff development" (p. 3).

Trotter (1999) similarly suggests that in preparing teachers for the digital age we must realise that teachers are the key to effective use of technology and in particular the professional development of teachers. Reporting on a survey taken by the National Center for Education Statistics in the USA in 1998, Trotter states that slightly more than half of the 1407 teachers who responded to the survey use software in their classrooms and nearly 4 in 10 say their students don't use computers at all in a typical week (p. 3). The reasons teachers gave were that they don't have enough time to try out software and most said they didn't have enough training in using the software.

However, although it would seem that all is not well with regard to the professional development of teachers in this technology area, there is evidence of a strong realisation that professional development of teachers is a crucial issue:

> Schools can only be as good as the teachers in them. This is something that all other so-called 'reform' efforts have missed. It's what teachers know and can do that will make the difference in improved student performance (Renyi, 1996, p. 1).

The National Foundation for the Improvement of Education (NFIE) report released in July 1996 suggests that the teaching profession must take responsibility for continuous learning which is the key to helping students. This report cites research findings that support the connection between teacher learning and student performance. The NFIE cites the research findings of Newman and Wehlage (1995) to show that student achievement is improved when teacher education is taken as a major focus. A five-year study by the Center on Organization and Restructuring Schools at the University of Wisconsin, Madison, found that student learning improved in schools where teachers work and learn together. They found that those schools that enhanced student learning organised their human, technical and social resources into an effective collective enterprise which they refer to as a "professional community". "If

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schools want to embrace their organizational capacity to boost student learning, they should work on building professional community that is characterized by shared purpose, collaborative activity and collective responsibility among the staff" (Newman & Wehlage 1995, p. 37).

Building on this research, the NFIE survey comprised phone interviews with eight hundred and forty eight randomly selected teachers who had three years or more classroom experience, as well as a further two hundred and twenty eight teachers in leadership roles across a range of schools in America. This study began by asking teachers "What does professional growth mean to you?" (NFIE, 1996, p. 1). Seventy three percent responded that it meant helping students to learn.

"To improve schools, we must focus on the teachers" said Renyi (NFIE, 1996, p. 1), Executive Director for NFIE. Supporting this view, Hughes (1991, p. 5) states that "the learning of students in classrooms does not depend heavily on factors external to the classroom". According to Hughes, it is the nature and form of the transactions in the classroom that are important. Among these transactions he notes "the words and actions of the teacher; the experiences, thoughts and activities of the students; the classroom climate and organisation; the materials and facilities for learning; and the interaction of teacher and students and between students."

Certainly, it could be argued that this is a very bold statement which does not take account of the influences of home and parents on student learning. However, in this particular discussion, Hughes is not suggesting that parental and home influences are insignificant but rather that the interactions within the classroom are more directly related to student learning than those issues of school organisation or system level directions. Hughes is adamant that the

important issues are curriculum and teaching. He also asserts that teacher professional development is one of the crucial factors for good teaching for two reasons. The first of these is the fact that teaching is becoming a stable profession with most teachers expecting to devote thirty or forty years of their lives to teaching. The second reason he suggests is the rapid change in education. Hence, teachers need to engage in professional development to meet and facilitate these changes.

Clarke (1994, p. 37) tells us that there is increasing recognition that without specific planned professional development programs for teachers, most of the reforms and changes suggested for improving the standards of mathematics in our students will not be implemented. He goes on to outline ten key principles taken from general educational research which need to be considered if professional development programs for teachers are to be effective (p. 38). They seemed to be just as applicable to any area of teaching, including learning technologies, not only mathematics. These ten principles suggested by Clarke can be grouped into four broad elements, listed in Table 2.1. There has been a great deal written about effective professional development in the last decade and much of it emphasises the need for one or more of these four elements in a successful professional development program.

Table 2.1

Four Broad Elements Concerned with Professional Development, Derived from Clarke (1994, p. 38)

The Interest Element
The professional development must be seen as an issue of interest or concern. The teachers need to be aware of the need to do it and be committed to it. (Clarke's principles 1, 5 & 8)
The Collaborative Element
The professional development needs to be collaborative in nature. Clarke states that groups of teachers from one school should ideally be involved. There should be time allowed for teachers to reflect and for feedback. The professional development should also allow for on-going support from peers. (Clarke's principles (2, 3 & 7)
The Situation Element
Changes are related to classroom practice and hence opportunities should be provided for modifying of classroom processes as well as reflecting on and evaluating changes as they occur in the classroom situation. (Clarke's principles 4 & 6)
The Time Element
For professional development to be effective, time is needed - change is gradual and time consuming and should be viewed as a long-term process encouraging teachers to be part of their on-going professional development as well as the development of the curriculum area. (Clarke's principles 9 & 10)

The following sub-sections (2.3.1 to 2.3.4) sample the literature pertaining to each of these four elements firstly in general professional development programs, then in those programs related specifically to integrating information technologies into classroom practice. Reviewing the literature in this way pointed to a general theoretical framework for each element. Support for that general framework was then derived by specifically relating it to the area of integrating learning technologies into classrooms. This gave rise to specific questions for the research study related to the second aspect of the general research statement which dealt with the professional development of teachers.

2.3.1 The Interest Element

The first broad element of the four listed in Table 2.1 supports the need for the preliminary question of why teachers integrate technology into their classrooms. Do they see this as an important issue, an issue of interest or concern?

The first ever USA survey of teachers' own views about professional development conducted by NFIE in 1996, (referred to earlier), found that teachers engaged in professional development programs to assist them to improve their students' achievements. The study revealed that 73% of teachers surveyed said they studied to improve student achievement. "Teachers are clear about the purpose of continuous learning: First and last, it is student learning that drives their passion for professional development" (NFIE Report, 1997, p. 1).

Clark (1994, p. 77) supports this argument that teachers need to take charge of their own learning for two different reasons. Firstly because adult development is voluntary "no one can force a person to learn, change or grow", and secondly, "because each teacher is unique and hence has specific needs and specific ways of learning".

A similar finding is reported by McLaughlin and Marsh (1992, p. 215) from the Rand Study, a four-year study of federally funded programs designed to introduce and spread innovative practices in US public schools. This study found that teachers' commitment had the most consistently positive relationship to all project outcomes, "the importance of teacher commitment to the achievement of project goals is axiomatic: Project success is unlikely unless teachers want to work hard to make it happen".

In the area of information technology innovations, there has also been much written on the fact that teachers are willing to commit to professional development programs if they can see that they will be beneficial for their students. The Software Publishers Association of

America (1996, p. 2) in their report "The Effectiveness of Technology in Schools" state that;

"There is compelling evidence that with appropriate teaching and learning methods, learning technologies can facilitate significant improvement in student learning." This report results from the review of 176 research projects in this field of technology in schools.

But one interesting question to ask at this point is, 'in what way does the student learning improve when learning technologies are used in classrooms? Are we talking about improved LAPS (Learning Assessment Project) scores and test results?' [The LAP (Learning Assessment Project), which has in more recent years been replaced with the AIM (Achievement Improvement Monitor), is a Victorian standardised assessment of children in Grades 3 and 5 in primary schools in the areas of mathematics and literacy in particular. It mirrors similar types of systems testing in other Australian states, as well as in England and in many parts of the United States]. Are we talking about this type of system imposed assessment procedures external to the school or teacher control? Surely it would have to be more than this if teachers are to be convinced of the worth of the effort needed to integrate computers. In fact, during evaluation of the Navigator project, Clarkson et al. (1999) reported a strongly held view in the Navigator schools that the LAP assessment program "did not assess student learning in the areas most strongly valued by the schools" (p. 6).

Broader benefits than improved test scores are also suggested by "The Effectiveness of Technology in Schools", the Software Publishers Association of America (1996) report referred to earlier. This report revealed that integrating information technologies into classroom practice based on sound teaching and learning methods would have:

- significant positive effects on students' achievement in all major subject areas in pre-school through to higher school,

- positive effects on students' attitudes towards learning and on students' self concept, and

- more student-centred learning, encourage cooperative learning and stimulate increased student teacher interaction.

(The Software Publishers Association of America, 1996, p. 2-3)

It is these types of improvement, it is speculated, that teachers will warm to, rather than the narrow 'improvement of LAPS scores.' It has already been noted that improved student achievement across all areas will result from integrating computers into classroom practice. Bishop (1993, p. 13) argues that computers in classrooms have the potential to enhance all teaching methods but the shift in emphasis towards holistic teaching, cooperative and group work and the integrated curriculum "makes the computer in the classroom particularly relevant in the opportunities offered to improve teaching and learning in terms of the experiences and content presented and the organisational models made possible."

Toomey (2001) presents a quite different perspective. Toomey argues that computer use in classrooms does not in itself improve teaching and learning when he states "the technology itself rarely makes any single-handed contribution to the much more complex task of engaging young people in the learning process" (2001, p. 1). However, he points out that it is a major force in 'reengineering' schools. As has been seen in the previous discussion of the evaluation of the Navigator schools project (Clarkson et al. 1999), the integration of the technology helped to move these schools to a process of whole-school reform. This whole-school reform theme is, according to Toomey, only one of four themes emerging from a study of the literature on the use of learning technologies and improvements in teaching and learning.

The first theme, which Toomey refers to as the cognitive psychology theme, assumes that learning technologies have a role to play in the learning process, usually enhancing performance in some way. Studies to date in this area have failed to be convincing. Indeed, many improved performances have resulted following the integration of computers, but it could be argued that a similar enhanced performance could have been generated without the computers and possibly even at a much cheaper cost.

The second theme discerned by Toomey relating to the use of learning technologies he terms the accolades or the 'how to do it perspective'. Once again the research is thin and unconvincing in this area. The third theme that emerges from the literature on the use of learning technologies is, according to Toomey, the 'dismissive' theme. As the name suggests there is research that warns against the prospect of any improved learning in technology classrooms. Apple and Jungck (1990), after conducting a longitudinal study into the use of computers in a North American secondary school, warn that some teachers may become deskilled in the process. Their study suggested that certain female mathematics and science teachers in particular found that their ability to teach in these areas decreased after they had focused on the process of introducing computers and an associated curriculum into their practice. However, one study in one school can only be a snapshot. Still related to the dismissive theme, there are also those who are concerned about the effects on children's creativity. Talbot (1995) and Turkle (1997) argue that the computer could prevent full development of the child's imagination and creative process. Once again, these are warnings for us to bear in mind, but certainly not evidence that suggests the integration of learning technologies is necessarily counter-productive. In fact, if schools follow the path of integrating the technologies into classrooms as a catalyst for whole-school reform, the fourth theme articulated by Toomey (2001, p. 6), and the one he endorses, it is probable that positive

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effects on teachers and children will be a high priority in the reform process and that these effects will include intellectual, social and attitudinal improvements. The Navigator evaluation (Clarkson et al. 1999) found, for example, that teachers' skills increased, that many teachers talked about their increased professionalism, an ability to articulate about their practice improved, and generally an improved staff morale resulted (p. 23).

Toomey's four themes highlight the possibilities of different outcomes. Each school is different; each group of students and each group of teachers will react differently in different situations. The factors which give rise to these differences may relate to leadership, school ethos or may not be able to be explained rationally. We cannot be sure how or why groups of people react in the way they do. However, Toomey's fourth theme related to whole school reform aligns with Clarkson's evaluation of the Navigator schools in its positive image of the effect of the integration of the computer into classrooms generally.

Clarkson and Toomey hence present a very different situation from the then futuristic scenario envisaged by Kay et al. (1968) in their book "Teaching Machines and Programmed Instruction" in which they envisaged students working alone, developing keyboard skills but with no thought of improved social interaction, the development of higher order thinking skills or improved motivation and creativity. However, Toomey (1996) suggests that it is only fairly recently that a changed scenario has replaced this older model. Computer usage in schools until as recently as the early eighties, Toomey suggested, comprised computer-assisted instruction (CAI) where the computer was in control. Papert (1980, p. 19) challenged this use of the computer, which he refers to as 'technocentrism'. He based his ideas on Piaget's "way of looking at children as active builders of their own intellectual structures" codified in Piaget's 'constructivist' approach to learning which claims that knowledge is not

transmitted, but is built up or constructed with the help of others and the support of the environment. This change in thinking on how children learn, together with recent technological advances such as the internet and sophisticated multimedia tools, have resulted in a move from computer assisted instruction (CAI) to computer enhanced learning (CEL). Toomey (1996, p. 322) maintains that CEL can be distinguished from CAI "by the way it adopts a student enquiry approach to teaching and learning and encourages children to adopt the technology in ways that promote enquiry." The process of computer-enhanced learning requires the teacher's role to change. The teacher becomes a facilitator in the learning process.

Snyder (1992) also acknowledged that the role of the teacher would change and suggested that this would have serious implications for professional development programs. However, she argued that the benefits, especially with regard to improvement in children's writing and thinking were such that the efforts required were worthwhile. Computers, she argued, play an important role in the development of thinking and writing because:

> They allow students to explore their ideas and responses to activities; to manipulate their words, punctuation and thoughts without fear of making an indelible mark; to visually interact with and format their texts; to share, respond and collaborate in a multitude of ways with the teacher and with other students. (Snyder, 1992, p. 428)

Ten years ago, Snyder was not alone in presenting the computer as having a positive influence on student learning. Bennett (1989) in his Masters study of "Computers in Catholic Primary Schools – a study within the Sale Diocese" suggested that teachers saw computers as extremely useful tools that motivate students, challenge them and enhance their skills and abilities.

Along the same lines, Bigum and Green (1993) and Dowling (1991, p. 10) suggested that traditional teaching methods whilst having some merit were not used to their full potential to enhance student learning. In order to use the computer more effectively Silver (1990, p. 7) called for computers to be used as an integral part of the constructionist approach to teaching and learning as proposed by Piaget and Papert generally.

A few years later, Perry (1995, p. 22), who was the 1995 recipient of the Australian Council for Educational Computing (ACEC) Teacher Educator of the Year award, presented a similar positive view of the computer as a real asset to student learning. He too suggested that the central aspect of facilitating the development of technology in schools was teacher acceptance. In his words, teachers needed to be "switched on to the learning that can take place through the use of technology." His views were derived from his own experience as a teacher of ten years with an interest in integrating learning technologies into classroom practice and also his role as network manager with responsibility for training teachers in this area. Perry argued that the use of technology improved students' learning by allowing for collaborative learning, by enabling children to think and consider appropriate materials, by enabling children to present imaginatively and creatively, and by allowing students of all abilities to achieve. He is clearly of the opinion that teachers will 'go the extra mile' in terms of professional development if they can see that they provide value for their students in the process.

More recently, a particular study focused on a diverse group of students including special education needs students. This study, carried out by Xin (2000) in a third grade classroom, focused on integrating technology into an inclusive classroom setting for diverse learners. In this study a third grade class of twenty students, four of whom were classified as learning

disabled, was the chosen sample. A situation involving a team of teachers using computers was established as mathematics sessions were implemented over one semester. At the conclusion of the investigation all students demonstrated significant gains compared with those of a pre-test. Regular student gains averaged 23% whilst special education students showed gains of 38% in their post test scores. Whilst it is acknowledged that many factors could influence these gains, the literature reviewed by Xin suggested that integrating computers could benefit classrooms with a diverse student population in terms of academic ability. Many teachers are constantly faced with the challenge of diversity, in the extreme in some cases, with their students. They may well be prepared to engage in professional development which could positively impact on their classrooms and be of value for their students as the above study has indicated.

Value for all students was investigated in a study by Mendels (1996). This study was arguably one of the first to look at the effects of using the Internet on-line on student outcomes. This study tracked 500 students from fourth and sixth grades in 28 classrooms in seven cities of the United States in 1996 as they participated in a two-month social studies program focused on civil rights. All children used the same course of study and were encouraged to use multimedia reference materials and videos, but only one group had Internet access. At the end of the course, the students were required to produce a project demonstrating their learnings. These projects were evaluated by a teacher who was not affiliated with the study. Nine different skill elements were rated and, on average, those students who had access to on-line resources performed better than those who did not. Robert McClintock, Director of the Institute for Learning Technologies at Columbia University, stated that this study should be viewed as an indication that the Internet has benefit for students (Mendels, 1996, p. 2). At the same time, the project research coordinator, Robert Hughes, pointed out the need to train

teachers to use on-line resources and adapt curriculum to take advantage of on-line use (Mendels, 1996, p. 4).

The body of literature reviewed in this sub-section suggests that once teachers can see benefits for their students they will engage in the professional development programs required to deliver these benefits. This review indicates that if teachers are convinced that integrating technology will help their students, and there is some evidence here to suggest that this is the case, then they will be keen to be active in professional development programs to assist with this change. But in this study it is still worth asking this question. Hence, as noted earlier, the first question of the research study is;

"Why do teachers integrate technology into classroom practice?"

This is a basic, but vital, question in relation to the subsequent views of teachers regarding the professional development process. However, it is an introductory question which does not sit at the heart of the study.

Moving into the heart of the research statement, the professional development process will be addressed in more detail. A review of the literature pertaining firstly to the collaborative nature of professional development was used to guide the formation of a more general question for this research study.

2.3.2   The Collaborative Element

Referring back to Table 2.1, which presents Clarke's (1994) professional development elements in four broad bands, the second element states:

- The professional development needs to be collaborative in nature. Clarke states that groups of teachers from one school should ideally be involved. There should be time

allowed for teachers to reflect and for feedback. The professional development should also allow for on-going support from peers. (Clarke's principles 2, 3 & 7)

An investigation of the literature in this area revealed a number of studies concerning the collaborative nature of professional development. Almost twenty years ago, Little's (1982) study comprised interviews with 105 teachers and 14 administrators. Her findings suggested that professional development programs which involved groups of teachers from the same school assisted in building collegiality and increased experimentation, which in turn led to successful development of teaching programs.

However, ten years later, Hargreaves (1992, pp. 221-223) warned that much of what is described as teacher collegiality or collaboration amounts to little more than a sharing of ideas, rather than being focused on curriculum goals which would lead to teacher development. While sharing of ideas is important, it is also necessary to have direction in order to move forward professionally. Hargreaves suggests that effective collaboration requires a "collaborative culture" to exist which cannot be contrived by administrators but needs to be allowed to arise. He explains that these collaborative cultures are "found in the minutiae of school life: in the small gestures, jokes and glances that signal sympathy and understanding: in kind words and personal interest shown on corridors and outside classroom doors" and that "cultures of collaboration are constitutive of, absolutely central to, teachers daily work," but that they need to be sustained just like a good marriage (p. 226). Hargreaves suggests that in order to achieve this collaborative culture we are faced with a challenge of administrative humility (pp. 235/236). Quite a challenge but one worth fighting for if, in fact, the collaboration of teachers is an important element in successful teacher development.

In their aptly titled book "What's Worth Fighting for in Your School", Fullan and Hargreaves (1991) argue that reculturing of schools and in particular teaching should be a prime focus for educational change. They point to the need for teachers to be supported within their school environment and to collaborate with one another.

More recently, Hargreaves (1997) takes this idea of a collaborative culture among teachers to a new height when he suggests that "Good teaching also involves emotional work" (1997, p. 14). Hargreaves points to a study of 32 grade 7 and 8 teachers and to his findings that the emotional dimension of teaching affected how teachers plan (1997, p. 14). During the course of this investigation, Hargreaves and his colleagues found that teachers start with knowledge and feelings about their students and with "the intuitive understanding about what is likely to excite and engage those students" (p. 15). The collaboration of teachers is emotionally charged. "It's a process where ideas are 'piggy-backed' on one another, 'bounced off' people and generally 'bashed around', where teachers are 'springboards' for one another, 'spin off' one another's ideas, 'take risks', 'go nuts' and engage in a 'free-for-all' so that teachers feel like a 'pin-ball machine'" (p. 15). Only then, says Hargreaves, are the prescribed outcomes addressed and checks are made to ensure the curriculum is balanced.

My professional experience as a teacher and as a principal leads me to suggest that Hargreaves' notion of emotionally charged collaboration amongst teachers is closer to the real situation in schools than we may imagine. Hargreaves, in suggesting that good teaching involves more than efficiency, competence and knowledge, talks of it being infused with pleasure, passion and challenge. Fullan (1997), supporting this stance, tells of teachers responding both intellectually and emotionally.

A recent paper from Blackmore, Johnson & Warren (2000), presented at the Australian Association for Research in Education conference in Sydney, introduced a new word "Warmware" to link with the hardware and software of our high-tech society. Warmware is a word that I would suggest brings to the fore the emotional ideas expressed by Hargreaves and Fullan. Blackmore et al.'s paper draws from the learning in New Environments Research Group research project, a pilot study in a large metropolitan secondary college in Melbourne exploring the social implications of learning technologies between students, teachers and community. The term Warmware refers to the people and how they interact with each other and with the hardware and software. In this study, interviews with staff of the school revealed that there was now an acceptance, past questioning that computers would be used in schools. The study was piloting a professional development model which puts people (Warmware) before hardware and software. Professional development in this pilot study was based on the pedagogy of the teacher and the students as part of the process that would be included in planning courses with the learning technologies.

Blackmore and colleagues suggest that a different way of thinking about learning with respect to technology is that of 'situated' learning. However, they note that in this case situated does not refer to time, place or space but to the diversity teachers, students and others bring to the learning process. This paper supports Hargreaves' (1997) notion that it is time to move beyond the classroom into the wider world to fully benefit from experiences with learning technologies.

In fact, Hargreaves (1997, p. 8) warns us that "teacher professional communities can easily turn into incestuous and protectionist ones". Collaboration could, in fact, become counter-productive and self-limiting. Hargreaves suggests that teachers now need "to move beyond

their own communities and fellow colleagues" and make "conscious and constructive connections with the wider world" (p. 9).

Ten years ago, Baird (1991) was not concerned with the possible dangers of collaborative working amongst teachers; he was concerned about the lack of opportunity for such collaboration. In purporting that collaborative and group reflection is an essential part of teacher professional development he suggested that the opportunity for professional reflection for teachers is limited by lack of time and by the nature of their work where they tend to work in isolation from their colleagues (1991, p. 109). To overcome this isolated way of working, a type of partnership support was put forward by Connor (1993, p. 40). This followed the emergence in the United Kingdom of the role of a professional tutor resulting from the James Report (1972) on recommendations for In-Service Education and Training (INSET) for teachers. Connor (1993, p. 40) suggested that this professional tutor or staff development coordinator "is the key to improved relevance, quality and effectiveness of INSET." In many instances, particularly in secondary schools and colleges, the role of INSET or staff development Coordinator has led to the formation of a staff development group which drives the professional development within the school. In this instance there is an appointed role whereby the formation of a team is encouraged, and this team in turn takes on the inservicing of teachers in that school.

A further model of partnership was put forward by Morrison (1993, pp. 71-86) citing a research study which was conducted in Salford in 1989 in which a "successful" classroom teacher was seconded to work as a curriculum assistant/trainer in conjunction with a specialist adviser. The curriculum trainer then spent time in a negotiated area with classroom teachers and followed this up by working with each teacher in their own school. I would suggest that

there are advantages and disadvantages to this model. A major disadvantage in this partnership model is the dependence on one person. Partnership also depends on mutual respect. This could become a problem if a dispute arose. One of the main advantages, however, and one which is also suggested by Morrison was the provision of a "framework for developing collaborative strategies between teachers and trainers in ways which bridge the gap between centre and school based provision and remain rooted in classroom practice" (p. 84).

Another type of partnership study involving collaboration between a teacher and an outside specialist was the CLIPS (Computers and Learning in the Primary School) research project. The CLIPS research project was a longitudinal project conducted over three years in five Melbourne schools. The project involved a university teacher working collaboratively with one or more teachers from the school. In total, nine teachers were involved together with an eleven-member research team. The key principle, according to these research studies carried out in 1992, 1993 and 1994 as part of this CLIPS project, was the need for personal challenge and interpersonal collaboration. The key to assisting teachers to integrate information technology into classroom practice according to Johnson (1995, p. 10) was "purposeful enquiry through reflection on action".

Reflection on action was one of the factors of key importance put forward by Baird (1991) who stated that; "When conditions operate to provide concurrently for both personal challenge and interpersonal collaboration you have a situation of shared adventure. In this situation, individual and joint thinking, feeling and acting provide a range of benefits for all concerned" (p. 95).

More recently, Baird (2000) reiterates the need for teachers to engage in collaborative action research involving reflective practices with other teachers in order to enhance teaching and learning. Baird's report is based on findings from a collaborative school based research between practising schoolteachers and university academics over a period of more than fifteen years, mainly in Australia but also for the last six years in Sweden and Denmark. The major research project is the Australian 'Project for Enhancing Effective Learning' (PEEL) and its Swedish version PLAN, 'Projekt for Larande under eget Ansvar' (Baird, 2000). Based on the findings of the PEEL project over fifteen years, Baird calls for teachers to develop long term strategic teaching agendas based on progressive learning of their students through collaborative action research. The suggestion in both the CLIPS project and the PEEL project is for a professional development program which is collaborative in nature to assist in the integration of technology into classroom practice.

Another proposed model for professional development based on collaboration and support was one put forward by Caverly, Peterson & Manderville (1997). They called this a generational model, the aim of which is to educate teachers in integrating technology into classroom practice. They insisted on using the term "education" rather than "training" of teachers and talk in Piaget's terms of "accommodating" new knowledge rather than assimilating another process. This model grew out of a social constructivist approach to professional development and is the result of a collaboration between South West Texas State University Education Department and the New Brauerfels Independent School District in Texas. The initial phase of the model involved the identification of a group of "first generation teachers" who were provided with hardware as well as an interactive three-week information technology course aimed at integrating the technology into the classroom. Collaborative groups of three were then formed to share, reflect on difficulties and offer

support as the teachers applied the technology in their classrooms. After a year of support and independent practice in their classrooms, each of these first generation teachers mentored two-second generation teachers. An outside facilitator helped a number of groups and regular meetings allowed for larger group collaboration. The majority of teachers involved in this scheme were able to successfully integrate technology into their classroom practice, that is they were able to use the computer as a tool to improve their students' learning. The teachers were then able to see how they could mentor other teachers in this way. The support offered by the collaborative process in this professional development program produced positive results.

Another great supporter of collaborative processes to enhance teacher professional development is Richard Sagor. Sagor, Associate Professor of Education at Washington State University, is also founder of the Institute for the Study of Inquiry in Education in Washington. For some ten years he has facilitated workshops on conducting collaborative action research to guide school improvement. Citing his own research (2000, p. 2) with teachers and networks of schools, Sagor argues that collaborative action research among teachers in their own schools around issues and purposes that are important to them will not only lead to relevant professional development for the teacher but "can set the stage for the building of a truly collegial school culture" (p. 31).

Similarly, Bray (1999) the founder of Computer Strategies Limited Liability Company, which provides relevant and customised technology staff development for K-12 teachers, supports the notion of a collaborative approach to professional development. However, her model is very structured and comprises eight steps. The first is to create a team. Each step of her process is prescribed – "the team should consist of 10-20 members and be representative of

the staff" (1999, p. 3). Bray's model then identifies steps in goal setting, defining needs and designing an action plan. This model may be too prescriptive for use generally and Bray acknowledges the need for time to carry out this staff development process along with the difficulties time availability presents.

In reviewing a substantial body of literature, no study was found that either stated or implied that collaboration was incidental or unnecessary. Whenever there was mention of collaboration, this was seen as a factor and often a key factor in successful professional development. Although studies highlighted collaborative practices in different ways and across different curriculum areas, the literature reviewed suggest very strongly that collaboration is an important factor in general professional development and in professional development related to information technology.

The literature reviewed here, which is only a brief selection of that which is available, points to the fact that collaborative support would seem to be an important factor in integrating technology into classrooms and to a suggestion that collaboration with peers is a key factor in the professional development of teachers. Hence the second section of the research study, which was specifically aimed at the Navigator and LaTTiCE projects, investigated this with a specific question that asked:

"Is the opportunity for collaboration with peers an important factor in assisting teachers to integrate learning technologies into their classroom practice?"

2.3.3.   The Situation Element

Referring back to Table 2.1, which presents Clarke's (1994) professional development elements in four broad bands, the third element states:

- Changes are related to classroom practice and opportunities should be provided for modifying of classroom processes as well as reflecting on and evaluating changes as they occur in the classroom situation (Clarke's principles 4 & 6).

For most teachers the classroom is their workplace. Seddon (1991) stated that "There is an emerging perspective which recognises that teachers are workers involved in a labour process and schools and classrooms can be seen as workplaces" (p. 47), and that professional development needs to be situated in their workplace.

However, Bryk and Driscoll (1988) warn that it is important to differentiate between schools which are conducive to and those which deter teacher professional development. They argue that generally those schools which foster teacher development are schools where there is a strong sense of community which focuses on the social relationships between cooperative adults sharing a common purpose and values.

Hargreaves (1992) supports this notion that the school culture is an issue in professional development and argues that consequently situating professional development in classrooms is advisable on three counts. Firstly, he suggests that professional development of teachers and institutional development of schools are interdependent. Secondly, he refers to the emergence of a culture of collaboration and the erosion of the culture of individualism, reporting this to be a positive move in effective teacher professional development. Finally he talks of the work of teaching as shifting from one of individual, hierarchical control by the teachers towards a more team based mentoring approach where teachers take responsibility for the professional development needs of colleagues as they go about their daily work in the classroom. These three trends point to the notion of situating professional development in the school, and preferably the classroom.

A variation on the team based mentoring approach suggested by Hargreaves is that of peer coaching. Joyce and Showers (1980) were among the first to refer to the term 'peer coaching' and to develop a model for this process of staff development. Their model was structured and had five components ranging from delivery of the theory through modelling the new strategy or skill, simulated practice, feedback on performance to a new fifth component – coaching, where the new skill is tried in the classroom with follow-up help. Bush (1984), in testing this Joyce and Showers model, found that, when participants were given only the first four components of the model, only 16-19% could transfer the new skill to the classroom. But when the fifth component, coaching situated in the classroom came into play, 95% of participants successfully transferred the skill into classroom practice.

Since then, many models of peer coaching have eventuated and with them the growing suggestion that successful staff development programs must include some form of collaborative follow-up for teachers which they can carry out in their classrooms. In the autumn of 1996, the National Commission on Teaching and America's Future (cited by Becker, 1996) published a report entitled "What Matters Most: Teaching for America's Future". This report focused on teachers and their professional development as vital components of students' performance. Referring to this report, Becker points out that peer coaching programs are being offered across America and the benefits reported by professionals involved in these programs include improved student achievement, enhanced sense of professional skill, improved teaching performance and improved school climate. However, she argues that despite the benefits they are not as widespread as they should be because of a lack of systematic support by schools and systems. She asks that schools and districts include peer coaching as a vital component of professional development of teachers

as well as allow time and funding for teachers to engage in this peer coaching within the school environment.

Supporting this stance, Brand (1997), a computer teacher with the Peel Board of Education in Canada, in his article "What Research Says: Training Teachers for Using Technology" also suggests that peer coaching can be very effective, as outlined by Browne and Ritchie (1991), for addressing the unique learning needs of individual teachers as they learn to integrate technology into their classrooms. However, he also offers a broader perspective on collaborative development, suggesting that "the environment in which effective technological development of teachers occurs is built around collaborative learning" (1997, p. 3).

Collaborative learning situations can vary in size, structure and purpose. One situation may be as simple as two teachers in adjoining classrooms helping each other on particular projects. The collaboration on the other hand may be more structured and complex as a year level group of teachers plan together formally and informally on a weekly basis. A collaborative learning situation may involve a teacher with particular expertise assisting a colleague. This would be the case with a learning technology coordinator working in partnership with a group of teachers, or a group of teachers themselves discussing and assisting the implementation of technologies into different curriculum areas. However, collaborative learning situations can only occur with any regularity or relevance if they are situated within the classroom experience of the teachers involved. The issue of classroom situated or workplace learning for teachers was the major focus of an Australian research project led by Dr John Retallick (1994) involving fourteen schools across Australia. A major conclusion of this report states that "whilst there is a great deal of variance from one teacher and school to another, in terms of which factors are most influential in teacher learning, the context has an over-riding

importance." This research further points to the fact that "teachers universally acknowledge the importance of workplace learning and the expertise that arises from it is highly valued in schools." The teachers suggest that their workplace learning is the main influence on the quality of their teaching (1994, p. 91).

Other studies also highlight the importance attached to the classroom situation by teachers for professional development. For example, Thiessen (1992, p. 103) discusses the issue of classroom-based teacher development (CBTD) arguing that CBTD is not merely a venue change from a more traditional workshop environment, but it is an "alternative orientation", one which denotes the "importance of the classroom as the key cultural and contextual force for teacher development and teachers in collaboration with their students as the primary agents in that process." Johnson (1995, p. 12) in outlining the CLIPS project (Computers and Learning in Primary Schools) suggests that "it is important to link the computer research project with the classroom." Situating the teacher development in the classroom facilitates the collaboration of teachers and enables them to devote more time to the work. One of the reasons why workplace learning is valued is that the classroom or school is where the teachers spend most of their time. Yelland and Bigum (1995) have also developed a workplace based professional development program for teachers participating in the Queensland Department of Education Primary Computers Program (PCP). Evaluation conducted by the Queensland Effective Learning and Teaching Unit (QELTU) suggests that there is a real need for more effective and systematic professional development associated with the use of technology in classrooms. The basis of this workplace based professional development model was in facilitating the sharing of experiences by way of the re-telling of the teachers' stories and its value lay in the projects direct application to classroom practice.

More recently, professional development practices directly related to what is going on in the classroom are strongly espoused by Mark Carter, deputy principal at a girls high school in New South Wales in association with Rob Francis, a lecturer at Charles Sturt University. They strongly support the case for workplace learning arguing that "the literature strongly suggests that contextualised learning or workplace learning mediated by mentors has the potential to assist beginning teachers in their development" (Carter and Francis, 2000, p. 3). Whilst they are referring to beginning teachers it is reasonable to assume that the case may also apply to the teaching profession in general. They report the findings of a study carried out in 1998 in New South Wales Government schools. Two hundred and twenty beginning teachers and 245 supervisors and mentors were surveyed and the process of beginning teacher professional learning was also observed in six case study schools across the State. Carter and Francis report that "the study confirms findings from other research in relation to the effectiveness of mentoring as a *workplace* learning strategy" (p. 10, my emphasis).

One of the other implications that can be drawn from this literature is that integrating technology into classroom practice requires the teacher to be a creative risk taker with the computer in the classroom, a learning facilitator for his or her students. This requires the teacher to experiment in the classroom situation alongside the student. The development of the computer and its subsequent use as an educational tool has meant that students now have a wide choice of information sources. Ferrier (1995, p. 87) contends that "the variety and size of these information sources has meant that students can experiment with the dynamics of their own program. Rather than just absorbing facts, students have the opportunity to create the environment for learning and sharing it with others." Hence the teacher's role must change from that of content provider to that of learning facilitator. The teacher learns alongside the student in a situated experience. The teacher should experiment with the

students and allow the students to explore and venture down their own learning paths. Hence, the teacher should take on the role of facilitator in the learning process.

From my personal experience for the staff at St Pius X, having computers in the classroom and being able to situate the continued professional development of teachers in the classroom was thought to be an important contributor to the success of the LaTTiCE project and the integration of learning technologies into practice. Having reviewed related literature and drawn upon my own experience, I was now led to ask the question "Do others view this aspect of classroom situated professional development as important?" Hence, in relation to the professional development of teachers, one of the research questions to ask was;

"Is it important to situate the learning of new skills and concepts by teachers into their classrooms?"

2.3.4 The Time Element

Another area of investigation relevant to professional development of teachers refers to the need for the professional development to be gradual and continuous. Once again a review of the literature was to direct the formation of a question on this issue.

Referring back to Table 2.1, which presents Clarke's (1994) professional development elements in four broad bands, the fourth element states:

- For professional development to be effective, time is needed - change is gradual and time consuming and should be viewed as a long-term process encouraging teachers to be part of their on-going professional development as well as the development of the curriculum area. (Clarke's principles 9 & 10)

It will come as no surprise that when teachers are asked what they need in order to do a better job, most of them will say they need more time.

Another major recommendation of the NFIE's (National Foundation for the Improvement of Education, 1997, p. 3) national survey, already referred to, was that more time must be allocated to build professional development into the life of the school. The report states that, "Time must be made available so that professional development for teachers can become a seamless part of the daily and year long job."

Stigler and Stevenson (1991) suggested that the teachers in the USA have too little time to engage in planning, reflections and feedback with colleagues and that this constitutes a major impediment to their professional development. To address this problem, Hoban (1997, p. 1) suggests that professional development of teachers must be seen as an on-going process so that teachers come to respond to the continuous changes in curriculum, resources, students, school organisation and ideas about best practice. However, he contends that in reality most professional development is still ad hoc and consists of occasional workshops. Hoban proposes a professional development model which he calls "Action Learning" in which participants share experiences on a regular informal basis. Hoban suggests that his model of "Action Learning" is similar to the model of "collaborative action research" as described by Baird (1991). Richardson (1994) puts forward another model similar to these two which he calls "Practical Inquiry". The "Action Learning" model suggested by Hoban, however, is less structured and hence more flexible.

All of these models, which require reflection on practice, are time consuming and based on an acknowledgement of the fact that the professional development will be a continuous process requiring time and patience. McKinnon (1994, p. 16) argued that in discussing professional development related to the integration of information technologies, this can no longer be seen as something that involves "one-off" courses which happen outside the school. "The

hypodermic approach" currently employed has little impact on the rest of the school. He advocates that this type of professional development must be seen as an on-going process.

McKenzie (1991, p. 23) supports this argument by suggesting that "Where staff development has been successful, the goals have usually been incremental." And going even further, he argues that "In order to lead students out of the Institutional Age and into the Informative Age, teachers must shed their time-honoured role as transmitters of the present culture and assume the role of continuous learners." This change of practice, and more importantly understanding of fundamentally what teaching is, takes time to accomplish.

There have been a number of suggested ways to assist the teacher in an on-going process of learning in the classroom using collaboration and partnerships. Johnson (1995) in discussing the CLIPS (Computer Learning in Primary Schools) program, describes the partnership of a university teacher and a primary school teacher who come together to form a school based study team. This program was referred to earlier in discussing collaboration and is cited again here to highlight another aspect of professional development, namely that it is ongoing. The university teacher was involved not merely as a computer expert but also as a support and co-worker and a mentor for the teachers to facilitate the integration of the technology into classroom practice as an *'on-going'* process.

Caverly et al. (1997), in proposing a "Generational Model", also uses a collaborative, mentoring situation as a process of on-going professional development which is passed on to a second and then a third generation of teachers. Duckett (1995, p. 65) suggests a similar answer to the continuous ongoing professional development in the integration of information technologies into classroom practice with his plan to "develop a cohort of trained people who will in turn train others who will then in turn train more." This approach, Duckett argues, will

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provide an effective face-to-face professional development program by colleagues who understand the needs and anxieties of the people they work with. This process, which is ongoing, over time, is a train-the-trainer type of model.

If professional development is necessary, as seems to be clearly argued by many educators and researchers in the field of learning technology, then we need to put time into the process. I suspect that in the end everything in terms of professional development comes down to time and money. Money, we seem to be able to find more easily than time, although Barkley (1999, p. 1) suggests that "time is made not found." He argues that most classroom teachers when asked about slowness of educational reform will say that "it's the lack of time for professional activities other than direct instruction of students." Barkley suggests that as a staff developer, consultant school reformer and change agent, he has frequently seen educators give up trying to be leaders or innovators because after looking for time they could not find it. He goes on to suggest ways to restructure schools so that time can be made available. "My suggestion was to have five staff members work with 250 students for one week while the remaining 18 staff members went to a retreat site and restructured the district" (p. 2). Obviously, Barkley does not have unions to contend with or for that matter legal issues or informed parents who would question the educational value of this week for their children. I would suggest that this is an administrator's answer and not one that could be practicable within the Australian school system, if anywhere.

Shelton and Jones (1996) acknowledge that time is essential for professional development of teachers and listed it as the first 'T' in their presentation of "Staff Development That Works! A Tale of the Four T's." They argue that time for staff development must be provided outside the school day. Training, they say, at the end of a school day in a two or three-hour module

has proven useful. Once again, my cynicism comes to the fore as my experience would suggest that most teachers' school day does not finish until after 5:00pm, and by this time they are not in the best frame of mind or physical state to engage in professional development. I prefer the suggestion offered by Amenta-Shin (2000), a program associate who leads on-line development for educators across the globe. She asserts that administrators need to come up with creative strategies to address the time issues such as releasing teachers for professional development by using substitutes. This is a possibility, even though it can be difficult to justify the use of substitute teachers on a regular basis.

Rasmussen (2000), the project director of Blueprints: A Practical Toolkit for Designing and Facilitating Professional Development, has a suggested solution which I prefer to those outlined above. She suggests the use of 'block scheduling' which can mean time for team teaching as well as team planning. Rasmussen suggests that in this model there is collaborative curriculum development, collaborative team teaching and the opportunity for reflection. She states that in these situations "professional development happens very naturally within the context of the job, always in relation to what's going on in the classroom" (p. 3).

Once again, my experience as part of the LaTTiCE project supports the view that the professional development must be linked closely to what is going on in the classroom and must be viewed as a continual process, one which is ongoing over time. However, this may or may not be the view of teachers in general.

Therefore, in relation to this area of professional development, a third question that needed to be asked as part of the research study was;

"Is it seen as important to have *'on-going'* support in assisting teachers to integrate learning technologies into classroom practice?"

2.3.5   Integrating The Four Elements

So far, in reviewing the literature relevant to this question of the professional development of teachers, three specific questions have been formulated relating to; the collaborative nature of the professional development; to the fact that it is situated in classroom practice; and to the on-going or continuous aspects of professional development. These are added to the original question dealing with teachers' interest. However, these four areas in the end will need to be knitted back together, as the following literature emphasises.

The professional development program Computing Across the Primary Curriculum (CAPC) attempted to emphasise these features as part of its program (Ferrier, 1997). CAPC is a professional development program produced by the South Eastern Regional Computer Technology Centre (SERCT) and designed to assist in the professional development of teachers as they integrate computers across the curriculum, into their classroom practice. It is based on the successful three-year professional development program, computer organisation and management in the classroom (COMIC). Its basis is helping teachers understand the place of information technology in the classroom by focusing on developing knowledge, skills and confidence through practical activities that integrate computer applications into the curriculum. It emphasises the need for a collegial environment, classroom based professional development, and realisation that the process is time consuming and needs to be ongoing.

These three components of collegiality, embeddedness, and the ongoing nature of professional development feature strongly in the writings of McKenzie. One of the most outspoken and entertaining writers in this field of staff development, McKenzie is editor of

the educational technology journal 'From Now On' and has been writing on this topic of the requirements of professional development programs for staff for more than ten years. In his 1991 paper 'Designing Staff Development for the Information Age', he talks of teachers being immersed and transformed, being inspired to inventiveness, that learning must result from doing and that staff development "hook the curiosity, wonder or passion of teachers" (p. 6). Some of his early sentiments were built on the work of Joyce and Showers (1983) who, as has been noted earlier, argued strongly that on-going staff development programs, 'coaching' by peers, and sustained practice are essential if the new approaches are to take root" (Joyce & Showers, 1983, pp. 15-22).

By 1998, McKenzie was confident enough in his views to entitle his paper 'Secrets of Success: Professional development that works'. He was also clear about what he saw as a mixture of success and failure. "Too many schools with brand new networks suffer from the screen savers disease" (p. 1). The computers are switched on and the screen-saver works overtime because teachers are unsure of when and how to use the computer. He explains this failure in terms of a lack of clear purpose, too little support for adult learning and poor design of technology staff development. But he goes on to state that, "the single biggest explanation for the failure of technologies to penetrate the routines of schools is the failure to fund staff learning at a robust level" (p. 3). He commends the Illinois State Board of Education for their directive that at least 25% of project budgets for technology grants must be dedicated to staff development.

Supporting the views of McKenzie, it would appear that over the past two decades since the introduction of computers into schools began, we have seen a shift in terminology from staff training to staff development and recently to adult learning. This shift is not seen solely in the

area of technology. There is a sense of broadening the picture with well-known writers such as Fullan and Hargreaves (1997) and Sergiovani (1996) who have in recent years moved into the emotional, spiritual and moral domains of the person, acknowledging these as vital areas in change and development.

McKenzie (1998) too is caught up with this new vision calling for the emotional dimensions to be addressed and urging the replacement of staff development and training with adult learning. Staff development, McKenzie argues is "all too often what we do to teachers. It sets up a parent-child relationship – often inspiring resistance and resentment rather than growth" (p. 4). Adult learning on the other hand he states "involves choices of preference, interest and style and is different for different people" (p. 5).

A few years further on, McKenzie (2001) is warning against "the superficial and glitzy use of technologies" which he terms "powerpointlessness" (p. 3) and again strongly argues for 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" (p. 6). This obviously suggests that the journey must be embedded in classroom practice and on-going in nature. McKenzie further describes adult learning as comprising learning by doing and exploring, trying, failing and adapting.

In their book on whole-faculty study groups, Murphy and Lick (1998) support this adult learning experience model by suggesting that "the professional study group process allows teachers the freedom and flexibility to explicate, invent and evaluate practices that have a potential to meet the needs of their students" (p. 2). This study group model suggested by Murphy and Lick would embrace the three elements of professional development activity

outlined so far. The development would be collaborative in nature, embedded in classroom practice and ongoing, over time.

The second section of this research study, using the questions formulated related to collaboration, embeddedness and the on-going nature of the professional development, gathered ideas in this area of professional development of teachers integrating learning technologies into classroom practice. Having looked in some detail at why teachers integrate learning technologies into classroom practice and at the professional development to assist them in the process, the third area of this study will begin with a review of the literature and of my experience pertaining to the role of coordinators in general and then on to the specific role of the LT Coordinator in particular in relation to the integration of learning technology. However, it will start by briefly reviewing such a role related to other curriculum areas.

2.4   The Role of the Coordinator

In the majority of primary schools, the role of a coordinator in certain areas of the curriculum has been well established for many years. In the Catholic school system in Australia, the role of religious education coordinator is usually an important leadership role in the primary school. In fact, often a leadership team will comprise the principal, first assistant and religious education coordinator. The role of the religious education coordinator has been documented in the Guidelines for Religious Education in Schools (Catholic Education Office (CEO), 1995, p. 20). The Guidelines suggest that the person fulfilling the role of the religious education coordinator must be a person "committed to the discipleship of Jesus and appreciative of the worth, dignity and efforts of others."

This statement clearly indicates that the role of religious education coordinator should only be taken by a teacher who sees religious education as an issue of importance and concern and is

committed to faith development. As we look more closely at the detailed role description from the Guidelines for Religious Education in Schools (CEO, 1995), we notice that under the three headings of formation, curriculum and administration, there is a strong emphasis on teacher development. The first area of 'formation' deals with development of oneself, other teachers, parents and the community. One of the six statements in 'formation' states that the religious education coordinator should be involved in "encouraging study and professional development in theology, scripture and liturgy, Christian morality and religious education" (CEO, 1995, p. 21).

The second area of the role description deals with the responsibility of the religious education coordinator with respect to the curriculum. Here, the religious education coordinator is asked to "assist teachers to ensure that classroom programs are sequential, relevant comprehensive and in accordance with Diocesan guidelines, authorised by the local bishop. " And also "liaise with other staff members to foster the integration of religious education into other curriculum areas" (CEO, 1995, p. 21). Quite clearly the suggestion is for collaboration with colleagues and to assist other teachers in relation to actual classroom practice. These were two of the four elements discussed as vital factors in professional development programs generally.

The actual word 'collaboration' is used in the third area of 'administration' where religious education coordinators are asked to "collaborate with others to ensure the development of the religious education program is in the school development plan." And "to ensure that staff are provided with opportunities to share personal insights, reflections, observations and evaluations arising from their work."

In my experience, the role of the religious education coordinator as suggested by the guidelines, is often closely adhered to in primary schools. Clearly, the religious education

coordinator takes on some responsibility for the development of teachers in the area of religious education. The fact that the role of the religious education coordinator has continued and flourished in primary schools for so long would suggest that it has some value in the development of the religious education program.

Another coordinator's role in primary school that has over the past decade been fairly significant is that of curriculum coordinator. In many cases, this is a minor role. It may be a POL (position of leadership) 1 or 2 or carry no POL status. I would suggest that this role when it does exist is an administrative role rather than a professional development role. It is unlikely that one person, often without specific release time, could assist, to any significant extent, in the professional development of staff across the entire curriculum. Hence, I would argue that the main responsibilities of the curriculum coordinator in most primary schools is to collate timetables and courses of study as well as to help the leadership team work with the school development plan.

The eight key learning areas in Victoria's primary schools are often allocated to a coordinator as a particular responsibility but are usually related to administration of the area only and not the professional development of teachers. The one curriculum area of these eight in primary schools where a coordinator has traditionally been important in professional development is that of mathematics. I would suggest that one reason why the role of the mathematics coordinator in primary schools has been an effective professional development role is that the mathematics coordinators themselves have been supported and assisted in this role. When the Mathematics Curriculum and Teaching Program (MCTP) was developed as a classroom based resource for teachers, alongside it a professional development package "Guidelines for consultants and curriculum leaders" (Owen, Johnson, Clarke, Lovitt & Morony, 1988) was

also developed. This program as a whole, but also the notions for professional development, were influential in Victoria's primary schools.

The introduction to this manual states that it "is written for people such as consultants and curriculum leaders who have a responsibility for the professional development of teachers of mathematics" (p. 1). This guideline also makes reference to the need for a coordinator or consultant as the professional development is on going and time consuming. A case is made for the ideal situation to be that of a consultant. The emphasis on both internal and external consultants in this area of mathematics professional development is to support the teacher to use the MCTP resource materials and hence empower teachers to make real and lasting improvements in their classroom practice.

The advice in the manual is based on well researched ideas regarding professional development in general and cites Fullan (1982, p. 128) who argues that professional development must be "part and parcel of the job" and that "new meanings, new behaviour, new skills depend significantly on whether teachers are working as isolated individuals or exchanging ideas, support and positive feedback about their work." Fullan is further cited, suggesting that time is required to effect changes in teachers' attitudes and behaviour.

Quite clearly, these three points made by Fullan and cited in this MTCP document are those of situating the professional development in classroom practice, ensuring that it is collaborative in nature and accepting that it will take time.

If we take account of the literature reviewed in earlier sections of this chapter this seems to be suggesting that effective professional development needs to be classroom based, collaborative and on-going. These aspects are reflected in what is said both of the religious education and mathematics coordinator positions and are no doubt part of the reason why these school based

coordinator positions have become important assets for the professional development programs in the areas of mathematics and religious education in the Catholic primary schools.

I now turn to the important area of literacy. The WA First Steps program was taken up by the Victorian Catholic school system early in 1995 and is now receiving widespread acceptance as a structured whole school approach to literacy in Catholic schools in Victoria. It has as a vital component of the program, the role of a 'focus teacher' - a coordinator by another name. The First Steps coordinator or 'focus teacher' is a school based staff member with responsibility for the professional development of teachers in their school with respect to the implementation of First Steps in the reading, writing, spelling and oral language areas.

Having been involved with the implementation of First Steps since mid-1996, I would argue that without the 'focus teacher' the innovation may well not have got off the ground in the first place, and the implementation would not have been sustained in the way it has. My colleagues in other schools who have implemented First Steps over a similar time frame would also regard the role of the focus teacher as vital.

More recently, at the beginning of 1997, a new initiative of the Catholic Education Office was the development of the CLaSS Project (Children's Learning and Success Strategy). This is a highly structured early literacy program and relies heavily on the 'literacy coordinator', a school based teacher with fifty percent release time, to assist staff in the introduction and implementation of the program in schools. In the case of the literacy coordinator for CLaSS, and the focus teacher for First Steps, the role is primarily that of teacher development through support and collaboration situated in classroom practice. In summary then the role of a coordinator in the areas of religious education, mathematics and literacy is seen to be closely

associated with development of these areas of the curriculum in primary schools, and most importantly is related to the professional development of teachers in these areas.

Turning our attention now to the role of a learning technology coordinator in schools, the Technology Coordinator's web site (accessed on-line 26-9-01) suggests that "there is surprisingly little written about the technology coordinator's role, and even less research on the subject" (http://www.ac.wwu.edu/~kenr/Tcsite/plan.html). However, research studies outlined below shed some light on the role and, of course, this research study in itself will add to the limited work in this area.

Neil Strudler, who is associate professor of educational computing and technology at the University of Nevada in Las Vegas, has been responsible for two research projects focusing on the role of the school based technology coordinator. The first of these studies he initiated with a colleague, Meredith Gall in 1988. In this research, computer coordinators were conceptualised as change agents in three case studies and an analysis of their strategies, skills and outcomes was carried out. A follow-up study (Strudler, 1995) revisited these same schools seven years later to investigate changes, outcomes the coordinators were able to effect, barriers to the integration of technology, and strategies used by the coordinators and teachers to overcome these impediments.

The 1994 follow-up study, investigating the role of the school based technology coordinator in elementary schools, used questionnaires, interviews, observations and reviews of planning documents. This study found that whilst teachers were increasingly citing the benefits of computer use by their students, they also commented on the considerable amount of time it takes to prepare teachers to fully integrate computers with their students. Strudler (1995), reporting on this study in the Journal of Research on Computers in Education, noted

particularly that technology is a 'moving target' and that "without the implementation support that the coordinators provide, it is unlikely that technology will fulfil its potential to impact on teaching and learning in school programs in the coming years" (p. 22). The main barriers to the integration of technology revealed by Strudler's study were reported to be time, the need for staff development, and the scarcity of adequate equipment.

A similar study which concentrated specifically on difficulties in this area and whose title was, 'Barriers to computer integration: micro-interaction among computer coordinators and classroom teachers in elementary schools' was carried out by Melissa Evans-Andris and reported upon in 1995. This was a four-year longitudinal study which took place in twelve elementary schools where computers had been available for a period of at least eight years. All of the schools employed a coordinator on either a part-time or full-time basis. Over a period of five months, approximately one hundred hours of observations were involved mainly investigating interactions between the coordinators and classroom teachers. Forty one-hour interviews with coordinators, principals and classroom teachers provided further data for the study. This study focused on the interactions between the coordinators and classroom teachers and in particular the difficulties encountered. Evans-Andris reported that teachers tended to consider technological promotion as the coordinator's responsibility, that coordinators were exploited in terms of producing classroom materials and completing secretarial type tasks, that there was a sense of the coordinator being isolated, and jealousy and resentment towards the coordinator were apparent. She went on to make four recommendations following this rather negative view of the coordinator's role. Firstly, the position should be full-time but the responsibility for encouraging computer use should be seen as a one for the whole staff and administration. Secondly the coordinator should have a clearly defined role. This clearly defined role would "reduce or eliminate the possibility of

excessive personal favours from becoming expected behaviour" (p. 44). These excessive personal favours, according to Evans-Andris, "ranged from simple chores to bothersome interruptions and outright exploitation"

(p. 35). One example she quotes in her study, which she terms as exploitation, involved the coordinator being asked to complete secretarial tasks at home because no one else in the school knew how to use the computer program required for the task. Thirdly, formal channels should be established for coordinators to communicate their mission. Finally, employment of the coordinators should be as resource facilitators and not, as was the practice, employing them to take scheduled computer lab time to release teachers.

A very different study in terms of methodology but related to the role of the school based coordinator was that of Henry Becker (1992). Becker used survey data from the US administration of the 1989 International Education Association Computers in Education survey. He found that district level involvement and the provision of a leadership role of a school based computer coordinator were regarded as the most important factors valued by teachers as well as leaders in relation to computer education. Further findings revealed that the influence of the school based technology coordinator resulted in computers being used to promote higher order skills type programs compared to lower order drills and practices programs.

A very recent survey carried out by Ronnkvist, Dexter and Anderson (2000) confirms the idea that the support of a technology coordinator gives rise to higher quality and more varied teaching. However, they also found that this only occurred when technology coordinators provided instructional as well as technical support, but that most technology coordinators provided much more technical support than instructional support.

All of these research studies cited so far focused on the role of a specific school based technology coordinator. Strudler, Falba and Hearrington (2001), have recently investigated what they term the evolving role of the school based technology coordinator. Their research investigated a three-year plan from 1997-2000 by the Clark County School District (CSSD) in Las Vegas to provide 'educational computing strategists' (ECS's) for each elementary school in the district. These ECS's were not part of the school staff but extra to the staffing structure. Survey and interview data were analysed from 69 ECS's serving 160 elementary schools. Consistent with the findings of Ronnkvist, Dexter and Anderson, this research found that the coordinators spent more time than the desired amount of time on technical rather than instructional issues. Respondents interviewed in the Ronnkvist study suggested that there was a need for both a technical person, and that the ECS should mainly address curriculum needs in schools.

It will be remembered that the focus of this study in the first instance is the LaTTiCE and Navigator projects. The Navigator schools do have, in addition to the Project Officer, a separate technician who deals mainly with computer breakdowns and troubleshooting. The Project Officer's main role in the Navigator schools is related to the 'instructional' area of staff, student and whole school development. The LaTTiCE schools have no technical support but rely on the technology coordinator to deal with the technical and troubleshooting issues.

In reviewing how the role of the coordinator in the areas of religious education, mathematics and literacy is structured in Victorian Catholic schools, it appears to be strongly related to the professional development of teachers in these areas. In the area of learning technologies, it would seem from those studies reviewed above that the LT Coordinator's role also should involve staff development. However, one general difficulty is finding time for this

professional development to occur. Specifically, issues impacting on the LT Coordinator's role are reported to be the scarcity of adequate equipment, the actual perceptions of the coordinator's role, and the issue of the coordinator providing instructional as well as technical support.

This present study will look at the role of the LT Coordinator both in terms of how it is perceived in reality and what is perceived to be the desirable role. It will also investigate any parallels with those reported in the Evans-Andris study. Further, it will investigate the technical versus instructional issue which seemed to be a point of concern from some of the literature reviewed.

However, before developing more specific research relating to the role of the LT Coordinator, it seems important at this point to situate these within the LaTTiCE and Navigator projects. Hence, the specific role of the LT Coordinator will be investigated further in the following section which will look closely at the LaTTiCE and Navigator schools. These particular schools are privileged schools as pilot schools for the integration of learning technologies into classroom practice and hence a closer look at their functioning will provide a rich source of data for this study.

2.5　The LaTTiCE and Navigator Schools

The LaTTiCE and Navigator projects have been previously referred to in section 1.2 of this thesis. This section will further elaborate on these two specific sets of schools focusing on the professional development and the role of the coordinator in the LaTTiCE and Navigator schools. Phase one of this present study will comprise a series of focus groups and interviews in LaTTiCE and Navigator schools and hence it is important that the reader is aware of their

particular situations especially with regard to professional development and the role of the LT Coordinator.

The Navigator project was launched by the Victorian Department of Education in October 1995 and comprised three secondary and four primary schools. The LaTTiCE project, which was the Catholic Education Office answer to the Navigator project, was launched early in 1997 and comprised six primary schools. The aims of the Navigator and LaTTiCE projects are detailed in section 1.2. In summary these projects were pilot projects providing technology rich schools from which it was aimed learnings could be transferred to other schools in each sector. Findings from evaluation of the Navigator project (Clarkson et al., 1999) and my personal experience of the LaTTiCE project support research suggestions that technology rich classrooms might assist student learning. This suggestion of improved student learning has led both the Government and Catholic sectors in Victoria to push for the provision of technology rich schools throughout the State. Government funding has resulted in millions of dollars being made available to achieve this aim in the State schools.

In 1998, the Catholic education system made successful application to the Government for increased funding in order to provide children in Catholic schools with improved access to information technologies. This increased funding has led to the 'Technology in Schools' project or 'TCS'. The main aim of the TCS project is to enable Primary schools in the Melbourne Archdiocese to formulate and implement a technology plan for schools thus providing technology rich classrooms for students.

Personnel and finance have been provided to enable schools to carry out this task. It is strongly recommended by the TCS project that 25-33% of the finance be used for the professional development of teachers in the area of integrating technology into classroom

practice. This recommendation was based on findings from the ACOT research as well as from the Navigator and LaTTiCE schools over a three-year period. In part, it was reported that despite the high initial cost of introducing computers into the six LaTTiCE schools, it was found that over the three-year period approximately 25% of the budget was used for the professional development of teachers. The feedback from the journal of participating teachers, coordinators' meetings and principals' meetings for the LaTTiCE project consistently reported the importance of this professional development. The Navigator schools' experience had been similar; they too felt that a significant proportion of the budget must be given to the professional development of teachers.

It is imperative that this professional development happens and that it is effective. Therefore, a study to investigate professional development in this area is extremely important. During the next two years, millions of dollars will be spent by the Catholic education system alone on the professional development of teachers in this area. In order for this money to be spent wisely, it is necessary that the professional development model is one which is based on tried and tested research as well as a review of previous professional development in general terms and specifically in the area of information technology.

A review of the literature has shown that the implementation support provided by school based technology coordinators is seen as vital if the technology is to fulfil its potential to impact on teaching and learning in our schools (Strudler, 1995; Evans-Andris, 1995; Becker, 1992; Ronnkvist et al., 2000; & Strudler et al., 2001) The role of the coordinator in the pilot Navigator and LaTTiCE schools therefore deserves investigation.

2.5.1   The Role of the Coordinator in LaTTiCE and Navigator Schools

The LaTTiCE project used a professional development model that required the appointment of a part-time coordinator in each school. The coordinator's main role was to assist in the integration of technology into that school and in particular the professional development of staff. The learning technology coordinator was funded for one day a week. At St Pius X (the school at which I was principal), I used our local staffing budget to upgrade this to two days a week. Approximately 70% of this time was scheduled with classroom teachers, on a one-on-one basis, as a team or in the classroom. The other 30% of the time was taken up with administration, organization and technical matters. Similarly, the Navigator Schools project allocated a specific role of Project Officer for each school. The role of the Project Officer in Navigator schools included providing appropriate training and on-going support for teachers in the school, challenging teachers concepts of teaching and learning and facilitating the adoption of student centred approaches in all classrooms. Project Officers also organised and planned teacher practicums and workshops for teachers from other schools. Project Officers were full-time but 50% of that time was allocated to running practicums for teachers from other schools. The Navigator schools were also funded for a part-time technician.

The coordinator's role in the LaTTiCE schools could be divided generally into two areas - the technical area and the staff support or professional development area. In the area of professional development, the LaTTiCE school coordinator had responsibilities for:

- Assisting the teachers with planning the curriculum to cater for the integration of technology

- Working with LaTTiCE teachers in the classrooms to implement their objectives

- Providing teachers with direction and motivation related to integrating computers into classroom practice.

- Organising and conducting weekly information technology meetings for LaTTiCE teachers.

- Organising and conducting professional development sessions with all teachers and organising practicums for teachers from other schools.

- Locating, researching and providing staff with resources and teaching them to carry out such research themselves.

- Liaising with all the principals, CEO and all teachers to provide on-going up-to-date reports on developments

There are similarities and differences between the learning technology coordinator's roles in the Navigator and LaTTiCE schools. However, the above list is sufficient to give a useful guide into what was expected of this role in the Navigator schools.

My own experience and knowledge of the LaTTiCE and Navigator schools together with a review of the literature surrounding the role of the coordinators in schools programs generally and in the area of learning technologies, led me to suggest that a very important question for this research study should relate to perceptions of the role of the coordinator held by teachers, principals and the coordinators themselves. Indeed, three questions were asked of this area. The first was, in fact, later positioned within those that dealt with professional development of teachers. It asks:

"Is the role of the LT Coordinator seen to be an important factor in assisting teachers to integrate technology into classroom practice?"

The second question which seemed natural to ask after a consideration of the literature and the two projects under investigation, was:

"How is the role of the school based learning technology coordinator perceived by other teachers, principals and LT Coordinators?"

Finally, to allow for respondents to suggest factors that may be relevant to the LT Coordinator's role, a third question was included which asked:

"What factors are perceived to affect the role of the LT Coordinator in assisting teachers to integrate learning technologies into classroom practice?"

The next chapter begins by restating the series of questions that have arisen in reviewing relevant literature that speaks to the LaTTiCE and Navigator projects, and then reviews the methodology used to investigate these questions.

CHAPTER 3

METHODOLOGY

3.1   Introduction

In this chapter, the research statement together with the derived research questions will be presented. This will be followed by a description of the rationale that led to the design adopted for the study in order to answer the research questions. The research design used will then be detailed for phase 1 of the study, the focus groups and interviews. The reasons for choosing this methodology, the specific design of the focus groups and interviews as well as the synopsis paper and interview guide preparations will be given. In detailing this design model, the role of the moderator will also be discussed.

Following the explanation of the design for phase 1, the results of a pilot study carried out for this phase will be given. One result of the pilot study was the need for enlarging the review of literature, particularly literature related to the role of the principal. It seemed appropriate to include this after the pilot study results. The chapter will conclude with a final report and review of the implementation of phase 1 of this study. The following chapter will give, and discuss, the results of phase 1 of the study.

3.2   The Research Statement and Questions

The major purpose of this study was to investigate the role of the school based learning technology coordinator in the professional development of teachers as they integrate learning technologies into classroom practice in the primary school. Following a review of the literature, the model of the research statement (see Figure 3.1) was produced which led to development of the research questions.
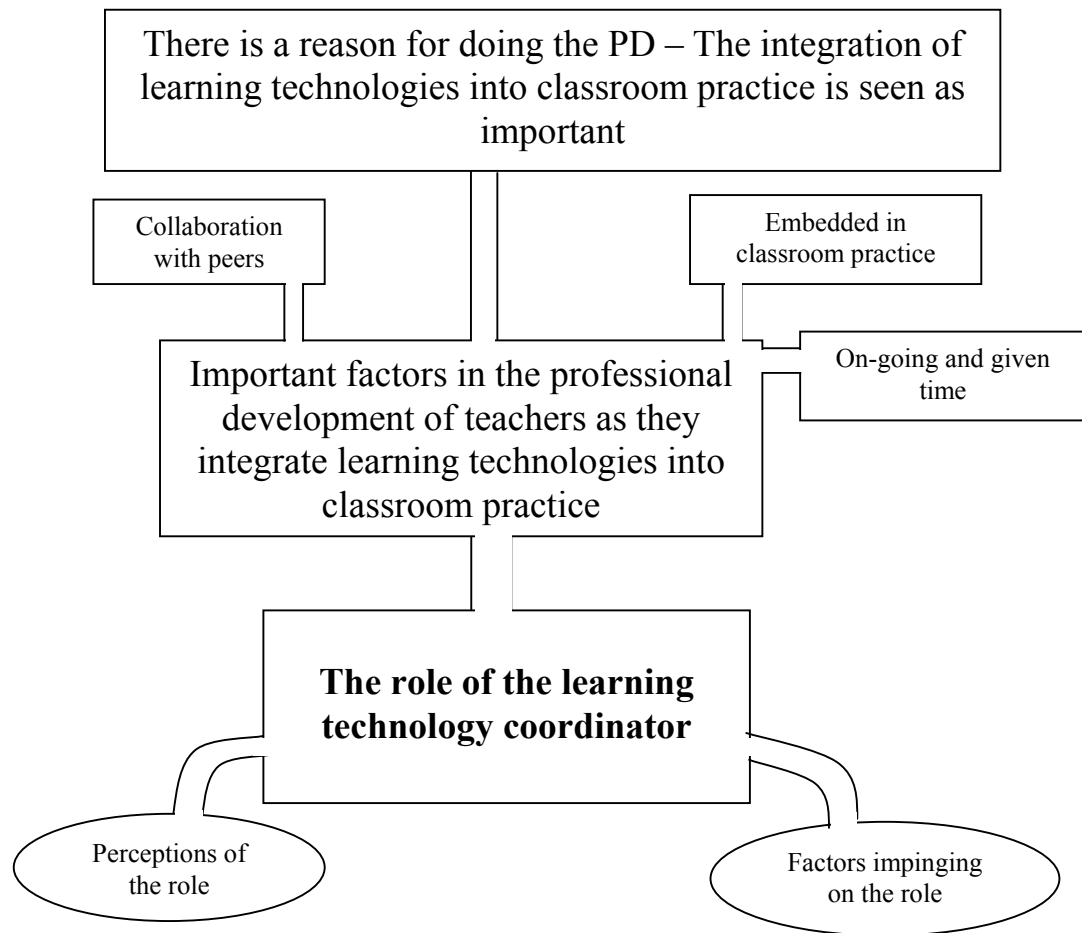
Figure 3.1.   Initial Model of the Research Statement.

Resulting from a review of the literature and development of the model, the initial research

questions were phrased as follows:

Concerning the integration of technology into classroom practice, the study asked:

1.   Why do teachers integrate learning technologies into their classroom practice?

Concerning the professional development of teachers in this area, the study asked:

2.   What are the most important factors in the professional development of teachers

as they integrate learning technologies into classroom practice?

2.a. Is the opportunity for collaboration with peers seen as an important factor?

2.b. Is the opportunity to embed new skills and learnings in classroom practice seen as an important factor?

2.c. Is it seen as important to have on-going support?

2.d. Is the role of the LT Coordinator seen to be an important factor in the professional development of teachers as they integrate learning technologies into classroom practice?

2.e. Are any other factors seen as important in the professional development of teachers as they integrate learning technologies into classroom practice?

Concerning the role of the LT Coordinator, the study asked:

3.a. How is the specific role of the LT Coordinator perceived in reality?

3.b. What factors are perceived to affect the role of LT Coordinator in the professional development of teachers as they integrate learning technologies into classroom practice?

As will be seen, the model of the research statement shown in Figure 3.1 was modified in line with the modification of the research questions following phase 1 of the study. The research questions were also modified after the first phase of the study was completed. This first phase involved focus groups and interviews at the Navigator and LaTTiCE schools and is explained in more detail later.

3.3 The Rationale for Design

The overall purpose of this study was to investigate the role of the LT Coordinator in the professional development of teachers as they seek to help teachers to integrate learning technologies into classroom practice. The derived research questions that arose from a review of the literature related to three specific themes of the statement and were divided into sections accordingly.

Section 1 related to the integration of learning technologies into classroom practice by teachers (question 1).

Section 2 related to the professional development of teachers as they integrate learning technologies into classroom practice (questions 2, 2a, 2b, 2c, 2d and 2e).

Section 3 related to the specific role of the LT Coordinator (questions 3a and 3b).

The study used perceptions of teachers who were integrating computers into their classroom practice, as well as the perceptions of principals and LT Coordinators.

3.3.1 The Sample

This section describes the sample used with respect to the above questions. From question one, it was clear that we were concerned with teachers who were integrating learning technologies into their classroom practice. Hence, teachers were the first group of people from whom we needed to gather information. In respect to section 2 which deals with those factors that assist teachers to integrate learning technologies into their classrooms, once again the views of teachers involved in this process needed to be accessed. Information from teachers themselves also gave us data required to answer the research questions in section 3 related to the role of the learning technology coordinator.

However, whilst teachers' perceptions were clearly required to answer the questions of the research statement, two other groups of people were identified whose views would provide important and relevant information to address these questions. Firstly, the LT Coordinators themselves, because of their particular role, had views that would contribute important information. Learning technology coordinators, where appointed, would also be more likely to answer some of the questions in more depth than the teachers due to their increased knowledge and commitment to this area. Similarly, principals in schools take responsibility for both appointing learning technology coordinators and providing the opportunities for professional development for teachers to integrate learning technologies into their classroom practice. Hence, it was decided that the views of principals would also provide important data to answer the questions of this research study.

Therefore, the three groups of people whose views were sought to answer these research questions were

a) teachers who were integrating learning technologies into classroom practice,

b) learning technology coordinators and

c) principals of schools where learning technologies were being integrated into classroom practice.

Further detail of these three groups of people will be discussed in the next section.

3.3.2   Design of Data Collection

This section gives a broad outline of the design of the study. More details for each phase are given in later sections. Initially, the intention was for a broad survey to be mailed to a reasonably large cross section of schools to obtain answers from these three groups of people

in respect to the research statement and questions. However, it was known that in the LaTTiCE and Navigator schools there were specific groups of teachers, learning technology coordinators (Project Officers in the Navigator schools) and principals who, because of their level of involvement in integrating learning technologies into practice during the past few years, had a depth of knowledge and experience in this area. Their views would be very important in answering the research questions of the study. Because of the depth of information these specific groups had, focus groups and interviews would be appropriate instruments to use with these particular groups of people. It was anticipated that these would give rise to a rich source of data as in fact proved to be the case.

Therefore, it was decided to plan a two-phase approach. Phase 1 of the study comprised focus groups and semi-structured interviews at the three remaining Navigator primary schools and four of the LaTTiCE primary schools. One of the original four Navigator primary schools was no longer a Navigator school at the time of data collection, and advice from the Department of Education, Employment and Training was that using data from this school would skew results though this was not elaborated (personal communication from Christine Ekin-Smyth, Research Officer at DEET).

Phase 2 of the study would comprise a survey of primary schools in the Melbourne area, thus meeting the original aim of the study. The reasons for choosing the survey and the sample will be detailed later in Chapter 6 which describes the survey instrument.

It was anticipated that the focus group and interview data from the Navigator and LaTTiCE schools would provide a rich source of data coming from a specific group of people with experience of integrating learning technologies into classroom practice and the associated professional development. Focus groups were used because according to Stewart and

Shamdasani (1998, p. 507) they may be useful at any point in a research program, but tend to be especially useful early in the project for "learning how respondents talk about phenomenon of interest which may in turn facilitate the design of questionnaires, survey instruments or other research tools." The rich data produced by the Navigator and LaTTiCE focus groups in this instance was intended to aid the final construction of the survey in highlighting or bringing to the fore issues not anticipated by the researcher. Thus the survey instrument of phase 2 of the study would be improved by delaying its final construction until after the focus groups had met.

Stewart and Shamdasani (1998) also suggest that focus groups have proven useful in situations following the analysis of a large-scale quantitative survey by adding a depth to the responses obtained. Hence, a study design could use a focus group at the end of the study or incorporate a second focus group coming together after the survey has been analysed to explore similarities and differences as well as other issues highlighted by the large-scale survey. However, this would have been too costly a venture in terms of time and hence did not form part of this particular research study. In this case, the focus groups and interviews preceded the survey to enable amendments to the survey prior to its final construction.

This section has given a broad overview of the conceptual design of the study (see Table 3.1). The next section will elaborate details and reasons why particular choices were made.

Table 3.1

The Research Design

Phase 1	Focus Groups	Interviews

		Sample: Classroom teachers from 4 LaTTiCE and 3 Navigator primary schools	**Sample**: Principals and LT Coordinators from 4 LaTTiCE and 3 Navigator primary schools
		Purpose: Elicit a rich source of data from this specific group of knowledgeable and experienced people in the field of learning technologies	**Purpose**: Elicit a rich source of data from this specific group of knowledgeable and experienced people in the field of learning technologies
		These data from phase 1 were used in part to aid construction of the survey in phase 2	
Phase 2	Survey		
	Sample: LT Coordinators, principals and teachers involved in integrating learning technologies into classroom practice in primary schools		
	Purpose: Access perceptions of a large number of people in relation to this research proposal at a relatively minor cost		

3.4   The Research Design for Phase 1 The Focus Groups and Interviews

The first phase of the design involved the collection of data from focus groups and interviews.

3.4.1   Reasons for Using the Focus Group Model

Only in the last decade have focus groups come to the forefront as an effective method of obtaining research data. Gibbs (1997, p. 2) suggests that "focus groups are under-used in social research" although she goes on to explain that they do have a long history in market research. Stewart and Shamdasani (1990) explain that the technique was developed after World War II by Robert Merton, a social scientist of this time, to evaluate audience perceptions of radio programs. According to Denzin and Lincoln (1994, p. 365) it was Merton himself who in 1956 coined the term 'focus groups' to apply to a situation in which the interviewer asks a defined group of people specific questions about a topic. Forty years on from that time, the many definitions of focus groups today vary little from this original concept. This research study uses Krueger's definition of what constitutes a focus group,

namely "a carefully planned discussion designed to obtain perceptions in a defined area of interest in a permissive, non-threatening environment" (1988, p. 18).

The focus group design model, according to Stewart and Shamdasani (1998, p. 507) is a very powerful way of raising issues which the participants see as important. Stewart and Shamdasani claim that focus group research, along with a few other research techniques such as the unstructured interview, allows for respondents to use their own words, categories and associations.

The reason why focus group research was used in this study was to draw on the experiences, attitudes and beliefs of a specific group of people, namely LaTTiCE and Navigator schools' teachers. The key element is the interaction of similarly experienced people in a nurturing environment leading to the development and articulation of perceptions at a greater depth than could otherwise be expected. Lewis (1995, p. 3) argues that the advantage of this qualitative research method lies in the fact that "it taps into human tendencies where attitudes and perceptions are developed through interaction with other people."

It is this interaction which I suggest was the crucial feature of the focus group used in this study. Elaborating on this point, Kitzinger (1994) referring to focus groups as qualitative research methodology in health studies further suggests that this interaction enables participants to question each other and to re-evaluate their own understandings. In this research study with LaTTiCE and Navigator teachers, the interaction led to questioning and re-evaluation. This produced a great depth of response which it is doubtful could have been gained by other research methods of a more quantitative nature. The purpose then was, as Krueger states, "to obtain information of a qualitative nature from a predetermined and limited number of people" (1988, p. 26).

3.4.2　　　　Designing the Focus Group

A focus group generally comprises six to ten people discussing a particular topic under the direction of a facilitator or moderator whose task it is to promote interaction amongst the group and direct the discussion to the topic. The focus group as a research tool has been found to be particularly effective in recent studies where a specific population has been identified as the group. Plentiful data is available when a specific population with a greater depth of information or experience of the issue is identified.

Focus groups would generally comprise people with a clear commonality. Research has shown that people tend to disclose more to people who resemble them in various ways than to people who differ from them. The commonality of participants according to Krueger (1994) is one of the strengths of focus group methodology.

Research by Knodel (1995) with a low-income group, and Hoppe, Wells, Morrison, Gillmore and Wilsdon (1995) with a specific group of children, highlighted the use of focus groups for an identified and specific group. In both of these instances, the depth of experience and knowledge of the issue by the specific groups enabled the collection of rich and relevant data.

Phase 1 in this study used very specific groups as respondents. The focus groups at four of the LaTTiCE schools comprised the four class teachers who were members of the LaTTiCE team in the school. The focus groups at the three remaining Navigator primary schools comprised a team of four teachers identified by the principal of those schools as key people in the integration of learning technologies in their schools.

Careful thought was given to the composition of these focus groups. One initial consideration was to have only one focus group made up of representatives from the LaTTiCE and Navigator schools. Whilst this was seen as one option that would provide rich and varied data

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there were two serious concerns. The first concern revolved around the number of respondents. The four LaTTiCE schools have four teachers each who would form part of the specified group – a total of sixteen. Add to these, four teachers from each of the Navigator schools, namely twelve and the final total is twenty-eight. A group of that size would be extremely difficult to gather together in one venue and at one convenient time. The sheer number of respondents would also reduce the input of each individual and may mean that only the views of a few dominant members of the group were adequately expressed. Merton suggests that the group must not be so large that it precludes adequate participation by most members (Merton, Fiske & Kendall, 1990, p. xxi – cited by Lewis, 1995, p. 3).

On the other hand, if the number of the group was reduced to a maximum of fourteen by inviting only two participants from each school then rich and valuable data from the other teachers would not be available. Furthermore, each of the four LaTTiCE schools is very different in size, socio-economic make up, and in the stability and experience of their LaTTiCE teams. The LaTTiCE schools differ from the four Navigator schools in the length of time for which they have been pilot schools for the integration of technology into classrooms and in the differing level of resources available.

Hence, it was decided that in phase 1 the focus group research would involve seven separate mini-focus groups. Each focus group would comprise the four teachers at that particular LaTTiCE or Navigator school. Krueger argues that smaller groups (4-6 people) are preferable when participants have had intense experience of the discussion topic. These teachers with intense experience of the topic would then have the opportunity to respond relative to his or her given situation and result in a very rich and diverse database.

3.4.3 The Synopsis Paper

Krueger (1988) suggests that conducting a focus group occurs in three phases; 1 Conceptualisation; 2 Interview; and 3 Analysis and Reporting. In this particular study, it was felt that the interview phase required some 'setting of the scene'. Hence, as a means of introducing the interview questions a synopsis paper was developed and sent to all participants.

Although a synopsis paper as such does not form part of the focus group model, in this particular instance a three-page synopsis paper was developed comprising a brief overview of the research as grounded in the literature (see Appendix A). The reason for this paper was to explain the purpose of the meeting and to encourage participation by respondents who, on reading the synopsis paper, would realise why they were the target group, and so appreciate that their particular experience in the LaTTiCE or Navigator schools would be helpful in this area of the research.

Gibbs (1997, p. 6) argues that before the meeting begins it is important that participants have a clear explanation of the purpose of the group, feel at ease and are prepared to interact. The synopsis paper served to set the scene or provide a background to the focus group meeting. This paper was circulated to the members of the focus group two weeks prior to the group session to allow time for reflection on the issues. A letter outlining the reason for the study, time frames, ethical clearance notifications and assurances of confidentiality was also sent to the principals, LT Coordinators and classroom teachers of these LaTTiCE and Navigator schools (see Appendix B). Once the synopsis paper to set the scene had been developed, the interview guide, as it is referred to in the literature of the focus group model, was prepared.

3.4.4 The Interview Guide

This guide, according to Stewart and Shamdasani (1990), should grow directly from the research questions. The lead questions used in the focus groups and produced in this interview guide related to the three themes arising from a review of the literature which was the impetus for the research questions.

Krueger (1994) suggests that quality questions will produce quality answers and that often five or six questions will suffice. Stewart and Shamdasani (1990) propose that most interview guides consist of fewer than a dozen questions. The purpose of this guide is to provide an overall direction for discussion. It is not the equivalent of a survey instrument.

When formulating interview guide questions, Stewart and Shamdasani (1998, p. 513) suggest that the questions be open-ended and serve to "introduce broad areas for discussion and to assure that all topics relevant to the research are included." They further suggest the use of words such as 'how', 'why', and 'under what conditions' as useful probes in the design of interview guide questions (1990, p. 65). However, Krueger argues that 'why' questions should rarely be used as they may force participants to provide quick answers that seem rational in the situation (1988, p. 62).

I would argue that this very much depends on the question and I did in fact include a 'why' question as the opening question for this study simply because it was required by the research and I could see no reason why this question rather than a 'how' or 'what' would elicit a spontaneous response. Throughout the focus group sessions, all participants appeared to give careful thought to the questions and I suggest that the use of the 'why' questions in no way elicited a spontaneous response in this study.

The first set of questions related to the theme of teachers integrating learning technologies into classroom practice and asked:

- "Why do you integrate learning technologies into classroom practice?"

This is the most general of all the questions to be asked and is followed by questions of a more specific nature as suggested by Stewart and Shamdasani (1990, p. 61), as well as most other writers in the field of focus group methodology.

The second question in the interview guide related to the theme identified in the literature concerning the professional development of teachers as they integrate learning technologies into classroom practice and asked:

- "What do you consider to be the most important factors in your professional development as you integrate learning technologies into classroom practice?"

The research questions 2a, b, c, d, and e were not used in the seven focus group sessions at the LaTTiCE and Navigator schools. This specific group of teachers from the LaTTiCE and Navigator schools are informed and experienced in this area of integrating learning technologies into classroom practice. Their views of what constituted important professional development in this area were a valuable source of very rich data. It was anticipated that the factors of collaboration with peers, professional development being situated in classroom practice, being continuous in nature and being supported by the role of the LT Coordinator would arise from this group without prompting.

The final set of lead questions for the focus group interview guide related to the specific role of the LT Coordinator in the professional development of teachers as they integrated learning technologies into classroom practice. Once again, general lead questions were asked to give

direction rather than prompt these informed and experienced people. Here, the questions asked were:

- "How do you perceive the role of the LT Coordinator?"

- "Can you identify any factors that impact on the role of the LT Coordinator? Please explain with examples where possible"

The lead questions for the focus groups are presented in Table 3.2.

Table 3.2

Lead Questions for the Focus Groups

- "Why do you integrate learning technologies into classroom practice?"

- "What do you consider to be the most important factors in your professional development as you integrate learning technologies into classroom practice?"

- "How do you perceive the role of the LT Coordinator?"

- "Can you identify any factors that impact on the role of the Coordinator? Please explain with example where possible"

3.4.5   The Moderator

The question of the moderator of the focus group was important. Gibbs (1997, p. 6) suggests that the role of the moderator is a critical one. They may need to help participants feel at ease and to understand the purpose of the group. They may need to promote debate, tease out meanings, probe for details and keep the session focused. The moderator, according to Krueger, also needs to have a good depth of knowledge about the topic but avoid showing any personal involvement or approval (Krueger 1988).

On the one hand, there were definite advantages to acting as moderator myself. I knew the research requirements very well and would be able to direct the focus as the need arose. Attendance at eight focus group sessions including the pilot school was required. Some stability would ensue if the same moderator were used for each session. With myself as moderator, this would be much easier to organise.

On the other hand, if I was acting as moderator, I would not be able to act as an observer for the group. Stewart and Shamdasani (1998, pp. 514-515) note that observational data such as gestures and behavioural responses may be very useful in addressing the character of the discussion but these are not reflected in transcripts. Videotaping was a possibility but one which was not favoured for this project. My personal experience of videotaped situations was that they are restrictive. Of the four teachers who formed the focus group at my own school, two of them said they would not take part if the session were to be videotaped. However, they had no objection to audio-tapes being used.

If I did not act as moderator, I needed to find someone who was experienced in group-dynamics and interview skills (Stewart & Shamdasani, 1998, p. 513). Whilst I am no expert in this area, as principal of a school I do have experience gained from staff meetings and parent

meetings in the area of group discussions and interviewing. On balance, I decided to act as the moderator and enlist the help of a colleague who was prepared to take on the role of observer. Clarification of these roles emerged from the pilot study which was conducted prior to phase 1 of the main study (see section 3.5).

There was also a need to consider the issue of personal bias. Would my position as moderator be a threat to the integrity of the research? There are two differing views related to this issue of personal bias. On the one hand, Maxwell (1998, p. 78) alerts us to the fact that the experience we bring to the research, 'personal bias', may be a valuable component of the research rather than something to be rejected or eliminated from the study. The personal experience we bring to the study according to Berg and Smith (1998,) and Jensen and Peshkin (1992) can be an advantage and enhance the study. Subjectivity, they argue in a qualitative research project does not necessarily compromise the trustworthiness or usefulness of its findings. The readers of the study will consider how self and subject have intersected and the effects of that on the study, according to Jensen and Peshkin (1992). The personal experience we bring to a study enables the researcher to go to greater depths in many instances of the investigation. Reason (1994), however, warns of the need for 'critical subjectivity' – a process by which we raise the subjective nature of the research to the conscious level, always careful to use and not abuse this subjective experience.

As a previous principal of one of the LaTTiCE schools, my position in this research was clearly subjective in nature. In fact, it was precisely because of my experience that this research question was generated. This is true of most research studies. Most researchers generally pursue an area of study because of some personal interest in that area. In my particular case, my personal experience over the last few years led me to believe that the

integration of information technologies is advantageous for our children and is dependent to a large degree on the professional development of teachers integrating technologies into their classrooms. My particular experience has further led me to suggest that the role of the learning technology co-ordinator in this process is a vital one. The reason for this research study was to investigate this question so as to inform other schools and all sectors of education.

However, as Reason (1988) suggests, we do need to be aware of the personal involvement and use it positively. Maxwell (1998) suggests the use of a 'researcher experience memo' as a means of reflecting on and exploring the relationship of personal experience to the research study. I incorporated a personal experience journal rather than a memo into this research design to highlight the personal experience as a valuable component of the study and gain insights from this.

3.4.6   Interviews

In the four LaTTiCE and three Navigator schools, an interview was conducted with the principal and LT Coordinator or Project Officer to further investigate the factors they considered important in providing professional development to help teachers integrate learning technologies into classroom practice. For this project, the role of the Navigator schools Project Officers is equivalent to that of the school based LT Coordinator in the LaTTiCE schools. Those being interviewed were presented with the synopsis paper used with the focus groups prior to the interview.

The principals of each school were interviewed as the people with the responsibility for the development of teachers and the implementation of programs. From the beginning of the LaTTiCE program in 1997 until the end of 2000, the principals of the LaTTiCE schools met

once a term. It is important to note that the professional development of teachers as well as the role of the information technology co-ordinator was an agenda item at every meeting. The views of the principals, therefore, provided this research study with rich data produced as a result of much discussion and reflection. As the principal of one of these LaTTiCE schools for four years, I was not interviewed but I used my personal experience journal as a tool to respond to the interview questions – once again raising awareness of my personal perceptions and so enabling me to treat them as valuable insights rather than a biased view.

As with the principals, the learning technology coordinators from the LaTTiCE schools met once each term during the three years prior to this study as well as during the study. Again a major area of discussion revolved around the role of the LT Coordinator in the professional development of teachers integrating technology into their classrooms. Similar network meetings were held involving principals and Project Officers in the Navigator schools. It was, therefore, anticipated that the seven interviews conducted with the learning technology coordinators from the LaTTiCE schools and the Project Officers from the Navigator schools would provide rich data for this study.

Once again the dilemma arose as to who should be the interviewer. Babbie (1990, p. 188) puts forward one view that the role of the interviewer must be neutral and "should affect neither a respondent's perception of a question nor the answer given." The principals of the other three LaTTiCE schools are my colleagues and know my feelings on professional development of staff, but my knowledge of these principals led me to believe that their responses would not be coloured by my presence as interviewer. Similarly, I know the Navigator school principals and once again had no hesitation in acting as interviewer in these situations, being quite sure that my presence would not bias responses to the interview. So too, in regard to the LT

Coordinators, some I know, some I don't know but I could see no reason to be concerned about acting as interviewer in these situations. The benefits to be gained in terms of time and convenience as well as knowledge of the study pointed to the fact that the interviewer's role was one I should take on. The interviews were audio-taped and field notes relevant to gestures and behaviour of the respondent were made by a colleague acting as observer. All responses were written up in a very open manner and any personal bias was stated clearly.

3.4.7 The Lead Questions for the Interviews

As with the focus groups, the lead questions used in the interviews related to the three themes arising from the literature review or from personal experience, which had given rise to the questions of the research statement. The first set of questions related to the theme of why teachers integrate learning technologies into classroom practice;

- "Why do you think teachers integrate learning technologies into classroom practice?"

- "As principal/LT Coordinator, what reasons would you give for supporting the integration of learning technologies into classroom practice?"

The second set of lead questions related to the theme identified in the literature concerning the professional development of teachers;

- "What do you consider to be the most important factors in the professional development of teachers as the integrate learning technologies into classroom practice?"

As with the focus group interviews, the research questions would not be used in the seven interview sessions with principals or LT Coordinators. This specific group of seven principals and seven LT Coordinators/Project Officers are informed and experienced in this area of integrating learning technologies into classroom practice. As with the focus groups, their

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views of what constitutes important professional development in this area were a source of rich data. It was anticipated that the factors of collaboration with peers, professional development being situated in classroom practice, being continuous in nature and being supported by the role of a learning technology coordinator would arise from this group without prompting. These derived research questions would serve as a guide for the general survey but they would have had a 'directive' role with these more informed participants of the study such as the LT Coordinators, Project Officers or principals of the LaTTiCE and Navigator schools. The final set of interview lead questions concerned the specific role of the LT Coordinator in the professional development of teachers as they integrated learning technologies into classroom practice. Once again, general lead questions were asked to 'lead' rather than prompt these informed and experienced people. Hence;

- "How do you perceive the role of the LT Coordinator?"

- "Can you identify any factors that impact on the role of the coordinator? Please explain with examples where possible."

The lead questions were very similar to those used in the focus groups and are presented together for convenience in Table 3.3.

Table 3.3

Lead Questions for the Interviews

- "Why do you think teachers integrate learning technologies into classroom practice?"   - "As principal/LT Coordinator, what reasons would you give for supporting the integration of learning technologies into classroom practice?"   - "What do you consider to be the most important factors in the professional development of teachers as they integrate learning technologies into classroom practice?"   - "How do you perceive the role of the LT Coordinator?"   - "Can you identify any factors that impact on the role of the Coordinator?

3.5   The Pilot Study for Phase 1 of the Main Study

Prior to embarking on the focus group sessions and the structured interviews, a pilot study was carried out at St Pauls School in East Bentleigh. St Pauls was deliberately chosen as it was originally one of the six LaTTiCE schools set up in 1997 by the Catholic Education Office in Melbourne as pilot schools for the integration of information technologies into classroom practice. At the end of 1999 after a three-year period, the LaTTiCE model changed slightly to accommodate four new "mentor" schools. At this stage St Pauls, having experienced significant staff turnover and internal structural changes decided to cease being part of the LaTTiCE group.

There were only seven schools, four LaTTiCE and three Navigator schools, in the original sample for this study so to lose even one would be too large a reduction. However, for the pilot to be representative of this group, a school as similar as possible to the intended sample was required. St Pauls was the obvious choice.

Personal contact was made with the principal at St Pauls who was very happy to accommodate us for the pilot of the research study, accepting the importance of such a study for future refinements of the professional development of teachers and for clarification of the need for a leaning technology coordinator in this area. The pilot study was conducted at St Pauls on July 18th 2000. I acted as moderator for the focus group session which was audio-taped. Shane Tobin agreed to act as research assistant and observer for the focus group and structured interview sessions. He noted observational data throughout the process. At the time, Shane was LT Coordinator at St Pius X and later became my deputy principal when I took up another principalship in 2000.

The observer and I then met, firstly with the learning technology coordinator then with the principal. I acted as interviewer for each of these interviews which were audio-taped and once again the observer noted body language, emphases and points of interest during the interview. At the conclusion of each of these sessions, the observer and I spent an hour discussing the overall themes, the positive outcomes and the difficulties encountered. I transcribed the audio-tape over the next few days and enlisted the help of another person who would act as the second analyst. He also transcribed the tape independently and we discussed our findings with the observer.

Hawe, Degeling and Hall (1990, p. 182) note that "whether you use a tape recorder or take notes as you go along, as soon as possible after the focus group you should write down your broad impressions; your feelings about how the group process worked." Hence the effort noted above to conduct these discussions as soon as possible after the focus groups and interviews

The overall feel from the pilot focus group and structured interviews was one of excitement and encouragement. The focus group had been very keen to explore and discuss the topics. They were quite clearly very knowledgeable in this area and the data provided was detailed. So too the data from the interviews with the LT Coordinator and principal were plentiful and very clear.

In all three sessions the role of the principal emerged as an important consideration. I had not explored the literature in relation to this factor, but discussions with my supervisor and colleagues led me to conclude that a literature search was required in this area and that the role of the principal should be included in the final study in some form. The literature review for this segment of the study is reported in section 3.6 in this chapter.

This pilot study also highlighted a need for clarification concerning the question of the perception of the role of the LT Coordinator. In each of the three situations, namely the focus group session and the interviews with the LT Coordinator and the principal, at least one of the respondents asked "do you mean in reality or ideally, as it should be?" Discussion on this issue resulted in a separation of this question into two forms for the actual study; enabling investigation of any differences perceived in the real and the ideal situations. As a result of this Pilot Study, the research questions were slightly modified as shown in Table 3.4. So too the research model is slightly extended as a result of this pilot of phase 1, as shown in Figure 3.2.

Table 3.4

The Derived Research Questions of the Research Statement after Modification Resulting from the Pilot of Phase 1 (changes are shown in italics)

Concerning the integration of technology into classroom practice:
1. Why do you teachers integrate learning technologies into classroom practice?
Concerning the professional development of teachers in this area:

2. What are the most important factors in the professional development of teachers as they integrate learning technologies into classroom practice?
        2a Is the opportunity for collaboration with peers seen as an important factor?
        2b Is the opportunity to embed new skills and learnings in classroom practice seen as an important factor?
        2c Is it seen as important to have on-going support including the allocation of time?
        2d Is the support of the principal seen as an important factor?
        2e Is the role of the LT Coordinator seen to be an important factor in the professional development of teachers as they integrate learning technologies into classroom practice?
        2f Are any other factors seen as important in the professional development of teachers as they integrate learning technologies into classroom practice?

Concerning the role of the LT Coordinator:

3a How is the specific role of the LT Coordinator perceived in reality?
        3b Ideally, what should the role of the LT Coordinator be?
        3c What factors are perceived to affect the role of LT Coordinator in the professional development of teachers as they integrate learning technologies

into classroom practice?

There is a reason for doing the PD – The integration of learning
technologies into classroom practice is seen as important

Collaboration with peers

Embedded in
classroom practice

Support of the
principal

Important factors in the professional
development of teachers as they
integrate learning technologies into
classroom practice

On-going and given
time

**The role of the learning technology
coordinator**

How is it perceived
in reality

What it should be
ideally

Factors impinging on
the role

* Changes to Figure 3.1 are shown in italics
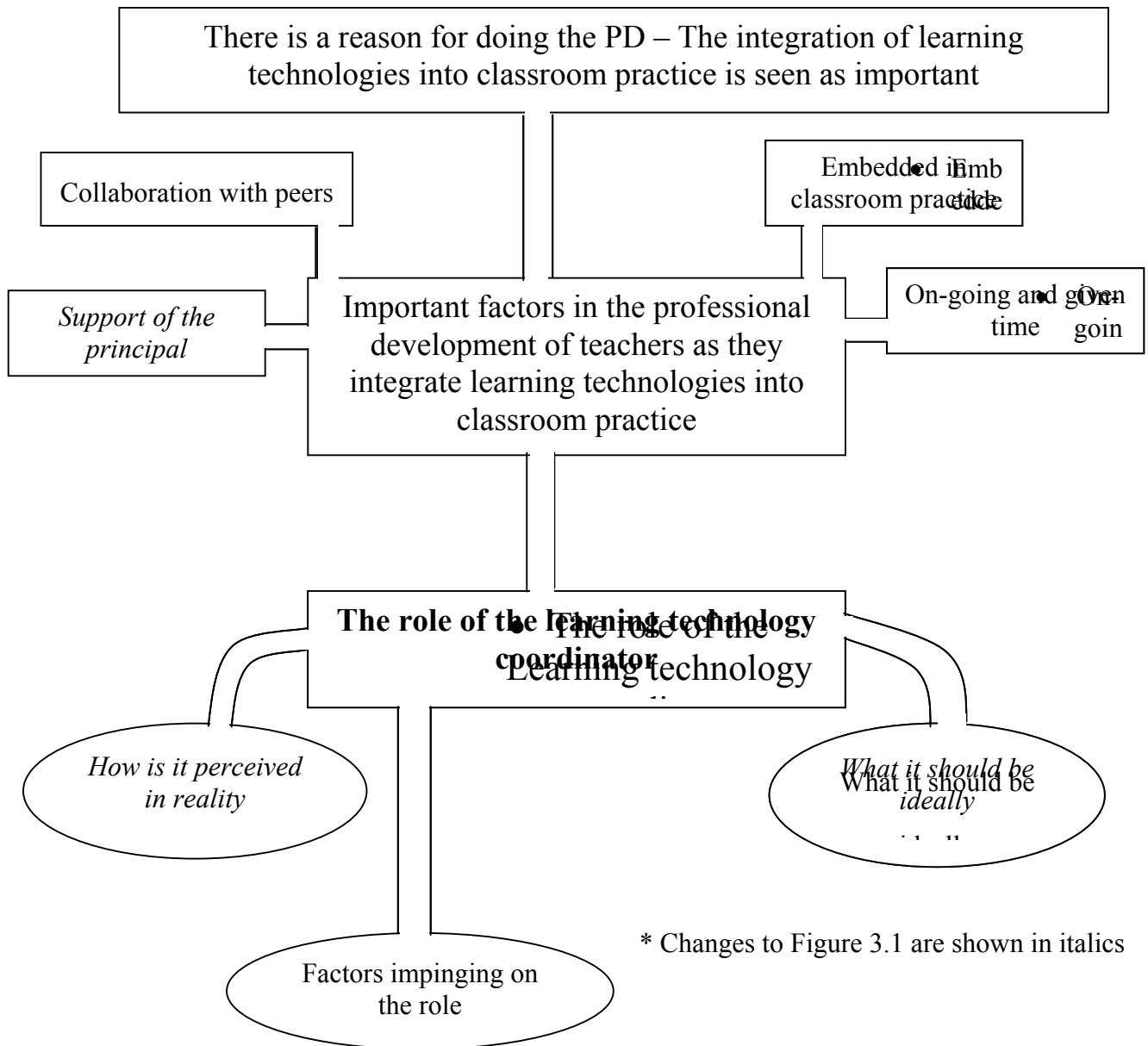
Figure 3.2.   Adapted model of the research question.

The lead questions for the focus group and interviews outlined in Tables 3.2 and 3.3 were
now restructured and the final version used in the seven LaTTiCE and Navigator schools for
the major study are presented in Tables 3.5 and 3.6.

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Table 3.5

Lead Questions for the Focus Groups (changes to Table 3.2 shown in italics)

1   "Why do you integrate learning technologies into classroom practice?" 2.a   "What do you consider to be the most important factors in your professional development as a teacher attempting to integrate learning technologies into classroom practice?" 2.b *"Is the role of the principal important in assisting you with professional development to integrate learning technologies into classroom practice? If so, how?"* 3.a *"How do you perceive the role of the LT Coordinator?"* 3.b *"Ideally what would you suggest the LT Coordinator's role should be?"* 3.c "Can you identify any factors that impact on the role of the LT Coordinator? Please explain with examples where possible"

Table 3.6

Lead Questions for Interviews of Principal and LT Coordinator (changes to Table 3.3 shown

in italics)

1   "Why do you think teachers integrate learning technologies into classroom practice?" 2.a "What do you consider to be the most important factors in the professional development of teachers as they integrate learning technologies into classroom practice?" 2.b *"Do you consider the role of the principal to be an important factor in assisting teachers with the professional development required to integrate learning technologies into classroom practice?" "If so, how?"* 3.a *"How do you perceive the role of the LT Coordinator?"* 3.b *"Ideally what would you suggest the LT Coordinator's role should be?"* 3.c "Can you identify any factors that impact on the role of the LT Coordinator? Please explain with examples where possible"

In summary, the pilot study of phase 1 of the research carried out at St Pauls led to a

modification of the research questions as outlined. It led also to the need for a review of the

literature with regard to the role of the principal. In this pilot school it was shown that the role of the principal was thought to be an important consideration in the process of integrating learning technologies into classrooms. The importance of this view was confirmed in discussions with my supervisor and colleagues. The following section investigates the role of the principal as shown in the literature.

3.6   Review of the Literature Concerning the Role of the Principal

The importance attached to the role of the principal in effective schools has been the subject of much research and writing for many years. Early theories of leadership were often related to management practices. Peters and Waterman (1982) popularised the concept of the principal engaged in "management by walking around" (p. 67). Anderson (1991) suggested that, in effective schools, the principal is efficient in hiring and supervising staff, curriculum development, administration and finance, as well as being able to solve academic and social problems.

In contrast to early theories of effective leadership which tended to break up the principal's role into a discrete set of attributes largely concerned with management, the work of Sergiovanni was foremost in proclaiming the principal as a community builder. In his three-part series "Moral Leadership (1992), "Building Community in Schools" (1994) and "Leadership for the Schoolhouse" (1996), Sergiovanni advises that management principles for business leaders are not appropriate for school principals. Sergiovanni, citing numerous case studies, argues that a sense of community is the vital ingredient which principals and other school leaders must work to develop.

Sergiovanni (1996), together with Fullan (1994) and Owens (1995), further suggests that within the cultural community of the school there is a real need to develop a shared vision.

Owens (1995, p. 134) argues that creating the mutually shared vision requires a relinquishing of some power previously held by the principal and the creation of "an environment that facilitates the development of trust and open communication that is essential to collaborative group effort".

Wilsmore and Betz (2000) summarise and compare the work of two prominent leaders in the field of educational leadership, namely Sergiovanni (USA) and Hill (Australia). Whilst Sergiovanni refers to ideas based on community leadership, Hill talks in terms of the 'Instructional Leader'. For both educationalists, the autocratic leader is replaced by a form of collaborative leadership and both emphasise the importance of professional development of staff and community members.

Over the past few years I have experienced first hand the work of Peter Hill as he, together with Carmel Crevola, led a group of principals and teachers in a new innovation in early literacy in Catholic schools in Melbourne. In 1997, forty schools comprised the first intake of the CLaSS early literacy development in primary schools in Melbourne. I was principal of one of this initial group of schools. Hill and Crevola were so insistent that leadership was a key issue in the introduction, implementation and institutionalisation of this CLaSS innovation that a non-negotiable requirement was the attendance of the principal in professional development in particular and the support of the principal for the design elements of the program in general.

Over a period of four years, as principal of a school introducing and implementing the CLaSS early literacy program, I came to realise the importance of instructional leadership as a vital component in bringing about the changes required of our teachers, school and community. I would suggest that schools are centres of continuous change and growth, the rate of which is

more rapid now than at any time over recent years. Adapting to and furthermore moving with these changes and this growth requires school leaders who are not only focused on educational change but also prepared to be a part of the improvement and growth.

A review of the literature reveals that much has been written about leadership and change over the past two decades. Fullan (1994) suggest that we are fighting a losing battle trying to regulate change or see it as a 'one-off' occurrence. He argues that a change culture is required including continuous teacher education. Sergiovanni (1996) agrees that schools are centres for change and leaders must realise this as well as be aware of the importance of teacher education in the process. The integration of information technology into school practice is one of the most obvious recent changes that schools are contending with.

Wilsmore's (1997) pilot study into the role of the principal in the introduction of information technology in schools and his current research (1998 – 2001) have highlighted the importance of leadership, professional development of staff and change management for the successful introduction of information technologies into school practice. In a 1996 research study, Sandholtz concluded that one of the key factors related to teachers integrating technology into classroom practice was the support they received from school leaders and administrators. The largest research study related to principal leadership and successful school technology implementation that I am aware of is that reported by MacNeil and Delafield (1998) in Texas. Surveys were sent to 122 principals and assistant principals and sixty-four were returned. The important findings from this study related to the need for funding professional development and the need for principals and school leaders to create supportive conditions for teachers to engage in professional development within their schools. The Sandholtz study (1996) similarly suggests that principals must create supportive conditions to foster the integration of

information technology into classroom practice and that time for professional development and planning was one of the major barriers to this successful integration.

However, can principals actively support the integration of information technology into schools? Parker (1999) suggests that for many of our schools, the technophobic principal is the weak link. Dawson (1997) agrees with Hill's (2002) view of the principal as instructional leader referring to the principal as not so much the head teacher but more the head learner. Supporting this view, Schiller's 1997 study claims that the principal must act as the facilitator for technology planning, learning themselves whilst providing professional development for their staff in this change process.

Wilsmore and Betz (2000) insist that the successful integration of information technology into schools calls not only on the principal to be an active learner but to develop within the school an effective learning community. The principal's role then in relation to the integration of information technology into schools is, according to the literature, not only vital but also multi-faceted.

Wilsmore and Betz (2000) also suggest that principals should focus on the educationally important tasks. "I don't want to under-emphasise the problems that principals face, but suggest they need to be faced in a manner that improves student outcomes, not just the plumbing" (p. 13). As a principal myself, I agree with this statement but the reality all too frequently calls for the principal to deal with the day-to-day needs of unblocking the toilets, finding lunch for a child or having the photo-copier serviced.

The teachers and learning technology coordinator in the pilot study were in no doubt however, that the role of the principal was vital if learning technologies were to be integrated successfully into schools. This present study investigated this issue to ascertain the views of

others with regard to the principal's role as an important factor in the integration of learning technologies into schools.

3.7 The Focus Group Sessions and Structured Interviews: Implementation of Phase 1 of the Study

Having been enthused and motivated by the pilot study carried out at St Pauls and after modifications to the research questions and consequently the lead questions, all was ready to embark on carrying out the focus group sessions and interviews at the four LaTTiCE and three Navigator primary Schools.

Ethical clearance had been granted by the University Human Research Ethics Committee, by DEET, and by the CEO. Permission and support had previously been obtained from all the principals. Five principals from the four LaTTiCE schools and one Navigator school had endorsed the study as very important and offered their full support. The other two Navigator schools had only Acting principals at the beginning of 2000 and the appointment of a new person was expected in term 3 in both instances. I now contacted the seven schools again and was able to set dates in term 3 to carry out the focus group sessions and the interviews at the four LaTTiCE schools and at one of the Navigator schools. The remaining Navigator schools, were extremely busy and suggested term 4 may be better for them. I was asked to get back to them again later in the term when the principals had had time to discuss the study with their Project Officers and staff. Whilst this was somewhat disconcerting I went ahead with the scheduled sessions at the other five schools during August and September.

Close to the end of September the remaining two Navigator schools informed me that because of the heavy workload on their teachers the focus group sessions would not be possible but that I could conduct the interviews as arranged with the Project Officers and principals. At this stage I was feeling very disappointed and realised this omission would jeopardise the

study so I contacted the two principals concerned and pleaded my case. This, together with the offering of a financial incentive to the schools to replace the teachers involved during class time, proved successful and I was able to conduct these focus group sessions and structured interviews in November. I was extremely grateful to all schools and I fully appreciated the time commitment required to accommodate this study. Interestingly, Gibbs (1997, p. 6) does warn that on a practical note, focus groups can be difficult to assemble and that "incentives, whether expenses, gift vouchers or presents will usually need to be offered".

The focus group sessions in each of the seven schools followed the same format. Four teachers, conversant with and involved in the integration of learning technologies into their classroom practice, formed the group. I acted as moderator and delivered the lead questions, with a research assistant acting as observer and taking notes throughout the session.

According to Krueger (1994) one of the strengths of focus group methodology is the commonality of the participants. After conducting eight focus groups, one pilot and seven for the major study, I would argue that it was this commonality, as described by Kruger, which enables the discussion to flow and the interaction to take place resulting in the collection of a depth of data.

In the case of the LaTTiCE and Navigator teachers, the specific nature of their roles ensured a depth of experience and knowledge gained over years of working in these specific pilot programs in their schools. I would argue that the quality responses obtained were attributable to the experience and knowledge of this group of people.

The interviews, like the focus group discussions generally involved LT Coordinators, Project Officers and principals with strong experience, knowledge and interest in this area gained over a period of more than three years involvement in their projects. One exception, a newly

appointed principal at a Navigator school, did not have a depth of knowledge or experience in this area, but her interest was very strong. No doubt that factor, in some measure, may have been why she had been appointed as principal of this school at the cutting edge concerning the integration of learning technologies into classroom practice. Responses from the fourteen individual interviews produced a wealth of very rich data for analysis.

However, there are some serious limitations to focus group research in general. One that is covered well in the literature is the fact that they are limited in terms of their ability to generalise findings, mainly because of the small, often specific, group who may not be a representative sample. This was also true in the case of this study. However, the focus groups were only one phase of the study and the survey in phase 2 would be more generalisable.

Another disadvantage according to Morgan (1988) is that there is less control over the data than in quantitative studies. By its very nature focus group research is open-ended. However, in our case, this was not a limitation as it was directions and general themes that were under investigation partly to inform the survey construction.

Gibbs (1997) also points to the fact that focus groups are not fully confidential or anonymous because of the interactive nature of the group. In this study this was not an important issue because the teachers, coordinators and principals regularly discuss the impact of learning technologies within their situation and no questions of a personal or confidential nature were being asked. However, acknowledging these limitations, I would argue that one of the main disadvantages with this particular methodology is the time consuming nature of it. Although the focus group sessions took only one hour and the interviews lasted approximately 30 minutes each, this time allotment of two hours per school rose to over fifty hours per school when transcribing and analysing data were added to the equation (see Appendix C).

However, the time consuming nature of this methodology is offset by the advantage of the rich data source. I further suggest that analysis of the data was able to be extremely thorough and as can be seen in the next section on analysis gave clear insights into this research issue. So in fact in my opinion the time was worthwhile in view of the resulting data. The results of the focus group and interviews are presented in the next chapter.

CHAPTER 4

RESULTS OF THE FOCUS GROUPS AND INTERVIEWS

4.1 Analysis of the Data from the Focus Groups and Structured Interviews

The focus group sessions and interviews were audio-taped and transcribed as the first step to analysis. Field notes were taken by the observer of the focus groups and of the interview sessions with the principals and LT Coordinators.

A review of the literature referring to the analysis of focus group data shows that the particular analysis employed depends on the original reason for the focus group study. Marczak and Sewell (1996), whilst commenting on the use of focus groups for evaluation, suggest that analysis should begin by going back to the intent of the study. Stewart and Shamdasani (1998, p. 515) note that a number of books and papers on focus group research seem to place emphasis on the "mechanics of the interviews themselves rather than the analysis of the data generated in the focus group session". However, for analysis of the data itself, they refer to their own treatment of analysis using a cut and sort technique to identify main and sub-themes (Stewart & Shamdasani, 1990).

Other writers such as Krueger (1988, p. 109) suggest more detailed forms of analysis beginning with comparison of the words used by respondents and assigning them as key words in the text. More recently, the use of computer software such as NuDist aids detailed content analysis of text.

Having reviewed the literature and discussed the purpose of these focus groups, it is argued that this qualitative data should not be treated in a predominantly quantitative way but a search of themes and sub-themes with related indicators should be identified.

It was therefore decided to use a variation of the cut and sort technique described by Stewart and Shamdasani (1990) to provide a means of sifting through the data from the seven focus groups and the fourteen structured interviews. The data was categorised and coded into topics or themes relevant to the research question. Stewart and Shamdasani warn of the need to be aware of the fact that this technique relies heavily on the judgement of a single analyst and that it may be worthwhile to have two or more analysts to assess the reliability of the coding. Taking this advice, this study did use two analysts for this stage of the process.

The cut and sort technique approach was used to analyse data produced by the focus groups and the interviews in this research as the emphasis was on the identification of general themes in the discussions rather than specific issues. A more detailed form of content analysis may have provided a greater number of differential pieces of data but in so doing, the general themes and issues may have become separated or diminished in their importance. This research question investigated the professional development of teachers as they integrated learning technologies into their classroom practice and the role of the learning technology coordinator in this process. The resulting general themes were being sought rather than a vast amount of particular detail which could have little bearing on this question. The coded results obtained by cutting and sorting using a word processor was judged to be the most appropriate and convenient form of analysis in this instance.

4.2   Identification of Main Themes

Although lead questions themselves which arose from a review of the literature led to an outline of the main themes, it was the transcribing of the sessions that confirmed clear identification of these themes. A thorough study of the transcripts was carried out by two people. I transcribed each discussion by hand from an audio cassette tape. This was extremely time consuming but provided me with a very clear overview of the main themes emerging.

A colleague acted as the second analyst and typed up each transcript from the taped group or interview. We discussed the main themes before independently coding responses.

The main themes identified were:

(Y)   Those concerned with the integration of LT into classroom practice,

(O)   Those concerned with the professional development of teachers in this area,

(G)   Those concerned with the role of the LT Coordinator.

The first of these themes, concerning the integration of technology, was afforded about ten minutes in our discussion, and each of the other two themes, being more relevant to the research question, were given about twenty minutes each.

The transcripts were then independently coded using highlighters (yellow, orange and green) and a word processor and letter identification in the case of the second analyst. The categories of the responses were then modified on the word processor in light of those that had been colour coded for that theme.

Table 4.1 shows the total responses for each of the main themes. Whilst it is interesting that a total of 973 relevant responses to these themes was forthcoming from the people over a time of about fourteen hours, it does not really give us a great deal of information as the lead questions arising from a review of the literature led to the emergence of these broad themes.

Table 4.1

Response for the Main Themes

Themes	Focus Group	LT	Principal	Total

	Response	Coordinator Response	Response	
Theme (Y) Concerning the integration of LT into classroom practice	86	32	45	163
Theme (O) Concerning the professional development of teachers in the area of LT	189	77	103	369
Theme (G) Concerning the role of the LT Coordinator	208	117	116	441

So, too, the proportion of responses is as would be expected and relates to the amount of time given in the focus group discussions or interviews to each of these three sections, since an equal amount of time was given to sections 2 and 3 and half as much to section one. This is reflected in the number of responses obtained. The spread of responses across participants was relatively even, that is the 45 principal responses shown in Table 4.1 were from all principals generally and not from one or two in particular. There were a few exceptions to this even spread and these will be highlighted as they occur.

The next part of the analytical process involved further analysis of each broad theme to identify recurring responses and hence sub-themes.

4.3 Identification of Sub-Themes

4.3.1 Theme (Y) The Integration of Learning Technologies into Classroom Practice

One great benefit of spending so much time listening to respondents then transcribing the audio tape is that the analyst develops a clear feel for the data. In this particular case it was

evident both to me and the second analyst that the majority of respondents felt that learning

technologies were integrated into classroom practice for three reasons:

a)   to benefit students

b)   to benefit teachers

c)   because it was an expectation

Table 4.2 shows the total of responses to these sub-themes as well as a fourth sub-theme

identified as other responses for this area:

Table 4.2

Theme (Y) The Integration of LT into Classroom Practice

	Focus Group Response	LT Coordinator Response	Principals Response	Total
Sub-Theme Y1 Benefit to students	55	12	19	86
Sub-Theme Y2 Benefit to teachers	4	3	4	11
Sub-Theme Y3 Related to expectations	26	10	13	49
Sub-Theme Y4 Others	1	7	9	17

During the pilot study for phase 1, the three themes related to students, teachers, and

expectations arose. Hence, in implementing phase 1, an attempt was made to allow a similar

amount of time for each of these themes. However, whilst I had to move on discussion

relating to students, there were long pauses related to teachers and expectations and

participants came back, again and again, to the benefits to students with such comments as: "You can actually get the kids learning a lot more and a lot more readily with computers" (Kathy, Grade 6 classroom teacher). "Also with the computer, as it's gone further with things like the Internet, etc., it also makes the work accessible to our children" (Anne, Grade 5/6 classroom teacher). All names used in this thesis are pseudonyms.

Similarly from principals, this enthusiasm for the integration of the technology was directly related to student benefits as shown by Luke's statement arguing that student skills are improved in this way; "And then they could see the children's skills developing as well and that brought about the whole….well, it's a lot to do with open-ended learning" (Luke, principal). The enthusiasm came through even more in John's tone and body language as noted in the observer's notes when he excitedly remarked, "And that's everyone from Preps taking photos on their zoo excursion with digital cameras and by the time they're back here in the classroom next morning, the children are writing recount of their excursion using the photos that have been printed overnight. The immediacy of it – the professional finish" (John, principal).

As can be seen from these remarks and from Table 4.2, teachers, learning technology coordinators and principals agree that the main reason for integrating learning technologies into classroom practice is for reasons related to students. This confirms the findings referred to in a review of the literature from those such as Vanzetti and Atkins (1992) and Bishop (1993) which suggests that in the main teachers integrate technology into their classroom practice in order to make a positive contribution to the teaching and learning of their students.

However, a review of the literature regarding the integration of learning technologies into classroom practice did not identify the issues relating to 'benefit to teachers' nor to 'the

expectations of others.' It could be suggested that those who referred to benefiting teachers in the focus groups and structured interviews was a relatively small percentage, being 11 of 163 responses or only 6% and hence this could be thought of as a fairly minor consideration. Those who referred to the expectations of others were much greater, 49 of 163 or 30%. The observer's notes and the type of language show the strength of these responses: "Originally, it wasn't through choice, it was because the Navigator schools program started here" (Florence, P/1/2 classroom teacher); and also, "We were a LaTTiCE school and it was just expected" (Gerard, Grade 6 teacher). LT Coordinators expressed similar views emphasising the expectation of the principal in the case cited, "What we had at the beginning of the project was a principal who was a dedicated leader in curriculum and education issues in the area and so what that did was give us a vision of what we can do with learning technologies" (Laura, LT Coordinator).

A review of the actual comments leads me to argue that this issue of 'expectations' may be an issue for the Navigator and LaTTiCE schools in particular where the overall aims of these pilot schools was clearly stated and, more importantly, funding was made available. Usually when aims are specified and funds provided, there follows an expectation to meet the aims and be accountable for the funding.

Further support for this theory arose when a more detailed analysis of these expectations was produced in both numerical terms and in relation to the type of the particular comments made. The more detailed analysis of this section of the study involved breaking down each of these four areas into particular responses or indicators. Fourteen responses were identified that related to students: Y1a – Y1n; three related to teachers: Y2a – Y2c; four related to expectations: Y3a – Y3d; and three did not fit into any of the three groups above and were

recorded under other: Y4a – Y4d. Table 4.3 shows the sub-themes recorded as particular areas of response. The fourteen responses related to students shown in Table 4.3 are grouped generally according to attitudes or learning of the student.

The breakdown of responses 3a – 3d revealed that it was those expectations of the system or the school that were strongly noted being almost 70% of all responses related to expectations. The following examples further illustrate the strength of feeling in this area with emphasis on the word 'given'.

"First of all, the impetus had been because we were <u>given</u> all the technology in the school – that was the first point – they (the teachers) had to use it as part of their commitment that was the over-riding factor" (Luke, principal). Classroom teachers also made clear comments describing their sense of expectation to simply use the technology because of the pilot program in the school; "With John, he said 'yes, it's a LaTTiCE school and we use computers'" (Tania, Grade 6 classroom teacher).

This would further support the suggestion that these particular Navigator and LaTTiCE schools, because of their 'pilot school' nature perceived the expectations as a strong reason for integrating learning technologies into practice. This may not be the case with the majority of schools but a survey of a more general population would test this suggestion. This notion is further explored with such a survey (see Chapter 5). The form of analysis moving from the broad and narrowing down to the specific had the advantage of ensuring that the main themes were the focus and were not lost but rather emphasised as sub-themes and related indicators were identified. This in turn would assist in the modification of the survey instrument.

Table 4.3

The Integration of LT into Classroom Practice – Why do Teachers Integrate LT into Their

Classrooms – Main Themes Broken Down into Related Indicators

		FG	LTC	P	Total
Y1	*Related to student attitudes and learning*				
Y1a	to improve student motivation	9	1	2	12
Y1b	to provide fun experiences	10	0	0	10
Y1c	there is no provision at home	1	0	0	1
Y1d	to enable students to be discerning	1	0	0	1
Y1e	to encourage independent learning	4	0	0	4
Y1f	to improve student self-esteem	0	2	0	2
Y1g	to provide an alternative learning tool	5	2	7	14
Y1h	to improve achievement of students	1	0	0	1
Y1i	to improve student skills	1	0	1	2
Y1j	to encourage active learning/interactive	4	0	1	5
Y1k	to gain access to more/current information	6	2	0	8
Y1l	to improve delivery of the curriculum	6	3	3	12
Y1m	to provide instant feedback for the student	2	0	1	3
Y1n	to improve student presentation	1	1	2	4
Y1o	other	4	1	2	7
	Overall Total	**55**	**12**	**19**	**86**
Y2	*Related to teachers*				
Y2a	to improve teacher skills	2	3	3	8
Y2b	related to professional development/performance plan	0	0	0	0
Y2c	related to job security	2	0	1	3
Y2d	other	0	0	0	0
	Overall Total	**4**	**3**	**4**	**11**
Y3	*Related to expectations*				
Y3a	to respond to expectations of Department/CEO	5	3	2	10
Y3b	to respond to expectations of school/principal	13	6	5	24
Y3c	to respond to expectations of parents	2	0	0	2
Y3d	to respond to expectations of society	5	1	6	12
Y3e	other	1	0	0	1
	Overall Total	**26**	**10**	**13**	**49**
Y4a	they are computer minded	0	1	0	1
Y4b	they see the value generally	1	5	8	14
Y4c	they were given support	0	1	1	2
Y4d	other	0	0	0	0
	Overall Total	**1**	**7**	**9**	**17**

4.3.2   Theme (O) Important Factors in the Professional Development of Teachers in the Area of Learning Technologies

A similar process as that previously described for theme (Y) was used to break down the main

theme (O) and identify sub-themes and indicators of this theme. Concerning professional

development of teachers in the area of learning technologies, seven important factors were

identified as sub-themes. Table 4.4 shows the responses for these sub-themes.

Table 4.4

Theme (O) Important Factors in the Professional Development of Teachers in the Area of

Learning Technologies

	Focus Group Response	LTC Response	Principals Response	Total
Sub-Theme O1 Collaboration with peers	30	4	11	45
Sub-Theme O2 The opportunity to embed skills in classroom practice	41	17	12	70
Sub-Theme O3 PD is ongoing and time is allocated	30	10	14	54
Sub-Theme O4 The incentive of a performance plan or goal	3	7	1	11
Sub-Theme O5 Access to current operational LT resources	1	0	12	13
Sub-Theme O6 Support of the principal	40	19	28	87
Sub-Theme O7 The role of the LT Coordinator	34	19	13	66
Sub-Theme O8 Others	10	1	2	13

There is an indication from this data that teachers, LT Coordinators and principals suggest that there are five very important factors in the professional development of teachers in this area: PD needs to be collaborative, embedded in classroom practice, ongoing over time and time allocated and as well, the LT Coordinator and the principal are seen as key players in the effectiveness of professional development in this area. This data strongly supports the review of the literature which clearly identified these factors as important to the professional development of teachers in general terms and in relation to learning technologies in particular.

Regarding collaboration with peers, 45 of the total of 359 responses in this area or 13% suggest this as an important factor supporting the views of Clarke (1994), Joyce and Showers (1983), and Johnson (1995) amongst others who express the opinion that teacher professional development is enhanced when a collaborative culture with peers is part of the model. Caverly, Peterson and Manderville (1997) in proposing a 'generational model' of professional

development related to integrating learning technologies into practice, insist that the basis of this model is collaboration and support.

Very strong responses were provided by respondents in relation to collaboration as an important factor in professional development. Whilst there were not as many responses in this area as anticipated, it is worth noting that they were strongly made as the following comments illustrate. "I think the collaboration is the most important" (Kathy, Grade 5 classroom teacher). Similarly, "Having the team you can work with and share ideas and brainstorm with; that was so important" (Pat, Grade 4 classroom teacher); and also from principals, "And whenever there was lots of collegial support with each other, then they decided that's the way to go" (Ken, principal). Although 13% of all responses were related to this aspect of professional development, I would have anticipated this figure would be higher following a review of the literature and it will be interesting to compare this finding related to a very specific group of people with the later survey results of a more general population.

Aligning much more closely with my expectation was the resulting importance given by this specific group for the need to embed skills into classroom practice. A total of 70 of the 359 responses or almost 20% highlighted this as an important factor. The work of Hargreaves (1992), Retallick (1994) and Johnson (1995) in this area strongly suggest that professional development is more effective if it is embedded in classroom practice. So too, those views of embedding professional development into classroom practice led Yelland and Bigum (1995) to develop a workplace based professional development program for Queensland teachers. The resulting analysis of this area of study emphasises the need to embed skills in classroom practice as an important factor in the professional development of teachers in this area.

The following comments from the focus group interviews indicate that these teachers were also committed to the notion of embedding professional development into classroom practice. "It has to be relevant. It has to be real. What you can use – it's no good seeing something in a perfect situation but you don't know how to use it in your room" (Tania, Grade 6 classroom teacher). And from another teacher the importance is shown of living the professional development; it actually being part of what the teacher does is shown by her comment, "I think living it in your teaching is a really important one too. So it's all well and good to go and see it but to put it into practice, you have to do it" (Pat, Grade 4 classroom teacher). The reality of professional development embedded in classroom practice is brought out most firmly by an LT Coordinator who remarked, "It needs to happen largely within the school because then you have a real context of working within your situation. And the other thing that's important is that it's related to real teachers, real kids, real classrooms" (Liz, LT Coordinator). Many of the comments made a link between embedding the professional development into classroom practice and to it being on-going. "For me, I have to have time to put it into practice. I can't just be shown something. I need to take it back to the classroom. I need to have time to play with it" (Pam, Grade 3 classroom teacher).

Closely related to the need to embed skills in classroom practice is, in fact, the factor of professional development being ongoing over time. Quite clearly the classroom is the place where teachers spend most of their time, hence if the professional development can be incorporated into their workplace there is a greater opportunity for that professional development to be ongoing over a period of time. Fifty-four of the 359 total responses or 15% suggested that this factor was important in the professional development of teachers in this area. Mackinnon (1994, p. 16) along with many others argued that one-off courses which he

referred to as the 'hypodermic' approach had little impact and that concerning professional development in this area of learning technologies "an ongoing process must be in place".

The following comment by a principal who was interviewed for this research study clearly supports this stance, "I think our system has moved away from the one-off inservice so it's on-going and agended (sic) and followed up and it stays on the agenda until it's dealt with" (John, principal). So too comments of classroom teachers, LT Coordinators and principals interviewed for this study similarly emphasised the need for the professional development to be on-going over time. "Yes, time. See, I argue that PD is on-going the whole time because you're always asking 'How do you do this?' And it's happening the whole time in the classroom" (Martin, Grade 3 classroom teacher). Similarly from an LT Coordinator, the time availability is emphasised, "I think the most significant thing is for teachers to have time to reflect and to think about why we're doing things and what the benefit is in the big picture" (Liz, LT Coordinator). The next comment also emphasises the need for the professional development to be on-going as well as embedded in practice; "The other important thing about PD is that it needs to be sustained; it needs to be on-going; it needs to have direct application to classroom activities and learning and teaching" (Jill, principal).

The other two important factors arising from an analysis of this phase of the study are related to the role of the LT Coordinator and the role of the principal. As has already been stated, very little has been written about the role of the LT Coordinator and even less research has been conducted in this area, although earlier I did discuss the few research studies by Strudler (1995), Evans-Andris (1995), Becker (1992) and Ronnkvist et al. (2000). However, it was not surprising that 66 of the 359 responses or 18% alluded to the LT Coordinator as important in the professional development of teachers in this area of learning technologies. As reported

earlier this specific group of participants from the Navigator and LaTTiCE schools have the role of the LT Coordinator built into their model and that role is related to the professional development of teachers integrating technology into classroom practice.

Their views come clearly to the fore in comments such as: "I believe it's vital to have a coordinator to organise PD and be aware of the different needs and styles of teachers; to plan with teams of teachers and individually to assist them. But it's vital to have someone there on the ground, ready and able to help" (Mary, principal). Classroom teachers saw the LT role as a driving force or even a lynchpin as illustrated by these comments; "I also think the coordinator is the driving force before you even start – that they take the direction for you. If you're coming in cold, they drive you and direct you to where you should go until you've started the journey" (Betty, Grade 2 classroom teacher). And also "Her role is the lynchpin to the development within the school; the development of the use of computers, the effective use of computers as a learning tool" (Kelly, Grade 1/2 classroom teacher).

A review of the literature concerning the role of the principal, in contrast to that of the LT Coordinator, was prolific. Generally, the literature indicated that the principal's role is important in relation to the professional development of teachers. Reitzug and Burrello (1995) in a study of 13 principals in 13 school districts in the Mid-West, South-West and South-East of the United States suggest that this support of the principal is important in staff development when, for example, the principal encourages risk taking, facilitates reflective practice and manipulates school schedules to provide staff development opportunities. Eighty-seven of the 359 responses or 24% of all responses in this area of the study suggest that role of the principal is an important factor in professional development of teachers as they integrate learning technologies into classroom practice.

Comments from the focus groups and interviews strongly supported this stance. "The principal is crucial to the whole thing because expectation is central" (Grace, Grade 5/6 classroom teacher). Another classroom teacher commented on the visionary aspect of the principal's role as well as that of motivator of staff, "Also the principal needs vision, the enthusiasm to continue. The staff has got to be motivated and feel appreciated. That's got to come from the top" (Kelly, Gr.5 classroom teacher). More concerned with practicalities, this comment from a classroom teacher notes the importance of the principal as resource provider, "Yes, the principal because the funding comes from there" (Pat, Grade 4 classroom teacher).

For most of this particular group of people, the incentive of a performance plan or professional development goal was not seen to be such an important factor. It can also be seen from the Table 4.4 that whilst principals suggested access to current operational resources was an important factor, the LT Coordinators and classroom teachers did not see this as so important. For the purpose of this study, 'access to current, operational resources' refers to the teachers having available reasonably up-to-date, networked computers which are not regularly out of operation because of technical problems to do with the computers themselves or the network.

A further numerical narrowing of these eight sub-themes into their specific responses or indicators is presented in Table 4.5. This narrowing shows that the focus group participants particularly valued being part of a system and sharing ideas as did the principals. Furthermore these particular responses contributed greatly to the total of responses, suggesting that collaboration with peers was an important factor in their situations. It is also interesting to note from Table 4.5 that sixteen respondents from the focus groups highlighted having time to work alone, twice as many as suggested the need for time to discuss issues with others. The

evenness of the data surrounding the support of the principal as an important factor in the professional development of teachers suggests that each of the sub-themes listed is relevant and important.

Table 4.5

Theme (O)   Factors in the Professional Development of Teachers in the Area of Learning Technologies – Themes Broken Down into Related Indicators

		FG	C	P	Total
O1	*Collaboration with peers*				
O1a	Being part of a system/sharing ideas	24	4	7	35
O1b	Visiting other places in pairs/school groups	3	0	0	3
O1c	Opportunity to plan as a team	3	0	4	7
	Overall Total	**30**	**4**	**11**	**45**
O2	*The opportunity to embed skills in classroom practice*				
O2a	Time to work in the classroom	9	5	2	16
O2b	Geographically close to other teachers in the school	1	0	0	1
O2c	Able to take risks to problem solve in the classroom	12	2	1	15
O2d	Learning from/with the children	10	0	0	10
O2e	Real and relevant PD to teaching and classroom	9	10	9	28
	Overall Total	**41**	**17**	**12**	**70**
O3	*The PD is on-going and time is allowed*				
O3a	Time to work alone	16	3	3	22
O3b	Time to discuss with others	8	1	1	10
O3c	A gradual step-by-step process	4	6	5	15
O3d	Others	2	0	5	7
	Overall Total	**30**	**10**	**14**	**54**
O4	*The incentive of a performance plan or professional development goal*				
O4a	Individualised, catering for your specific needs	1	6	1	8
O4b	Using reflective journal	0	1	0	1
O4c	Others	2	0	0	2
	Overall Total	**3**	**7**	**1**	**11**
O5	*Access to current, operational LT resources*	*1*	*0*	*9*	*10*
O5a	Seeing the value of technology as a tool	0	0	3	3
	Overall Total	**1**	**0**	**12**	**13**
O6	*The support of the principal*				
O6a	Support at a personal level	10	1	1	12
O6b	Support at the school level	11	4	10	25
O6c	Providing clear expectation/vision	6	7	7	20
O6d	Providing resources/time	13	7	10	30
	Overall Total	**40**	**19**	**28**	**87**
O7	*The role of the LT Coordinator*				
O7a	Organising for teachers to collaborate as a team	5	4	3	12
O7b	Being a key person to plan with	3	1	4	8
O7c	Organising PD	8	8	2	18
O7d	A person on-site and available	4	3	1	8
O7e	A person aware of your needs	10	2	1	13
O7f	As someone to support and affirm	4	0	1	5
O7g	Others	0	1	1	2
	Overall Total	**34**	**19**	**13**	**66**
O8	*Others*				
O8a	Visiting other schools/seeing it done	7	1	2	10
O8b	Physically conducive environment	2	0	0	2
O8c	Department directives	1	0	0	1
	Overall Total	**10**	**1**	**2**	**13**

4.3.3   Sub-Theme (G) The Role of the LT Coordinator

Concerning the role of the LT Coordinator, sub-themes were identified in four areas:

1.   How the role is perceived in reality

2.   How it should be ideally

3.   The factors that impact on the role

4.   The attributes needed by the LT Coordinator

Table 4.6 shows the total of responses to each of these sub-themes:

Table 4.6

Theme (G) The Role of the LT Coordinator

	Focus Group Response	LT Coordinator Response	Principals Response	Total
Sub-Theme G1 Role perception in reality	56	45	49	150
Sub-Theme G2 Role perception ideally	60	25	27	113
Sub-Theme G3 Factors impacting on the role	55	38	29	122
Sub-Theme G4 Attributes needed by LT Coordinator	37	9	11	57

It is convenient to discuss the first two sub-themes together, followed by the third and then the fourth. In reality and in an ideal sense, the role of the LT Coordinator in this study is perceived to revolve around the provision of professional development, coordination or development of the school's LT program, the provision of technical expertise, and the provision of professional development to other schools or outside agencies. As has been

noted, the literature related to the role of the LT Coordinator is sparse and, in fact, one of the major aims of this study is to shed further light on this role.

Strudler's (1995) follow-up study, which investigated the effect of computer coordinators in three elementary schools, stated as a recommendation that "findings of this study suggest that schools should consider staffing technology coordinators where the goal is integration throughout the curriculum by all teachers" (p. 19). Strudler goes on to suggest that if a full-time on-site staff member is too costly, teachers should be empowered and use should be made of 'student experts'. Teachers and coordinators interviewed for this present study expressed similar views and in one case suggesting that the expert role of the coordinator evolved to that of empowerer; "as we've gone on, it's become rather than a leader thing; it's just a leader of a team rather than a person up here who has all the expertise which is how it started" (Florence, Grade P/1/2 classroom teacher). And in the following case, the coordinator develops mini-expert groups just as Strudler (1995) suggested: "So he has the knack of using whatever you've got and getting the best out of these people. I suppose he's developed mini-expert groups" (Grace, Grade 5/6 classroom teacher).

So too, as Strudler suggested, teachers made references in this present study to utilising the skills of students; "I find one of the things that works for me is that, although I'm a facilitator and a lot of children are ahead of me, particularly in the 5-6 area, and that's fine but I'm not confident in presenting things. I'll let them present, for example, a research project in whatever format you want – the email, Internet, using flowcharts, etc." (Anne, Grade 5/6 classroom teacher). And then following along the same lines from the same teacher: "And my professional development has even come through the children" (Anne, Grade 5/6 classroom teacher).

This present study also builds on the work of Evans-Andris (1995) whose research investigated barriers to the integration of technology into school practice related to the role of the coordinator. She recommended a very clear role description for the coordinator so that he or she did not become 'everything to everyone'. However, one of the strongest recommendations was that the technology coordinator, rather than simply providing release time and taking computer classes, should be employed as a resource facilitator "and coordinate strategies of computer integration with classroom teachers rather than for them" (p. 44).

Phase 1 of this research study was carried out in Navigator and LaTTiCE schools only where clear role descriptions exist for the Project Officer in the Navigator schools and the learning technology coordinator in the LaTTiCE schools. However, with respect to working with, rather than for teachers, comments from the interviews reveal different thoughts in this area. There are those who saw the role as very broad, working with the teacher as coach: "We had support for our staff in the Project Officers' role being the teachers' coach – a person who can coach individual people about various aspects of their understanding of being a teacher" (Malcolm, principal). And those who saw it as vital to be in the classroom with the teacher: "If it's going to work, it needs to have a component whereby that person can go in and work in the classroom with the teachers" (Jill, principal). But there were clearly those who saw the role as technical, although this was not necessarily seen as desirable but as a necessity; "He was basically hands-on, getting the computers into the rooms and getting teachers just able to use the things – very practical" (Gerard, Grade 4 classroom teacher), and similarly, "I see one of his major roles as to be a technician – someone to go to – a maintenance person. He can get the network going" (Geoff, Grade 6 classroom teacher).

The issues highlighted following analysis of the focus group and structured interview sessions are seen as relating particularly to LaTTiCE and Navigator schools as stated in the aims of these two pilot programs. It will be interesting to see if the survey of phase 2 with a more general population reveals similar or different feelings. Referring to the role of the coordinator as a provider of professional development, seven particular areas were identified both in realistic and ideal senses as outlined in Table 4.7.

Table 4.7

The Role of the LT Coordinator - How the Role is Perceived in Reality and Ideally

		FG	C	P	Total
G1	How is the role of the LT Coordinator perceived in reality?				
G1a	To provide PD	6	9	4	19
G1a1	In the technical skills area	5	5	8	18
G1a2	In the teaching/learning area	8	8	8	24
G1a3	To develop teacher resources	3	3	1	7
G1a4	To help new teachers	2	0	0	2
G1a5	To act as a support person for teachers	6	4	1	11
G1a6	To empower others	7	0	2	9
G1a7	To develop a positive mindset in staff related to the use of technology and get them up and running or re-energise them	5	2	4	11
G1b	To provide for the development or coordination of the learning technology program in the school	4	5	8	17
G1c	To provide technical expertise to keep computers working	10	2	11	23
G1d	To provide external PD	0	7	2	9
	Overall Total	**56**	**45**	**49**	**150**
G2	What should the role of the LT Coordinator be ideally?				
G2a	To provide PD	7	2	5	14
G2a1	In the technical skills area	19	5	4	28
G2a2	In the teaching/learning area	14	10	8	32
G2a3	To develop teacher resources	3	1	1	5
G2a4	To help new teachers	3	0	0	3
G2a5	To act as a support person for teachers	4	1	1	6
G2a6	To empower others	4	1	2	7
G2a7	To develop a positive mindset in staff related to the use of technology and get them up and running or re-energise them	0	0	0	0
G2b	To provide for the development or coordination of the learning technology program in the school	1	1	4	6
G2c	To provide technical expertise to keep computers working	5	3	1	9
G2d	To provide external PD	0	1	0	1
G2e	The role is not needed as technology is just another tool	0	0	1	1
	Overall Total	**60**	**25**	**27**	**112**

Strong similarities can be identified from the two parts of the table, but equally clear are some important differences.

Professional development in the area of teaching and learning is perceived as the role of the LT Coordinator both in the real and the ideal situation. So too, a large number of responses relate to the need to provide professional development in the area of technical skills. In general terms, professional development within the school accounts for two-thirds of the responses related to the role of the LT Coordinator both in reality and in the ideal situation as shown in Table 4.7.

A noticeable difference between the perception of reality and the perception of the ideal in Table 4.7 suggests that the role of the LT Coordinator in reality is to develop a positive mindset in teachers, whereas this is not the case ideally. One explanation for this was actually enunciated by a classroom teacher suggesting that in setting up the learning technology program within the school the LT Coordinator played a vital role: "Her major role when she first started off was to get the people in the right frame of mind to accept that it could be possible" (Jane, Grade 3 classroom teacher). And from a principal, his comment suggests it is in the initial phase that this role is important: "Another role has been to say, 'you need to give this a go' because unless people actually have a try at something they cannot really critique it to see if it actually works or not" (Malcolm, principal).

Respondents in these focus groups and interviews may have seen an ideal situation as one where the learning technology was already well established and this aspect of developing a positive frame of mind was not relevant, as suggested by this comment from a classroom teacher: "First of all,….you are taking a group of adults who have mind-sets that may be pro-technology or pro-talk and chalk and you are going to try to mould them into a group that are going to use the technologies. So her role <u>has been</u> to try to get these people amenable to thought" (Betty, Grade 2 classroom teacher).

Another noticeable difference in Table 4.7 relates to the real and ideal perceptions of the role of the LT Coordinator in providing technical expertise to keep the computers working. In reality, classroom teachers and principals see that this constitutes part of the LT Coordinator's role, as illustrated by this comment from a principal; "I suppose they've got to know the nuts and bolts of the equipment because, when there's a problem, that's the person we call on" (Ken, principal). However, only two LT Coordinators' responses refer to it in their own descriptions of the role when they say: "OK, my role is basically making sure the network is working" (Jeremy, LT Coordinator). And then, referring to the third part of his role: "The third one err…is the technology management….the upgrades….I know about it and make sure the technology will work for them" (Jeremy, LT Coordinator).

It is also worthy of note that those responses related to technical expertise are all from the LaTTiCE schools as will be shown in a later table. This can be explained by the fact that the Navigator schools are provided with separate technical support and, hence, this is not seen as the role of the Project Officer. In examining the question of the coordinator's role from an ideal viewpoint, only one principal response notes this as part of the role compared with eleven in the real situation. Perhaps this suggests that if technical support were available this would be preferable to it being part of the LT Coordinator's role, as is indeed noted by the following: "Oh, in an ideal world, you'd have this person as a specialist, not troubleshooting. You'd have a technician coming in to troubleshoot and they could concentrate on getting their knowledge across…..and keeping the professional development organised for staff" (Ken, principal).

It is interesting to note the overall increase in G1a1 to G2a1 and similarly from G1a2 to G2a2 for the focus group respondents only. This suggests that the classroom teachers (the members

of the focus groups) in reality perceive the coordinator's role as minimal in respect to providing professional development in the technical skills area (only five responses), but in the ideal situation, it is perceived as the most important part of the role (nineteen responses). However by comparison the LT Coordinators note this technical professional development assistance as part of their role equally whether in the real or ideal situation (five responses each). The principals on the other hand seem to be suggesting by their responses that this is more of a role in the real situation but should be less ideally (drop from eight responses in reality to four ideally). One explanation for this could be that ideally principals see teachers as being proficient enough to develop their own technical skills, whereas teachers seem to be suggesting from these results that they need technical assistance and the LT Coordinator's role should include this professional development of their technical skills.

To a lesser degree, but still notable, are the increased responses from focus group members regarding the perception of the LT Coordinator's role concerned with the provision of professional development in teaching and learning (eight responses in reality increase to fourteen ideally). Principal responses of eight in both the real and ideal situations are similar to those of the LT Coordinators whose responses increase only marginally from eight in reality to ten in the ideal situation. These results seem to suggest that teachers ideally would expect more assistance from the LT Coordinator in the teaching and learning area.

The provision of external professional development also differs in the real and ideal situations, according to this data. However, it is only really noted by the LT Coordinators and the principals of the Navigator schools as will be shown in table 4.11, referring to the role of the LT Coordinator in LaTTiCE and Navigator schools. This point is further clarified and illustrated by these comments; "I would like a fifty-fifty split between the Project Officer

running things here in our school for our own staff and then fifty percent on the bigger picture stuff. But I'm also a realist and know that when they're paying the salary over and above our global budget, there's a bigger commitment to the bigger picture stuff. But that would be my ideal" (Luke, principal). And from a coordinator, a similar revelation: "The ideal role is when I was school support with another Project Officer but now I'm Project Officer….when I was doing what was going on before, I was in classrooms with the teachers….I think that's really important" (Matthew, LT Coordinator).

As has been explained previously, the Project Officers in the three Navigator schools had, as part of their role description, the provision of external professional development which in some cases amounted to 50% of their workload. No such specific requirement was in place in the LaTTiCE schools although it was expected that these schools would inform the wider sector of Catholic education by running a few practicums each year. As well as external professional development provision, other factors were seen to impact on the role of the coordinator.

The remaining two sub-themes in this section concern the factors perceived to impact on the LT Coordinator's role and the particular qualities or attributes perceived to be needed by a person in the role of LT Coordinator. One of the lead questions for both the focus groups and the interviews related to the factors that impact on the role but despite the fact that no lead question referred to the attributes of the LT Coordinator, many of the respondents chose to comment on this. Hence, the fourth sub-theme in this area emerged (see Table 4.8). This was not a question but emerged as a heading for classification purposes due to the quantity of responses related to this area. As can be seen from Table 4.8, the data in relation to sub-theme

G3 highlights the fact that time is seen as the biggest factor impinging on the role of the LT Coordinator with almost 40% of responses relating to this fact.

Table 4.8

The Responses for G3 and G4 – Factors Perceived to Impact on the LT Coordinator's Role and Qualities Perceived to be Needed by a Person in This Role

G3	What factors are perceived to impact on the role of the LT Coordinator?	FG	LTC	P	Total
G3a	The qualities and attributes of the LT Coordinator	1	4	6	11
G3B	The time available	22	15	10	47
G3c1	Expectations of the Department/CEO	10	10	2	22
G3c2	Expectations of the school/principal	2	0	3	5
G3d	Access to current/operational LT resources	14	2	1	17
G3e	The range of different needs of the teachers	4	2	3	9
G3f	Succession policy	2	1	1	4
G3g	Keeping pace with changes in technology	0	3	1	4
G3h	Availability of finance	0	1	2	3
	Overall Total	**55**	**38**	**29**	**122**
G4	What particular qualities or attributes are perceived to be needed by a person in the role of LT Coordinator?				
G4a	Aware of an able to cater for different needs of staff	7	1	2	10
G4b	Flexible	4	0	0	4
G4c	Technically competent	6	2	2	10
G4d	Helpful and considerate	2	1	0	3
G4e	Good communicator/listener	6	1	3	10
G4f	Strong in teaching/learning strategies	2	4	3	9
G4g	Enthusiastic	1	0	1	2
G4h	Patient	3	0	0	3
G4i	Challenging	1	0	0	1
G4j	Resilient	2	0	0	2
G4j	Professionals	3	0	0	3
	Overall Total	**37**	**9**	**11**	**57**

The intensity of these responses was also noted in the observer's notes and is also further highlighted with reference to the following examples taken from the data; "The time is the biggest thing. Time being so that they could be available at the key times of the day" (Rod, Grade 2/3/4 classroom teacher). In the following comment from Morrie, strong body language was noted to emphasise the 'release time' requirement, "The important factors that impinge on his role – release time" (Morrie, Grade 4 classroom teacher). So too, the observer's notes

show intensity from a principal; "A person really needs time, certainly and that perhaps limits the impact they are going to have" (Jill, principal).

Expectations of the Department of Education or CEO are seen by teachers and LT Coordinators in this study to be a factor of importance. But this is largely attributable to the Navigator schools where the Project Officers have, as part of their designated role, other duties not related to the school.

Classroom teachers in the focus groups noted that access to the current operating LT resources was an important factor impacting on the role of the LT Coordinator but this was not perceived to be a factor by the LT Coordinators themselves or by the principals. However, the frustration of some teachers in LaTTiCE schools is borne out by the following comments: "It's a real problem for the coordinator and us when the file server goes down. If the machine doesn't function the way staff expect it to, that's a major cause of frustration" (Kathy, Grade 5 classroom teacher), and similarly, "And this year it's been really difficult because we haven't been able to use the computers in our work" (Anne, Grade 5/6 classroom teacher).

This factor was noticeably relevant to the LaTTiCE schools but not the Navigator schools as will be shown in Table 4.12. Once again it could be argued that the provision of a technician in the Navigator schools but not in the LaTTiCE schools could account for this variation.

Turning our attention now to the actual attributes of the LT Coordinator, it can be seen that, according to the perceptions outlined in Table 4.8, this person needs to be aware of, and able to cater for, the needs of different staff members; needs to be technically competent; a good communicator and be strong in teaching and learning areas. These areas are best summarised by the following quotes from participants in this study; "Basically, the ideal coordinator would be a combination of what we had before; someone who is skilled in the use of

computers and can impart that knowledge to us who are coming in at all different levels"
(Julie, Grade 3/4 classroom teacher). Then again; "you have to be a good listener
though…you have to be absolutely a person who's willing to accept wherever you are at"
(Florence, Grade P/2 classroom teacher).

In relation to the attributes or qualities of the LT Coordinator, no noticeable differences could
be identified between LaTTiCE and Navigator schools data. However, these two sets of
schools, although similar in that they are both pilot program schools for the integration of
learning technologies, also showed some very clear differences in the data. A comparison of
the data collected for each group of schools specifically highlights some of these similarities
and differences. The results of such a comparison are shown in the next sub-section of this
chapter.

4.4   Comparing the Data from the Navigator and LaTTiCE Schools

Table 4.9 shows the responses for Theme (Y) concerning the reasons teachers integrate
learning technologies into classroom practice. There is little variation between respondents in
relation to teachers. In relation to benefiting students, responses from the LaTTiCE schools
were higher than those from the Navigator schools (54 compared with 32). However, in the
area of expectations, forty of the forty-nine responses were from Navigator schools compared
with only nine from the LaTTiCE schools.

Table 4.9

*Comparison of LaTTiCE and Navigator Schools' Responses to Theme Y – Why do Teachers
Integrate Learning Technologies into Classroom Practice?*

	LaTTiCE			Navigator			LaTTiCE Total	Navigator Total
	FG	LTC	P	FG	LTC	P		
Sub-Theme Y1 Related to students	33 (62%)	9 (16%)	12 (22%)	22 (69%)	3 (9%)	7 (22%)	54	32

Sub-Theme Y2 Related to teachers	2 (33%)	2 (33%)	2 (33%)	2 (40%)	1 (20%)	2 (40%)	6	5
Sub-Theme Y3 Related to expectations	6 (66%)	1 (12%)	2 (22%)	20 (50%)	9 (22%)	11 (28%)	9	40
Sub-Theme Y4 Others	1 (12%)	3 (38%)	4 (50%)	0 (0%)	4 (44%)	5 (56%)	8	9

One explanation for this was the very specific role of the Project Officer in the Navigator schools who was funded by the Department of Education and was responsible for the bigger picture of LT in the State system of education, not simply for the coordination in the school as was largely the case in the LaTTiCE schools. There is also a perception that the large amount of funding received by the Navigator schools brings with it an expectation of accountability as evidenced by this comment from one of the classroom teachers: "Being a Navigator school, we got a million dollars or something pumped in three or four years ago and the challenge was to use it" (Martin, Grade 5 classroom teacher), and similarly from another teacher in a Navigator school; "Originally, it wasn't through choice, it was because the Navigator schools program started here" (Florence, Grade P/1/2 classroom teacher). Whereas, even though the LaTTiCE schools had a lesser but substantial amount of money, there were no analogous comments. One explanation for this could be the fact that, whilst there were expectations from the CEO, these expectations were minor compared with those of the Department on the Navigator schools in line with the lesser amount of funding expended by the CEO on LaTTiCE schools in comparison to the much larger funding from DEET to the Navigator schools. The survey of phase 2 of this research study may help to elucidate this issue of accountability, and this will be explored further in Chapter 6.

Comparing the Navigator and LaTTiCE data in respect of the second theme, Theme (O) related to the professional development of teachers, as can be seen from Table 4.10, similarities dominate and no real differences are suggested by this data with the exception of the perception that a performance plan is an incentive to professional development of

teachers. As can be seen, the incentive of the performance plan is a factor in the Navigator schools but not in the LaTTiCE schools. This is further illustrated by the following quote from a Navigator LT Coordinator: "Each year, each teacher creates a professional development plan which includes where they want to go in terms of their teaching and learning strategies and learning technologies….I work with teachers to break down that plan…" (Laura, LT Coordinator). The survey of phase 2 may shed further light on this point.

Table 4.10

Comparison of LaTTiCE and Navigator Schools' Responses to Theme (O) – What are the Important Factors in the Professional Development of Teachers as they Integrate Learning Technologies into Classroom Practice?

	LaTTiCE			Navigator			LaTTiCE Total	Navigator Total
	FG	LTC	P	FG	LTC	P		
Sub-Theme O1 Collaboration with peers	16 (67%)	2 (8%)	6 (25%)	14 (67%)	2 (9%)	5 (24%)	24	21
Sub-Theme O2 The opportunity to embed skills in classroom practice	21 (58%)	10 (28%)	5 (14%)	20 (60%)	7 (20%)	7 (20%)	36	34
Sub-Theme O3 PD is ongoing and time is allocated	18 (60%)	5 (16%)	7 (24%)	12 (50%)	5 (21%)	7 (29%)	30	24
Sub-Theme O4 The incentive of a performance plan or goal	0 (0%)	1 (100%)	0 (0%)	3 (30%)	6 (60%)	1 (10%)	1	10
Sub-Theme O5 Access to current operational LT resources	1 (11%)	0 (0%)	8 (89%)	0 (0%)	0 (0%)	4 (100%)	9	4
Sub-Theme O6 Support of the principal	22 (49%)	10 (22%)	13 (29%)	18 (43%)	9 (22%)	15 (35%)	45	42
Sub-Theme O7 The role of the LT Coordinator	20 (53%)	11 (29%)	7 (18%)	14 (50%)	8 (28%)	6 (22%)	38	28
Sub-Theme O8 Others	5 (72%)	1 (14%)	1 (14%)	5 (84%)	0 (0%)	1 (16%)	7	6

Comparing the LaTTiCE and Navigator schools data with responses to theme (G) in Table 4.11, it can be seen that the most noticeable differences suggested by the data for LaTTiCE and Navigator schools concerns the role of the LT Coordinator to provide technical expertise

to keep the computers working. It is not too surprising that some differences are identified in this section as the roles were different in terms of the time allocated and the expectations. The Project Officers in the Navigator schools were employed full time to look after learning technologies but only part of the role is related to the school. Up to fifty percent of their time was given to providing professional development to other teachers from different schools, usually by way of practicums.

Table 4.11

Comparison of LaTTiCE and Navigator Schools' Responses to Theme G – The Role of the LT Coordinator?

	LaTTiCE			Navigator			LaTTiCE Total	Navigator Total
	FG	LTC	P	FG	LTC	P		
G1 How is the role of the LT Coordinator perceived in reality?								
G1a To provide PD	3	5	2	3	4	2	10	9
G1a1 In the technical skills area	3	3	4	2	2	4	10	8
G1a2 In the teaching/learning area	5	5	5	3	3	3	15	9
G1a3 To develop teacher resources	2	1	0	1	2	1	3	4
G1a4 To help new teachers	1	0	0	1	0	0	1	1
G1a5 As a support person for teachers	3	2	1	3	2	0	6	5
G1a6 To empower others	5	0	1	2	0	1	6	3
G1a7 To develop a positive mindset in staff related to the use of technology and get them up and running or re-energise them	2	1	2	3	1	2	5	6
G1b To provide for the development or coordination of the learning technology program in the school	2	3	5	2	2	3	10	7
G1c To provide technical expertise to keep computers working	10	2	10	0	0	1	22	1
G1d To provide external PD	0	0	0	0	7	2	0	9
Overall Total	**36**	**22**	**30**	**20**	**23**	**19**	**88**	**62**
G2 What should the role of the LT Coordinator be ideally?								
G2a To provide PD	4	1	3	3	1	2	8	6
G2a1 In the technical skills area	11	3	2	8	2	2	16	12
G2a2 In the teaching/learning area	8	5	4	6	5	4	17	15
G2a3 To develop teacher resources	2	0	0	1	1	1	2	3
G2a4 To help new teachers	2	0	0	1	0	0	2	1
G2a5 As a support person for teachers	2	1	1	2	0	0	4	2
G2a6 To empower others	2	1	1	2	0	1	4	3
G2a7 To develop a positive mindset in staff related to the use of technology and get them up and running or re-energise them	0	0	0	0	0	0	0	0
G2b To provide for the development or coordination of the learning technology program in the school	1	0	2	0	1	2	3	3

G2c To provide technical expertise to keep computers working	5	3	1	0	0	0	9	0
G2d To provide external PD	0	0	0	0	1	0	0	1
G2e The role is not needed as technology is just another tool	0	0	0	0	0	1	0	1
Overall Total	**37**	**14**	**14**	**23**	**11**	**13**	**65**	**47**

Learning technology coordinators in the LaTTiCE schools were in most cases holding a role of part time teacher within the school and part time LT Coordinator. But apart from a few sessions each year when professional development was presented for other schools in the system, the LT Coordinator's role was supporting LT development at the one particular school.

Secondly, Navigator schools employed a technician whose role it was to keep the computers and networks functioning. In the LaTTiCE schools, the LT Coordinator had to attend to this. Thus the reason for the noticeable variation shown in Table 4.11 where 22 respondents from the LaTTiCE schools perceive the LT Coordinator's role as having the technical expertise to keep the computers working compared to only one response to this effect from the Navigator schools. However, this figure of 22 in reality dropped quite dramatically to a figure of only nine in the ideal situation as shown in Table 4.11.

Further analysis of the data related to theme (G) concerning the important factors perceived to impact on the LT Coordinator's role revealed that, as already noted, there was a clear difference identified relating to the perception that the expectation of the Department of Education was an important factor impacting on the role of the Project Officers in the Navigator schools (see Table 4.12). This related to the fact that the role of the Project Officer was funded by the Department of Education and only part of that role related to the school. In part, the Project Officers in Navigator schools took on responsibility for Navigator practicums and the development of LT in a much broader sense than did the LT Coordinators in the LaTTiCE schools.

Another difference highlighted in Table 4.12 and noted with reference to quotes was that access to current operational resources was perceived as an important factor impacting on the LT Coordinator's role by classroom teachers in the LaTTiCE schools, but was not seen to impact on the Coordinator's role by either the Navigator schools or the Coordinators or principals themselves in any school.

Table 4.12

Comparison of LaTTiCE and Navigator Schools' Responses to Theme G – Important Factors Perceived to Impact on the Role of the LT Coordinator

	LaTTiCE			Navigator			LaTTiCE Total	Navigator Total
	FG	LTC	P	FG	LTC	P		
G3 What factors are perceived to impact on the role of the LT Coordinator?								
G3a The qualities and attributes of the LT Coordinator	1	3	4	0	1	2	8	3
G3b The time available	12	9	5	10	6	5	26	21
G3c1 Expectations of the Department/CEO	2	2	0	8	8	2	4	18
G3c2 Expectations of the school/principal	1	0	1	1	0	2	2	3
G3d Access to current/operational LT resources	12	2	1	2	0	0	15	2
G3e The range of different needs of the teachers	2	1	2	2	1	1	5	4
G3f Succession policy	1	0	0	1	1	1	1	3
G3g Keeping pace with changes in technology	0	0	0	0	3	1	0	4
G3h Availability of finance	0	1	2	0	0	0	3	0
Overall Total	**31**	**18**	**15**	**24**	**20**	**14**	**64**	**58**

One explanation for this could be that in the LaTTiCE schools the LT Coordinators were generally responsible for ensuring that the hardware and software were operational, a time consuming role and one for which there may have been little time. From my own personal experience, I can speak of some frustration by teachers when the Coordinator's time was

taken from them so that he could deal with the technical side of things. In the Navigator schools, technicians were employed for this role and this may account for the fact that the equipment generally was operational, whereas in the LaTTiCE schools it became part of the LT Coordinator's role and it may have taken time for repairs to be carried out. This situation is changing as some funding was made available last year for technical support for Catholic schools. I can find no explanation for the fact that principals and LT Coordinators did not refer to this factor of operational resources as impacting on the role. We were only looking at four LaTTiCE schools so perhaps there were no particular technical issues in three of them.

This phase of the study, a particular look at Navigator and LaTTiCE schools, has highlighted some very important similarities and differences with the literature, some questions concerning gaps in the literature, and some obvious differences between these two specific types of pilot schools. This analysis led to a modification of the draft survey which in its final form served to identify views and perceptions of a general sample of schools as they integrated technology into classroom practice. Further reference will also be made to this data set when discussing the results in Chapter 7.

The next chapter will detail first the drafting of the survey instrument, based on the literature, and then the changes that were made after the first analysis of the focus group data was completed.

CHAPTER 5

PHASE 2: METHODOLOGY – THE SURVEY

In designing the data collection procedures for this study, consideration was given to obtaining responses from teachers, LT Coordinators and principals concerned with the integration of learning technologies in schools. A two-phase approach was decided upon. Phase 1 comprised focus groups and interviews at Navigator and LaTTiCE schools in order to obtain data from this specific group of people with particular knowledge in this area of learning technologies because of their situation.

Phase 2 of the study comprised a survey of primary schools in the Melbourne area. The survey instrument was chosen as a means of accessing the perceptions of a large number of participants in relation to the research question. The drafting of the survey took place at the same time as the focus groups and interviews were being conducted and hence there is some repetition in this chapter with the information in Chapter 3.

5.1   The Sample

The sample for this survey included a stratified sample of State and Catholic systemic primary schools in Melbourne. Catholic schools in Melbourne receive Government funding at a lower level than do State schools. In affluent Catholic schools, this level of funding is made up to equal that of State schools by the parent community. In less affluent Catholic schools, these parent contributions fail to make up this difference. In surveying State and Catholic schools, differences related to integrating computers or financing an LT Coordinator may have been identified because of these funding level differences.

There are more than 700 State schools and 300 Catholic schools in the Melbourne Metropolitan area. It was decided to survey these schools in a similar ratio to that which

exists, ie. 2:1. It was hoped that approximately 100 schools would return surveys and hence a decision was taken to mail-out about 225 surveys. Initially it was decided that approximately 150 State schools and 75 Catholic schools would be asked to participate in the survey.

Small, medium and large schools were surveyed. The category of size was included to investigate this effect in terms of the professional development needs of teachers and the role of the LT Coordinator. It was thought that size could reflect different amounts and types of resource available. A small school was defined as one with an enrolment of less than 150 children, a medium school one with an enrolment of between 150 and 350, and a large school was defined as a school with over 350 students enrolled. These cut-off points were used because within the Catholic system, principals' salaries are classified according to the number of students enrolled. Small schools are classified as below 150 and large schools as above 350.

To ensure geographical coverage across the suburban area of Melbourne, the sample was stratified by region as well. There is some evidence to suggest that schools as a whole are financially 'better off' in the eastern region compared to the west. Hence, there may be resource implications by region. A list of metropolitan State schools was obtained from the Department of Education, Employment and Training. This list was sorted by region and then alphabetically. In each of the four regions; Eastern, Northern, Southern and Western, forty schools were identified by highlighting every fifth school giving a total of 160 Government schools. Using the directory for Catholic schools, a similar system was used to identify 80 schools - 20 from each region.

Hence a total of 240 schools were selected for the survey. Each school was assigned a number which appeared on all the material sent to that school. The State schools were numbered 1-160 and the Catholic schools were numbered 200-280.

Consideration was given to other differences among schools such as situation, financial status and social status, but for the purpose of this study such variations were not seen to be central to the investigation, although it is acknowledged that particular themes highlighted by this study may evoke further studies with a more varied group of schools involved.

5.2 The Survey

5.2.1 Cover Letter and Procedure

An essential part of a survey is the cover letter. This, as Wiersma (1995, p. 183) suggests, should be "straightforward, explaining the purpose and potential value of the survey and transmitting the message that an individual's response is important". The cover letter should "set the stage for responding and the early part of the questionnaire should begin immediately with the content related to the research question" (Wiersma 1995, p. 186).

May (1997, p. 89-90) warns that "unless people have an incentive, either through an interest in the subject which the survey is covering or some other basis, then response rates are likely to be low". However, it was thought that greater importance would be given to the survey by asking principals themselves, via the covering letter, to respond to the survey. Furthermore an increase in the response rate was hoped for by asking principals to direct the surveys to the LT Coordinator and also to teachers interested or involved in this area.

Nevertheless, it was acknowledged that the response rate would be less than the desired one hundred percent, and that time and effort would need to be directed towards following up responses. The initial questionnaire would include a stamped, addressed envelope for reply.

Wiersma (1995, p. 188) suggests that a follow up procedure needs to be planned for and implemented in the case of most mail surveys. He recommends a second reminder mailed out to arrive a few days after the due date for the survey return for those who have not yet responded. He further recommends a telephone reminder to coincide with the arrival of the second questionnaire as another way to improve the response rate. In this present survey a telephone call would serve as a reminder. I would argue that mail arrives in schools in vast quantities and finding time to deal with it as a principal, LT Coordinator or teacher is always a difficult prospect, whereas a telephone call sometimes elevates the enquiry to a personal level and could elicit a response.

However, more important than the follow up procedure according to Wiersma (1995, p. 186) is the fact that the questionnaire as a whole is attractive and easily read. Dillman (1978, cited by Wiersma, 1995, p. 187) tells us that an increased response will result if the respondent sees the cost in terms of time and effort to be less than the perceived reward. Dillman suggests that the rewards are being positively viewed by another, being appreciated and being consulted on an important issue. Hence, in constructing the cover letter an effort was made to give some indication of these rewards to increase the response rate of the survey (see Appendix D).

5.2.2.   Survey - Item Construction and Format

In the first instance a draft survey was constructed based on the literature review and my personal experience of this issue. Following the focus groups and the interviews of phase 1 of this study, this draft survey was modified and these modifications are detailed in a later section. This section details the initial draft construction resulting from the literature review.

Two types of items were used; selected response items (closed) and open-ended items. The open-ended items allowed for more freedom, flexibility and interpretation (May 1997, p. 95)

and were included because of an anticipated richness of data which they would provide. On the other hand, selected response items improve the chances of a consistent response and the tabulation of data is generally straightforward in comparison with the open-ended items. A five-point Likert type response, a commonly used attitude response, was seen to be appropriate for this survey. Five responses were possible ranging from 'strongly agree' through 'not sure' to 'strongly disagree'. Item construction must be unambiguous (Wiersma, 1995, p. 179-187). Items constructed for this study related directly to the research questions that arose from the themes emerging from a review of the literature on this topic, as well as my own personal experiences in this area.

The overall research statement was concerned with the professional development of teachers as they integrated learning technologies into classroom practice. However, as noted earlier, in the literature review, teachers would probably commit to professional development if they could see there is a need for it. Therefore, the first theme related to the integration of learning technologies into classroom practice. As noted in the review of the literature, McGlaughlin and Marsh (1992, p. 215) when reporting on the four-year federally funded Rand study designed to introduce and spread innovative practices in US public schools, suggested that teachers' commitment was vital to the success of new projects or programs. If teachers were convinced that integrating learning technologies into their classroom practice was of benefit to their students, they may commit to professional development in this area. Perry (1995, p. 22) argued that teachers need to be "switched on to learning that can take place through the use of technology." The first section of the survey, therefore, investigated this issue using the following question as a guide;

"Why are teachers integrating learning technologies into their classrooms?"

This section of the survey is shown in Table 5.1. The specific items are all related to points

made in the literature reviewed

Table 5.1

Section 1 of the Survey

This question relates to the integration of learning technologies into classroom practice.

Integration of learning technologies into classroom practice is defined as:

"The process involved in using learning technologies as a tool to facilitate learning across curriculum areas in classroom practice"

Please tick the most appropriate response for each statement.

KEY: **SA** = Strongly Agree; **A** = Agree; **NS** = Not Sure; **D** = Disagree; **SD** = Strongly Disagree

Why do you integrate learning technologies into classroom practice?	SA	A	NS	D	SD	If possible provide examples for some of your responses
To motivate the students						
To improve the achievement of the students						
To improve the students skill with computers						
To provide fun experiences for the students						
To help the students gain access to more information						
To improve my own skills with the computer						
To respond to expectations of: Parents The principal Society						
Others: please comment						

The second section of the survey moved on to the second theme arising from the literature and related to the factors, other than the teachers' commitment, that were seen as being important in order for the professional development to be effective in assisting teachers to integrate learning technologies into classroom practice (See Table 5.2).

As noted in a review of the relevant literature, many researchers such as Little (1982), Fullan (1990), Baird (1991) and Caverly et al. (1997) have argued that for professional development to be successful there needs to be an opportunity for collaboration with peers. The first item of this section asked teachers if they saw this collaboration with peers as an important factor in a professional development program that assisted them to integrate learning technologies into classroom practice.

Another factor emerging from the literature as important in successful professional development programs in general, and specifically related to assisting teachers in the integration of learning technologies into classroom practice, was that of classroom situated professional development. Johnson (1995) as well as Yelland and Bigum (1995) have developed workplace based professional development programs for teachers arising from their conviction that professional development situated in the classroom was more likely to be successful than that offered away from the teaching environment. The ACOT research, citing results from its five-year study of teacher professional development, also argues that situating professional development in the classroom is an important consideration in assisting teachers in the integration of learning technologies into their classroom practice. Hence, the second item of section two asked teachers if they saw as important the opportunity to embed new skills into classroom practice.

Table 5.2

Section 2 of the Survey

This question concerns those factors that you see as important in the professional development to assist you to integrate learning technologies into classroom practice.

Please tick the most appropriate response for each statement.

KEY:	**SA** = Strongly Agree;	**A** = Agree;	**NS** = Not Sure;	**D** = Disagree;	**SD** = Strongly Disagree

What do you consider to be the most important factors in the professional development to assist you to integrate learning technologies into classroom practice?	SA	A	NS	D	SD	If possible provide <u>examples</u> for some of your responses
The opportunity to collaborate with peers in school						
The opportunity to embed new skills into classroom practice						
The professional development is on-going						
The role of the LT Coordinator in the school						
The incentive of a "performance plan" or professional development goal in this area						
Others: please comment						

Mackinnon (1994), in substantiating the need for successful professional development to be situated in the classroom, also noted that the professional development needs to be continuous and that one-off courses, which he refers to as the 'hypodermic approach', have little impact on the professional development of teachers. McKenzie (1991), Caverly et al. (1997) and Duckett (1995) similarly argue that professional development needs to be sustained or on-going. Hence, the third item in section 2 asked teachers if they considered it important that professional development to assist them to integrate learning technologies into classroom practice was on-going.

The final theme emerging from the literature in relation to the professional development of teachers concerned the role of the LT Coordinator. In the area of religious education, the coordinator's role has been seen for many years as important in the professional development of teachers in the school (CEO, 1995). More recently, the appointment of a literacy coordinator in schools engaging in the CLaSS early literacy program has been linked directly to the need for continuous professional development for teachers in the school. In the area of learning technologies, the Navigator and LaTTiCE schools, in their appointments of Project Officers and LT Coordinators respectively, note the professional development of teachers in this area as an important aspect of their role (see Chapter 1). The fourth item of section 2 in this survey asked teachers if they considered the role of the LT Coordinator to be an important factor in the professional development to assist them to integrate learning technologies into classroom practice.

The fifth item in section 2 of this survey was included following discussions with Christine Ekin Smyth, a Research Officer with the Department of Education, Employment and Training. She suggested that some teachers in the State school system have a specific

performance plan in the area of learning technology. This plan is related to their professional goals and may be an incentive for them to put time and effort into professional development in the area of learning technology. Hence Item 5 asked if the incentive of a performance plan or professional development goal related to learning technology was an important factor in their professional development in this area. An open-ended item asking teachers to comment on any other factors they saw as important in this area concluded this section (see Table 5.2).

Looking in greater depth at the third theme arising from the literature concerning the role of the LT Coordinator gave rise to the items constructed in section 3 of this survey (see Table 5.3). Item 1 is included in the draft of the survey instrument arising from my own experience of having a learning technology coordinator for three years as a requirement of the LaTTiCE project. Item 1 asked if coordination of the LT program at the whole school level was perceived to be part of the LT Coordinator's role (see Table 5.3).

The second item arose from both a review of the literature as well as personal experience. Becker (1992) argues that a full-time computer coordinator would encourage higher order problem solving use of the computer technology. Hence, the second item of the draft survey asked if the role of the LT Coordinator involved providing teachers with ongoing assistance with the integration of learning technologies.

Item 3 arising from a review of the literature related to the role of the LT Coordinator as mentor. Becker (1992) suggests that the computer coordinator would provide the crucial modelling of computer applications for teachers to assist them in integrating the technology. Supporting this argument, Johnson (1995, pp. 10-13) argues that computer coordinators in schools should take on a mentor-type role to assist teachers as they integrate technology.

Table 5.3

Section 3 of the Survey

These questions are related to your perceptions of the role of the learning technology coordinator.

Please tick the most appropriate response for each statement.

KEY: **SA** = Strongly Agree; **A** = Agree; **NS** = Not Sure; **D** = Disagree; **SD** = Strongly Disagree

In my situation, the learning technology coordinator's role involves:	SA	A	NS	D	SD	If possible provide <u>examples</u> for some of your responses
Coordination of the LT program at the whole school level						
Providing teachers with on-going assistance with the integration of learning technologies						
Acting as a mentor for teachers in relation to the integration of learning technologies						
Assisting teachers with professional development to enhance skills in using computers and learning technologies						
Providing technical support in relation to the use of computers and learning technologies						
Others: please comment						

Hence Item 3 of the draft survey asked if the role of the coordinator involved acting as a mentor for teachers in relation to the integration of learning technologies.

In constructing Item 4 of this section of the survey, consideration was given to the main objectives of the LaTTiCE and Navigator schools and also to the role of the Project Officers in the Navigator schools and the LT Coordinators in the LaTTiCE schools. The main objectives outlined for both Navigator and LaTTiCE schools refer to the professional development of teachers. Navigator schools state as one of their four major aims; "to provide a premium professional development resource for teachers and principals" (Buninyong Primary School, 1998); so too in the LaTTiCE schools; "to develop skills and confidence of teachers as they assist students in the use of information and communication technologies" (CEO, 1996, p. 1).

In the Navigator schools, the Project Officer's role involves the professional development of teachers in this area and in the LaTTiCE schools, six of the seven items of the role of the LT Coordinator relate in some way to the professional development of teachers (see Chapter 2). Two of these are:

- Organising and conducting professional development sessions with all teachers, and

- Assisting teachers with planning the curriculum to cater for the integration of technology.

Hence, Item 4 of the survey asked if the role of the LT Coordinator generally was perceived to involve assisting teachers to enhance skills in using learning technologies.

The final item of this section of the survey, asked if the role of the LT Coordinator involved providing technical support in relation to the use of the computer and learning technologies.

This item was included because my personal experience as a principal of a LaTTiCE school suggested that this was a major part of the LT Coordinator's role. The LaTTiCE schools were not funded for technical support, unlike the Navigator schools. It was anticipated that this item as a question on the general survey instrument could elicit varied responses although some modification of this item may be required following the analysis of stage 1 of this research. The purpose of the third section was to gain further clarification of teachers' perceptions of the specific role of the LT Coordinator and to investigate in greater depth the nuances of the assistance given to teachers by the LT Coordinator. It was anticipated that the variations in the suggested roles of the Coordinator would indicate to respondents that a greater depth and a more specific response was being sought in connection with the LT Coordinator's role.

Items constructed for section four of the survey were yet a further attempt to seek a greater depth of thinking and more specific answers from the respondents. In section four, the items related to the skills, knowledge and personality of the LT Coordinator as perceived by the classroom teacher (see Table 5.4). This was planned to lead to a gathering of data relevant to the research questions in part 3 of the research.

At this draft stage, the four attributes arose from my own questioning of colleagues and teachers at the local level, namely; has the skills and knowledge to assist me (the teacher); is able to communicate effectively with me; has a pleasant personality; and is willing to assist whenever I need help, given that he is not already busy helping someone else.

A search of the literature revealed no specific reference to the attributes, skills or personality of the LT Coordinator. A visit to the Technology Coordinators website (accessed June 2001)

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confirmed this with the statement "there is surprisingly little written about the Technology

Coordinator's role, and even less research on the subject".

Table 5.4

Section 4 of the Survey

These questions relate to other factors you consider to be important in enabling the learning technology coordinator to assist you with professional development to integrate learning technologies into classroom.

Please tick the most appropriate response for each statement.

KEY: **SA** = Strongly Agree; **A** = Agree; **NS** = Not Sure; **D** = Disagree; **SD** = Strongly Disagree

In my situation, it is important that the learning technology coordinator:	SA	A	NS	D	SD	If possible provide <u>examples</u> for some of your responses
Has the skills and knowledge needed to assist me.						
Is able to communicate easily and effectively with me						
Has a pleasant personality						
Is willing to assist whenever I need the help.						
Others: please comment						

The section of the survey shown in Table 5.4 was expected to be modified after phase 1 of the study. It was anticipated that phase 1 would be useful in providing information as to the attributes and skills of the learning technology coordinator as perceived by the participants at the Navigator and LaTTiCE schools.

The final part of the questionnaire comprised "classification questions" (May, 1997, p. 94) which provided the demographic information concerning the respondents and their situation. The first classification item related to the size of the school. Size could be a relevant factor in terms of the amount of resources available or the level of staffing available for coordination of programs.

The second item sought further data in relation to resources by asking how many computers are in use in the classroom. Presumably a teacher would find it much more difficult to integrate learning technologies into his or her classroom if only one computer was available for his or her use, whereas having access to five or six computers would eliminate that particular problem. The third item was linked to this question, and asked the teacher if they did actually integrate learning technologies into classroom practice.

The fourth item of the classification section sought information that asked if there was a designated LT Coordinator in the school. If no such role had been created, then much of the third part of this research would not be able to be answered by these particular respondents and this factor would also be an important consideration in analysing the other items of the survey.

The amount of time available to the LT Coordinator for the specific purpose of coordinating learning technologies in the school would probably impact on their role in the professional

development of teachers in this area. So too would the amount of time actually spent by the LT Coordinator directly with the teachers. Items five and six of this classification section provided finer grain data concerning the role of the LT Coordinator in this way.

Item seven sought information from respondents in relation to the existence of a particular 'performance plan' or professional development goal in this area of learning technologies. This notion seemed to be important in the Navigator schools as expressed by Christine Ekin-Smythe, a Research Officer with the Department of Education, Employment and Training. Whether it was important in a more general sample of schools would remain to be seen.

Wiersma (1995, p. 186) suggests that classification questions should appear at the end of the questionnaire or survey so that transition from the cover letter is not broken. Acting upon this suggestion, the classification questions formed the final section of this particular survey (see Table 5.5).

The survey form (Type C) presented by sections in the earlier tables of this chapter was the form specifically designed for the teachers. Two further types of survey form, form B for the LT Coordinator and form A for the principal, were very similar to those constructed for the classroom teachers. The items in these two particular forms were phrased slightly differently for the LT Coordinator and for the principal according to their particular roles in the school.

The initial survey forms resulted from a review of the relevant literature and personal experience. However, following phase 1 of the actual study, namely the focus groups and interviews at seven Navigator and LaTTiCE schools, the research questions were modified to better investigate the overall original research statement which remained unchanged.

Table 5.5

Classification Questions

Please tick the most appropriate response for each question.

Into which category of size does your school fit?	Under 150 children		Between 150 – 350		Over 350	

How many computers are able to be used in your classroom?	1	2	3	4	5	6 or more

Do you integrate learning technologies into your classroom practice?	Yes	No	Sometimes

Is there a designated learning technology coordinator in your school?	Yes	No

How much time each week does this person have to coordinate learning technologies?	Less than 1 day	1 – 3 days	More than 3 days

How much time on average each week does this Coordinator spend with you (planning, in classroom or generally assisting you?)	Less than 1 hour	1 – 2 hours	More than 2 hours

Is your professional development in the area of learning technologies linked to a performance plan or professional development goal?	Yes	No	Comment

The final version of the research questions is shown in Table 5.6 and the final model is also included as Figure 5.1

Table 5.6

The Final Derived Research Questions after Modification Resulting from Phase 1 of the Study

Concerning the integration of technology into classroom practice, the study will ask:

1.   Why do teachers integrate learning technologies into classroom practice?

Concerning the professional development of teachers in this area, the study will ask:

2.   What are the most important factors in the professional development of teachers as they integrate learning technologies into classroom practice?

   2.a.   Is the opportunity for collaboration with peers seen as an important factor?

   2.b.   Is the opportunity to embed new skills and learnings in classroom practice seen as an important factor?

   2.c.   Is it seen as important to have on-going support including the allocation of time?

   2.d   Is the incentive of a performance plan or professional development goal seen as an important factor?

   2.e   Is access to current, operational IT resources seen as an important factor?

   2.f   Is the support of the principal seen as an important factor?

   2.g.   Is the role of the LT Coordinator seen to be an important factor?

   2.h.   Are any other factors seen as important in the professional development of teachers as they integrate learning technologies into classroom practice?

Concerning the role of the LT Coordinator, the study will ask:

   3.a   How is the specific role of the LT Coordinator perceived in reality?

   3.b.   Ideally, what should the role of the LT Coordinator be?

   3.c   What factors are perceived to affect the role of the LT Coordinator in the professional development of teachers as they integrate learning technologies into classroom practice?

   3.d.   What particular qualities or attributes are perceived to be needed by a person in the role of LT Coordinator`?

There is a reason for doing the PD – The integration of learning technologies into classroom practice is seen as important

Collaboration with peers

Embedded in classroom practice

Incentive of performance pay

On-going and given time

Important factors in the professional development of teachers as they integrate learning technologies into classroom practice

Access to current operational resources

Support of the principal

The role of the learning technology coordinator

How is it perceived in reality

What it should be ideally

Factors impinging the role

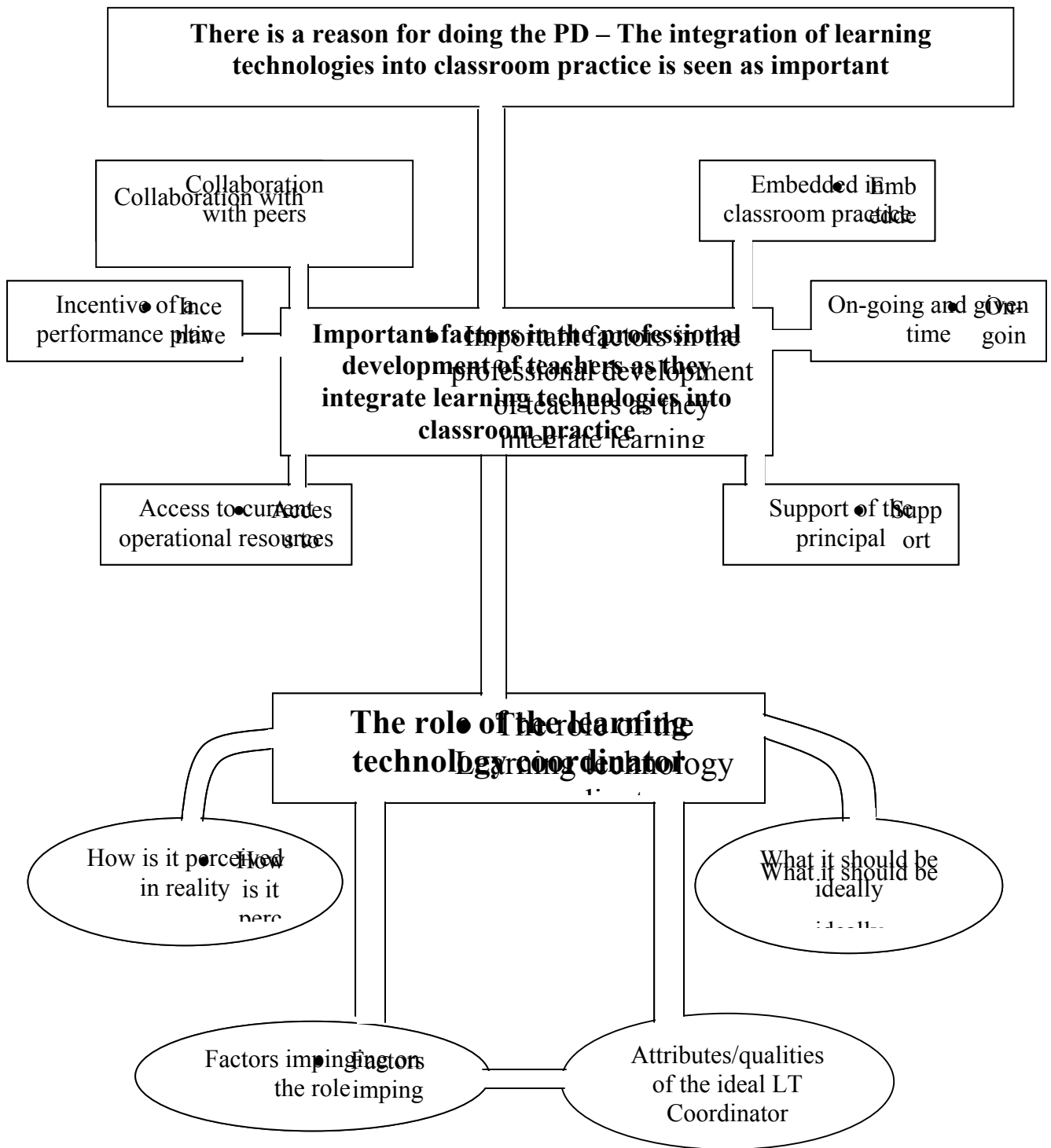Attributes/qualities of the ideal LT Coordinator

Figure 5.1. Model of the Research Question – Final Version.

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The next section of this chapter details the modifications to the surveys which were made following implementation of phase 1 of the study and the analysis of the focus group and interview data.

5.2.3   Modification of the Survey Instrument Following Phase 1 of the Study

Results from the analysis of the focus groups and interviews led to modifications of the survey, as was anticipated. The discussion in Chapter 4 relating to the sub-theme (Y) from the focus group data revealed that the majority of respondents in the focus groups and structured interviews identified three main reasons why teachers integrate learning technologies into classroom practice. These three reasons related to student attitude and learning, teachers themselves and the expectations of others. Section 1 of the initial survey was therefore reformatted under these headings.

Closer scrutiny of the reasons related to student attitudes and learning (see Table 4.3) shows five areas referred to frequently; to improve student motivation, to provide fun experiences, to provide an alternative learning tool, to provide access to more current information, and to improve delivery of the curriculum. It was decided that the inclusion of these five areas would be listed as dot points in the final survey. The item related to student skills was also included. Although this was not referred to greatly in phase 1 of the study, my own personal experience and a review of the literature led me to suggest that it could be a major reason why teachers integrate the technology into their classroom practice. Toomey (1996) suggests strongly that the integration of computers aids students' enquiry skills and Snyder (1992), looking more specifically in the area of literacy, suggests that children's writing skills improve significantly when learning technologies are integrated into classrooms.

In relation to teachers, analysis of the focus group and structured interview data showed that the issues of teacher skills and job security were paramount, and hence these two items should be included in the survey. Although no one in the focus groups or the structured interviews had referred to addressing the needs of a performance plan whilst discussing the reason why teachers integrate technology, it was decided to still include this in the final survey because of the strong suggestion of Christine Ekin-Smythe, a Research Officer with the Department of Education, Employment and Training.

Expectations related to the Department of Education and the CEO, to the school or principal, and to a lesser degree to the demands of society featured strongly in phase 1 of the survey. Although the expectations of parents did not seem to be an issue for the Navigator and LaTTiCE schools, it was reasoned that this should be investigated in a general survey where it may feature as a reason why teachers integrate learning technologies into classroom practice. Hence, the issue of parental expectation was included as a dot point in section 1 of the survey under the heading of expectations.

Items in section 1 of the original survey (see Table 5.1) were modified with respect to the above analysis. Once this was completed, the survey was given to a sample of ten teachers, principals and LT Coordinators with a request to comment on any difficulties or ambiguities they encountered. The major response resulting from this small-scale pilot was for more space to be provided for written examples. To accommodate this request, as well as to provide further clarity, the areas were grouped. The resulting section 1 for the classroom teacher is presented in Table 5.7. The corresponding forms relating to section 1 for principals and LT Coordinators are presented in Appendix E.

Table 5.7

Section 1 of the Survey   Survey Form C – Classroom Teachers

This question relates to the integration of learning technologies into classroom practice.
Integration of learning technologies into classroom practice is defined as:
"The process involved in using learning technologies as a tool to facilitate learning across curriculum areas in classroom practice"
Please tick the most appropriate response for each statement.

KEY:	**SA** = Strongly Agree;	**A** = Agree;	**NS** = Not Sure;	**D** = Disagree;	**SD** = Strongly Disagree

Why do you integrate learning technologies into classroom practice?	SA	A	NS	D	SD	If possible provide <u>examples</u> for some of your responses
Related to student attitudes and learning to improve student motivation to provide fun experiences to provide an alternative learning tool to improve student skills to gain access to more current information to improve delivery of the curriculum						
Related to teachers to improve teachers skills to improve job security to address the needs of a professional development performance plan						
Related to expectations to respond to expectation of the Dept/CEO to respond to expectation of the school/principal to respond to expectations of parents to respond to expectations of society						
Others: please comment						

The second section of the survey concerned the professional development of teachers integrating learning technologies into classrooms. From an investigation of the literature as well as personal experience, this section in its original draft form pointed to important factors including collaboration with peers, the opportunity to embed new skills into practice, that professional development should be ongoing, the role of the LT Coordinator, and the incentive of a performance plan or professional development goals (see Table 5.2). An analysis of the focus group and interview data relevant to sub-theme O (see Chapter 4) also identified these five areas to be important. However, this analysis suggested two other important factors, namely the support of the principal and access to current operational LT resources.

The support of the principal was highlighted during the pilot study for phase 1 of the research (see Chapter 3) and, following a review of the literature which supported this view (section 3.6), this item was actually added to the interview guide to be used with the other seven schools as phase 1 of the main study was implemented. Therefore, as was expected, the support of the principal was identified as a factor of major importance. In fact the support of the principal was perceived by Navigator and LaTTiCE schools to be generally the most important factor in the professional development of teachers in the learning technologies area. Because of the above analysis, the second part of the research question was modified in light of the results from the focus groups and the interviews to include these two extra questions related to the support of the principal and access to current, operational LT resources (see Table 5.6). In line with this modification, section 2 of the survey was modified accordingly and is presented in Table 5.8.

Table 5.8

Section 2 of the Survey   Survey Form C – Classroom Teachers

This question concerns those factors that you see as important in the professional development to assist you to integrate learning technologies into classroom practice.

Please tick the most appropriate response for each statement.

KEY:	**SA** = Strongly Agree;	**A** = Agree;	**NS** = Not Sure;	**D** = Disagree;	**SD** = Strongly Disagree

What do you consider to be the most important factors in the professional development to assist you to integrate learning technologies into classroom practice?	SA	A	NS	D	SD	If possible provide examples for some of your responses
The opportunity to collaborate with peers						
The opportunity to embed new skills into classroom practice						
The professional development is on-going, over time and time is made available						
The incentive of a "performance plan" or professional development goal in this area						
Access to current, operational IT resources						
The support of the principal						
The role of the LT Coordinator in the school						
Others: please comment						

In the initial draft of the survey the third area, which related to the role of the learning technology coordinator, comprised two parts. The first part, section three of the survey, related to perceptions of the learning technology coordinator's role (see Table 5.3). The other part of this area, section four of the original survey, related to the skills, knowledge and personality of the LT Coordinator (see Table 5.4).

The resulting analysis from the focus groups and interviews of phase 1 of the study led to a fairly substantial modification of this area of the survey. With respect to perceptions of the LT Coordinator, it was during the pilot study for phase 1 that an ambiguity was revealed. In this pilot study, the members of the focus group, the LT Coordinator and the principal each sought clarification of the perceived role of the LT Coordinator suggesting that the question in 'reality' and in 'the ideal world' would evoke different answers. Because of this, the research questions were modified (see questions 3a to 3d in Table 5.6) as were the focus group and interview protocols.

Hence, section three of the survey was also modified and presented in four parts: 3a referred to the perceived role of the LT Coordinator in reality and 3b looked at these perceptions in an ideal situation. The original survey items for section 3 were reshaped to relate to areas alluded to in phase 1 of the study and these Sections 3a and 3b were reformatted to provide further clarity of issues. Four general perceptions were sought in relation to: assisting teachers with professional development, coordinating the school LT program, providing technical expertise and providing professional development for other schools. The modified Sections 3a and 3b are presented in Tables 5.9 and 5.10 respectively.

Table 5.9

These questions are related to your perceptions of the role of the learning technology coordinator as it is in reality.

Please tick the most appropriate response for each statement.

KEY:	**SA** = Strongly Agree;	**A** = Agree;	**NS** = Not Sure;	**D** = Disagree;	**SD** = Strongly Disagree

In _my_ situation, the learning technology coordinator's role involves:	SA	A	NS	D	SD	If possible provide <u>examples</u> for some of your responses
Assisting in the area of professional development of teachers						
In the technical skills area						
In the teaching/learning area						
In developing teacher resources						
As a support person for teachers						
As an empowerer of others						
Providing for the development or coordination of the learning technologies program in the school						
Providing technical expertise to keep the computers working						
Providing professional development for teachers in other schools						
Others: please comment						

Table 5.10

Section 3b of the Survey   Survey Form C – Classroom Teachers

These questions are related to your perceptions of the role of the learning technology coordinator in an <u>ideal</u> situation.

Please tick the most appropriate response for each statement.

KEY: **SA** = Strongly Agree;   **A** = Agree;   **NS** = Not Sure;   **D** = Disagree;   **SD** = Strongly Disagree

In an <u>ideal</u> situation, the learning technology coordinator's role should involve:	SA	A	NS	D	SD	If possible provide <u>examples</u> for some of your responses
Assisting in the area of professional development of teachers In the technical skills area In the teaching/learning area In developing teacher resources As a support person for teachers As an empowerer of others						
Providing for the development or coordination of the learning technologies program in the school						
Providing technical expertise to keep the computers working						
Providing professional development for teachers in other schools						
Others: please comment						

The initial survey items in section 4 were also modified in view of the data obtained from the focus groups and interviews. Section 3c of the final survey related to perceptions of important factors impacting on the role of the LT Coordinator. Analysis of the focus group and interview data revealed that the time available, the expectations of the Department of Education or the CEO, access to current operational resources, qualities and attributes of the LT Coordinator and the range of different needs of teachers were the major factors seen to impact on the role of the LT Coordinator. Hence, section 3c of the survey would investigate the importance of these factors as perceived by principals, LT Coordinators and teachers in a more general sample and is presented in Table 5.11.

Section 3d of the survey attempts to gain a more specific perception of the particular qualities or attributes required of the LT Coordinator. Once again the items included in section 3d were those highlighted by respondents in phase 1 of the study, namely: is the LT Coordinator aware of and able to cater for the different needs of staff; has technical skills; is helpful and considerate; is a good communicator and listener; is strong in teaching and learning strategies. Section 3d of the final survey is presented in Table 5.12.

It will be recalled that the last section of the survey was a group of demographic questions. With reference to this demographic section, discussion with my supervisor and reflection on this section led to the inclusion of a further question related to the length of time learning technologies had been integrated into classroom practice. If differences in the data resulted from this particular classification question this would point to suggestions of further investigation in this area at some later date. This was the only amendment to the classification questions for the final survey and this section 4 of the survey is presented in Table 5.13.

Table 5.11

Section 3c of the Survey   Survey Form C – Classroom Teachers

These questions relate to the important factors you perceive as impacting on the role of the learning technology coordinator.

Please tick the most appropriate response for each statement.

KEY:	**SA** = Strongly Agree;	**A** = Agree;	**NS** = Not Sure;	**D** = Disagree;	**SD** = Strongly Disagree

In my opinion, the factors that impact on the role of the learning technology coordinator are:	SA	A	NS	D	SD	If possible provide <u>examples</u> for some of your responses
The qualities or attributes of the Coordinator						
The time available for the Coordinator						
The expectation of others The Department/CEO The School/principal						
The access to current operational resources						
The range of different needs of the teachers						
Others: please comment						

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Table 5.12

Section 3d of the Survey   Survey Form C – Classroom Teachers

These questions relate to the particular qualities or attributes you consider to be important in enabling the learning technology coordinator to assist teachers with professional development to integrate learning technologies into classroom practice.

Please tick the most appropriate response for each statement.

KEY:	**SA** = Strongly Agree;	**A** = Agree;	**NS** = Not Sure;	**D** = Disagree;	**SD** = Strongly Disagree

I consider it is important that the learning technology coordinator:	SA	A	NS	D	SD	If possible provide <u>examples</u> for some of your responses
Is aware of and able to cater for the different needs of staff						
Has the technical skills and knowledge to assist me						
Is helpful and considerate						
Is a good communicator/listener						
Is strong in teaching and learning strategies						
Others: please comment						

Table 5.13

Section 4 of the Survey - Classification Questions Survey Form C

Please tick the most appropriate response for each question.

Into which category of size does your school fit?	Under 150 children	Between 150 – 350	Over 350

How many computers are able to be used in your classroom?	1	2	3	4	5	6 or more

Do you integrate learning technologies into your classroom practice?	Yes	No	Sometimes

How long have you been integrating learning technologies into classroom practice?	Less than 1 year	1–3 years	3-5 years	More than 5 years

Is there a designated learning technology coordinator in your school?	Yes	No

How much time each week does this person have to coordinate learning technologies?	Less than 1 day	1 – 3 days	More than 3 days

How much time on average each week does this Coordinator spend with you (planning, in classroom or generally assisting you?)	Less than 1 hour	1–2 hours	More than 2 hours

Is your professional development in the area of learning technologies linked to a performance plan or professional development goal?	Yes	No	Comment

5.3   Implementation of the Survey

Ethical clearance was sought and granted by the University Human Research Ethics Committee, by the Department of Education, Employment and Training and by the Catholic Education Office. As advised in the letter from the Department of Education, the Regional Directors were telephoned to inform them of this research study survey involving schools in their area. Copies of the cover letters and surveys, coloured coded for different groups, were prepared. Separate cover letters were prepared for principals, LT Coordinators and classroom teachers. Envelopes were labelled for mailing and a stamped addressed envelope was included with each set of survey materials. All 240 surveys were mailed in early March 2001 with a request for their return by the end of term 1. As term 2 commenced, 35 of the 80 surveys had been received from the Catholic sector but only a disappointing 23 of the 160 State schools had returned surveys. At this stage a decision was made to contact by telephone as many schools as possible to request the return of the survey. At the same time, it was decided to mail out a further 50 surveys to another 50 State schools in the Metropolitan area. Once again these schools were selected by highlighting every fifth school in each of the four regions. These schools were numbered 300-350.

Then began the time consuming, frustrating and depressing process of telephoning schools that had not replied to the survey. In more than fifty percent of cases I was unable to speak with either the principal or the LT Coordinator. During school day time hours many principals were either at meetings or out of school and LT Coordinators were often in the classroom or in meetings. After school hours did not prove to be a better time to contact people. Often after 3:45pm, principals, LT Coordinators and teachers were at meetings or they had left for the day. In more than fifty percent of cases, I had to leave a telephone message with the secretary and rarely received a reply. When I was able to speak with the principal or the LT

Coordinator it was much more productive. Many principals and LT Coordinators said they had misplaced or not seen the survey but a number were agreeable to me sending a second copy. In all, another 41 surveys were mailed out as second copies to 25 State schools and 16 Catholic schools.

One disappointing fact was that over thirty principals or LT Coordinators in the State schools apologised but said that the demands of time prevented them from being able to take part in the survey. Six principals and two LT Coordinators said that the school had a policy of taking on no research for the year because of the already high extra demands on their time.

Whenever I could, I sent emails to schools reminding them of the request to complete the survey but I am only aware of one positive response from this method. Of the 290 schools surveyed, 90 responded. However, on a more positive note, 71 of the 90 responded fully with the principal, LT Coordinator and classroom teacher completing the survey. The final number of schools responding in each of the regions is presented in Table 5.14.

Table 5.14

The Number of Respondents to the Survey in Each Sector by Region

	Region	Principal	LT Coordinator	Classroom Teacher	Overall Totals
State	Eastern	14	11	11	36
	Northern	10	8	7	25
	Southern	13	10	9	32
	Western	8	6	5	21
	Total	45	35	32	114
Catholic	Eastern	18	15	14	47
	Northern	9	8	8	25
	Southern	11	10	10	31
	Western	7	7	7	21
	Total	45	40	39	124

As outlined earlier in this chapter initially it was hoped that a return sample of approximately 100 schools would eventuate. There were, in fact, 90 returned eventually and discussion with

my supervisor led to the belief that this was a sufficient number to make an analysis worthwhile. However, it was initially hoped that returns would be in the ratio of 2:1 for State to Catholic schools as this is approximately the ratio in which they are represented in the metropolitan area of Melbourne. As can be seen from Table 5.14, the ratio was exactly 1:1 with a larger proportion of surveys than expected returned from the Catholic sector and much smaller than expected from the Government sector schools.

One possible explanation for this is that I have been involved in Catholic education in Melbourne for more than twelve years, seven of these as principal and, hence, I am quite well known to many principals and teachers in the Catholic sector. Some of the surveys returned from Catholic schools, especially from the Eastern Zone, were from my colleagues who could have made the effort to complete the survey as a personal favour to me.

However, as for the final response rate being 1:1 instead of the anticipated 2:1, it was felt that this was unlikely to impact on the results of the analysis but this discrepancy would be kept in mind when attending to the resulting data. One very pleasing result of this survey was that of the 236 individual replies, there were only two that were incomplete and 164 of the surveys provided a large amount of interesting examples which added to the richness of the data.

The next chapter will outline the entering of the survey data, which will be followed by analysis of the data to reveal the major findings from this survey phase of the study.

CHAPTER 6
RESULTS OF THE SURVEY

6.1   Entering the Data

Data from the surveys were entered onto EXCEL spreadsheets. The Likert type five-point scale was coded using the number 5 to signify strongly agree, and the number 1 to signify a strong disagreement as the response.

The demographic data of school, Catholic or State, whether principal, teacher or LT Coordinator were used to devise a code for each respondent. Any written comments from the survey forms were entered onto the spreadsheet alongside the numerical response from that respondent.

A worksheet was created for each school listing the written examples provided in response to the survey alongside the response of the Likert type response scale. Using this worksheet, a report outlining all the written examples relating to the item response code could be produced for each of the respondents, namely the principal, the LT Coordinator and the classroom teacher. A sample of the resulting analysis is included for the principal of one of the surveyed schools (see Table 6.1).

Despite the relative ease of entering this data, the process was very time consuming because of the immense amount of data gathered. A total of 236 sets of data were entered. Each set of data required 55 numerical response entries and an average of ten written phrases or sentences. In total 12,980 numerical responses and over two thousand written responses were entered.

Table 6.1

Item Responses with Examples Alongside for the Principal of School 202

School	Item	Numerical Response	Comment
202	2	3	Not only for fun but for education
	9	5	All staff need PD to ensure whole school development and personal and professional development
	14	5	Peer support and training via staff meetings planned and Friday night drinks and practice sessions
	16	5	This is very important - a very important feature
	17	4	The appraisal system highlights this
	19	5	The staff see me using and communicating via the computer and know my commitment
	20	5	Troubleshooting, PD sessions, parent PD, policy, programming
	26	5	Staff meeting focus, visiting other schools for ideas
	27	5	Only because she can
	28	4	Only if time permits has she
	38	5	We have provided time for her role
	39	4	The CEO and DOE do make demands. The CEO does provide excellent PD opportunities
	41	5	In order to form and inform others you need to formed and informed also
	42	5	The staff surveys done - staff ongoing PD reviewed
	43	5	Survey done at start of year - interest groups formed - school closure day - time allocated
	44	5	Time allocated for this
	45	5	Staff chosen for these qualities
	46	5	Time allocated during staff meetings for info sharing
	47	4	Demonstrates new CD programs for staff to implement
	A		It is important that students use the computers as another tool in their learning process
	B		Expectation that proformas and work programs be typed on the computer
	C		There are many expectations on staff especially information technology
	F		Friday night peer support, running sessions on closure days, attending PD and sharing, given less yard duty in order to support staff

6.2 Analysis of the Data

The process of entering the data allowed me as the analyst to have a good feel for the major themes emerging. Analysis took the form of producing graphs and tables firstly for the total group, namely all 236 responses belonging to principals, LT Coordinators and classroom teachers in both State and Catholic schools, and then for specific groups, such as the principals, LT Coordinators and classroom teachers separately, or the Catholic and State principals, so comparisons could be made.

Averages of the Likert type responses were calculated from the spreadsheet in some instances to give an indication of a central tendency. Although considered, the notion of using statistical analysis was rejected on the basis that the data probably was not robust enough. For others, percentages of those strongly agreeing or disagreeing were calculated as a means of showing the intensity of the responses.

As a general rule, and in the absence of any statistical comparisons, a difference of 10% of the scale was taken as an indication that an educationally interesting difference may be present and worth commenting on. Such differences were compared to earlier results emerging from the literature reviewed, and from the analysis of interview and focus group data obtained in phase 1 of the study. Hence, a continuous layering of results over results that started in the pilot study of phase 1 was continued in this phase.

6.2.1 Analysis of Section 1 of the Survey

Three major findings arose from the analysis of section 1 of the survey related to why teachers integrate learning technologies into classroom practice. This section 1 is presented in Table 6.2 to allow the reader easier access to the items.

Table 6.2

Section 1 of the Survey   Survey Form C – Classroom Teachers

This question relates to the integration of learning technologies into classroom practice. Integration of learning technologies into classroom practice is defined as: "The process involved in using learning technologies as a tool to facilitate learning across curriculum areas in classroom practice" Please tick the most appropriate response for each statement.						
KEY: **SA** = Strongly Agree; **A** = Agree; **NS** = Not Sure; **D** = Disagree; **SD** = Strongly Disagree						
Why do you integrate learning technologies into classroom practice?	SA	A	NS	D	SD	If possible provide <u>examples</u> for some of your responses
Related to student attitudes and learning to improve student motivation to provide fun experiences to provide an alternative learning tool to improve student skills to gain access to more current information to improve delivery of the curriculum						
Related to teachers to improve teachers skills to improve job security to address the needs of a professional development performance plan						
Related to expectations to respond to expectation of the Dept/CEO to respond to expectation of the school/principal to respond to expectations of parents to respond to expectations of society						
Others: please comment						

The findings were first an indication that reasons for integrating learning technologies into classroom practice were related to students, more so than to teachers or expectations of others. Second, with respect to expectations, this survey found that expectations of society were more important than those of the school, parents, or the system. The third major finding was that job security and the incentive of a performance plan seemed to be of lesser importance than the other eleven reasons suggested by this survey. Finally, there were quite similar responses from Catholic and State school respondents and no real variation was shown between principals, LT Coordinators or classroom teachers who responded to this survey. These four major findings will be discussed in the following four sub-sections in some detail.

6.2.1.1   The first major finding – related to the overall response to section 1

It will be recalled that the first question posed was: "Why do teachers integrate learning technologies into their classroom practice?" In order to explore this question, the first section of the survey asked this question and provided thirteen possible responses. Respondents were to indicate their level of agreement or disagreement. The arithmetic mean for items 1-6 was calculated as indicative of reasons related to students, the arithmetic mean of items 7-9 gave some indication of reasons related to teachers' learning, and the arithmetic mean for items 10-13 of those related to the expectations of others. Figure 6.1 shows a graph of these averages.

Those reasons related to students seemed to be more important to the respondents from this survey as a reason why teachers integrate learning technologies into classroom practice than those related to expectations of others or to teachers themselves. This is the same trend as that arising from a review of the literature and that shown by the focus group members and the principals and LT Coordinators interviewed in phase 1 of the study. In the absence of any statistical comparisons, a difference of 10% of the scale was taken as an indication that an educationally interesting difference may be present and worth commenting on.
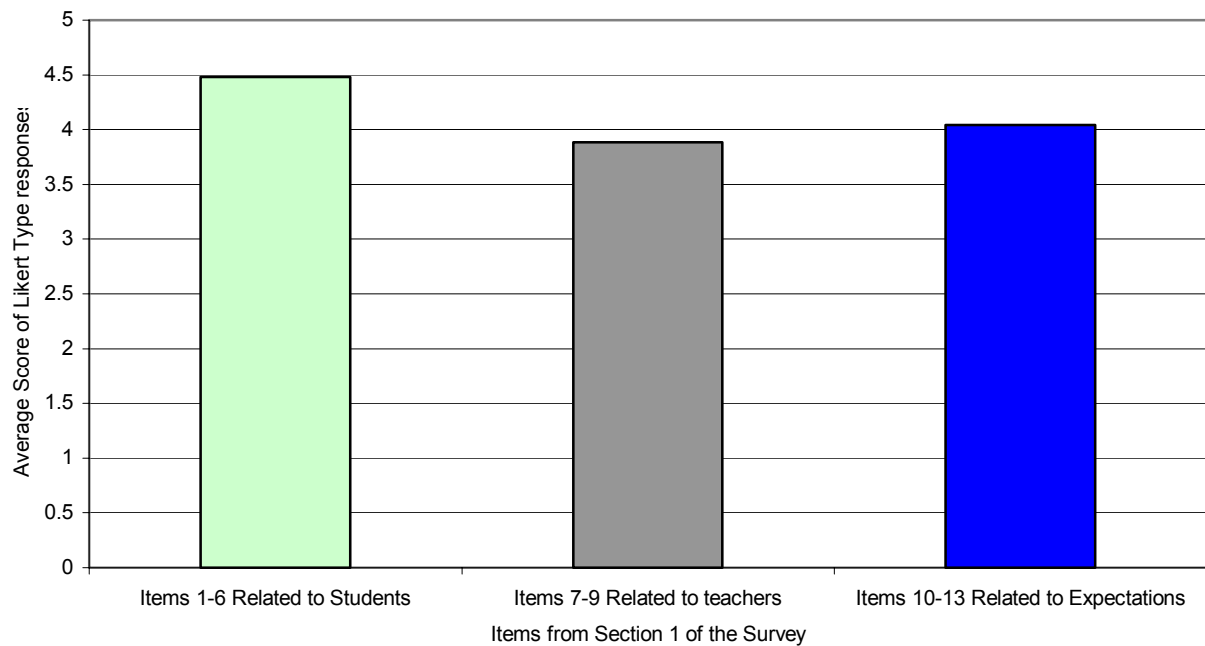
Figure 6.1.   Reasons for Integrating LT into Classroom Practice.

To obtain a different perspective, each of the three major areas, related to students, teachers and expectations, were broken up and results for the specific items were analysed as averages (see Figure 6.2).
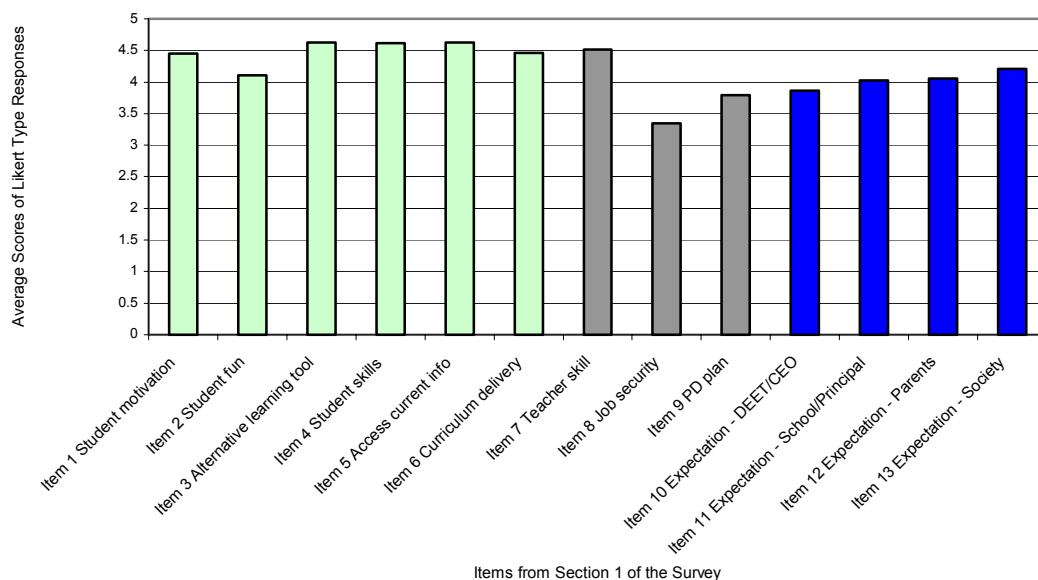

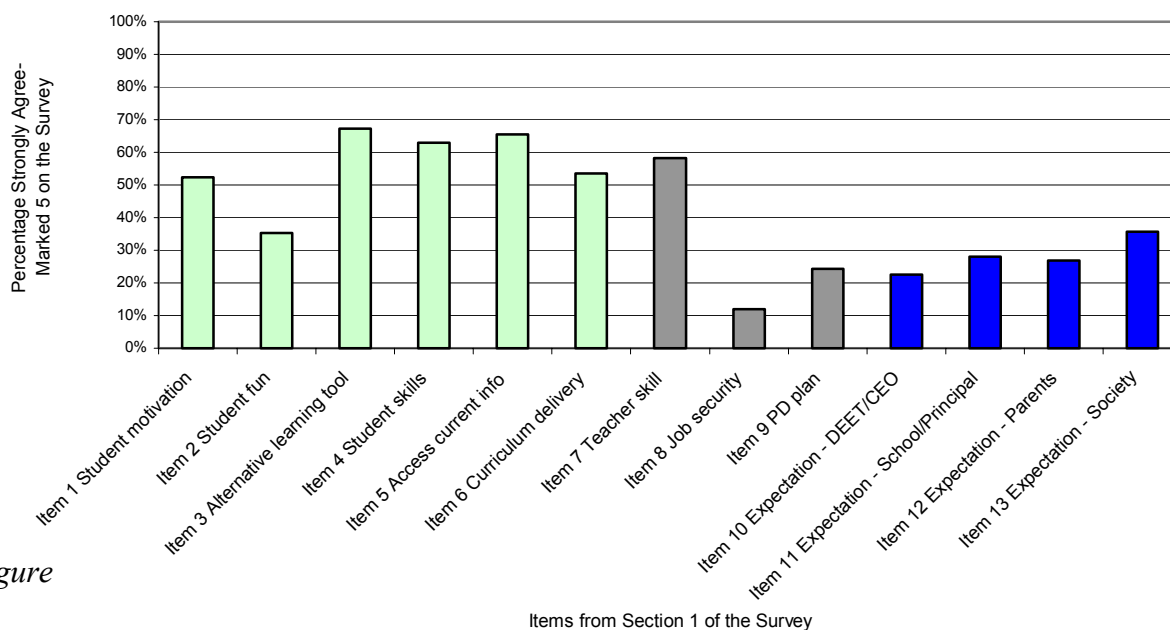*Figure 6.2.*   Why Do Teachers Integrate LT Into Classroom Practice (All Respondents).

In relation to students, the specific item 2, providing fun experiences for the students, was seen as relatively less important than the other issues canvassed in the survey. Although this

was only slightly less important, it points to a difference between phase 1 and phase 2 of the study. The focus group members who represented classroom teachers in Navigator and LaTTiCE schools noted that providing fun activities was the most important of all reasons related to students as a reason for integrating technology into classroom practice. However, it is acknowledged that the principals and LT Coordinators at the Navigator and LaTTiCE schools placed no importance on this as a factor. One reason that could be suggested for this result is that classroom teachers know that fun activities are motivational and make teaching easier whereas those not full time in classrooms often forget this. Or it may be that in these specialist Navigator and LaTTiCE schools some of the other issues had already started to recede into the background and so fun remained. However, I am not sure why such a result was obtained and for the purposes of this study no conclusions can be drawn from this particular data.

6.2.1.2   The second major finding - expectations

Moving to a finer grain analysis of this data, it seemed useful to find a way to capture intensity of responses rather than just the averages, an indication of the most common response. Hence Figure 6.3 graphs the frequency of those who strongly agreed item by item on section 1 of the survey.

Whilst there is similarity between both phases of the study related to reasons why teachers integrate technology into classroom practice, there are also some discrepancies. Of particular interest are items 10 through 13.

Figure 6.3. Percentage of Respondents who Strongly Agree with the Item as a Reason Why Teachers Integrate LT into Classroom Practice.

The analysis of the focus group and interview data showed that in relation to expectations, it was the expectations of the school or principal which were seen to be the most important reason why teachers integrated learning technologies into classroom practice, followed by the expectations of the system (DEET or CEO) and then of society. There was little importance given to the expectations of the parents. However, the survey presents a different picture and this analysis indicates that the expectations of society are seen as the most important of the expectations for this more general population.

When the results of item 13 (see Figure 6.3), related to the expectations of society, were investigated more closely, of the 236 respondents, 85 marked a '5' for this item denoting that they strongly agree that the expectations of society is a major reason why teachers integrate technology into classroom practice. This figure of 85 represents 36% of those who replied to the survey. The strength of this numerical data is further supported by a number of comments

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in this area such as; "We do live in a technological world and, as a supplementary and complementary tool, it is very effective", from a principal, and also from an LT Coordinator; "it's our duty to prepare children as much as we can for their world".

A similar discrepancy in comparing this survey phase 2 with a review of the literature and phase 1 of this present study presented itself in relation to parental expectations. Once again when this item, item 12, was closely examined, 64 respondents marked '5' on their survey paper to indicate strong agreement that the expectations of parents was a major reason why teachers integrate technology into their classrooms. This figure of 64 represents 27% of those surveyed. Yet analysis of the phase 1 focus group and interview data with the Navigator and LaTTiCE school principals, LT Coordinators and classroom teachers pointed to the expectations of the school and expectations of the system (DEET or the CEO) as noticeably more important than those related to parents or society.

Once again the strength of this numerical data is supported by strong written comments on the survey. One principal writes, "Parents expectations are evident from the time they enrol their students in the school – IT is seen to be an important tool." My own experience would confirm the fact that over the past two or three years, during initial enquiries regarding enrolment, the majority of parents have been keen to know that their children will be using computers from as young an age as Grade 1 or Grade 2.

Finer grain analysis of this survey data shows in fact for item 11, related to the expectations of the school or principal, 66 strongly agreed. This represents 28% of respondents. Similarly for item 10, related to the expectations of the system, only 52 strongly agreed that this was an important factor, representing 22% of all respondents.

It is suggested, therefore, from a comparison of these two phases of the study that the respondents to the more general survey are less concerned with accountability at systemic or school level than those in the LaTTiCE and Navigator schools. One possible explanation for this discrepancy is the fact that the LaTTiCE and Navigator schools, because of their very make-up, had aims imposed and expectations related to their existence and their funding. These issues may not have been of such great importance for the more general sample of schools surveyed in phase 2 of the study.

6.2.1.3   The third major finding - teachers

From the graphs presented in Figures 6.2 and 6.3, it can be seen that the issue of job security was the least important of all the reasons given for integrating learning technology into classroom practice by respondents in phase 2 of the study. The incentive of a professional development plan is also seen as of lesser importance than in areas related to students or to expectations. This aligns closely with results obtained in phase 1 of the study. It is clear from both of these graphs that student related reasons predominate as does the reason related to improving teachers' skills. But job security for teachers is relatively unimportant. Of the 236 respondents only 26, representing 11% strongly agreed that this issue of job security was a reason for integrating technology.

Looking at this from the opposite end of the continuum, a graph was plotted of those respondents who disagreed or strongly disagreed with the item as a reason for integrating technology. The reason for producing this graph was to clarify this point further. Whilst, as has been stated, only 26 respondents from a total of 236 strongly agreed that job security was a reason why teachers integrate technology into their classrooms, it could have been argued that the remaining 210 respondents agreed that it was important (by marking '4' on the Likert

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scale) and that none of the respondents regarded it as unimportant. Investigation of this point required the production of a graph of respondents who disagreed that this was a reason for integrating technology (marked '1' or '2' against this item on the survey). The resulting graph presented in Figure 6.4 confirms the trend shown in Figures 6.2 and 6.3. Whilst very few disagree that issues related to students are important as a reason for integrating technology, twenty five percent, being a total of 59 of the 236 respondents disagree that job security is a reason for this integration of learning technologies into classrooms. Phase 1 and phase 2 of the study reveal similar trends in this area. Job security is of lesser importance than issues related to students, teachers' skills or the expectations of others.
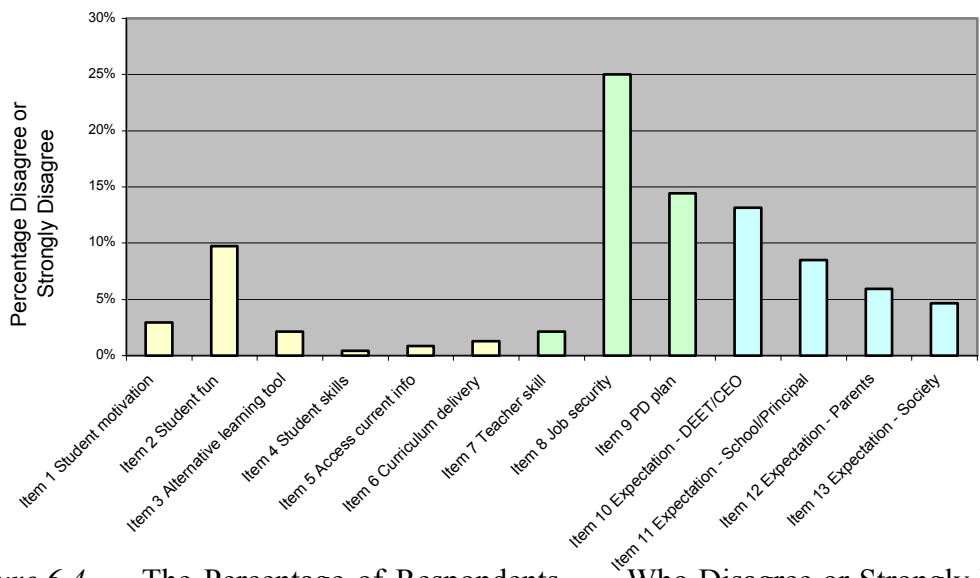
Figure 6.4.   The Percentage of Respondents   Who Disagree or Strongly Disagree with the Item as a Reason Why Teachers Integrate LT into Classroom Practice.

This point is confirmed by investigating the written examples presented in the survey for this item 8, as shown by this comment from a classroom teacher; "I don't believe job security depends on the integration of LT", and an even stronger comment from an LT Coordinator;

"Not an issue – should not be an issue" (LT Coordinator, survey). Whilst the numerical data and comments such as those above clearly show that job security was not seen generally as of importance in comparison to the other items presented in the survey, there were a minority of written examples suggesting that, for some people, this is a very important consideration. One LT Coordinator warns; "computer literate teachers will replace computer illiterate teachers in the future," and a classroom teacher similarly comments, "I think security is a big issue."

However, these were the only two comments showing intensity of feelings in this way and the trend was towards the fact that job security was not generally seen as a reason why teachers integrate technology into practice. I had expected that job security would feature as an issue of importance in this survey given that many jobs advertised for teachers do request some knowledge and competency in the area of information technology.

6.2.1.4   The fourth major finding – the similarity of responses from respondents and from different sectors

To compare the three different groups deemed to have important insights for the items in section 1 of the survey, the responses of the principals, LT Coordinators and classroom teachers were graphed on the same axis (see Figure F1, Appendix F). The fourth major finding from the analysis of section 1 of the survey was that responses from principals, LT Coordinators and classroom teachers were very similar, showing almost no variation.

Another comparison which may have been important was between the school groups: State and Catholic. Once again, very similar sets of data were produced suggesting that the State and Catholic schools agree on the reasons why teachers integrate learning technologies into classroom practice. A series of graphs (Figures F2, F3, and F4, Appendix F) show these comparisons. In each case little or no interesting variations were noted.

Data resulting from phase 1 of this study, the focus groups and interviews, did reveal differences between Catholic and State schools as discussed in Chapter 4. However, since there is little or no variation detectable from the survey data, it can be argued that these differences may be attributable to the very different set-up of LaTTiCE (Catholic) and Navigator (State) schools and not related to differences which arise from the fact that a school is a part of the Catholic system or the Government system.

6.2.1.5   Minor findings or the absence of findings from section 1 of the survey

Information not given by respondents can often be as revealing as information suggesting trends. Not one of the 236 completed surveys had any comments in the final part of section 1 which asked for other reasons why teachers integrate technology into classroom practice. One possible suggestion we can draw from this is that the thirteen reasons given in this section were thought to represent all the possible reasons worthy of note.

When the data in section 1 of the survey was used in conjunction with the other demographic items at the end of the survey (see Table 5.14), little or no variations were revealed. The first demographic item 48 (see Table 5.14) asked respondents to identify the size of the school as small, medium or large. Investigation of the section 1 responses related to this classification item showed that small, medium and large schools gave very similar responses, suggesting that the size of the school is not an issue related to why technology is integrated into classroom practice.

Similarly, with the second demographic item 49 which asked how many computers are able to be used in your classroom. Whether it was a small number (1, 2 or 3) or a larger number (5 or 6) seems to be of no consequence as to the reasons why teachers integrate technology into their classrooms. The data, once again, was very similar.

The third demographic item simply asked if learning technologies were integrated into classroom practice in your situation. Only 8 of the 236 respondents answered 'No' to this item and for these the following item, which asked how long the technology had been integrated into practice, was not applicable. For the other 224 respondents, analysis of this fourth demographic item stating that technology had been integrated for 'less than one year', '1-3 years', '3-5 years' or 'more than 5 years', revealed no noticeable differences as to why learning technologies were integrated. Whether it was a short term or a long-term endeavour seemed to make little difference according to this data.

The only demographic item which did show a slight variation in the reasons for integrating technology into practice was related to the length of time the LT Coordinator had to coordinate the program. When the LT Coordinator had less than one day to coordinate learning technologies, compared to where he or she had more than three days. When the LT Coordinator had less than one day for coordinating the learning technology, job security and the incentive of a professional development plan were slightly less important than when the LT Coordinator had more than three days for coordinating learning technology (see Figure F5, Appendix F). We could suggest that one reason for this variation may be that the role of the LT Coordinator is an insecure role and hence where this forms more than 50% of the workload, job security may be more of an issue. However, this is only speculation and no real reason can be given to account for this result

This section of the study has dealt with the data resulting from section 1 of the survey, highlighting four major findings as well as minor findings. The four major findings from section 1 analysis suggest first that teachers integrate technologies into their classrooms in order to benefit their students more so than for reasons related to teacher benefits or the

expectations of others; second that expectations of society are seen as more important than those related to the school, parents, or the system; third that job security is seen as the least important of the reasons given for why technology is integrated into practice; and fourth principals, LT Coordinators and classroom teachers hold similar views with regard to these reasons as do respondents from Catholic sector and Government sector schools.

These findings will be further elaborated upon in the following Chapter 7 where these findings and those of phase 1 of the study will be drawn together in discussion of the first section of the research question which asks why learning technologies are integrated into classroom practice.

The second part of the research statement concerned the professional development of teachers in this area of integrating technology into practice. The survey data will now be examined in relation to this area.

6.2.2 Analysis of Section 2 of the Survey

Section 2 of the survey was concerned with the professional development of teachers in the area of integrating technologies into their classroom practice. This section 2 is presented again in Table 6.3 to allow the reader easy access to the individual item.

As can be seen, respondents to this section of the survey were asked for their views concerning the most important aspects of professional development in the area of integrating learning technologies into classroom practice and seven items with suggested responses were outlined. A series of graphs was then produced relating to section 2.

Table 6.3

Section 2 of the Survey   Survey Form C – Classroom Teachers

This question concerns those factors that you see as important in the professional development to assist you to integrate learning technologies into classroom practice. Please tick the most appropriate response for each statement.
KEY: **SA** = Strongly Agree;   **A** = Agree;   **NS** = Not Sure;   **D** = Disagree;   **SD** = Strongly Disagree

| **What do you consider to be the most important factors in the professional development to assist you to integrate learning technologies into classroom practice?**	SA	A	NS	D	SD	If possible provide <u>examples</u> for some of your responses
1. The opportunity to collaborate with peers						
2. The opportunity to embed new skills into classroom practice						
3. The professional development is on-going, over time and time is made available						
4. The incentive of a "performance plan" or professional development goal in this area						
5. Access to current, operational IT resources						
6. The support of the principal						
7. The role of the LT Coordinator in the school						
8. Others: please comment						

The overall picture resulting from this analysis was that all seven areas of professional development were seen to be very important in relation to the integration of learning technologies into practice, although the incentive of a performance plan was seen as less important than that of the other six items.

Further analysis of the data from section 2 comparing responses from State and Catholic schools found that responses from the sectors were similar but interestingly a difference was noted in relation to the incentive of a performance plan. These findings will now be explored in more detail in the following sections of this study.

6.2.2.1   The first major finding – The evenness and high values of the data analysis in section 2

As has been mentioned, a series of graphs was produced for section 2 of the survey. One of these graphs showed the averages of the Likert type responses item by item and by categories principals, LT Coordinators and classroom teachers (see Figure 6.5). A striking evenness of the data is revealed by this graph as well as very high values for the averages. All columns for six of the items show an average response of very nearly 4.5 or more. It will be remembered that on the scale '4' was to be interpreted as 'strong' and '5' 'very strong' agreement.

These average scores indicate quite strong agreement that these items are important factors in the professional development of teachers in the area of integrating technology. Clearly, the one issue for which all three groups felt less strongly about was the need for professional development plan incentives.
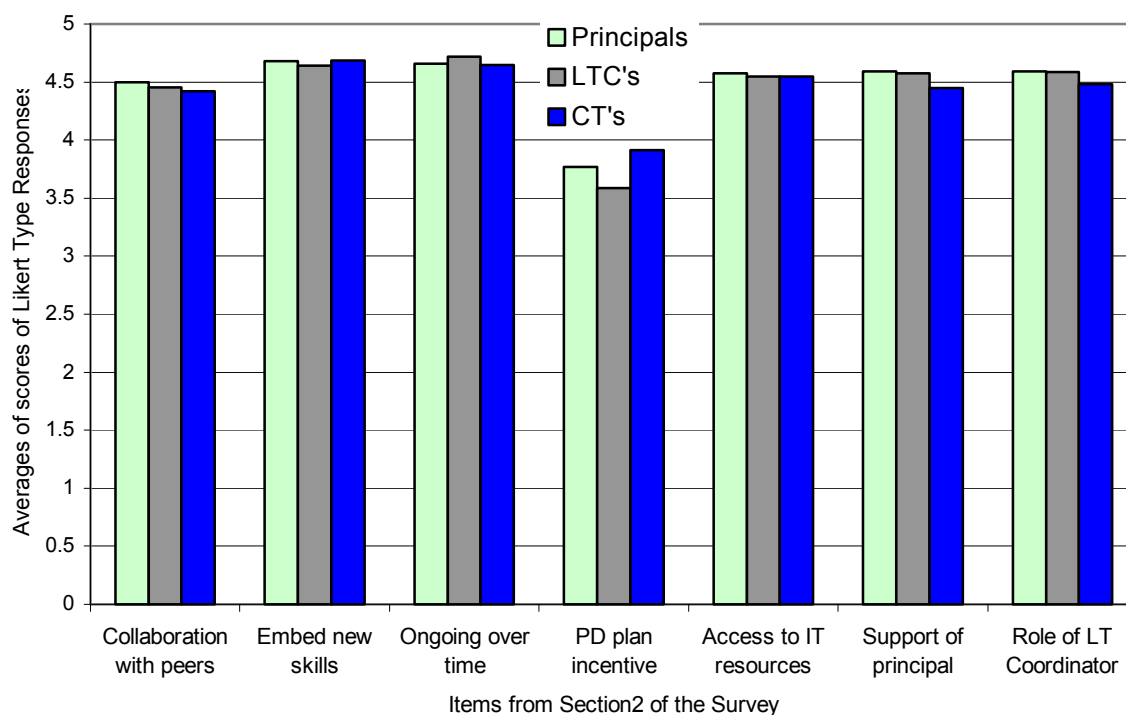
Figure 6.5. Important Factors in the PD of Teachers as They Integrate LT into Classroom

Practice – Comparison of Responses from principals, LT Coordinators and Classroom

Teachers.

As with the data from section 1 of the survey, another graph was produced showing the

percentage frequency of those who strongly agreed item by item. The purpose of this graph

was to capture the intensity of the data. This graph is shown in Figure 6.6. The evenness of

the data relating to the principals, LT Coordinators, and classroom teachers as shown in

Figure 6.5 led to the decision to produce in Figure 6.6 the total responses rather than

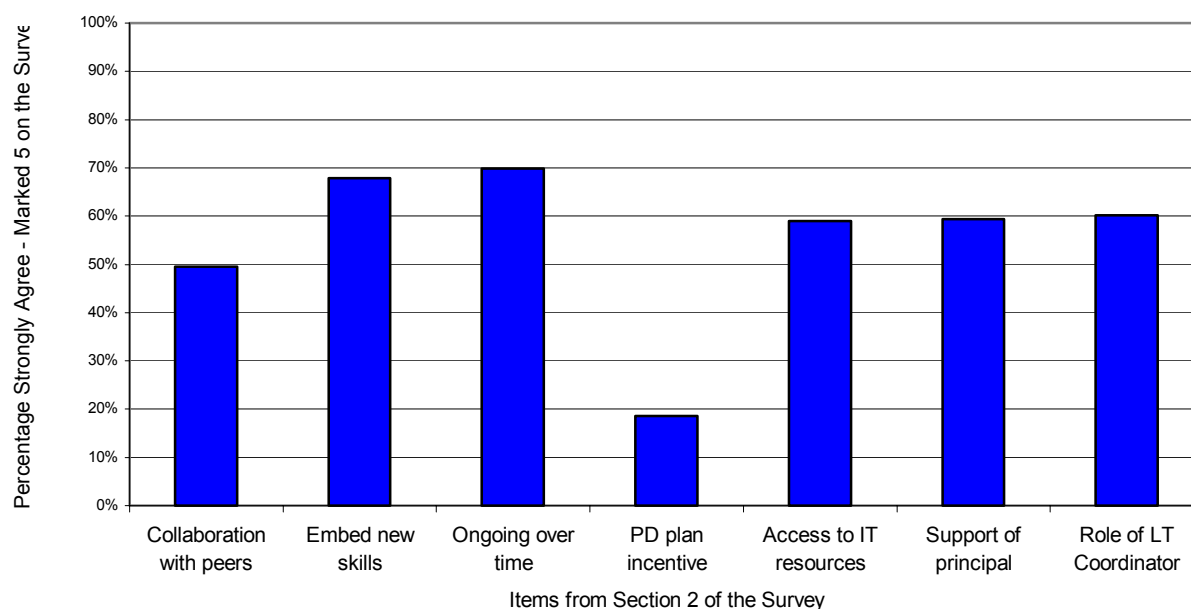separating these three categories of respondents.

Figure 6.6.   Percentage Who Strongly Agree that a Given Item is an Important Factor in
the PD of Teachers as They Integrate LT into Classroom Practice.

Looking at this set of data from this different perspective, the graph in Figure 6.6 shows the
percentage of respondents who strongly agree with itemised factors as important in the
professional development of teachers integrating technology into classrooms. It can be seen
that between 50% and 70% strongly agree with six of the seven items referring to the
professional development needs in this area. This data suggests that slightly more respondents
strongly agreed that embedding new skills in classroom practice and the professional
development being on-going over time were more important factors in professional
development than the other factors suggested.

This confirms indications from a review of the literature as well as aligning closely with the
findings in phase 1 of the study, namely that professional development in the learning
technologies area is embedded in classroom practice and ongoing over time are two themes
that seem to be linked both in the literature and in our study.

The workplace based model of professional development developed by Yelland and Bigum (1995) suggests an ongoing process of professional development which is workplace based to allow teachers the opportunity to embed new learnings in classroom practice. So too, Johnson (1995, p. 12) in outlining the CLIPS project (Computers and learning in Primary Schools) argues the need to link the learning to the classroom practice. He further states that in this way teachers are able to devote more time to the learning as the classroom is where teachers spend most of their time. Johnson (1995) also refers to this model as one in which collaborative practice is seen as important.

The findings from this survey suggest that the factors of embedding the professional development in practice and it being ongoing over time are perceived as more important than the collaboration with peers. Phase 1 of the study also found that whilst collaboration with peers was viewed as an important factor in professional development, it was not as important as embedding the professional development in classroom practice or ensuring that it was ongoing over time.

Analysis of the focus groups and structured interviews of phase 1 as well as analysis of this survey substantiate the view that the two areas of the professional development being embedded in practice and ongoing over time are linked to each other. The fact that these two factors are often seen as linked is shown by examining the focus groups and interview data from Phase 1 as well as the written examples of the survey.

There were many comments related to the importance of these two factors during Phase 1 of the study, and it was also noted that they were often linked together. The following comment from a classroom teacher during one of the focus group sessions shows a desire for the professional development to be on-going as well as embedded in practice; "The other thing

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about professional development is that it needs to be sustained, it needs to be ongoing, it needs to have direct application to classroom activities and learning and teaching" (classroom teacher, focus group).

In a similar vein, linking the on-going nature of professional development with embedding professional development in classrooms is shown by this written example from a classroom teacher's survey response which stated "people learn by doing on a computer in a supportive environment, within the classroom and over a long period of time" (classroom teacher - survey).

Despite the fact that the overall findings from the survey suggest that the collaboration is of lesser importance than embedding the professional development into classroom practice or ensuring that it is ongoing over time, there were comments and examples from both phases of the study which suggest that some teachers do see the collaborative nature of professional development as linked to embedding it in the classroom. "You learn more ways of integrating IT into the classroom by talking to others. This is a high priority" (classroom teacher - survey). The linking of collaboration and workplace situated professional development was also commented on by a principal interviewed in phase 1 of the study. "I think professional development is crucial and key. How it takes place and when it takes place is just as crucial. I think the most effective professional development has taken place during our regular weekly staff meetings and in teachers' classrooms" (principal, interview).

Much of the literature reviewed suggested that effective professional development needed to be collaborative, situated in classroom practice and on-going (Joyce & Showers, 1983; Johnson, 1995; and McKenzie, 1998). This is summarised well by a comment from an LT Coordinator during phase 1 of the study; "Professional development needs to happen largely

within the school because then you have a real context of working within your situation with your peers, but, yes, time is the key. You must have time" (LT Coordinator, interview). Another LT Coordinator expresses similar sentiments with this statement from the survey; "Teachers gradually build on each others ideas and confidence. They share/steal good ideas that work with their children" (LT Coordinator - survey). Although the word 'time' is not written here, it is implied in the words 'gradually' and 'build on'. The following comment from a principal is less subtle and spells out clearly the linking of these three elements; "PD must be linked to real work projects – teachers must be supported with time and people" (principal - survey).

The fact that these are only a few of the many examples in this area is in itself testament to the importance given to embedding skills in classroom practice and being able to pursue the professional development gradually over time. I can only speculate as to why collaboration with peers seemed to be of lesser importance. It may be that respondents take for granted the fact that they share professional development opportunities with colleagues and hence saw no reason to emphasise this factor. Another possible explanation is that respondents may not have had the luxury of taking part in extended professional development with colleagues and are hence not fully aware of the benefits. It may also be, as the findings seem to be suggesting that teachers as well as principals and LT Coordinators acknowledge the importance of collaboration, but regard the need to embed the professional development into classroom practice and the ongoing nature of the professional development as more important factors in their situation.

Of all the written examples presented in this survey the majority related to the need to dedicate time to the professional development of teachers in the learning technologies area.

The words 'ongoing' and 'time' appeared regularly in the phase 1 data as well as in the survey data. A classroom teacher in a focus group commented "yes, time. See I argue that professional development is ongoing the whole time because you're always asking 'How do you do this?' And it's happening the whole time in the classroom. You keep finding things you can't do and you fix it, sometimes your colleagues help you" (classroom teacher, focus group). And another classroom teacher in the survey writes "PD needs to be ongoing. Teachers develop skills working with colleagues" (classroom teacher - survey). Similar sentiments are expressed in the written form by an LT Coordinator in the survey; "Time availability is the key element. This is the only way to enable staff to grow in confidence of their own capabilities to use the technology to become familiar and comfortable with it" (LT Coordinator - survey). In this written comment it can be noted that the respondent underlined the word 'key' in a clear attempt to emphasise the importance of the time factor in the professional development process.

The strength or intensity of other responses was made clear by respondents underlining these examples or printing them. One of the great benefits of these written examples is that they provide indications of intensity of feeling from the respondents. It is worthy of note that many of these attempts to express emphasis, by underlining or printing, were related directly to the time issue. One principal in the survey wrote "This is very important – a very important feature" (principal - survey). Here, he even repeated the phrase to make sure the reader understood the message. Similarly an LT Coordinator writes "Time is crucial and not always available" (LT Coordinator - survey). And a second LT Coordinator even attempts a pun on 'time'; "Time is essential! TIME allocated in the weekly timetable" (LT Coordinator - survey).

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In drawing attention to the strength of the responses across both phases of the study which refer to professional development being on-going and embedded in practice, it must be pointed out that these were only two of the factors regarded as important by respondents in section 2 of the survey. Of the seven items listed (see Table 6.3), all were found to be very important, although the incentive of a professional development performance plan was seen as of lesser importance.

The other items seen by respondents to the survey as very important factors in professional development of teachers integrating technology and not already addressed were the support of the principal, the role of the LT Coordinator, and access to current operational LT resources. The graphs shown in Figures 6.5 and 6.6 support the notion that these issues were as important as those related to time and embeddedness. However, it is interesting to note that fewer written examples in the survey referred to the role of the principal, the LT Coordinator or current technology in comparison to a great many, as previously illustrated, referring to time, embeddedness and, to a lesser degree, collaboration in professional development. A total of 133 written examples accompanied items 14, 15 and 16 which referred to the importance of collaboration, embeddedness and time, whereas only 70 written comments referred to items 18, 19 and 20 related to access to current technology, the support of the principal and the role of the LT Coordinator. Of these 70 written examples, many were linked with issues of time, collaboration and embeddedness as illustrated by this written example from a classroom teacher "Support through time to attend PD's during school time – time to implement skills learned as well is important" (classroom teacher - survey). And from an LT Coordinator "Factors include budgeting and time allocation for team meetings."

Whilst I am in no way suggesting that the data presented shows anything other than the fact that the issues of access to reliable, up-to-date technology, the role of the principal and the role of the LT Coordinator are important, I would argue that upon finer investigation of written examples, they may not be quite so important to respondents in this survey as those issues related to embedding professional development into practice, the fact that it should be on-going over time, and, to a lesser degree, the collaborative nature of professional development.

However, I reiterate that of the seven items suggested in section 2 of this survey, six were seen as very important factors in the professional development of teachers integrating technology into practice. The seventh item, whilst it is accepted that it is seen as important, was noticeably less so than the other six. This was the second major finding in this area of the study and will be explored further in the next section.

6.2.2.2   The second major finding – similar trends from Catholic and state sectors with one interesting variation

When a graph was plotted using data from section 2 of the survey and separating out the Government and Catholic school responses to the individual items, some interesting findings were noted (see Figure 6.7).
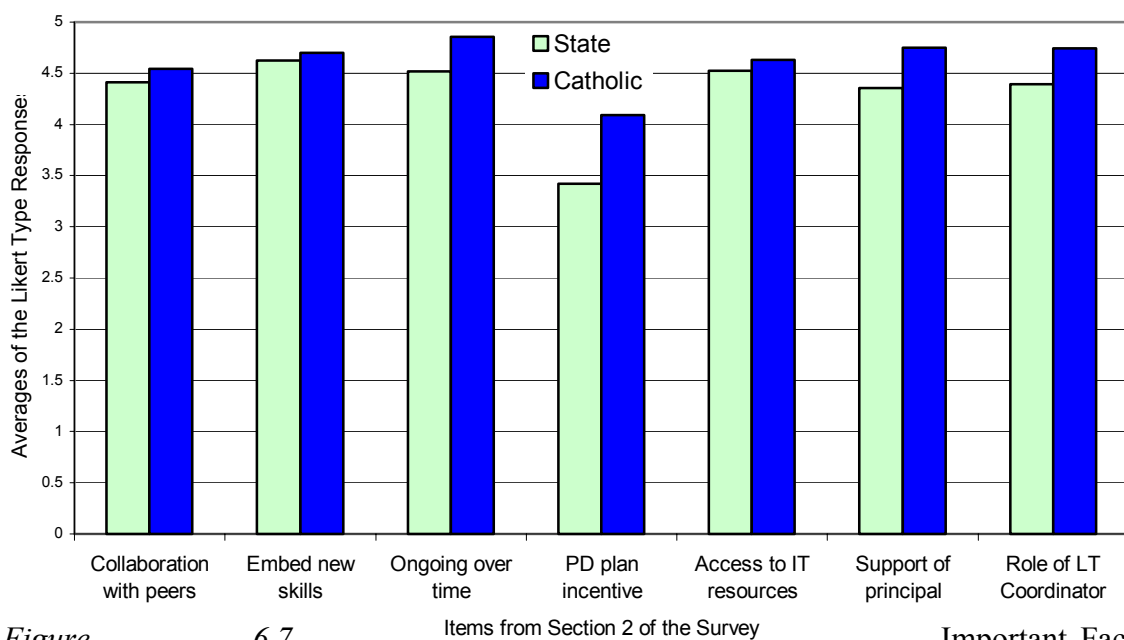
Figure 6.7. Items from Section 2 of the Survey — Important Factors in PD of Teachers as They Integrate LT into Classrooms – Comparison of State and Catholic Schools.

In general, it can be seen that similar trends from the Catholic and Government schools related to all seven items. Focusing on the item related to the role of a performance plan as an incentive in professional development, both Government and Catholic schools suggest this is of lesser importance but, surprisingly, Government schools felt it was of even less importance than did the Catholic sector schools. This is contrary to what I would have expected to find given that the professional development plan was the initiative of the Department of Education, Employment and Training for schools in the State system. Furthermore, this professional development plan was noted during phase 1 of the study in the Navigator schools. One explanation for the discrepancy could be that the performance plan related to learning technologies was a greater issue in the Navigator schools than it is in other State schools.

A closer scrutiny of written examples in this section was made to see if this would shed further light on the issue. Whilst some comments show a very positive aspect to this item; "setting achievable goals makes management easier. Know what you are capable of and extend yourself" (classroom teacher – survey), others saw this as negative; "some may see a performance plan as more of a burden than an incentive – another thing to do in an already filled day" (classroom teacher – survey). Then again these comments from two LT Coordinators show a lack of fervour in this area – neither negative nor positive, more non-committal. "Not the most important issue but may encourage some teachers to pursue ICT" (LT Coordinator – survey); and "some see this as important" (LT Coordinator – survey).

However, it is important to reiterate that whilst the incentive of a performance plan was seen to be of lesser importance than the other factors given, it was still seen as important in the professional development of teachers as they integrate technology into classroom practice.

Explanation has now been given in some depth for the two major findings from this section of the survey, namely the fact that respondents strongly agree that six of the seven items suggested by the survey were important to the professional development in the area of integrating technology into practice and that the Government and Catholic sectors show similar trends in response to section 2 of the survey relating to the incentive of a performance plan. Whilst both see the incentive of a performance plan as relatively less important than the other six factors, the Government schools are even less convinced of the need for a performance plan than are the Catholic sector schools. The minor findings of this second section will now be presented.

6.2.2.3   Minor findings from section 2 of the survey

This section will now examine the data from section 2 of the survey in relation to the demographic data provided from the classification section of the survey. Relating the section 2 data to the first of the demographic items referring to school size, it would appear that the size of the school seemed to have little impact on the factors seen as most important in the professional development of teachers as they integrate learning technologies into classroom practice (see Figure F6, Appendix F).

There was a slight variation regarding the importance of the role of the LT Coordinator and to a lesser degree the importance of the support of the principal in relation to this question. However, the degree of variation was so small that inferences from the data cannot be made on this issue. Nevertheless, it is of some interest and a number of reasons could account for this variation.

Concerning the role of the LT Coordinator, in my experience, in small schools where less than ten teachers are employed, there often exists a strong sense of collegiality, and hence the particular LT Coordinator's role may be of lesser importance. Another explanation could be that in small special schools the role may be taken by the principal. During the telephoning of schools as a reminder to send back the survey, one principal said they were a very small school of only three teachers and she was the principal, LT Coordinator and a classroom teacher. In such a situation, it is not difficult to see why there would be a lesser importance attached to the LT Coordinator's role.

Another demographic item referred to the number of computers in the classroom. Having a smaller or greater number of computers in the classroom seemed to have little or no effect on the importance of factors in the professional development of teachers in this area (see Figure F7, Appendix F).

So too in reference to the demographic item related to the time available for the coordinator. It would appear that the time the LT Coordinator spent in the classroom changed the picture only very slightly. Although, as would be expected, if the LT Coordinator was in the classroom with teachers for more than three days slightly more importance was placed on the LT Coordinator's role, access to resources, the opportunity to embed skills in classroom practice and the fact that professional development was ongoing (see Figure F8, Appendix F). However, this variation was small and not sufficient to lead to any real statements of interest.

The greatest variation in regard to these demographic questions related to the differing lengths of time computers had been integrated into the classrooms. In cases where the integration had been for less than one year, a greater importance was placed on all factors relating to professional development and 100% of respondents from schools in this category strongly agreed with the importance of ensuring professional development was ongoing (see Figure F9, Appendix F).

Phase 1 of the study involved only LaTTiCE and Navigator schools which have been integrating technology into classroom practice for more than three years and so a comparison between phase 1 and phase 2 of the study in this area was not possible. However, it could be argued that teachers in the early stages of integrating technology into practice are less confident of their own ability in this area and hence see as vital the need for ongoing support.

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Such suggestions are in line with a number of comments found in the literature. For example, a study of the literature concerning the phases of development of teachers indicates that after a two-year period, teachers move from an appropriation stage into an innovation stage (Dwyer, Ringstaff & Sandholtz, 1990). They are beginning to handle the learning technology as a tool more easily now and the focus moves to be more curriculum based. By this time, the on-going nature of the professional development may be established and hence seen as of lesser importance than it was in the early days of the integration.

Ringstaff and Sandholtz (1996, p. 2) suggests that the professional development at this stage is "curriculum focused professional development to support a constructivist approach to learning: ongoing peer to peer professional networking." One way of providing this peer to peer support may be to appoint a learning technology coordinator in each school. Having explored this issue of important factors in teachers' professional development while integrating technology into classroom practice, analysis of section 3 of the survey related to the role of the LT Coordinator will be reported in the next part of this study.

6.2.3   Analysis of Section 3 of the Survey

The third part of the research statement concerned the role of the LT Coordinator. Section 3 of the survey, which dealt with this issue, was separated into four sub-sections; 3a related to perceptions of the LT Coordinator's role in reality; 3b perceptions of this role in the ideal sense; 3c factors impacting on this role; and 3d attributes perceived to be important for an LT Coordinator.

In general terms, analysis of the data from this section showed similar views regarding the importance in the real and ideal sense of the role of the LT Coordinator with respect to professional development and the coordination of the LT program within the school. The data

further showed that providing professional development for teachers in other schools was relatively less important than those factors related to the school setting. Technical expertise, whilst it was perceived to be a role of the coordinator, was again less important than the other areas related to the professional development of staff and coordination of the LT program.

With respect to factors that impinge on the role of the coordinator (section 3c), each of the six factors presented, namely the attributes of the coordinator, the time the LT Coordinator has available, expectations of DEET or the CEO, expectations of the school or principal, access to current operational technology, and the range of needs of the teachers, were all perceived to impact strongly on the role of the coordinator, although the expectations of DEET or the CEO were seen as impacting less.

In reviewing the data related to the perceived qualities or attributes of the coordinator (section 3d), the five attributes presented were all seen to be important. However, slightly less importance was attached, in general terms, to the technical skills of the coordinator. These major findings, along with minor findings will now be explored further for each of these sections.

6.2.3.1 Analysis of sections 3a and 3b – the role of the LT Coordinator in reality and in an ideal situation

There were three major findings in relation to this section of the survey. First, the role of the LT Coordinator related to professional development within the school and coordination of the LT program is seen as important in reality and similarly in an ideal sense. Second, providing professional development for teachers in other schools is seen as less closely related to the LT Coordinator's role and third, so too the issue of technical expertise is seen as of less relevance to this role.

6.2.3.1.1   *The first major finding - professional development of staff and coordination of the school program are seen as important in reality and ideally*

A graph was produced (see Figure 6.8) to compare the average scores given by respondents to each of the items perceived to belong to the role of the coordinator in the real situation with each item that would be perceived as the coordinator's role in an ideal situation.
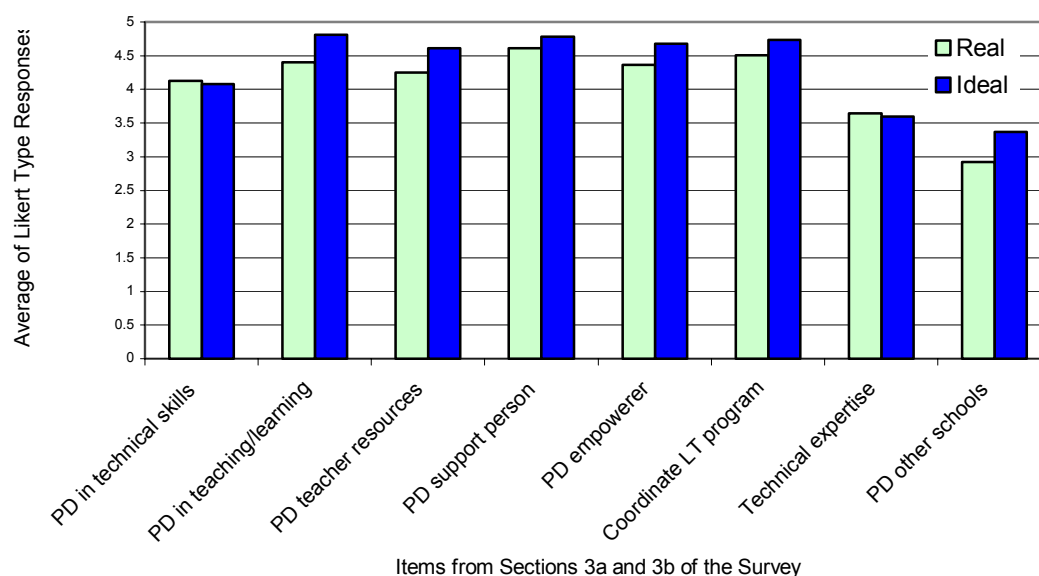

Figure 6.8.   The Role of the LT Coordinator – Comparison of Real and Ideal Responses.

An examination of this graph shows that the role of the LT Coordinator with respect to professional development within the school and coordination of the LT program is seen as important in reality and in an ideal situation.

This finding is similar to that resulting from phase 1 of the study, which involved focus groups and interviews, and where the role of the LT Coordinator was seen by classroom teachers, LT Coordinators and principals to relate strongly to the provision of professional development within the school. This view is supported in the literature by Johnson (1995) and

Shearman (1997) who argue that the provision of a computer coordinator could provide teachers with mentor type professional development to assist them in integrating technology into classrooms. As would be expected in an ideal situation more importance is placed on this professional development aspect of the role (see Figure 6.8). However, the variation between the data for the real and ideal situations is small.

6.2.3.1.2 The second major finding – providing professional development in other schools is seen as less closely related to the coordinator's role than other areas

Referring to the graph (Figure 6.8), it can be seen that the item related to providing professional development for teachers in other schools was seen as of less importance with regard to the learning technology coordinator's role both in reality and ideally, although in the ideal situation more agreed that this could be part of the LT Coordinator's role. One reason why this provision of professional development for other schools may be seen as of less importance is illustrated by this written comment from a classroom teacher; "Focus on constantly improving our own school. Although there is definitely a place for sharing outside your school, the focus needs to be on your own staff – get those who are reluctant using and integrating LT" (classroom teacher – survey).

There were also written comments from principals and LT Coordinators clearly indicating the lesser importance of this duty with respect to the role of the coordinator. "I am concerned with the situation in my school, not providing PD for other schools" (principal – survey). And from an LT Coordinator, "Each school needs to employ its own staff with expertise" (LT Coordinator – survey). However, more agreed that the LT Coordinator could take on this extra burden in an ideal situation, "Whilst this is ideal, the LT Coordinator needs a great deal of time to cover all these areas" (LT Coordinator – survey), and "Yes, if the coordinator has

the expertise and willingness and is able to cope with the time commitment" (LT Coordinator – survey).

The provision of external professional development was also seen as relatively unimportant in phase 1 of the study, involving the focus groups and interviews, although in a real situation it was noted by Navigator schools principals and Project Officers as forming part of their role. As has been stated previously, this can probably be accounted for by the fact that the Navigator schools Project Officers are mandated to take on professional development of teachers in other schools. This point is illustrated by a comment from phase 1 of the study during an interview with a Project Officer from a Navigator school. "My role is full-time. I'm meant to be, apparently, according to the books 50-50. Department of Education for half my time and – primary school for half my time. My role with the Department is to coordinate professional development for teachers in other schools" (Laura, Project Officer).

Just as the issue of providing professional development to teachers in other schools was seen as of less importance with regard to the LT Coordinator, similarly less importance was attached to the coordinator's technical expertise by the respondents to the survey.

6.2.3.1.3 *The third major finding – technical expertise is less relevant to the coordinator's role than other areas*

Figure 6.8 suggests that there was agreement that the role of the LT Coordinator did include providing some technical expertise to keep the computers working, but this was rated as less important than the provision of professional development within the school. Many written comments accompanied this item number 27 of the survey. In many cases 'Agree' was ticked for this item but some hesitancy or uncertainty is suggested by respondents with comments such as "unfortunately, yes" (LT Coordinator – survey), "with the support of a technician" (principal – survey), "If possible, and outside support is also required" (principal – survey).

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This confirms the findings of phase 1 of the study in the focus groups and interviews where it was accepted that technical expertise was part of the LT Coordinator's role, but not as important as the professional development aspect as illustrated by these comments: "In conjunction with the IT technician" (LT Coordinator, interview), "Yes, but it's not a major part of my role" (LT Coordinator, interview), "This particular person we've got is very technical so if she wasn't able to do it we'd need to have a technician" (principal, interview).

To provide a finer grain analysis of this section, further graphs were drawn showing the average response score for each item but separated out for State and Catholic schools (see Figures F10 & F11, Appendix F). In graphing these responses for the State and Catholic schools, it was only on this item relating to the provision of technical expertise to keep computers functioning that a difference in response was found. Both in a real and ideal situation, Catholic school respondents were more accepting of this being part of the LT Coordinator's role in comparison to their State school counterparts. This confirms the findings from phase 1 of this study where LaTTiCE schools accepted that in reality the LT Coordinator's role involved keeping computers and networks functioning but those from the Navigator schools knew it was not part of the role (see Table 4.11).

As has been mentioned earlier in Chapter 4, one explanation for this could be that some State schools, in particular Navigator schools, are provided with a technician or funding for a technician on site, as illustrated by these comments from the survey: "This is the responsibility of the technician employed by the school" (classroom teacher – State school survey), "LT Coordinators should be able to concentrate on curriculum delivery" (LT Coordinator – State school survey), "We have two technicians (part time) to fulfil this role" (principal – State school survey).

The Catholic school system has only within the last two years introduced funding for technical support but this is limited and at best allows for only a few hours of technical support weekly. Hence, the LT Coordinator in Catholic schools may assume this technical duty as part of the role. They may have little choice than for it to be part of their role. However, the situation is changing as Catholic schools are more and more bringing in technical experts to cope with this demand and as funding is gradually made available for this to happen. Even without adequate funding, many principals are seeing this as an increasing need as shown by some of the written comments in this survey: "LT Coordinators are there first for the students, then teachers and it is a bonus if they can keep the computers working" (principal – Catholic school survey) and "I provide a support role here as we have a technician who comes in once a week to work on the network" (LT Coordinator – Catholic school survey). Perhaps very strong feelings as indicated from this classroom teacher have led to this move by many Catholic school principals to provide technical support. "Technicians provide technical support not teachers who teach" (classroom teachers – Catholic school survey).

Whatever the reasons, it is apparent from this survey data that the provision of technical expertise to keep the computers operating is seen as of less importance in the coordinator's computer role than those issues related to the professional development of teachers and the coordination of the school LT program.

We will now look at minor findings arising from this section of the survey.

6.2.3.1.4   Minor findings from sections 3a and 3b

In exploring the data from sections 3a and 3b of the survey with regard to the demographic data provided from the classification section of the survey (Table 5.6), only minor differences could be identified.

In relation to school size, perception of the role of the LT Coordinator in small, medium or large schools both in reality and in the ideal situation showed a very similar trend (see Figures F12 & F13, Appendix F).

Similarly in producing graphs for these sections 3a and 3b against other demographic items, hardly any differences were shown. Very little variation in response was seen for schools whether there was one or six computers in the classroom. So too, the demographic item relating to the length of time the school had been integrating technologies did not appear to impact on the responses regarding the role of the LT Coordinator either in the real of the ideal situation.

There was one minor difference from the graph showing the role of the coordinator against the demographic item of the amount of time available for the coordinator (see Figures F14 & F15, Appendix F). Where the LT Coordinator had more than three days to spend with teachers there was a greater agreement that part of the role involved professional development in other schools compared to when the LT Coordinator had less than one day for the role. This was further borne out by written examples where time was seen as the determining factor as to whether coordinators should offer professional development to other schools "whilst this is ideal, the coordinator needs a great deal of time to cover all these areas" (LT Coordinator – survey).

Having explored the role of the LT Coordinator as perceived by respondents to this survey in both the real and ideal situations, in the next section the focus will be on the factors which are perceived to impact on the coordinator's role.

6.2.3.2 <u>Analysis of section 3c – factors perceived to impact the role of the LT Coordinator</u>

Analysis of the data collected from section 3c of the survey (see Table 5.6) was carried out by producing a graph comparing each of the six factors suggested in terms of the average scores of the respondents (see Figure 6.9). Each of the six factors was perceived to impact strongly on the coordinator's role as shown by the high value of the average scores which ranged from 3.9 to 4.7. This was the only major finding in this section and is explored in more detail in the next section.
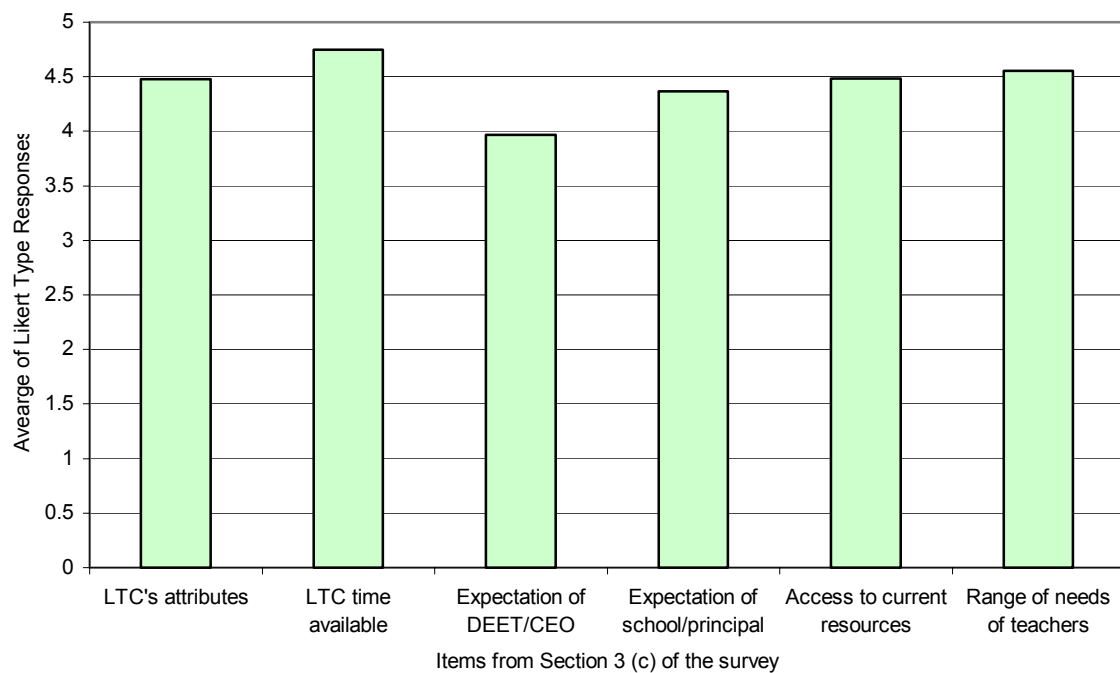
Figure 6.9. Factors Impacting on the Role of the LT Coordinator.

As expected, all of the factors itemised in this section of the survey were seen as impacting on the role of the LT Coordinator. The graph shown in Figure 6.9 indicates that the time available to the LT Coordinator received the strongest agreement as a major factor impacting on the role but this was only by a small amount. In order to explore this factor further, another graph of this data was produced in terms of the percentage frequency of those who strongly agreed, item by item. In plotting this graph, it was hoped that the intensity of the data would be revealed (see Figure 6.10). When this slightly different perspective of the data was presented by graphing those who strongly agreed with each item, it was found that 184 of the 236 respondents, being 78%, strongly agreed that the time available for the LT Coordinator was a factor which impacted on this role.
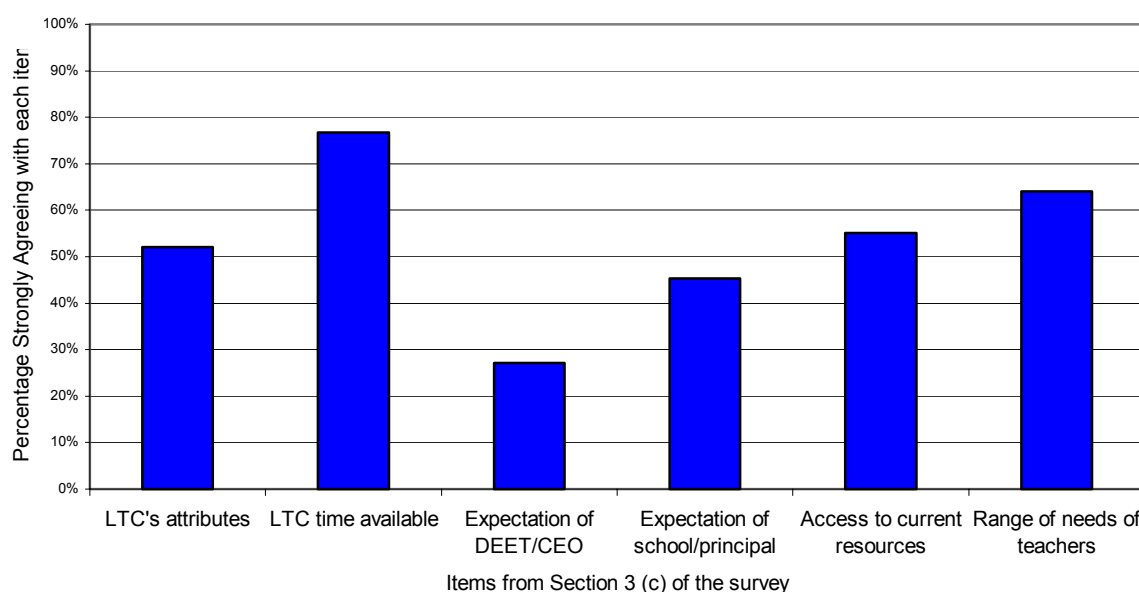
Figure 6.10. The Percentage of Respondents Who Strongly Agree that the Itemised Factors Impact on the Role of the LTC.

The graph from this different perspective aligns closely with the importance given to the time factor in phase 1 of the study with the focus groups and interview participants. To further emphasise the importance of this factor of time, written examples were plentiful in this area and many of them were written in such a way that the strength of the response was brought out quite clearly, "What more can be said, TIME is always the big problem" (LT Coordinator – survey), and "The role of the LT Coordinator is time consuming. They need time to do their job" (classroom teacher - survey). Many respondents to the survey showed the importance they attached to this point with strong emotive language such as 'definitely', 'crucial' and 'the biggest factor'; "definitely time constraints impact heavily on implementation of the program" (classroom teacher - survey), or "time for PD of staff, for coordinating resources - crucial" (classroom teacher - survey), and "time is probably the biggest factor" (LT Coordinator - survey).

The findings from both phases of the study suggest strongly that the LT Coordinator must be given time to fulfil the role effectively as has been shown previously and will be discussed further in the next chapter.

Of the factors which impact on the role of the LT Coordinator the expectations of the Department of Education or the CEO are seen as having comparatively the least impact of the other factors identified. Once again, the difference is only marginal when an average of the Likert type responses is shown against each item (see Figure 6.9) but the difference is quite substantial when the data is viewed as percentages of those who strongly agree with the impact of the item (see Figure 6.10). Viewed in this way, only 61 of the 236 respondents (26%), strongly agreed that the expectations of the Department of Education or the CEO impacted on the role of the coordinator. However, all we can really suggest from these graphs

is that the expectations of the system, whether it be the CEO or DEET, is seen to have less impact on the LT Coordinator's role than the other factors of the time available, the expectations of the school, access to up-to-date, working technology resources, the range of needs of the teachers, and the attributes of the coordinator.

Having discussed the major findings of section 3c, the next section will look at the minor findings which are related to the comparison of the data for section 3c with that of the classification section of the survey.

6.2.3.2.2   *Minor finding in section 3c – data from section 3c in relation to demographic data*

In exploring the data from section 3c of the survey with regard to the demographic information provided from the classification section (see Table 5.14), no variation was identified in relation to school size or to the number of computers in classrooms (see Figures F16 & F17, Appendix F). Also, on graphing the factors impacting on the LT Coordinator's role for schools which had been integrating technology for less than one year or more than five years, no variation was seen although a slight difference was shown with regard to the expectations of the Department of Education and the CEO (see Figure F18, Appendix F). One explanation for this slight variation might be that the expectations of the Department of Education and the CEO could reasonably have less impact as schools become familiar with the integration of technology into practice and are to a lesser extent dependent on outside support.

The time the LT Coordinator had to spend in the classroom with teachers also revealed slight variations in the data (see Figure F19, Appendix F). Generally speaking, the more time available related to a stronger agreement of factors impacting on the role especially, as would be expected, in relation to the time available and the attributes of the LT Coordinator. If

teachers don't see much of the LT Coordinator, they are probably going to be less concerned about his or her skills and attributes than if he or she is available for a significant amount of time. Similarly, from a time point of view, if the coordinator is only available for less than one day a week, it would seem reasonable to suggest that teachers will become accustomed to managing without him or her, so generally, the coordinator's presence will be less of a factor.

Attempting a further exploration of the data from section 3c, graphs were drawn which presented these data for State and Catholic schools separately (see Figure F20, Appendix F). This graph shows that State and Catholic schools had similar views regarding the impact of factors on the LT Coordinator's role. Similarly, little or no variation was found to exist between the views of principals, LT Coordinators, or classroom teachers when a graph was plotted for the data of section 3c showing the responses of each of the groups separately.

The factors impacting on the role of the coordinator as perceived by the respondents to this survey have now been explored. In the next section, the data relating to the attributes viewed as necessary for the coordinator will be presented.

### 6.2.3.3   Analysis of section 3d – qualities or attributes perceived as needed by the LT Coordinator

Analysis of the data for section 3d of the survey (see Table 5.14) was once again carried out by producing a series of graphs. The first of these graphs compared the average for all respondents with each particular quality or attribute. The resulting graph (Figure 6.11) shows that all five attributes were deemed to be important with respondents averaging 4.3 – 4.7, suggesting very strong agreement that these qualities are desirable for an LT Coordinator. Further explanation of this major finding follows.

6.2.3.3.1   The major finding – The five items of attributes were all seen as important for LT Coordinators

Five possible attributes were itemised in this section of the survey. All five of these were seen as important (see Figure 6.11), and no other suggestions were given in the "Others, please comment" section of the survey.

Items from Section 3d of the Survey   Attributes
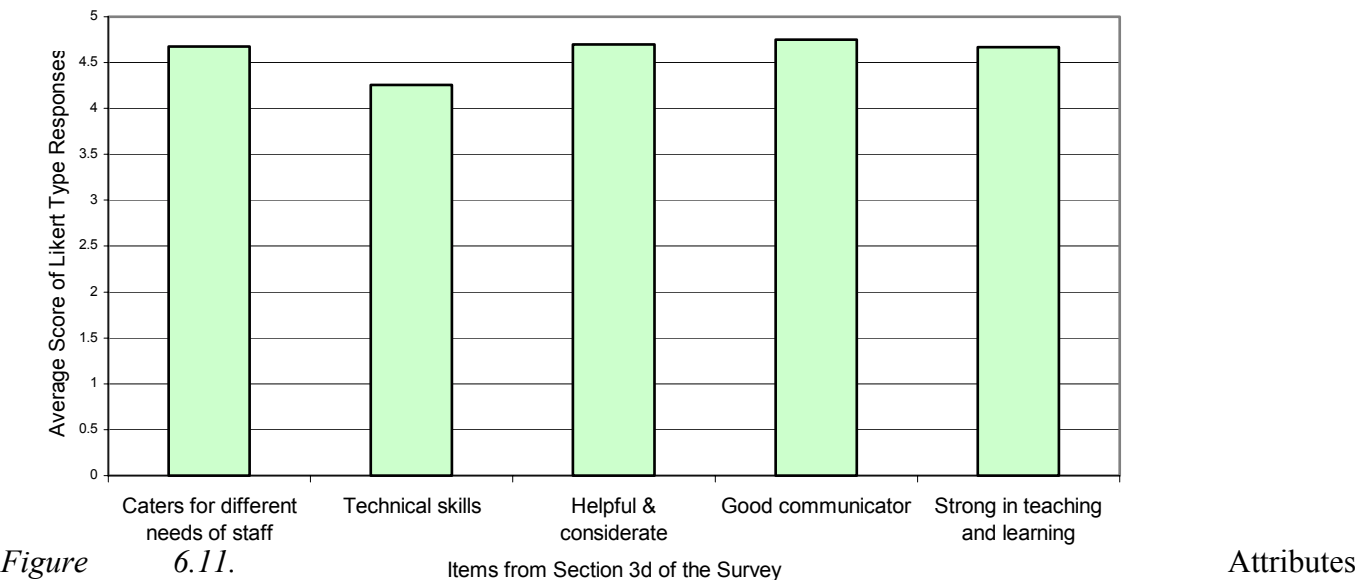
However, of the five items listed the least important, albeit only marginally, related to having technical skills and knowledge. This difference was too small to lead to anything other than a need for further exploration. Hence, a second graph was produced to display the percentage of those respondents who strongly agreed with individual items as attributes necessary for an LT Coordinator. Once again, as outlined previously, the aim was to look for intensity of response and so view the data from a different perspective (see Figure 6.12).
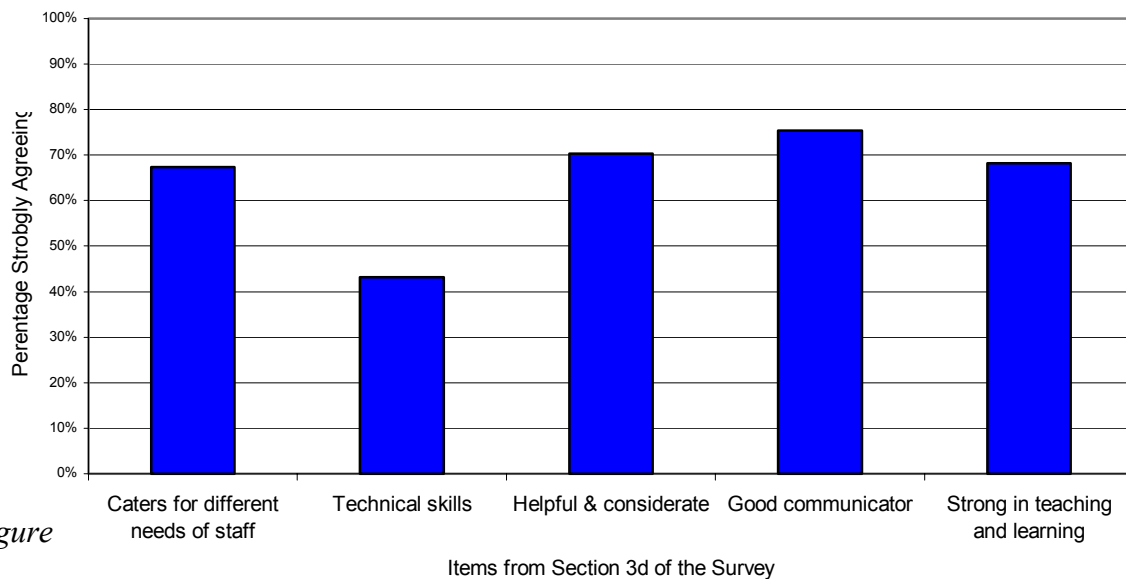
Figure 6.12. Attributes of the LT Coordinator – Percentage of Respondents Strongly Agreeing with Item.

When this data from the survey is viewed from this slightly different perspective in relation to those who strongly agreed it was shown that only 96 of the 236 respondents (43%), strongly agreed that technical skills were needed by an LT Coordinator whereas those who strongly agreed that the other four skills were necessary were 68%, 69%, 70% and 75% respectively. As discussed previously, the reason for this perceived lesser need for technical skills may be accounted for by the fact that in many schools the LT Coordinator is assisted by a technician or the technical issues are not a part of the LT Coordinator's role at all. Hence, technical skills are deemed to be of lesser importance than those relating to catering for different needs, being helpful, being a good communicator, or strong in the teaching and learning area. As this was the only major finding in this section, our attention will now turn to the minor findings in section 3d of the survey.

6.2.3.3.2   Minor findings in section 3d – Data from section 3d related to demographic data, school type and the role of the respondent

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When a graph was produced to show the responses of principals, LT Coordinators and classroom teachers separately for the itemised attributes of the coordinator, little or no variation was identified. So too, a graph comparing responses in the section from Catholic and State schools separately showed no noticeable difference.

When demographic information was compared with this section 3d data only a very slight variation was detected in reference to school size (see Figure F21, Appendix F). Those in smaller schools, although still agreeing that technical skills were relatively the least important, put greater store by these skills than did those in medium or large schools. One possible explanation here is that the smaller schools may have less funding for a technician and this technical expertise may be comparatively more important. In all other areas, similar responses were given regardless of the differences in classification. In fact, the over-riding statement related to this section is that there was a clear indication that each of the five attributes was important and this was not affected by differences in school type, role of respondent or demographic differences.

6.3 Summary

Having investigated the findings for phase 2 of the study within the three major themes, the lack of impact that the demographic data had is very noticeable. This is of interest since it implies that these findings are robust across a diverse range of contexts. This is a further major finding of this study. A summary of the major findings of phase 2 of the study is presented in Table 6.4.

Table 6.4

The Major Findings of the Survey

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Section 1	Concerning the integration of technology into classroom practice, the survey found:
	• Teachers integrate learning technologies into classroom practice because they perceive it will benefit their students
	• Job security and the incentive of a performance plan, whilst still rated important, are perceived to be of lesser importance than reasons related to students, teachers' skill development or the expectations of others
	• Principals, LT Coordinators and classroom teachers hold similar views regarding the reasons why learning technologies are integrated into practice, as do those in State and Catholic schools
Section 2	Concerning the professional development of teachers as they integrate learning technologies into their classroom practice, the survey found:
	• Collaboration with peers, embedding new skills in classroom practice, PD which is on-going, access to current operational IT resources, the support of the principal, the role of the coordinator and the incentive of a performance plan are perceived to be important factors in the professional development of teachers integrating technology into practice
	• The incentive of a professional development performance plan was perceived to be the least important of these factors in the professional development of teachers related to integrating technology
Section 3	Concerning the role of the LT Coordinator, the survey found:
	• The role of the LT Coordinator related to professional development and to coordinating the school program is perceived to be important in reality and ideally
	• Providing professional development for teachers in other schools and having technical expertise to keep computers working is seen as of lesser importance with regard to the LT Coordinator's role than those factors related to professional development within the school and coordination of the program
	• Six factors were perceived to impact on the coordinator's role – namely the attributes of the coordinator, the time available, expectations of the system, expectations of the school, access to current operational resources and the range of needs of the teachers. Of these, the expectations of the system were perceived to impact to a lesser degree
	• Attributes needed by an LT Coordinator are perceived to be the ability to cater for diverse needs, technical skills, helpful and considerate, a good communicator and strength in teaching and learning. Of these attributes, technical skills were perceived to be of lesser importance
Demographics	The above findings can be said to be quite robust in that they are not influenced by the demographics of: school system, size of school, the number of computers in classrooms, or the length of experience teaching with computers. There is a minor variation related to the time given to the LT Coordinator.

Analysis of phase 1 and phase 2 of this study has given rise to some clear similarities between

the specific sample of LaTTiCE and Navigator schools from phase 1 and the more generalised

sample of Metropolitan schools from phase 2. Attention has also been drawn to some clear

differences between these two groups. In the next chapter, the findings from both phases of the study will be discussed in relation to the literature reviewed and to the research questions.

CHAPTER 7

DISCUSSION OF THE RESEARCH FINDINGS

This study has drawn on the perceptions of classroom teachers, LT Coordinators and principals in specialised settings of the Navigator and LaTTiCE schools as well as from a more general population in order to investigate the research statement. The research statement aims to examine the role of the learning technology coordinator in the professional development of teachers as they integrate learning technologies into classroom practice. In order to investigate this issue, the research statement was extrapolated into a series of research questions which became the focus for the collection of data. These questions are repeated in Table 7.1 to provide easier access for the reader.

Table 7.1

Research Statement and Questions after Modification Resulting from Phase 1 of the Study

An investigation of the role of the learning technology coordinator in the professional development of teachers as they integrate learning technologies into classroom practice
Concerning the integration of technology into classroom practice, the study will ask:
1.　　Why do teachers integrate learning technologies into classroom practice?
Concerning the professional development of teachers in this area, the study will ask:
2.　　What are the most important factors in the professional development of teachers as they integrate learning technologies into classroom practice?
2.a.　Is the opportunity for collaboration with peers seen as an important factor?
2.b.　Is the opportunity to embed new skills and learnings in classroom practice seen as an important factor?
2.c.　Is it seen as important to have on-going support including the allocation of time?
2.d　Is the incentive of a performance plan or professional development goal seen as an important factor?
2.e　Is access to current, operational IT resources seen as an important factor?
2.f　Is the support of the principal seen as an important factor?
2.g.　Is the role of the LT Coordinator seen to be an important factor?
2.h.　Are any other factors seen as important in the professional development of teachers as they integrate learning technologies into classroom practice?
Concerning the role of the LT Coordinator, the study will ask:
3.a　How is the specific role of the LT Coordinator perceived in reality?
3.b.　Ideally, what should the role of the LT Coordinator be?
3.c　What factors are perceived to affect the role of the LT Coordinator in the professional development of teachers as they integrate learning technologies into classroom practice?
3.d.　What particular qualities or attributes are perceived to be needed by a person in the role of LT Coordinator?

As can be seen from Table 7.1, the research statement was divided into three separate areas or themes related to the reasons why teachers integrate technology into classroom practice, the factors involved in the professional development of teachers as they integrate the technology, and the role of the LT Coordinator in this process.

Investigation of each theme was based on a review of related literature. The investigation itself comprised two phases. Phase 1 took the form of focus group and interview sessions at seven LaTTiCE and Navigator schools. These seven pilot schools for the development and integration of technology provided a rich set of data to aid answering the research questions and to aid in the final preparation of a questionnaire. The questionnaire was the instrument of a generalised survey of metropolitan State and Catholic schools. The survey was the second phase of the research study and provided a large quantity of more generalised data to inform the research questions.

The results of an analysis of the data from phase 1 of the study were discussed in Chapter 4 and the results of analysis of the survey of phase 2 were examined in Chapter 6. This chapter will further discuss these results, comparing and contrasting the findings from both phases of the study with the related literature and relating them to the research questions. The discussion will be presented in three parts relevant to the three themes of the study namely, the integration of technology into classroom practice, the professional development of teachers in this area and the role of the LT Coordinator in this process. The final section of this chapter will then summarise findings and reflect on the original research statement.

7.1   Theme 1 – The Integration of Technology into Classroom Practice

This theme gives rise to section 1 of the study and to the first research question:

- Why do teachers integrate technology into classroom practice?

A review of related literature led us to expect that reasons given would relate to improvements or benefits for students, and this was clearly the case.

7.1.1   Related to Students

Studies by Bishop (1993) and Vanzetti and Atkins (1992) suggest that technology is a useful tool for students and integrating technology into classrooms they see as making a positive contribution to teaching and learning. Being more specific, the ACOT report (Apple Computer, Inc., 1995) talks in terms of students' improved mastery of skills, increased motivation and decreased absenteeism. This current research report confirms the findings of the "Effectiveness of Technology in Schools" report (Software Publishers Association, 1996), which notes positive effects on student achievement as well as on students' attitudes and self-concept.

In both phases of this research study, there is a clear indication that teachers integrate learning technologies into their classrooms predominantly because they believe it benefits their students in some way. During the focus group and interview sessions, 53% of all replies to the question of why learning technologies were integrated into practice related to student benefits, compared with 30% related to the expectations of others and 11% to teachers. This numerical expression of the data was, however, further strengthened when the particular comments of respondents were explored. I remember the emotion and excitement in the voice of a principal as he explained how teachers are motivated to use technologies; "And then they could see the

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children's skills developing as well as that brought about the whole…well, it's a lot to do with open-ended learning" (principal, interview).

Although enthusiasm and emotion were difficult to identify in the survey, emphasis was placed on this area of student benefits by written comments such as, "They learn new skills easily and enjoy challenges of learning" (classroom teacher – survey) or "I don't view PC's as alternative learning tools anymore. I believe them to be part of the furniture in the classroom and a great learning tool" (classroom teacher – survey).

In general terms, the survey analysis of phase 2 of the study strongly supported the view from phase 1 of the study that the predominant reason why teachers integrate technology is to benefit their students. Whilst the examples from the survey quoted above spoke in general terms of student benefits, there were those that were more specific, "Children love creating their own masterpieces. I find using programs such as Wiggleworks for reading and Creative Writer for writing improves their reading and writing skills" (classroom teacher – survey). This view is similar to that of Snyder (1992) who argued that computers could play an important role in the development of children's writing and thinking as they visually interact to manipulate text without the difficulty of indelible mistakes. However, presenting the opposite viewpoint, Talbot (1995) and Turkle (1997) argue that the computer may hinder a child's creativity and imagination. Toomey (1996) hints that children's creativity may have suffered and their education may have been narrowed in the early eighties before computer assisted instruction was replaced with computer enhanced learning as a result of changes in thinking on how children learn as well as technological advances.

Computers were used in schools in the eighties often only as word processors. It could be argued that this was a narrow use of the computer which did not help children to develop creativity or imagination. However, with some children, especially special needs children and children with dexterity difficulties, this could be an extremely beneficial use as illustrated by classroom teacher's comments on the survey, "when gross motor skills are a problem, typing stories looks much better" (classroom teacher – survey). In a similar vein, a classroom teacher during a focus group session commented "the kids who are slow or untidy writers can actually get more out of them" (classroom teacher – focus group).

A recent study carried out by Xin (2000) found that special needs children in a mainstream classroom showed real gains when learning technologies were integrated into maths sessions. Xin suggests that the technology was a motivator and helped to develop the self-esteem of these special needs children. This view is supported by an LT Coordinator who was interviewed during phase 1 of this research and claimed "some children who are slow readers and have difficulty with their writing, build up their self-esteem with the computers" (LT Coordinator – interview).

Responses from coordinators, principals and classroom teachers in both phases of this study show that the perceived benefits for students are not solely intellectual or academic. Improvements in self-esteem, motivation and collaborative learning are commented on in some quantity in both the written form of the survey and verbally during the focus group and interview sessions.

7.1.2   Related to Teachers and Expectations

Other benefits perceived by respondents in both phases of the study relate to teachers. An increase in the skill level of teachers was one of the findings of the Navigator project

evaluation (Clarkson et al., 1999), but in contrast to this Apple and Jungck (1990) warn that some teachers may become deskilled. In this case they are referring to the skills of teaching and learning and not computer use. But the Navigator project evaluation reported clear evidence that teachers felt that their skills had improved their professionalism, their ability to articulate their practice and their morale (p. 23).

Findings from this present research study support this view that integrating technologies into practice aids in the overall development of teachers' skills and morale. The coordinators, principals and classroom teachers involved in the focus groups and interviews, whilst in most cases agreeing that teachers did gain from the process, were fairly reluctant to discuss these gains in any depth. Whilst they were quick and eager to enunciate benefits for their students, prompting was required to bring forth suggestions of teacher gain. However, some comments did allude to the teachers' skill development. "I also think a spin-off the teachers find is that their own skills are improved and this may enhance job prospects in the future" (principal, interview). This comment was referring to the skills of using the computer but another, as shown below, looks at a broader view of the teacher skill development, "it's made the role of teachers more challenging because they've questioned the whole pedagogy of what the role of the teacher is. So I think it's made them reflective (principal, interview). Quite clearly, this principal, and the classroom teacher cited below, do not agree with Apple and Jungck (1990) that teachers are in danger of becoming de-skilled: "Mastering skills with computers appeals to me. I like the challenge of working through problems and achieving something new" (classroom teacher – survey).

However, whilst mastering or improving their skills was seen as a reason for teachers to integrate technology in both phases of this study, job security generally was seen as of lesser

importance. This factor was only mentioned on three occasions during phase 1, and was regarded as the least important of the thirteen reasons suggested for the integration of technology by respondents to the survey.

We have discussed findings from both phases of the study and the literature related to integrating technology for the benefit of students or of teachers. Toomey (1996) argues that there will probably be benefits for students and teachers when schools integrate technology as part of a whole-school reform process. Whilst he acknowledges the fact that the technology in itself rarely makes much of a contribution he suggests that the process involved in integrating the technology can be a major force in 're-engineering schools'. Clarkson et al. (1999) in evaluating the Navigator project support this view that technology helps to move schools through a reform process.

This study did not investigate this issue of the technology as a catalyst for whole-school reform generally, but broke this idea up into specific reasons. Some of these reasons related to the expectations of the school, the system, parents and society are however part of this idea of overall development. The focus groups and interview respondents felt, in many cases, that the expectations of the school and the system were strong reasons for integrating the technology into practice. "The computers were already there in my classroom so I was expected to use them" (classroom teacher - focus group). However, analysis of the survey data showed that it was not the expectations of the system (CEO or DEET) or the school, but rather expectations of society and of parents that were seen as being of greater importance. It is quite probable that the very specialised nature of the phase 1 schools led to this slight discrepancy. The phase 1 Navigator and LaTTiCE schools were funded and supported as pilot schools for the integration of learning technologies. As such, expectations were placed upon them whereas

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generally, as with most schools in the survey sample, schools budget themselves for the technology and their expectations are governed more by societal and parental pressures than by systemic requirements.

Having discussed in some detail this first theme of the research statement concerning the reasons why teachers integrate learning technologies into practice, the findings of this study suggest that they do so predominantly for reasons related to benefiting students but also for the improvement of teachers' skills and because of expectations placed upon them.

The next section of this chapter will comprise a discussion of the second theme of the research statement related to those factors perceived to be important in the professional development of teachers as they integrate technology into classroom practice.

7.2   Theme Two – Important Factors in the Professional Development of Teachers as They Integrate Technology into Classroom Practice

A review of the literature outlining important factors in the professional development of teachers led initially to the identification of four factors. These factors were that the professional development was related to an area of interest or concern, that it was collaborative in nature, embedded in classroom practice, and on-going over time. The first of these areas could be investigated fully with reference to the introductory question of the research which asks why teachers integrate technology into their practice. This has been discussed in some detail above. A review of the literature with reference to the other three factors related to the professional development being collaborative, embedded in practice and on-going gave rise to research questions which would form the focus of investigation for this second part of the research study.

These questions were initially phrased as shown in Chapter 3. However, following the pilot of the focus groups and interviews of phase 1 of the study, there was a strong feeling that the support of the principal should be included as a relevant factor in this section of the study. A review of the literature substantiated this view and therefore another research question was added. This research study was, at all times, seen as evolving and hence as new insights were gained the questions were modified or adapted accordingly. Discussions with a representative of DEET about this research study led to the inclusion of another question which dealt with teachers' performance plans. One of the major aims of phase 1 of the study with the focus groups and interview participants was to inform the on-going development of the survey instrument. Indeed some of the original questions were slightly reworded.

Two of the most striking features of the analysis of the survey data were the evenness of the data, and an indication of strong agreement that six of the factors were seen as very important in the professional development of teachers integrating technology into practice. The six factors were collaboration with peers, embedding professional development in practice, professional development being on-going, access to current, operational LT resources, the support of the principal, and the role of the LT Coordinator relating to professional development in this area. A review of the literature led us to expect that the factors of collaboration with peers, embedded in practice, on-going over time and the support of the principal would be regarded as important in the professional development area. The role of the coordinator, although somewhat sparse in the literature, is present in a few studies and papers and does lead to speculation that this role is an important factor in the professional development of teachers in this area. Each of these six areas will now be discussed.

7.2.1   The Professional Development Needs to be Collaborative in Nature

There is a wealth of literature to support this statement both in general terms and related to the integration of technology into schools as detailed in Chapter 2. The findings from both phases of this research study support the claims from the literature that professional development works best when collaborative practices are part of that development.

It is twenty years since Joyce and Showers (1980) were amongst the first to coin the phrase 'peer coaching' and to suggest this collaborative working situation as a vital component of staff development. Since then, many have put forward adaptations of peer coaching. These include a partnership model suggested by Johnson (1995) as part of the CLIPS (Computers and learning in the Primary School) project, a generational model including collaborative support as outlined by Caverly et al. (1997) and, more recently, a collaborative action research model as adapted by Baird (2000) as part of the PEEL project (Project for Embracing Effective Learning).

The findings from phase 2 of this research study clearly support the literature as the respondents to the survey show their agreement that professional development of teachers integrating technology needs to be collaborative in nature, although this factor was not seen by survey respondents as the most important factor. Those factors concerned with time and embeddedness were perceived as of great importance. However, the numerical data related to collaboration is further substantiated by written comments in this area suggesting that: "I have found it easier to learn from peers rather than attending out-of-hours PD. learning from peers means they are also on hand for minor problems as they crop up" (classroom teacher – survey).

Investigation of written comments in the survey suggests that for at least two principals this collaborative professional development is important in terms of positive school culture. "Peer support and training via staff meetings and Friday night drinks helps with developing a culture (principal – survey), and similarly "You would hope the school environment has peers collaborating at all times (principal – survey). These two comments from the survey support the work of Sagor (2000) who argues that collaborative practices are not only relevant to professional development but "can set the stage for the building of a truly collegial school culture" (2000, p. 31).

Similar positive comments related to collaboration in general can be found by exploring the transcripts from the focus group sessions. As with the survey comments in some cases these refer to specific elements of collaborative practice as shown by this comments from a coordinator, "Staff were encouraged to explore ideas and that was really important because they would reflect on what they had done… they were going on a journey sharing it with the team," (coordinator - interview) and from yet another coordinator, "we have a reflective journal process" (coordinator – interview).

These examples refer to collaborative practice but, in particular, to the reflective component of this practice. This component of reflection on action was seen as a key factor by Baird (1991) almost ten years ago. More recently he has reiterated the importance of collaboration which involves reflective practices in order to enhance teaching and learning (2000). There is a large body of literature which supports collaboration among peers. Findings from this research study show clear agreement with the literature on this point, even though other factors such as time and embedding the professional development in practice were seen as more important.

7.2.2   Embedded in Classroom Practice

"This is the only way to enable staff to grow in confidence of their own capabilities to use the technology, to become familiar and comfortable with it in their classrooms" writes one LT Coordinator on the survey. So too, a simple comment on the survey from a principal, "if this doesn't happen, skills are lost", supports the findings of Bush (1984) who tested the peer coaching model put forward by Joyce and Showers (1980). Bush found that if the fifth element of the model, where the new skill is used within the classroom, is not part of the professional development process, fewer than 20% of participants learnt the new skill whereas the figure rose to 95% when the skill was practiced in the classroom. A very similar survey example from a classroom teacher had particular appeal to me. I felt this comment summed up the point exactly. "If new knowledge is not put into practice, it is soon forgotten. If new knowledge can't be used in the curriculum, it wasn't worth learning."

One of the reasons why new learning needs to be embedded in classroom practice is that each teacher and each classroom is different. What works for one teacher may not work for another or what is possible with one group of students may not be possible with another group. Retallick (1994), in suggesting that workplace learning is highly important and highly valued in schools, points to the variance from one teacher and school to another as a reason for this. During phase 1 of this study, a teacher also mentioned this variance linking it with the need for embedding new learning in practice, "It was the hands-on here in the classroom. And it really worked because I was able to identify the needs – so that was from point of view" (classroom teacher - focus group).

In making a strong case for workplace learning, Retallick (1994) also points out that it is only within this situation that professional development with relevance and regularity can take place. The regularity and the need for professional development to be on-going is seen by

many researchers and writers to be a vital component in professional development. Quite often, as would be expected, the ideal is presented as embedding the new learning in classroom practice over a period of time.

7.2.3 Professional Development Must be Ongoing Over Time

"Time must be made available so that professional development for teachers can become a seamless part of the daily and year-long job" was a major recommendation from the NFIE national survey (1997, p. 3). This on-going nature of professional development and the whole issue of time availability were the subject of many written examples on the survey and it was in this area more than any other that words were underlined, printed or repeated, presumably in an effort to emphasise on the writer's part their strong feelings on this point. Some of the comments were of a general nature as detailed in Chapter 6, but further examination of comments from this section of the survey showed that some were more specific giving particular reasons why the professional development must be on-going. "I think our system has moved away from one-off inservices so it's on-going. It needs to be facilitated within the school because what it does it forces everyone to become a learner and learn as a team" (classroom teacher - focus group). This comment aligns clearly with the writings of McKenzie (1991) who argues that: "in order to lead students out of the 'instructional age' and into the 'informative age', teachers should shed their time honoured role as transmitters of the present culture and assume the role of continuous learners" (p. 23).

Supporting this view from the literature, a principal interviewed during phase 1 of this research study commented "professional development needs to be facilitated within the school because what it does is it forces everyone to become a learner and you've then realised the goals of the organisation" (principal – interview). Hoban (1997) suggests that we do need to be constantly learning as a response to the continuous changes in the curriculum, resources,

students, school organisations and ideas of best practice. The need for professional development to be on-going because of continuous changes is borne out by comments from both phases of the study. "It's a case of teachers making sure that they've got a changing role, that they don't need to know all the answers as traditionally expected of teachers" (classroom teacher – focus group). And more specifically, related to changes in the technology, a respondent in the survey comments "LT is an ever-changing field. PD needs to be frequent in order to keep up with current trends" (classroom teacher – survey).

These factors of the professional development being on-going, with it being embedded in practice and being collaborative, were individually and in combination considered to be very important factors in the professional development of teachers integrating technology by participants in both phases of this study. Another factor which is seen as important, although less so than the other five factors, was access to current operational technology. We will now discuss this factor in more detail.

7.2.4   Access to Current Operational Resources

The sixth item which was regarded as important by the survey respondents, and to some degree by participants in the focus groups and interview sessions, namely access to current operational resources, is fairly obvious in the literature, but usually mention of resources is brief and they are usually assumed to be present. There are certainly regular references to the need for teachers to be provided with the necessary hardware and software but this issue is not explained in the literature in connection with teacher professional development. However, it is fairly obvious that teachers will only be able to use learning technologies if they are present and functioning adequately.

Shelton and Jones (1996), in their review of "Staff Development That Works! A Tale of Four 'T's'", suggest that a common complaint among teachers attending professional development sessions is that they don't have the equipment or software in their classrooms. Both LaTTiCE and Navigator schools had as one of their major goals, the provision of appropriate hardware and software. Most often, however, the literature suggests that too much attention and funding has been put into the technology at the expense of staff development. McKenzie (2001) warns that when districts put "the horse before the cart, investing all of its money in equipment and networking rather than taking a more balanced approach", the strategies he outlines for staff development are difficult to provide (p. 13).

However, it is clear from the data analysed in this research study that although a balanced view should be taken, that up-to-date technology which is working, is important if teachers are to be engaged in effective professional development. Some frustrations were noted by participants of the focus groups when this was not the case. "The skills level has totally gone down because every time you try to do something, the system was down" (classroom teacher - focus groups). And similarly from the survey "There are often technical problems with the school network and this is frustrating. There is a need to have resources operational" (classroom teacher – survey).

Whilst there were such comments related to the need to have access to operational technology in both phases of the study, these comments were far fewer than those related to the other five factors suggested as important in teacher professional development in this area. One of the five factors regarded as very important was the support of the principal which will now be discussed in more detail.

7.2.5 The Support of the Principal

In recent years the literature has focused on the role of the principal in a holistic sense rather than dissecting the role into a series of attributes as had been the case previously. Sergiovani (1994 and 1996) suggests that the principal's role is first and foremost that of community builder. The findings from this present study support this view of the principal as a community builder and instructional leader as illustrated by many comments in phase 1 of the study and many written examples from the survey; "the principal is crucial to the whole thing because expectation is central. If there's an expectation from the top down for improvement, for excellence, for challenge…." (classroom teacher – focus group); and from a survey "the principal's role is a significant role in creating a positive climate to embrace LT" (principal – survey).

Hill (2002), whilst supporting this stance of principal as community builder, also suggests that the principal is the instructional leader with responsibility for the professional development of staff and for leading by example. Some examples from the survey show that respondents to this study also see the principal as instructional leader; "The staff see me using and communicating via the computer and know my commitment" (principal – survey), and from the focus group sessions "and seeing it in operation in the classroom, which has been good, to have principals walk in and seeing the kids work and noticing what's happening in seeing the difference" (classroom teacher – focus group).

Hill (2002) is a strong believer in the 'principal's walk' which he insists is an important component of the principal's role as instructional leader. The principal's walk was referred to many years ago by Peters and Waterman (1982) who were among the first to coin the phrase "management by walking around" (p. 67). However, whilst the principal's role is spoken of in the literature today less in terms of management and more in terms of building community,

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there is no doubt that the administrative side of the role is an important one. Certainly, the comments from this study, both written and oral, show the role of the principal to be important in the professional development of staff largely because of their desire and ability to provide finance and time. A large percentage of comments related to the role of the principal were clear on this matter; "The support of the principal is essential in an area that requires such a huge outlay of finance" (classroom teacher – survey), and with reference to time; "Support through time to attend PD during school time….time to implement skills learned as well is important" (classroom teacher – survey), and from phase 1 similarly, "Because the funding comes from there, the time release and the green light gets given" (classroom teacher – focus group).

Clearly, however, whether as a provider of resources, instructional leader or community builder, the support of the principal related to staff development in the learning technologies area is shown as a vital component from an analysis of data in this study. The findings in this study also suggest strongly that the role of the LT Coordinator is an important factor in the professional development of teachers in this area.

7.2.6   The Role of the LT Coordinator

The role of the coordinator lies at the heart of this study and expectations from a review of the literature and from personal experience were that this would be perceived to be an important role in the professional development of teachers integrating technology into practice. This was clearly the case. Findings from both phases of the study showed this role to be of great importance.

In a general sense, coordinators of school programs have been built into staffing schedules for many years. In Catholic primary schools, the religious education coordinator's role has not

only been clearly documented (CEO, 1995) but, in practice, is operational in the majority of Catholic schools. Across both Catholic and Government sectors, staff are employed to fulfil the roles of curriculum coordinator and mathematics coordinator in particular and other coordinators of KLA's in general. The role of the literacy coordinator has come to the fore in recent years as literacy has been a focus of Government funding. The LT Coordinator is a fairly recent role coinciding with the integration of technology in schools. Phase 1 of this study, which drew on focus groups and interviews in the Navigator and LaTTiCE schools, as expected strongly supported the need for this role. This was expected as both LaTTiCE and Navigator schools, as rich technology pilot schools, have a built-in provision for an LT Coordinator or Project Officer as they are called in the Navigator schools. However, it was interesting that the vast majority of schools surveyed in the general population reported that they did have an LT Coordinator and, furthermore, there was strong agreement that this role was very important, if not crucial, with respect to the professional development of teachers in this area.

The Technology Coordinator's website suggests that surprisingly very little has been written about or researched regarding this role (Technology Coordinators Website, accessed June 2001). One of the aims of this present research study is to add to this small amount of information. However, the studies that have been carried out (Strudler, 1995; Evans-Andris, 1995; and Becker, 1992) note the importance of the LT Coordinator in helping teachers with the integration of technology into practice. This position is supported from an analysis of the data from this study as illustrated by these comments; "Her role is the lynchpin to the development within the school, the development of the use of computers, the effective use of computers as a learning tool" (classroom teacher – focus group). Similar feelings were

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expressed in the written form of the survey; "The LT Coordinator' is essential especially in regard to curriculum and embracing interests and ideas of staff" (classroom teacher – survey).

The role of the LT Coordinator was explored in greater depth in the third section of the study relative to the third theme of the research statement concerning the role of the LT Coordinator specifically. This theme will now be discussed in relation to findings from this study.

7.3   Theme Three – The Role of the LT Coordinator in the Professional Development of Teachers as they Integrate Technology into Classroom Practice

This theme will be discussed in line with the three areas investigated in this study, namely, the perceived role of the coordinator, factors which impact on this role, and attributes or qualities needed by an LT Coordinator.

7.3.1   The Perceived Role of the LT Coordinator in the Real and Ideal Sense

The need to investigate this role from an ideal as well as a real perspective arose from the pilot study of the focus groups and interview sessions when frequent clarification was sought as to whether we were looking at reality or an ideal situation. In general, however, the findings from this study indicate that there is little difference between how the coordinator's role is perceived in an ideal sense or in reality. One exception to this was seen during analysis of the data from phase 1. A number of participants suggested that the role of the coordinator in reality included developing a positive mindset in teachers, "Her major role when she first started was to get people in the right frame of mind to accept that it could be possible" suggested a classroom teacher during a focus group session. However, no comments related to this area of the coordinator's role in an ideal situation. One possible explanation for this could be that the ideal situation may be seen as one in which the technology was already established in the school and this idea of developing a positive mindset would not apply.

Another difference was perceived in relation to the LT Coordinator having technical expertise to keep the computers working. However, this difference was only found during phase 1 of the study. Findings from an analysis of the data from phase 1 with the focus groups and interview participants suggest that there was a difference in reality and in the ideal situation with regard to this aspect of the role; "I suppose they've got to know the nuts and bolts of the equipment because when there's a problem that's the person we call on" states a principal during the phase 1 interview. Clearly the principal is referring to what is actually happening in reality but later on this same principal states "Oh, in an ideal world you'd have this person as a specialist, not troubleshooting, you'd have a technician coming in to troubleshoot and the coordinator could concentrate on getting his knowledge across….and keeping the professional development organised for staff" (principal – interview).

Findings from phase 2 of the study, which surveyed the more general population of schools, showed little distinction between the ideal and the real situations regarding this technical expertise, but these findings did concur with those of phase 1 that in the ideal sense this role of providing technical expertise was less important than the aspect of the role related to the professional development of teachers or the coordination of the school program. Written comments from the survey point to the need for a technician to take on this responsibility, "Technicians provide technical support not teachers who teach" was a very strongly presented comment from a classroom teacher responding to the survey.

Findings from the survey also aligned with those of phase 1 in the distinction between Catholic and State school responses with regard to this particular question. From the survey data it was clear that Catholic school respondents were more accepting of this technical expertise being part of the coordinator's role than were their Government school counterparts.

This confirmed findings from analysis of phase 1 data where LaTTiCE schools (Catholic) participants agreed that having technical expertise to keep computers working was part of the coordinator's role whereas the Navigator schools (Government) participants said it was not part of the LT Coordinator's role. As has been stated, one explanation for this finding could be that in some State schools technicians, or funding for technicians, are provided but until very recently no technical funding has been available to schools in the Catholic sector. However, this situation is changing as more funding in the last two years has been allocated for technical assistance in Catholic schools, hopefully releasing coordinators for the role of supporting teachers. Evans-Andris (1995) reported that one of the barriers to computer integration in schools is the fact that coordinators do not have clear role descriptions and this leads to their being exploited. She recommends that they are employed as "resource facilitators" to work and support teachers in their practice. Ronnkvist and colleagues (2000) similarly suggest that the technology coordinator's role should focus on the instructional rather than the technical. The findings from this study would support this suggestion that the technical support facet of the role was seen as less important than the professional development or instructional side, and further should not be included in the role description. Help in this area should be given in alternative ways.

Referring to the role of the coordinator in terms of professional development, findings from this study suggest that this professional development should be first and foremost concerned with staff of the school and of lesser importance is the wider role of the coordinator as responsible for staff development in other schools. The Navigator schools Project Officers are funded above staff entitlements and are required to provide professional development for staff in other schools. Nevertheless, in general terms the provision of external professional development was not seen to be as important a part of the LT Coordinator's role as the

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provision of professional development within the school. This finding resulted from an analysis of the data across both phases of the study, but was emphasised by written examples from the survey such as, "I am concerned with the situation in my school not providing PD for other schools" (principal - survey), and "only if time permits" (principal - survey). The availability of time is one of the issues explained in the next section of this third theme which focused on factors that impact on the role of the LT Coordinator.

7.3.2   Factors Which Impact on the LT Coordinator's Role

Six factors were seen to impact on the role of the technology coordinator across both phases of this research study. They were; the attributes of the coordinator, the time available, the expectations of the system, the expectations of the school, access to current operational resources, and the different needs of teachers.

During the focus group and interview sessions of phase 1, three other factors were mentioned as impacting on the role; succession policy (relating to replacement of the coordinator), keeping pace with technological change, and the availability of finance. However, there were only a few who commented along these lines and these three factors were not therefore itemised in the final survey instrument. Interestingly, none of these issues were noted in the open response items of the later survey. The other six factors were itemised for the survey and analysis of the data from this survey showed that respondents strongly agreed that each of these factors had an important impact on the role. This survey data were analysed from two different perspectives; one related to the average of responses using Likert type responses and one related to the percentage of respondents who strongly agreed by marking a '5' on the survey form. The second analysis was seen as a way to highlight the intensity of the data which was also shown by investigating the written comments for each item.

The findings resulting from this three-way analysis of the data related to the factors that impact on the role of the coordinator suggest that the expectations of the system (CEO/DEET) has comparatively less impact than those factors related to the attributes of the coordinator, the time available, the expectations of the school, access to current operational resources and the range of needs of the teachers. These findings are contrary to those of phase 1 which suggested the expectation of the system was a very important factor impacting on the role of the coordinator. As has been discussed in Chapter 4 and Chapter 6, this can be explained when we broke open the data from phase 1 further to discover it was participants from the Navigator schools who suggested that expectations of DEET were an important consideration. In Navigator schools, the Project Officers are employed above staffing schedule, part of their designated role being laid down by DEET. Furthermore, these Navigator schools are funded very highly from DEET and hence it is hardly surprising that these schools attached greater importance to the expectations at a systemic level.

Whilst the expectations of the system were seen as least important of the six factors, the finer grain analysis of this data, showed that the time available for the coordinator was seen to be the most important factor impinging on the role. This confirmed the findings from phase 1 of this study and also supported views found in the literature. According to Strudler (1995) one of the main barriers to the coordinator's role is that of time. He states: "Data from this study suggest that reducing the barriers to the implementation of computers will not likely occur without adequate time for coordinators to perform their role" (p. 19). The need for time is confirmed by Evans-Andris (1995) whose first recommendation suggests that "if schools are committed to an integrated computer program, they should invest in a full-time coordinator for their school" (p. 44).

The findings from this present study strongly confirm these views. "Time is the biggest thing" states a classroom teacher from a focus group. "Time being so that they could be available at the key times of the day." A principal interviewed in phase 1, referring to the coordinator's role also claimed "a person really needs time, certainly, and that perhaps limits the impact they are going to have." Similar strong views on this subject were clear from written comments on the survey: "The role of the LT Coordinator is time consuming" writes a classroom teacher, and "They need time to do their job." From a LT Coordinator a written comment which is simple and clear: "time is the biggest factor."

It is hoped that these findings will help to influence those responsible for funding and advice at a systems level to fund schools so that a full-time coordinator can be appointed to primary schools. It is acknowledged that this will be an expensive operation. However, the findings from this study suggest it is a vital area if technologies are to be integrated successfully into practice. It is further hoped that these findings will influence principals of schools to budget, as far as funds will allow, for this important role and to see it as a priority related to the integration of learning technologies into practice within their schools.

If schools were able to employ a full-time coordinator, it would be important to consider the attributes or qualities needed by this person. This question leads us into a discussion of the final part of this third section of the research, the attributes perceived to be needed by an LT Coordinator.

7.3.3   The Attributes Needed by an LT Coordinator

Strudler's study (1995) found that "prospective coordinators should possess a good balance of technical, interpersonal and organisational skills" (p. 19). He goes on to extrapolate these qualities even further finally suggesting that one attribute is the ability to "wean" teachers

from their dependence on the coordinator (p. 20). Whilst there was no mention in this sub-section of the study of the coordinator needing to be able to wean other teachers, the same concept, that of empowering, was put forward by suggesting the role of the coordinator in the professional development of teachers needed to include empowering others. In the focus groups of phase 1 participants also suggested "I don't see him as the sole deliverer of PD. I see him as spotting people who are capable of doing his role in smaller areas…" (classroom teacher - focus groups). Similarly, "The role is to, I guess, empower people to take it as far as they can – so that the onus is not on the Project Officer to make it happen but the role is on the classroom teacher in the classroom to make it happen" (classroom teacher - focus groups).

As this particular attribute of being able to empower others did not arise frequently during phase 1 of the study, it was not one of the attributes or qualities listed for the survey although it was included as an item in the suggested role of the coordinator and was perceived as an important attribute. Those qualities which featured strongly and frequently in phase 1 were, being aware of the needs of staff, technically competent, a good communicator, and strong in teaching and learning. The following comment summarises these perceptions, "someone who is skilled in the use of computers and can impart that knowledge to us who are coming in at all different levels," states a classroom teacher participating in a focus group session. In constructing the survey, to these four attributes was added that of being helpful and considerate as my experience suggested this would be seen as important. Analysis of the data from this final section of the survey confirmed the findings of phase 1 with strong agreement from survey respondents of the importance of each of these qualities or attributes.

7.4   Lack of Impact on the Data of Demographic Factors

It is very interesting to note that the demographic factors had little or no impact on the survey data. In section 1 of the survey relating to reasons why teachers integrate technology into

classroom practice, the demographic data showed no variation in response with one slight exception, namely the length of time the LT Coordinator had to coordinate the program. When the coordinator had more than three days for coordination, a slight increase was shown related to job security and a performance plan. It could be argued that the coordinator's role is not seen as a secure role, and hence when this comprises more than 50% of the role, job security may be more of an issue.

In section 2 of the survey, once again the different demographic factors appeared to have very little or no impact on the factors perceived to be important in the professional development of teachers in this area. I had expected to see some variation in this section, especially with respect to access to IT resources when the number of computers per classroom varied but, surprisingly, teachers with access to six computers noted access to IT resources as important as did those with access to only one or two computers. Neither group noted this access factor as more important than embedding the professional development into practice and ensuring that it was ongoing over time.

The only variation shown with regard to the demographic data related to the length of time computers had been integrated into classrooms. Where the integration had been for less than one year, a greater importance was placed on all factors relating to professional development and 100% of respondents from schools in this category strongly agreed with the importance of ensuring professional development was ongoing. As noted in Chapter 6 one explanation for this, which aligns with comments in the literature (Dwyer, et al., 1990), may be that in the early stages of integrating technology into practice, teachers are less confident of their own ability and therefore the issue of ongoing support becomes a vital one for them.

In exploring the data from section 3 of the survey, once again only minor differences could be identified. The interesting fact is that similar trends were apparent across the three sections of the survey regardless of differing demographic situations.

Having discussed each theme of the research statement with reference to the findings from the study as well as a review of related literature, the following section will summarise these findings, discuss limitations of the study and the implications of this research study.

7.5   Summary of Findings

Drawing on the perceptions of classroom teachers, LT Coordinators and principals from Navigator and LaTTiCE schools as well as from a more general population of teachers, principals, and LT Coordinators, this study investigated the role of the learning technology coordinator in the professional development of teachers as they integrated learning technologies into classroom practice. The first major finding from this study was that teachers integrated technology into classroom practice primarily to benefit their students, but also to improve teacher skills, and because of the expectations of the school, the system, society and parents. Another major finding was identifying important factors in the professional development of teachers in the integration of technology. These were that professional development in this areas needs to be collaborative, embedded in practice, on-going over time, supported by the principal, and supported by a learning technology coordinator.

If students were to benefit, then teachers need to know what they are doing. One of the crucial factors in their on-going professional development it was found, was access to a LT Coordinator. The third and main section of this study turned to this role. Hence, the third major finding from this study was that the most important aspects of the LT Coordinator's

role were seen to be those related to the professional development of teachers in the school and to the coordination of the school LT program.

To a lesser degree, the LT Coordinator's role was seen to involve technical expertise, if there was no other avenue to cater for this. Crucial factors perceived as impacting on this role included the time available for the coordinator, the attributes of the coordinator, the expectations of the school and system, access to current operational LT resources, and the range of needs of teachers. In turn, the attributes seen as important for an LT Coordinator to have comprised the ability to cater for diverse needs of teachers, being able to communicate well, being strong in teaching and learning, being helpful and considerate and having technical expertise. The major findings of the study are summarised in Table 7.2.

Table 7.2

Summary of Finding from the Study

1	• Teachers integrate learning technologies into classroom practice predominantly in order to benefit their students • The expectations of others and the improvement of teacher skills are seen as secondary reasons why teachers integrate learning technologies into classroom practice
2	• The most important factors in the professional development of teachers integrating learning technologies into classroom practice were seen to be the collaborative nature of the professional development, that it is embedded in classroom practice, is on-going over time, has the support of the principal, and is supported by the role of the LT Coordinator
3	• The most important aspects of the role of the learning technology coordinator are related to the professional development of teachers in the school and coordination of the school's learning technology program • To a lesser degree, the role of the LT Coordinator is seen to involve technical expertise • Important factors which impact on the role of the coordinator are the time available, the attributes of the coordinator, the expectations of the school, access to current, operational resources and the range of needs of teachers • Attributes of the LT Coordinator which are considered important are the ability to cater for diverse needs of teachers, the ability to communicate well, being strong in teaching and learning, being helpful and considerate and having some technical expertise
4	• The findings can be said to be quite robust in that they are not influenced by different demographic situations

It was interesting and somewhat surprising to note that the results were apparently not altered by different demographic situations. Neither school size, access to computers, the length of time computers had been integrated into the classroom, or the time allocated to the LT

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Coordinator seemed to alter the results obtained in any section of the survey. Taking all of these potentially important and influential contents together, this strongly suggests that the important extra finding of this study is that the results are quite robust

7.5.1 Limitations of the Study

The original intention of the study was that the second phase, the survey, would involve a sample of at least one hundred Catholic and State schools in the Melbourne area. The original mail-out went to a total of 240 schools, 160 from the State sector and 80 from the Catholic sector. A poor response to this mail-out, especially in the State sector, was followed up by telephone calls, the sending of second copies of the survey and finally a second mail-out to a further fifty State schools. The final response was a total of 90 surveys received from 290 mailed out. In terms of time and money, it was decided that the sample of 90 would suffice for the gathering of data in phase 2. However, it is acknowledged that the findings could have varied if a larger quantity of data had been gathered from the survey. But there is no internal evidence from the data available or anecdotally to suggest this would have been the case.

Because of the nature of the data, the differences in the graphical analysis were not couched in statistically significant terms. Hence, statistical inference statements cannot be made. However, against this, the layering of different types of data from multiple sources with educationally important differences noted, more than meets the requirements of this study.

7.5.2 Implications of this Research and Recommendations

The integration of technology into classroom practice is still in its early days despite the fact that most schools have had access to computers for ten years or more. In the last decade, there has been a move to integrate the computer into the classroom as an educational tool to enhance teaching and learning for students. There is a growing body of knowledge which suggests that, in order for this integration to proceed, schools need to be equipped with the relevant resources but also importantly staff development programs need to be part of this process. Furthermore, there are clear indications that technology in schools is a "moving target" (Strudler, 1995) because of rapid advances in the technology itself as well as new insights into how children learn. This evolving or changing state of technology in schools will require on-going professional development processes to be in place. The findings from this study have important implications regarding the professional development of teachers integrating technology into classroom practice and in particular the role of the LT Coordinator in this process.

Following from this research, it is recommended that at a system level, funding for professional development of teachers in this area in primary schools is provided as a matter of priority, together with funding for an on-site LT Coordinator in each school. Hill (2002) notes that one of the major lessons of educational reform is that the system matters. Where the system has given strong support to reforms, as shown in the recent support in terms of funding and professional development by the CEO in Melbourne for literacy in general and CLaSS in particular, great advances have resulted. Similar support is required now particularly in the form of funding for a school-based LT Coordinators in each primary school. The results of this study go further and give some insight into what the role description of the LT Coordinator should include and should not include. The results also give

pointers to what attributes quality LT Coordinators will have. This research further recommends that principals of primary schools, as a matter of priority, allocate staffing for a school based LT Coordinator and support this LT Coordinator and teachers with as much time release as possible to enable them to take part in on-site professional development.

7.5.3 Further Studies

This study has highlighted a number of issues concerning the professional development of teachers as they integrate learning technologies into their classroom practice and, in particular, has focused on the role of the LT Coordinator in this process. With respect to the professional development of teachers, this study has concentrated on factors perceived to be important for teachers as they engage in professional development related to the integration of technology. Further studies may investigate the professional development activity in particular. This study suggested that teachers are keen to participate in professional development which is embedded in practice, on-going over time and collaborative. Further studies may actually investigate how this embeddedness or collaboration could occur; are professional learning teams, for example, seen to be effective in the professional development of teachers in this technology area?

This present study investigated LaTTiCE and Navigator schools as technology rich schools which were well underway with professional development of teachers integrating technology, and who had designated learning technology coordinators. Further studies could investigate the LaTTiCE and Navigator schools in three or five years from now, focusing on sustainability or changes that may have occurred.

This study focused in particular on the role of the LT Coordinator related to the professional development of teachers. Further studies may investigate in particular the way in which the

LT Coordinators work with teachers and how this is perceived to be effective. The time allocated to the LT Coordinator and a comparison of varying rates of time may provide for yet another study in this area.

There are relatively few studies which have focused on the role of the LT Coordinator and hence any further information in this area will be useful in clarifying aspects of this role. These in part may serve to persuade systems to provide further funding for the appointment of school based coordinators.

7.6   Conclusion

This research study has yielded rich data from a series of focus groups and interviews at Navigator and LaTTiCE schools. These data, together with data from a survey of the more general population of schools, produced findings which were consistent with much of what the literature suggests concerning the professional development of teachers as they integrate learning technologies into classroom practice.

The study focused on the role of the LT Coordinator and found this role to be very important in the professional development of teachers in this area. The research study findings led to recommendations that priority be given to funding at a system level for a school based LT Coordinator in each primary school and that principals provide as much time as possible for the coordinator and teachers to engage in collaborative on-site professional development in this area.

If the integration of technology into classroom practice is to fulfil its potential to have a strong impact on the teaching and learning in schools, teachers need to be supported by principals and systems, and crucially by LT Coordinators in their schools.

APPENDIX A

SYNOPSIS PAPER

Research Project: **The role of the learning technology Coordinator in the professional development of teachers as they integrate learning technologies into their classroom practice.**

Do the classrooms in your school look the same the same as they did five or even three years ago?

Do the children in your classrooms learn in the same way as they did five years ago?

Do you teach in the same manner as you did five years ago?

If you have answered "no" to any of these questions, it may be that the reason for this response is the impact of learning technologies in your classroom or in the classrooms in your school.

The use of learning technology in Primary schools is changing the face of teaching. Thirty years ago, Kay, Dodd and Sime (1968) suggested that computers in schools would change the role of the teacher in the classroom and indeed, in most cases this has happened but not in the way predicted. Contrary to the supposition that children would become isolated in single cubicles engaged in programmed tasks, today children using computers in Primary schools are often engaged in learning with their teachers and peers in an interactive way.

The Software Publishers Association of America (1996, p.2) stated that "There is compelling evidence that with appropriate teaching and learning methods, learning technologies can facilitate significant improvement in student learning."

Their report, "The Effectiveness of Technology in Schools" was based on one hundred and seventy six research reviews and research projects. It revealed that higher student achievement from pre-school to university was produced, student attitude was improved, and learning became more interactive when computer based networked teaching and learning was operative.

The basic assumption upon which computers are used in schools is that an improvement in children's learning will take place.

In acknowledging the role of the computer in assisting with the student's learning, teachers, according to Bishop (1993) as well as Vanzetti and Atkins (1992), were conscious of the need for more professional development in the integration of technology into classroom practice. Bishop (1993, p.118) argued that; "Teachers recognise that there is much more to be learned if computers are to be fully utilised in primary education." She challenged the education system and school leaders to fully support teachers by providing them with "more time, in-servicing and more generous budgets that allow for upgrading of equipment and software."

The provision of hardware and software is indeed an issue but according to Smyth (1997) it is not the most important factor. Professional development is the most important factor in ensuring the integration of computers into classroom practice.

> It is safe to be dogmatic about this point as this finding has emerged consistently through both commissioned evaluations and anecdotal reports of the educational computing programs in those schools considered by most to be the pioneers and leaders in the area.   (Smyth, 1997, p.3)

The Significance of This Research

In 1995, the Department of Education with the help of the Victorian Government, set up best practice schools in the area of learning technologies. The Navigator project, as it was called, involved three secondary and four primary schools. Two years later the Catholic Education Office, learning from the Navigator Schools Project, set up the LaTTiCE project (Learning and teaching Technologies in Catholic education). The LaTTiCE schools comprised six schools from different geographical areas of Melbourne. These Navigator and LaTTiCE schools had as their objective to improve student learning by the effective use of learning technologies.

Both the Navigator and LaTTiCE projects identified two specific needs from the outset:

− The provision of the technology including technical support.

− The professional development of staff to enable them to use the technology to improve student learning.

More recently, at the end of 1998, the Catholic education system made successful application to the Government for increased funding in order to provide children in Catholic schools with improved access to learning technologies. This increased funding led to the "Technology in Schools" project or 'TCS'. The main aim of the TCS project is to enable Primary schools in the Melbourne Archdiocese to formulate and implement a technology plan for schools.

Personnel and finance have been provided to enable schools to carry out this task. It is strongly recommended that 25-33% of the finance be used for the professional development of teachers in the area of integrating technology into classroom practice. This recommendation was based on findings from the Navigator and LaTTiCE schools over a three-year period, as well as on findings from the ACOT research over a 7-8 year period. Despite the high initial cost of introducing computers into the six LaTTiCE schools, it was found that over the three year period approximately 25% of the budget was used for the professional development of teachers. The feedback from participating teachers' journals, Coordinators' meetings and Principals' meetings for the LaTTiCE project consistently reported the importance of this professional development. The Navigator schools' experience had been similar; they too felt that a significant proportion of the budget must be given to the professional development of teachers.

It is imperative that this professional development happens and that it is effective. Therefore, a study to investigate professional development in this area is extremely important. During

the next two years, millions of dollars will be spent by the Catholic education system alone on the professional development of teachers in this area. In order for this money to be spent wisely, it is necessary that the professional development model is one which is based on tried and tested research as well as a review of previous professional development in general terms and specifically in the area of learning technology.

Research Background

From a review of the literature surrounding the professional development required to assist teachers as they integrate learning technology into classroom practice some clear observations can be made. It is suggested that for this professional development to be effective it should be:

a)   Seen by teachers to be an issue of interest or concern

b)   Collaborative in nature

c)   Situated in classroom practice

d)   An on-going process

Mackinnon (1994, p.16) argues that in discussing professional development related to the integration of learning technologies, this can no longer be seen as something that involves "one-off" courses which happen outside the school. What do teachers perceive to be the most important factors in assisting them to integrate learning technologies into classroom practice?

The literature review points to the need for school based professional development. The school based learning technology Coordinator would therefore seem to be important in the effective professional development of teachers integrating learning technologies into their classrooms.

The Research Statement

The major purpose of this study is then to investigate the role of the school based learning technology Coordinator hereafter known as the LT Coordinator in the professional development of teachers as they integrate learning technologies into classroom practice in the primary school.

APPENDIX B

LETTER TO PARTICIPANTS OF PHASE 1 OF THE STUDY

Australian Catholic University

Research Project:The role of the Learning Technology Coordinator in the professional development of teachers as they integrate technology into classroom practice.

Researcher: Margaret O'Donnell

Dear Learning Technology Coordinator,

As part of my studies for the degree of Doctor of Education for the Australian Catholic University, I am undertaking research related to the integration of learning technologies into classroom practice in the primary school. The research particularly relates to the professional development needs of teachers as they attempt to integrate learning technologies into their classroom s and also to the role played by the Learning Technology Coordinator in this process. The project is partly based on the collection of data from focus group discussions and interviews.

I would be most appreciative if you would agree to be part of the focus group discussion. This focus group discussion would comprise four teachers involved in integrating learning technologies into their classrooms as well as the Learning Technology Coordinator.

I would also appreciate it if you would agree to be interviewed for the purpose of this research.

I anticipate that the focus group discussions will run for approximately one hour and can be arranged at a time convenient to you. The participants involved in the focus groups will be asked to read a synopsis paper (three pages) prior to the discussion.

I expect the interviews to take about thirty minutes, however, this estimate depends on how much information you wish to give.

Your response is very important to the success of this research. The information you provide will serve to inform the professional development of teachers in the area of integrating technology into their classrooms.

The policy of the university is that participants are free to withdraw from the research project at any time without giving a reason.

Any questions concerning the project can be directed to the Researcher:

Margaret O'Donnell

Tel. 9846 3434

And/or the Supervisor
Dr Phil Clarkson
Tel. 9953 3000
Department of Education (Vic)
Australian Catholic University
St Patrick's Campus
115 Victoria Parade Fitzroy

- Please note that this project has been approved by the University Research Projects ethics Committee at the Australian Catholic University.

In the event that you have any complaint about the way you have been treated during the study or a query that the researcher or Supervisor has not been able to satisfy, you may write care of the nearest branch of the Office of Research:

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Australian Catholic University
St Patrick's Campus
115 Victoria Parade Fitzroy

tel. 9953 3000   fax 9953 3005

- Any complaint will be treated in confidence, investigated fully and the participant informed of the outcome.

If you agree to participate in this project would you please sign both copies of the informed consent form, retain one copy for your records and return the other copy in the enclosed stamped, addressed envelope. Would you also read the synopsis paper in readiness for the interview.

.

Yours sincerely,

Margaret O'Donnell

Australian Catholic University

Research Project:The role of the Learning Technology Coordinator in the professional development of teachers as they integrate technology into classroom practice.

Researcher: Margaret O'Donnell

Dear Classroom Teacher,

As part of my studies for the degree of Doctor of Education at the Australian Catholic University, I am undertaking research related to the integration of learning technologies into classroom practice in the primary school. The research particularly relates to the professional development needs of teachers as they attempt to integrate learning technologies into their classrooms and also to the role played by the Learning Technology Coordinator in this process. The project is partly based on the collection of data from focus group discussions and interviews.

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Yours sincerely,

Margaret O'Donnell

Australian Catholic University

Research Project: The role of the Learning Technology Coordinator in the professional development of teachers as they integrate technology into classroom practice.

Researcher: Margaret O'Donnell

Dear Principal,

As part of my studies for the degree of Doctor of Education at the Australian Catholic University, I am undertaking research related to the integration of learning technologies into classroom practice in the primary school. The research particularly relates to the professional development needs of teachers as they attempt to integrate learning technologies into their classrooms and also to the role played by the Learning technology Coordinator in this process. The project is partly based on the collection of data from focus group discussions and interviews.

I would be most appreciative if you would give permission for a focus group discussion to take place in your school. This focus group discussion would comprise four teachers involved in integrating learning technologies into their classrooms as well as the Learning Technology Coordinator.

I would also appreciate it if you and your Learning Technology Coordinator would agree to be interviewed for the purpose of this research.

I anticipate that the focus group discussions will run for approximately one hour and can be arranged at a time convenient to you and your staff. The participants involved in the focus groups will be asked to read a synopsis paper (three pages) prior to the discussion. If you are willing to help with this research would you please forward the synopsis papers and consent forms enclosed to those whom you choose to participate in the focus group discussions.
I expect the interviews to take about thirty minutes, however, this estimate depends on how much information you wish to give.

Your response is very important to the success of this research. The information you provide will serve to inform the professional development of teachers in the area of integrating technology into their classroom s.

You are free to withdraw from the research project at any time without giving a reason. Any questions concerning the project can be directed to the Researcher:

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Australian Catholic University

Research Project: The role of the Learning Technology Coordinator in the professional development of teachers as they integrate technology into classroom practice.

Researcher: Margaret O'Donnell

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I would be most appreciative if you would give permission for a focus group discussion to take place in your school. This focus group discussion would comprise four teachers involved in integrating learning technologies into their classrooms as well as the Project Officer.
I would also appreciate it if you and your Project Officer would agree to be interviewed for the purpose of this research.

I anticipate that the focus group discussions will run for approximately one hour and can be arranged at a time convenient to you and your staff. The participants involved in the focus groups will be asked to read a synopsis paper (three pages) prior to the discussion. If you are willing to help with this research would you please forward the synopsis papers and consent forms enclosed to those whom you choose to participate in the focus group discussions.
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Australian Catholic University

Research Project: The role of the Learning Technology Coordinator in the professional development of teachers as they integrate technology into classroom practice.

Researcher: Margaret O'Donnell

Dear Project Officer,

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Margaret O'Donnell

Australian Catholic University

Research Project: The role of the Learning Technology Coordinator in the professional development of teachers as they integrate technology into classroom practice.

Researcher: Margaret O'Donnell

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Yours sincerely,

Margaret O'Donnell

APPENDIX C

TIME REQUIRED FOR FOCUS GROUP AND INTERVIEWS IN THE STUDY

	Task	Average time per school	Total Time
A	Travel to and from the venue	2 hours	
	Focus group session	1 hour	
	Structured Interview (30 minutes each)	1 hour	
	Discussion – observer and moderator	2 hours	6 hours
B	Transcribing focus group and structured interviews	8 hours x 2 analysts	16 hours
C	Analysis of focus groups and structured interviews	6 hours x 2 analysts	12 hours
D	Discussion and modification of results by analysts and observer	6 hours x 3	18 hours
	Total average time for one school		52 hours
	Total average time for seven schools		364 hours

APPENDIX D

LETTER TO PARTICIPANTS OF PHASE 2 OF THE STUDY

Australian Catholic University

Research Project: The role of the Learning Technology Coordinator in the professional development of teachers as they integrate technology into classroom practice.

Researcher: Margaret O'Donnell

Dear Principal,

As part of my studies for the degree of Doctor of Education for the Australian Catholic University, I am undertaking research related to the integration of learning technologies into classroom practice in the primary school. The research particularly relates to the professional development needs of teachers as they attempt to integrate learning technologies into their classroom s and also to the role played by the Learning technology Coordinator in this process. The project is partly based on the collection of data from a mailed survey (attached). There are three separate surveys:

- Survey Form A is for the Principal

- Survey Form B is for the LT Coordinator (or someone with responsibility for the coordination of information technology)

- Survey Form C is for classroom teachers with an interest in this area.

I would be most appreciative if you could complete Survey Form A and organise for all the other survey forms to be completed, however if this is not possible I will be grateful for any responses received.

I have enclosed two copies of Survey Form C for classroom teachers. If more than two classroom teachers are able to complete this survey, please copy this form as required.

I anticipate that completion of this survey will take between ten and twenty minutes. However, this estimate depends on how much information you wish to give. Please note I have printed the survey on one side of the paper only. If you wish to add more, please use the reverse side of the sheet.

Your response is very important to the success of this research. The information you provide will serve to inform the professional development of teachers in the area of integrating technology into their classrooms.

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Any questions concerning the project can be directed to the Researcher:

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If you agree to participate in this project you should sign both copies of the informed consent form, retain one copy for your records and return the other copy with the completed survey forms in the enclosed stamped, addressed envelope. It would be greatly appreciated if the surveys could be returned by November 1st 2000.

Yours sincerely,

Margaret O'Donnell

Australian Catholic University

Research Project: The role of the Learning Technology Coordinator in the professional development of teachers as they integrate technology into classroom practice.

Researcher: Margaret O'Donnell

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- Survey Form A is for the Principal

- Survey Form B is for the LT Coordinator (or someone with responsibility for the coordination of information technology)

- Survey Form C is for a classroom teacher with an interest in this area.

    - I would be most appreciative if you could complete Survey Form B.

I anticipate that completion of this survey will take between ten and twenty minutes. However, this estimate depends on how much information you wish to give. Please note I have printed the survey on one side of the paper only. If you wish to add more, please use the reverse side of the sheet.

Your response is very important to the success of this research. The information you provide will serve to inform the professional development of teachers in the area of integrating technology into their classroom s.

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- Any complaint will be treated in confidence, investigated fully and the participant informed of the outcome.

If you agree to participate in this project you should sign both copies of the informed consent form, retain one copy for your records and return the other copy with the completed survey forms in the enclosed stamped, addressed envelope. It would be greatly appreciated if the surveys could be returned by November 1st 2000.

Yours sincerely,

Margaret O'Donnell

Australian Catholic University

Research Project: The role of the Learning Technology Coordinator in the professional development of teachers as they integrate technology into classroom practice.

Researcher: Margaret O'Donnell

Dear Classroom Teacher,

As part of my studies for the degree of Doctor of Education for the Australian Catholic University, I am undertaking research related to the integration of learning technologies into classroom practice in the primary school. The research particularly relates to the professional development needs of teachers as they attempt to integrate learning technologies into their classrooms and also to the role played by the Learning Technology Coordinator in this process. The project is partly based on the collection of data from a mailed survey (attached). There are three separate surveys:

- Survey Form A is for the Principal

- Survey Form B is for the LT Coordinator (or someone with responsibility for the coordination of information technology)

- Survey Form C is for a classroom teacher with an interest in this area.

   - I would be most appreciative if you could complete Survey Form C.

I anticipate that completion of this survey will take between ten and twenty minutes. However, this estimate depends on how much information you wish to give. Please note I have printed the survey on one side of the paper only. If you wish to add more, please use the reverse side of the sheet.

Your response is very important to the success of this research. The information you provide will serve to inform the professional development of teachers in the area of integrating technology into their classrooms.

The policy of the university is that participants are free to withdraw from the research project at any time without giving a reason.

Any questions concerning the project can be directed to the Researcher:

Margaret O'Donnell

Tel. 9846 3434

And/or the Supervisor

Dr Phil Clarkson
Tel. 9953 3000
Department of Education (Vic)
Australian Catholic University
St Patrick's Campus
115 Victoria Parade Fitzroy

- Please note that this project has been approved by the University Research Projects ethics Committee at the Australian Catholic University.

In the event that you have any complaint about the way you have been treated during the study or a query that the researcher or Supervisor has not been able to satisfy, you may write care of the nearest branch of the Office of Research:

Chair, University Research Projects Ethics Committee
C/O Office of Research
Australian Catholic University
St Patrick's Campus
115 Victoria Parade Fitzroy
tel. 9953 3000   fax 9953 3005

- Any complaint will be treated in confidence, investigated fully and the participant informed of the outcome.

If you agree to participate in this project you should sign both copies of the informed consent form, retain one copy for your records and return the other copy with the completed survey forms in the enclosed stamped, addressed envelope. It would be greatly appreciated if the surveys could be returned by November 1st 2000.

Yours sincerely,

Margaret O'Donnell

APPENDIX E
FINAL SECTION 1 OF THE SURVEY FORMS FOR PRINCIPAL AND LT COORDINATOR

Table E1

Section 1 of the Survey - Survey Form A – Principal

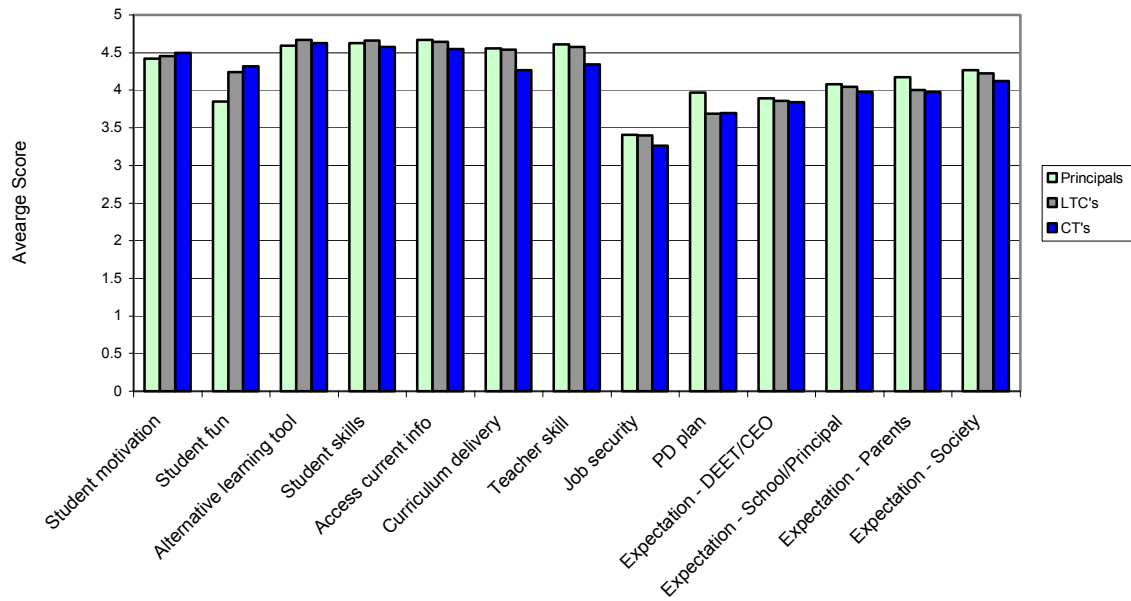| This question relates to the integration of learning technologies into classroom practice. Integration of learning technologies into classroom practice is defined as: "The process involved in using learning technologies as a tool to facilitate learning across curriculum areas in classroom practice" Please tick the most appropriate response for each statement.						
KEY: **SA** = Strongly Agree; **A** = Agree; **NS** = Not Sure; **D** = Disagree; **SD** = Strongly Disagree						
Why do you support the integration of learning technologies into classroom practice?	SA	A	NS	D	SD	If possible provide <u>examples</u> for some of your responses
A. Related to student attitudes and learning • to improve student motivation • to provide fun experiences • to provide an alternative learning tool • to improve student skills • to gain access to more current information • to improve delivery of the curriculum						
B. Related to teachers • to improve teachers skills • to improve job security • to address the needs of a professional development performance plan						
C. Related to expectations • to respond to expectation of the Dept/CEO • to respond to expectation of the school/principal • to respond to expectations of parents • to respond to expectations of society						
D. Others: please comment						

Table E2
Section 1 of the Survey - Survey Form B – LT Coordinator

This question relates to the integration of learning technologies into classroom practice.

Integration of learning technologies into classroom practice is defined as:

"The process involved in using learning technologies as a tool to facilitate learning across curriculum areas in classroom practice"

Please tick the most appropriate response for each statement.

KEY:	**SA** = Strongly Agree;	**A** = Agree;	**NS** = Not Sure;	**D** = Disagree;	**SD** = Strongly Disagree

Why do you support the integration of learning technologies into classroom practice?	SA	A	NS	D	SD	If possible provide <u>examples</u> for some of your responses
A. Related to student attitudes and learning						
• to improve student motivation						
• to provide fun experiences						
• to provide an alternative learning tool						
• to improve student skills						
• to gain access to more current information						
• to improve delivery of the curriculum						
B. Related to teachers						
• to improve teachers skills						
• to improve job security						
• to address the needs of a professional development performance plan						
C. Related to expectations						
• to respond to expectation of the Dept/CEO						
• to respond to expectation of the school/principal						
• to respond to expectations of parents						
• to respond to expectations of society						
D. Others: please comment						

APPENDIX F

GRAPHS SHOWING ANALYSIS OF THE SURVEY

Figure F1.   Comparison of Responses from Principals, LT Coordinators and Classroom Teachers to Section 1 of the Survey.
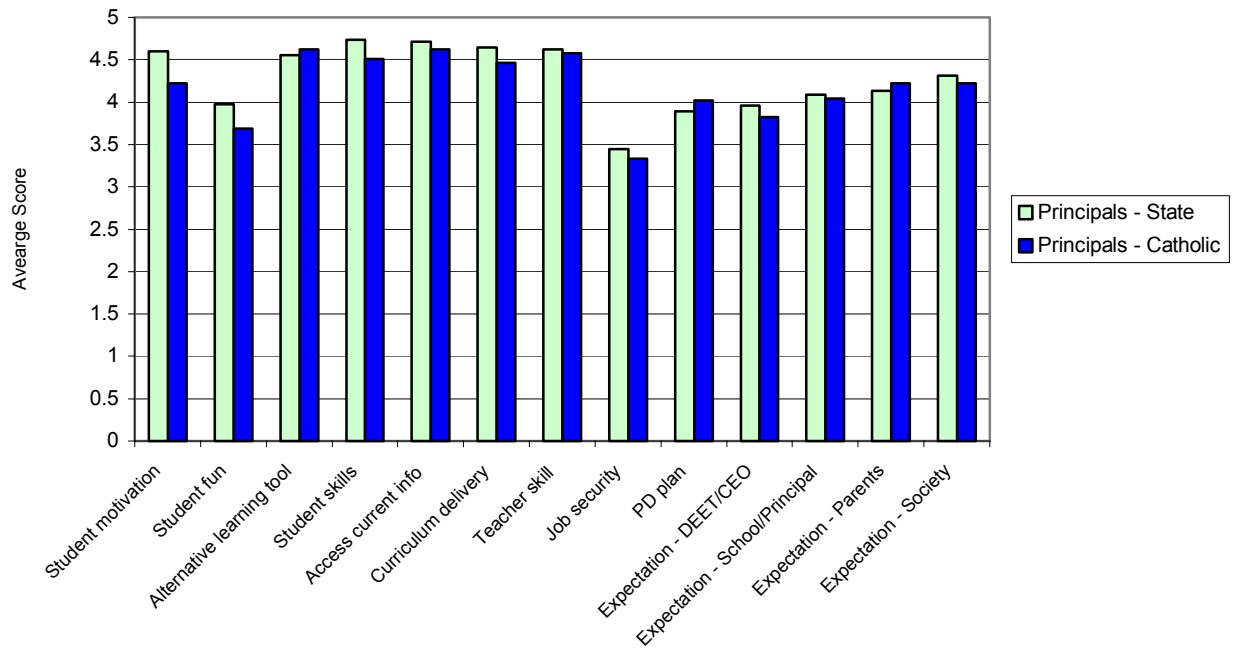
Figure F2.   Comparison of Responses from Catholic and State Schools Principals to Section 1 of the Survey.
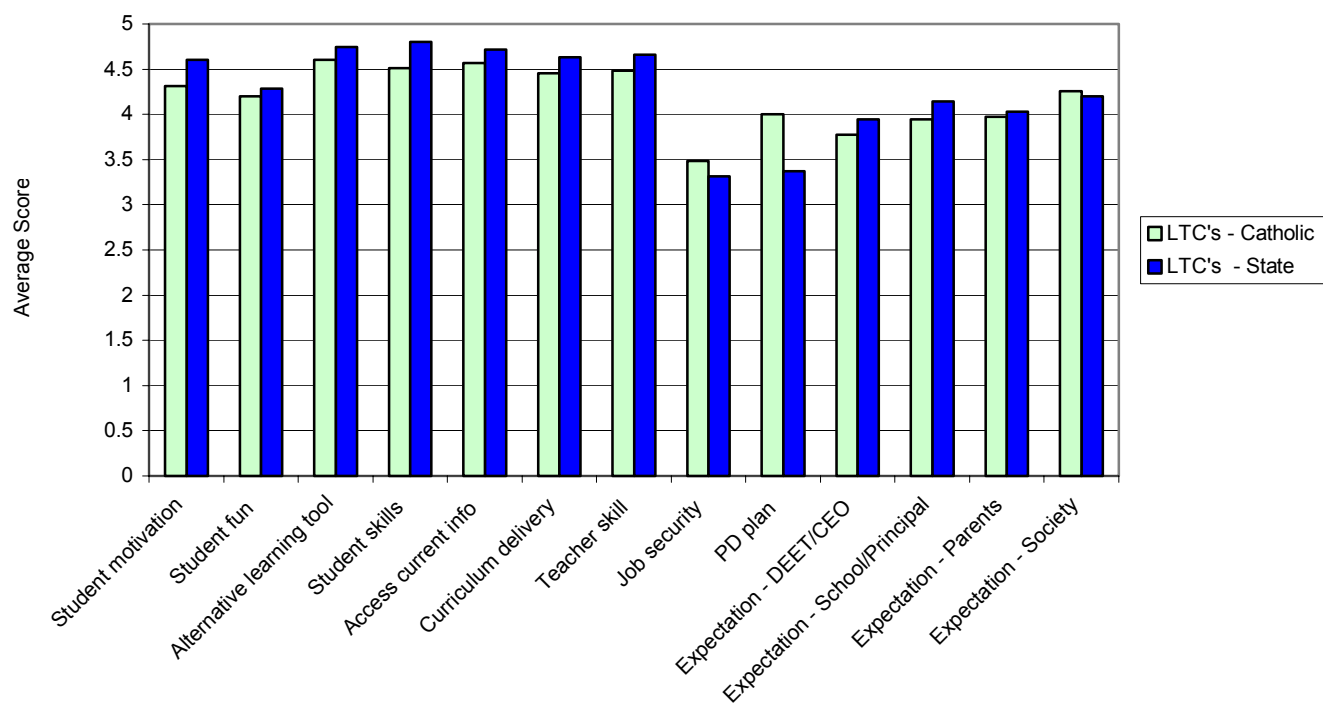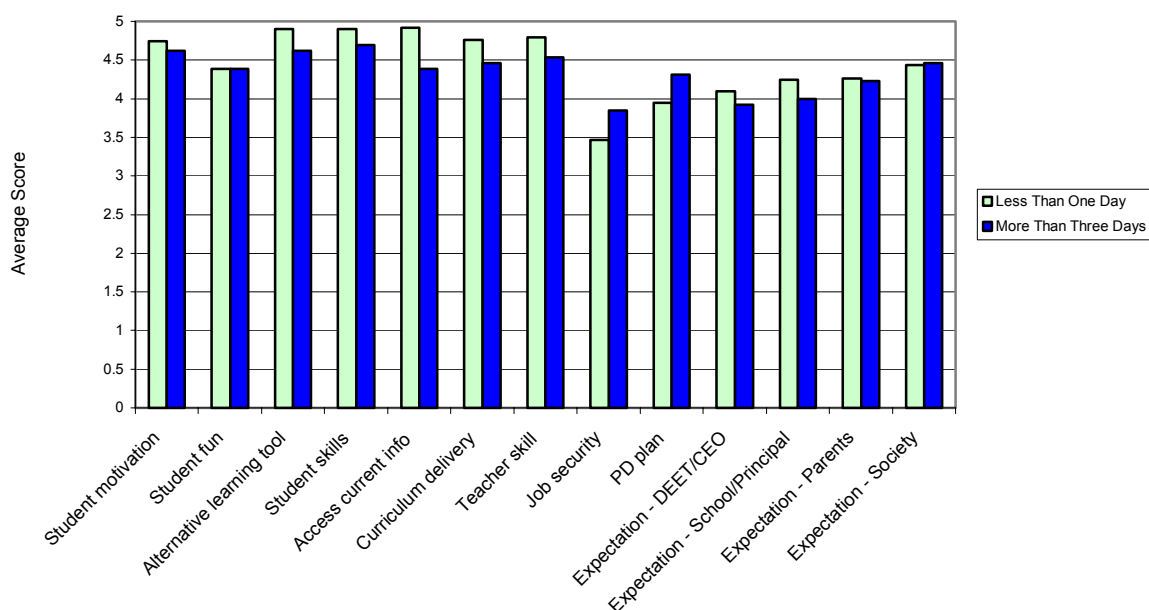
Figure F3. Comparison of Responses from Catholic and State Schools LT Coordinators to Section 1 of the Survey.
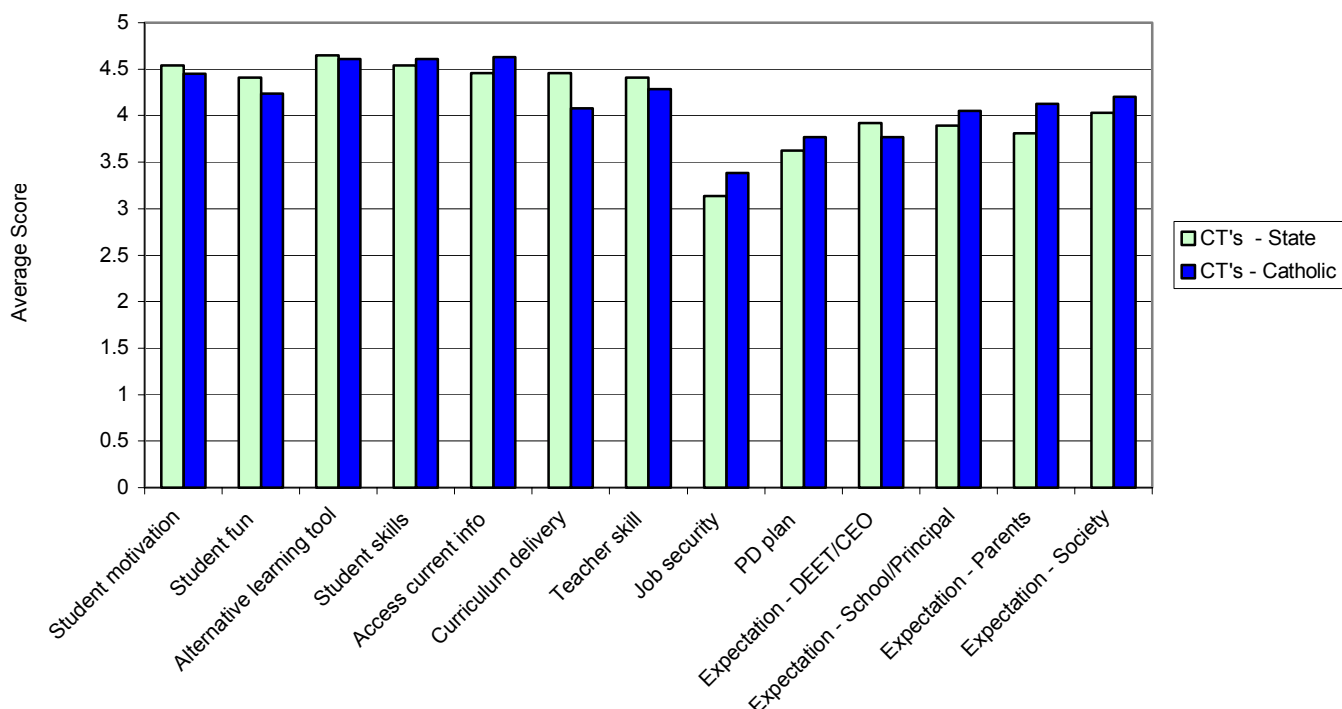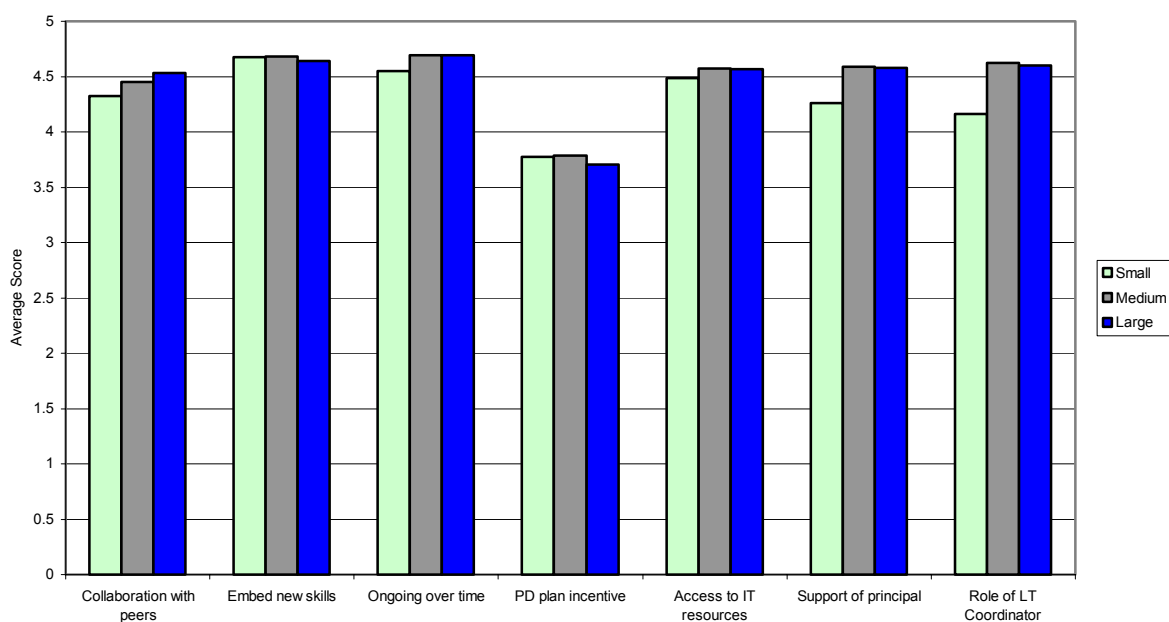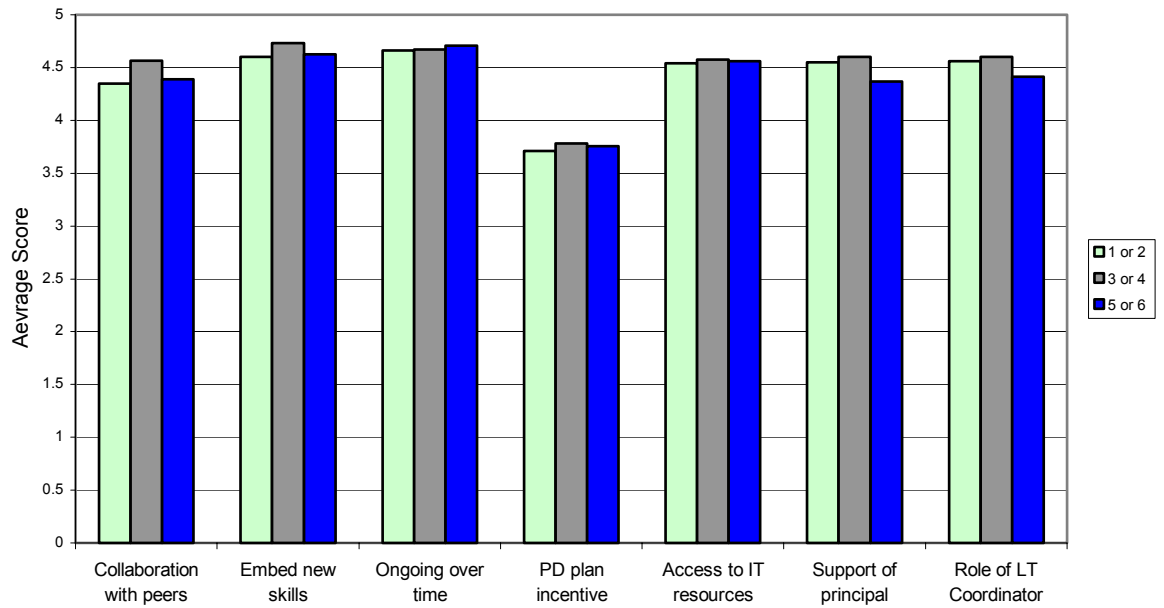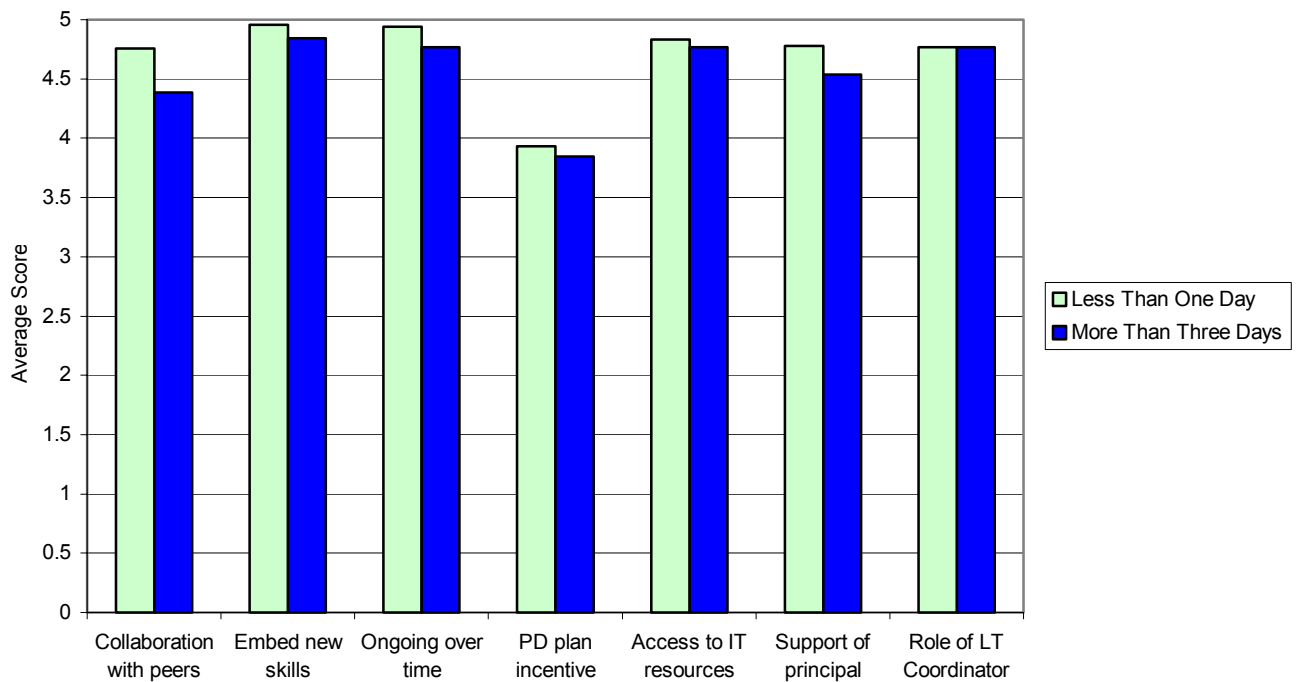

Figure F4. Comparison of Responses from Catholic and State Schools Classroom Teachers to Section 1 of the. Survey.
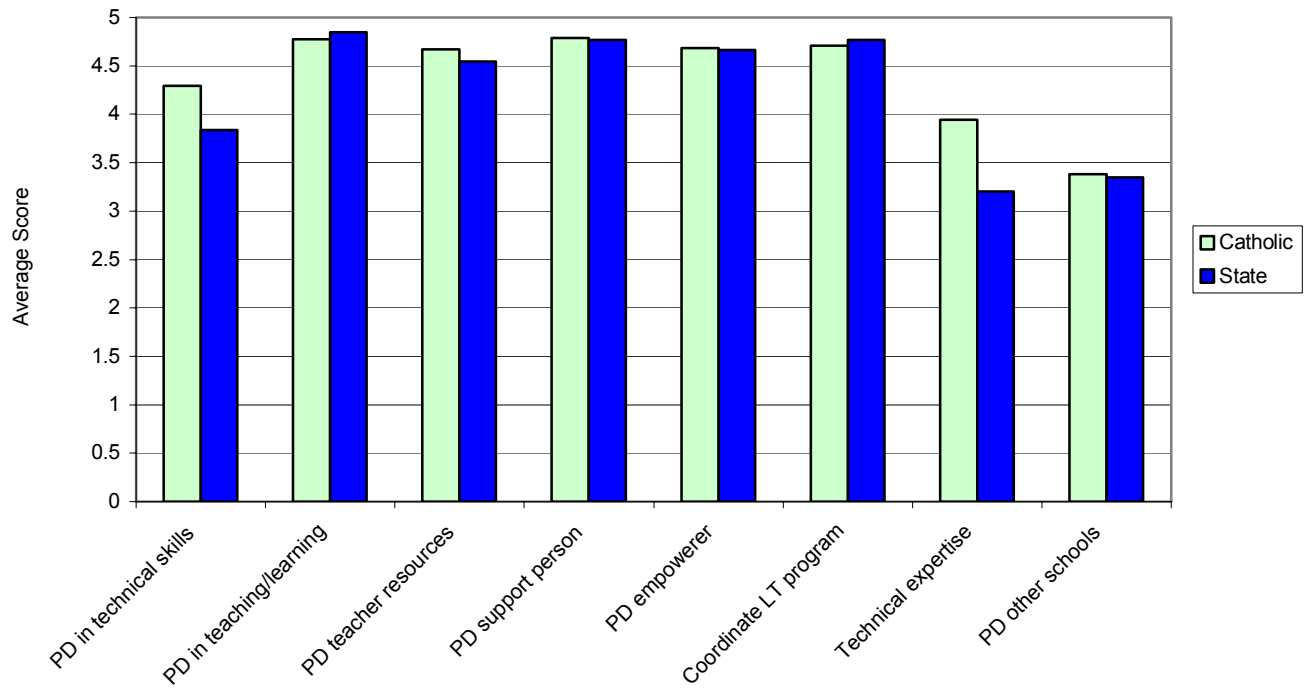
Figure F5.   Comparison of Responses to Section 1 of the Survey Related to the Length
of Time the LT Coordinator has for Coordination.

Figure F6.   Comparison of Responses to Section 2 of the Survey Related to the Size of
the School.

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Figure F7. Comparison of Responses to Section 2 of the Survey Related to the Number of Available Computers in the Classroom.

Figure F8. Comparison of Responses to Section 2 of the Survey Related to the Length of Time the LT Coordinator has for Coordination.

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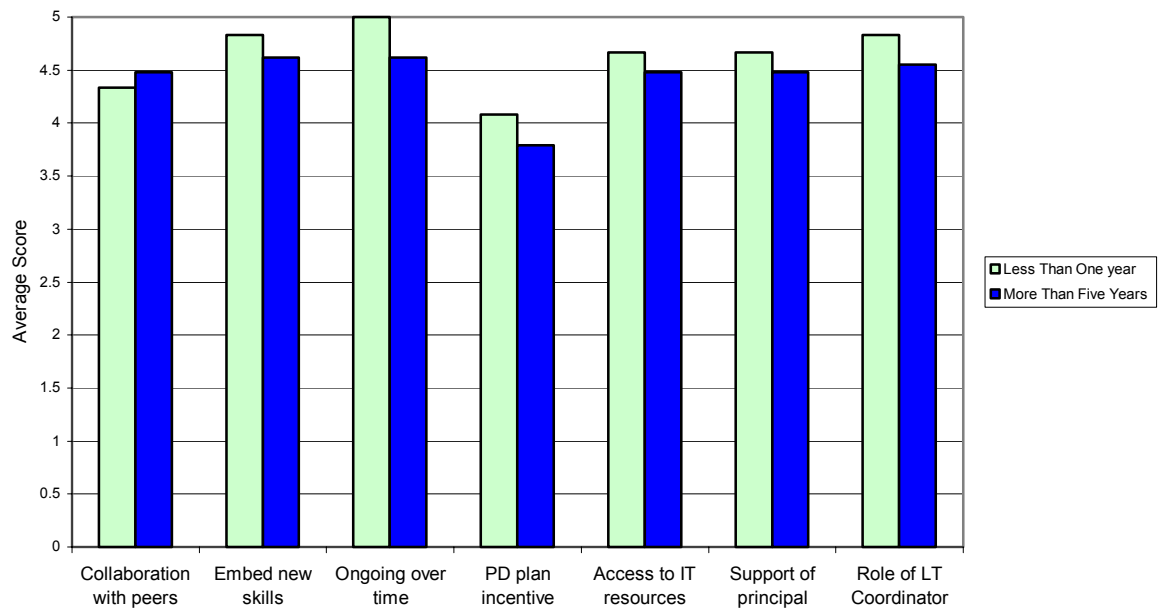
Figure F9.   Comparison of Responses to Section 2 of the Survey from Schools Using Computers for Different Lengths of Time.
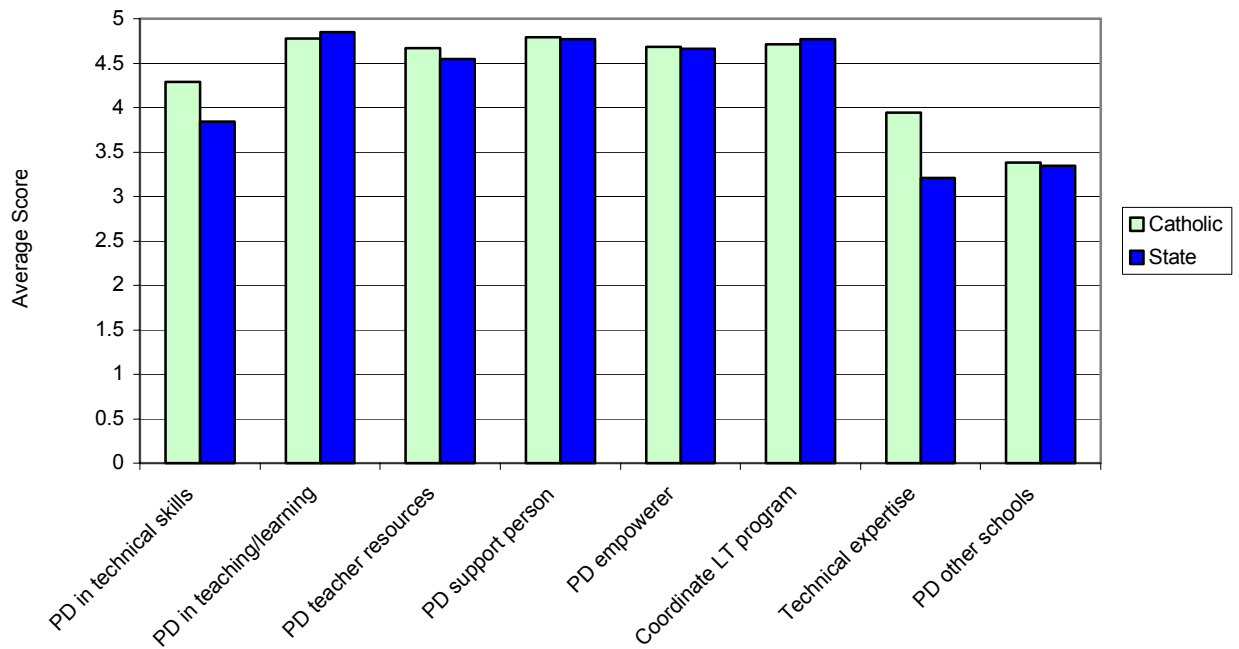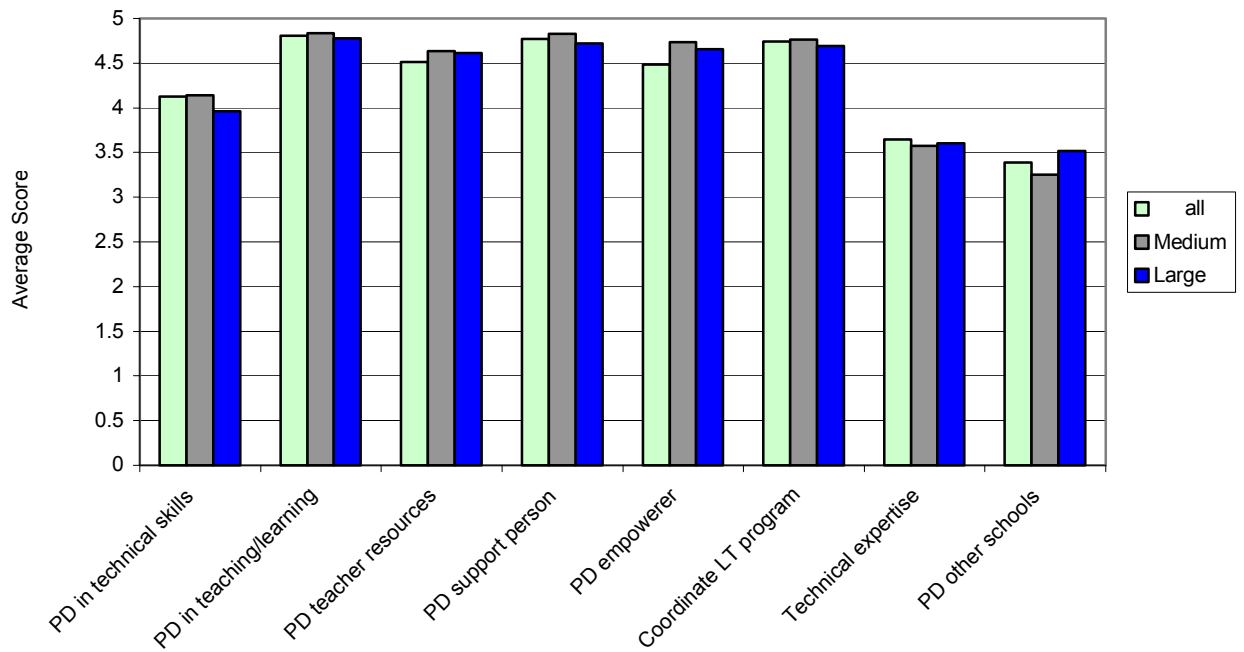

Figure F10.   Comparison of Responses to Section 3(a) of the Survey from State and Catholic Schools.
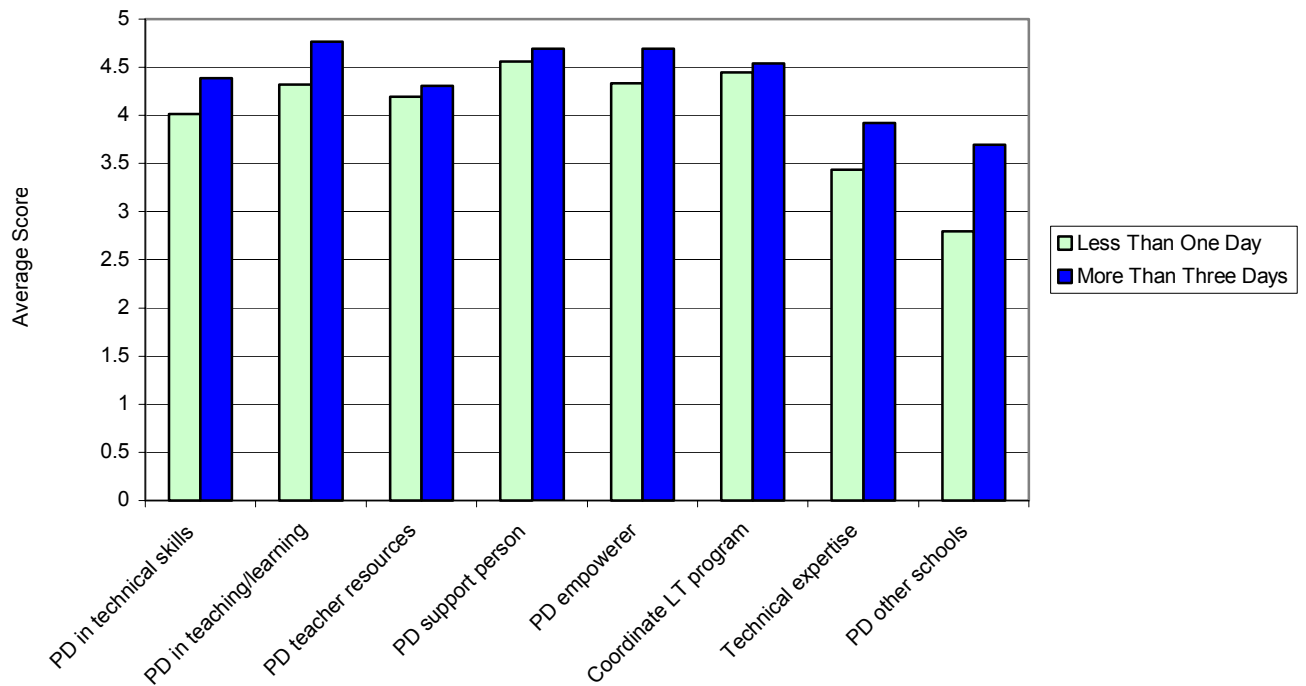
Figure F11. Comparison of Responses to Section 3(b) of the Survey from State and Catholic Schools.
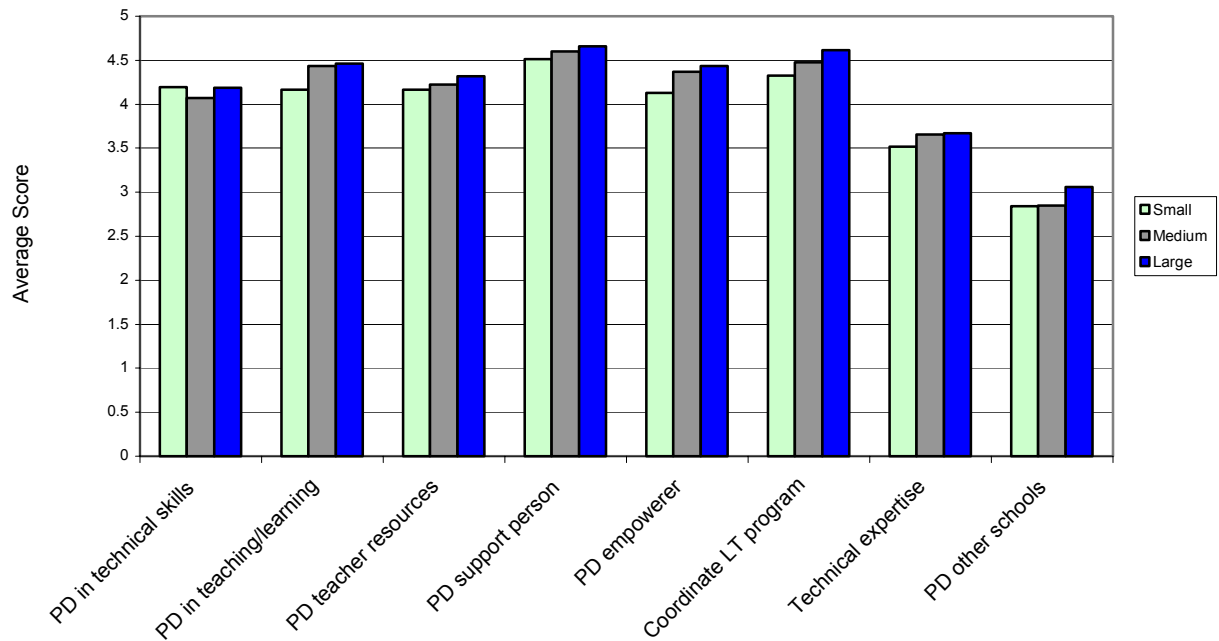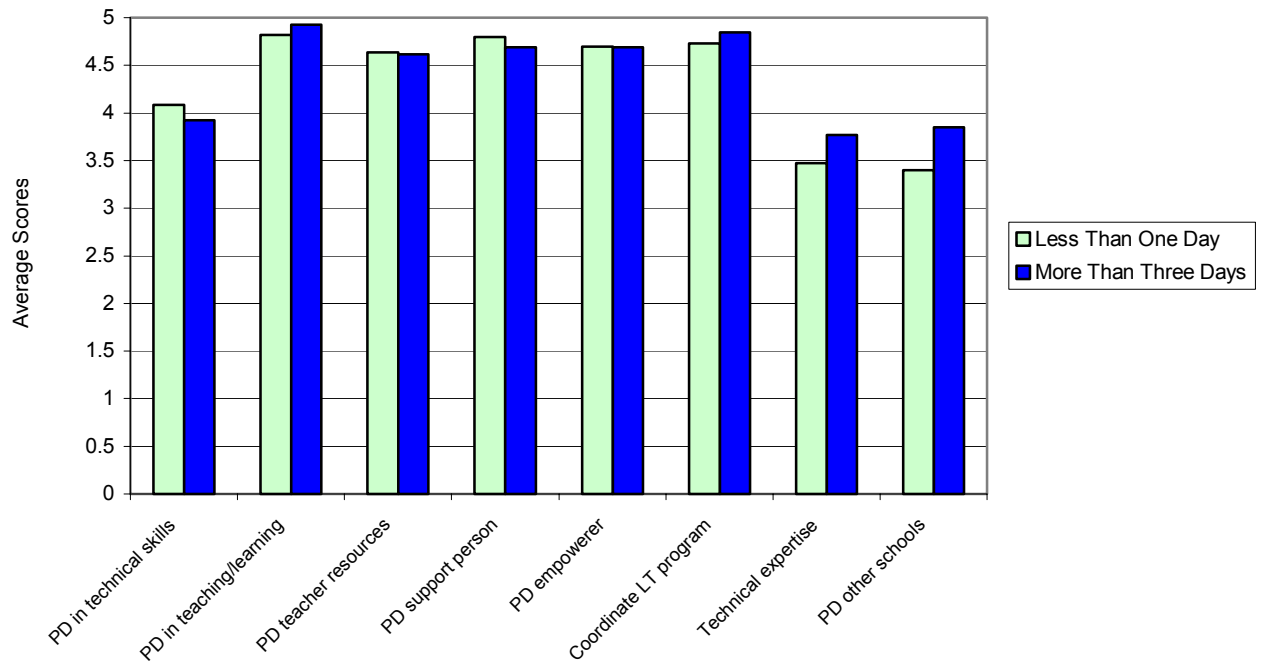

Figure F12. Comparison of Responses to Section 3(a) of the Survey Related to Demographic Data of School Size.
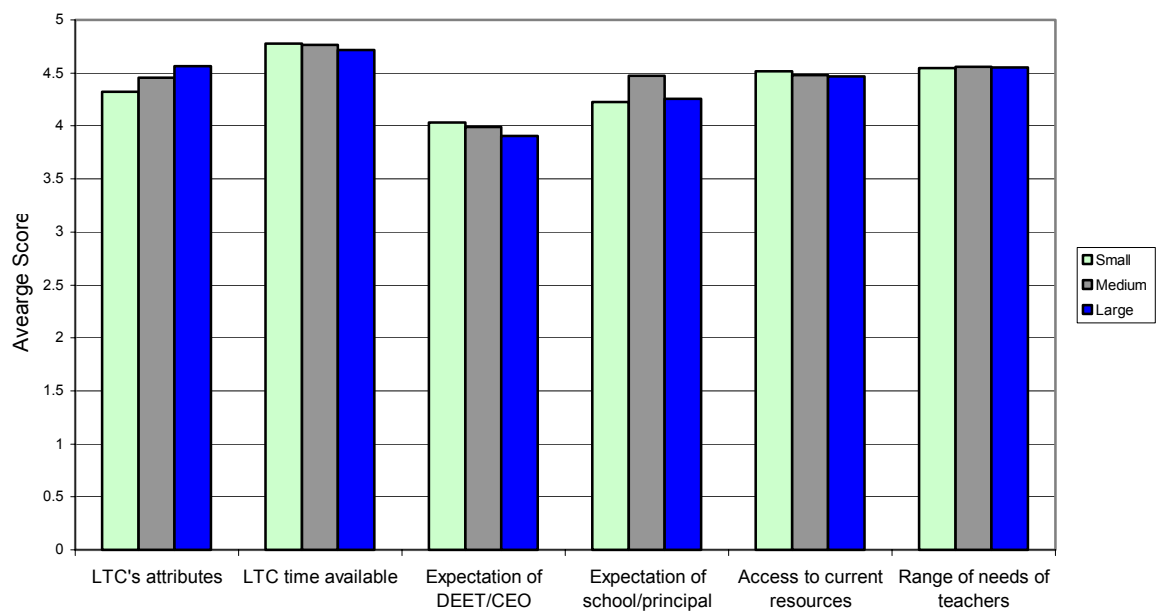
279

Figure F13. Comparison of Responses to Section 3(b) of the Survey Related to Demographic Data of School Size.
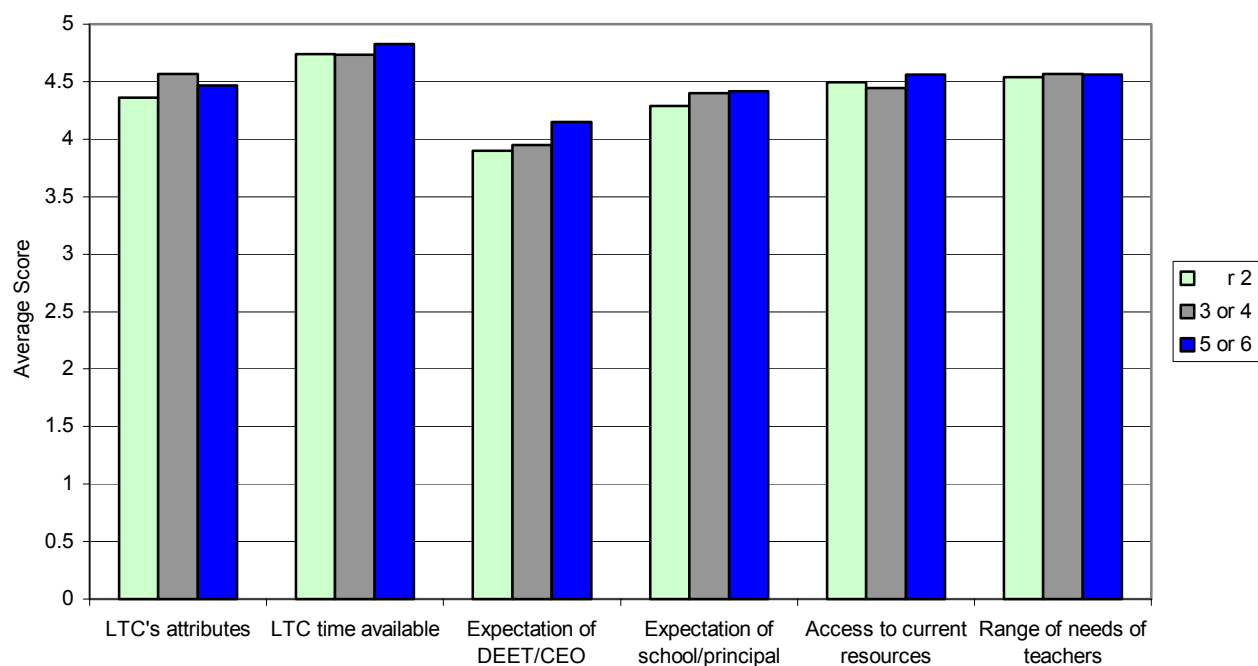

Figure F14. Comparison of Responses to Section 3(a) of the Survey Related to the Amount of Time Available to the LT Coordinator.
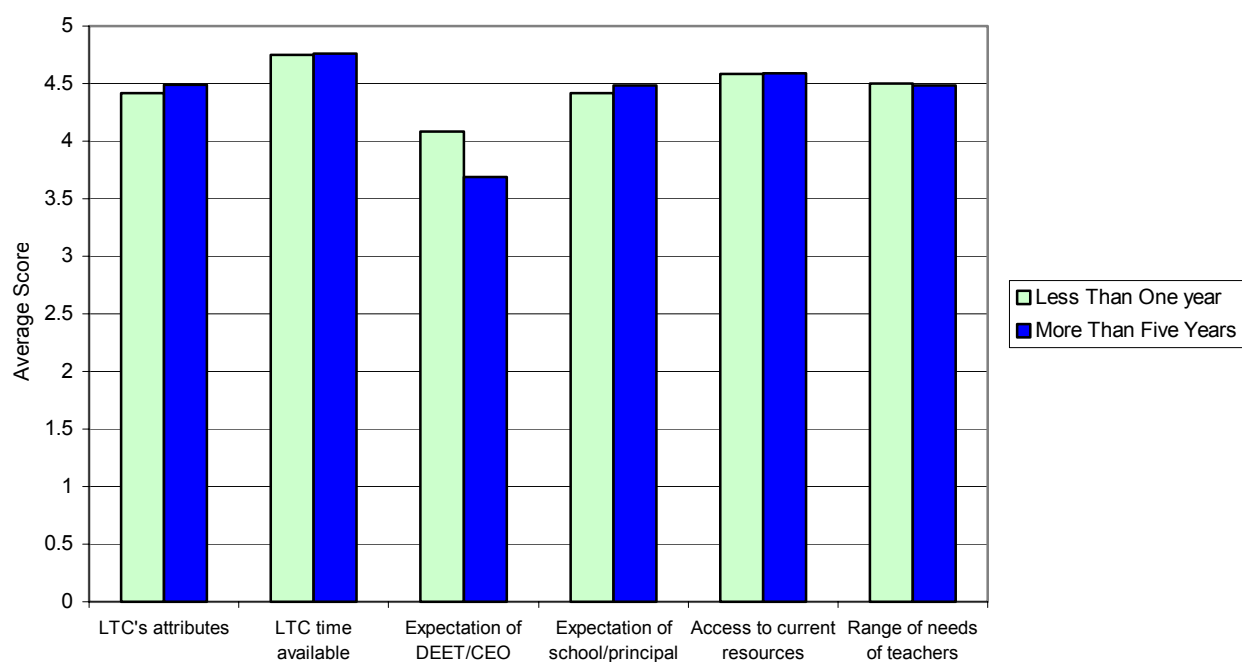
Figure F15. Comparison of Responses to Section 3(b) of the Survey Related to the Amount of Time Available to the LT Coordinator.

Figure F16. Comparison of Responses to Section 3(c) of the Survey Related to the Demographic Data of School Size.

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Figure F17.   Comparison of Responses to Section 3(c) of the Survey Related to the Number of Computers in the Classroom.

Figure F18.   Comparison of Responses to Section 3(c) of the Survey Related to the Length

of Time Computers have been used in the School.
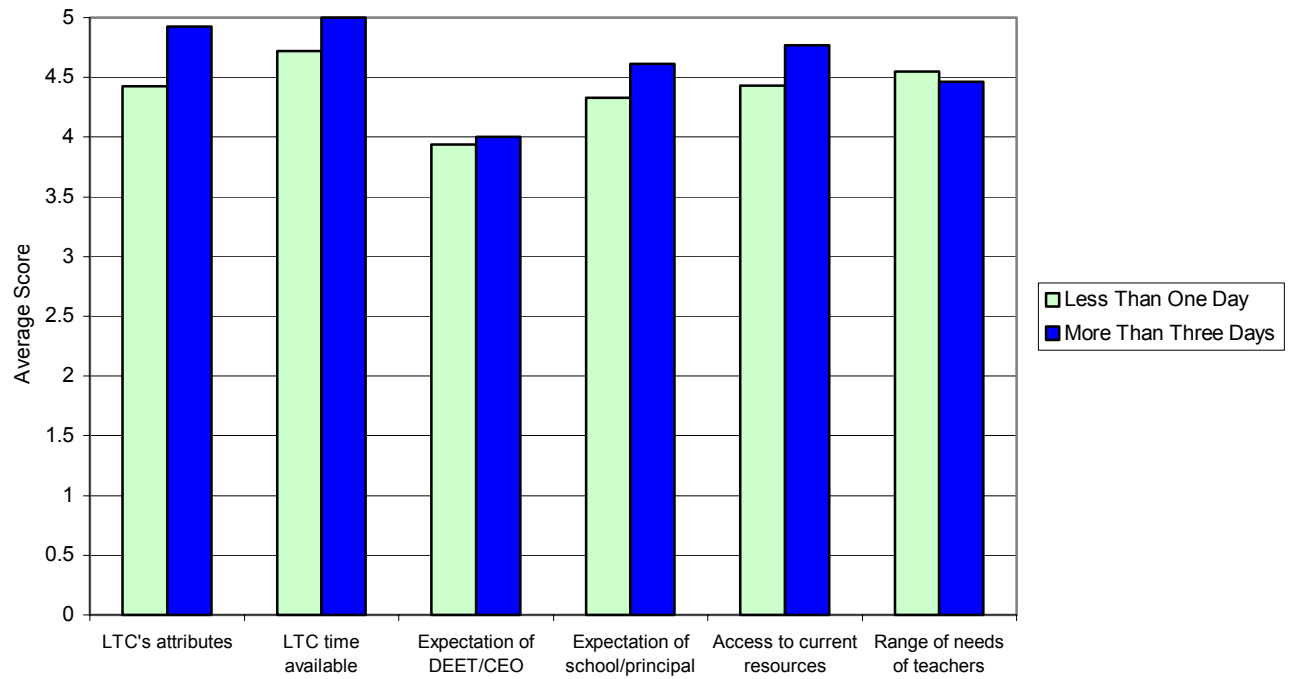
Figure F19. Comparison of Responses to Section 3(c) of the Survey Related to the Amount
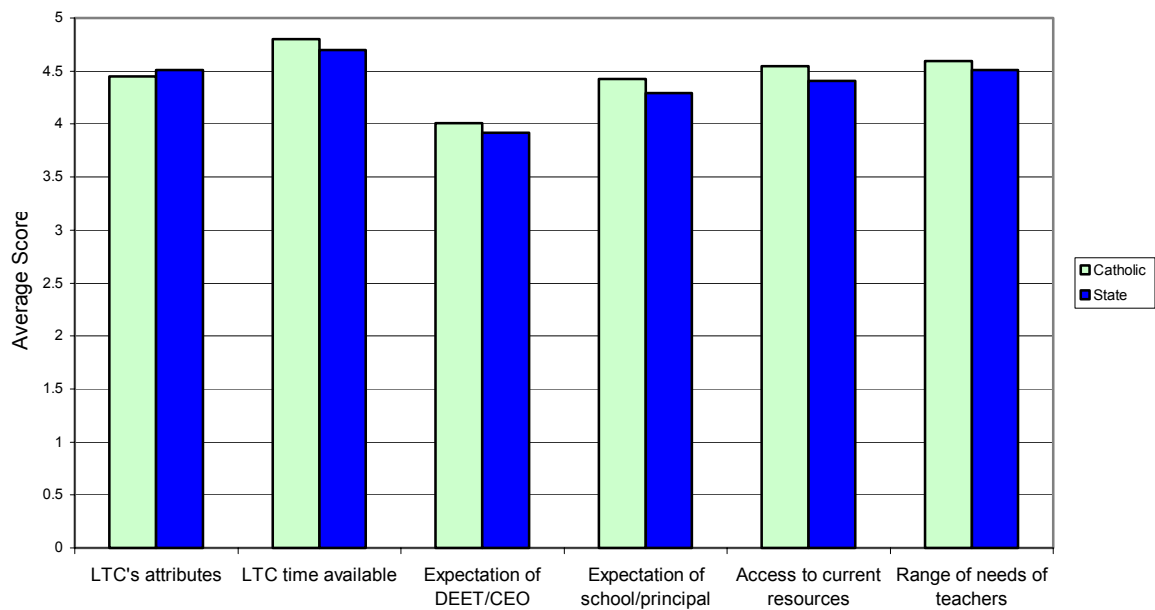
Figure F20. Comparison of Responses to Section 3(c) of the Survey from Catholic and State Schools.
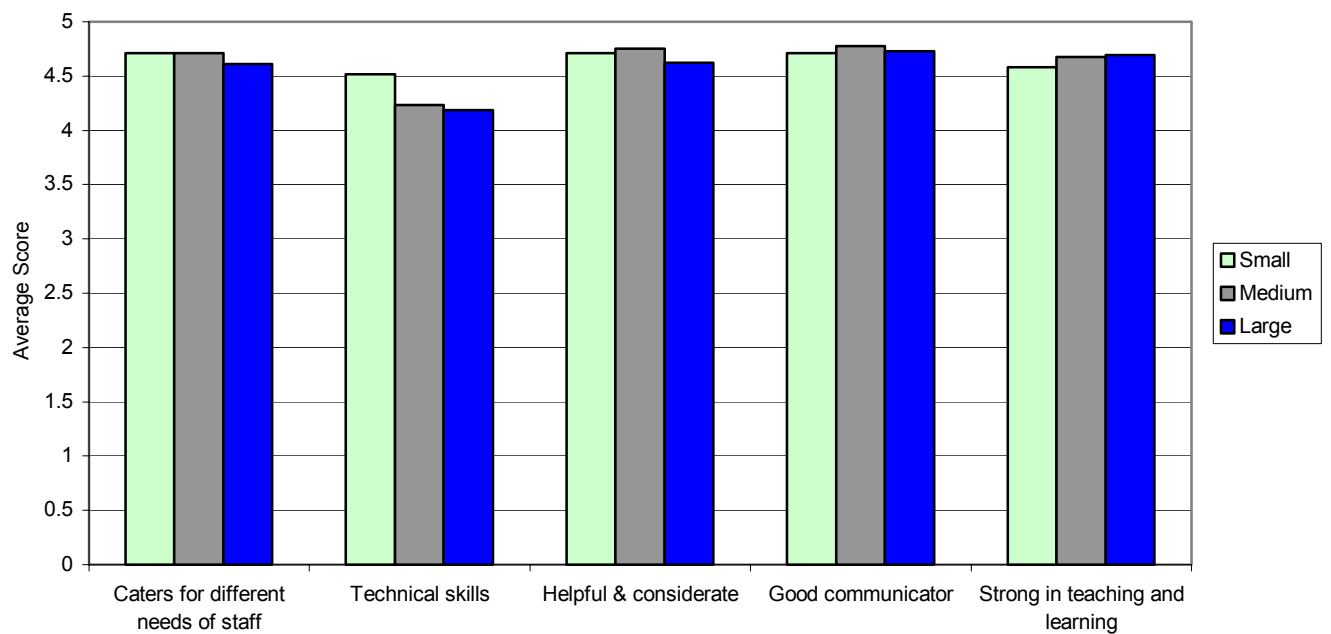
Figure F21. Comparison of Responses to Section 3(d) of the Survey Related to the

Demographic Data of School Size.

APPENDIX G

COPY OF ETHICS APPROVAL FROM THE HUMAN RESEARCH ETHICS COMMITTEE AND PARTICIPANTS' CONSENT FORMS

AUSTRALIAN CATHOLIC UNIVERSITY
Office of Research

University Research Projects Ethics Committee
Ethics Clearance for a Research Project - Approval Form

Principal Investigator/s (if staff):	1) Dr Phil Clarkson	**Campus:** Patrick
Co Investigator	2)	
Co Investigator	3)	
Researcher(s) (if student/s)	1) Mrs Margaret O'Donnell	**Campus:** Patrick

Ethics clearance has been provisionally extended / approved for the following project: The role of the Learning Technology Coordinator in the professional development of teachers as they intergrate technology in classroom practice.

for the period: 2nd May to 31st December 2002*

University Research Ethics Committee Register Number: V2000-30

subject to the following conditions as stipulated in the National Health and Medical Research Council (NHMRC) Statement on Human Experimentation and Supplementary Notes 1992:

    (i)   that principal investigators provide reports annually on the form supplied by the Institutional Ethics Committee, on matters including:
- . security of records;
- compliance with approved consent procedures and documentation;
- compliance with special conditions, and

    (ii)   as a condition of approval of the research protocol, require that investigators report immediately anything which might affect ethical acceptance of the protocol, including:
- adverse effects on participants;
- proposed changes in the protocol, and/or
- unforeseen events that might affect continued ethical acceptability of the project.

and subject to clarification of the following to the University Research Projects Ethics Committee:

1. Information Letters to Participants
   - Correct tittle of URPEC to University Human Research Ethics Committee on forms.
   - Department of Education should be School
   - Amend line beginning "The policy of the University..." to "You are free to withdraw..."
   - First line of all letters amend "for" to "at"
2. Other
   - Box 6.1 (a) incorresctly ticked -- the respondents are not anonymous in the interview phase.

The Committee granted ethics approval for the project, subject to the above matters being addressed by the Principal Investigator and approved by the local Deputy Chair. The local Administrative Officer should confirm that the *Letter to the Participants* is complete and that the contact details are correct.

*It is important to note :"Ethics approval may be granted for up to one year at a time. Renewal of approval beyond one year is covered by the Annual Review Form"

A Final Report Form will need to be completed and submitted to the URPEC within one month of completion of the project
OR
An Annual Progress Report Form will need to be completed and submitted to the URPEC within one month of the anniversary date of approval.

Please sign, date and return this form (with any additional information or material, if requested by the Committee) to the Administrative Officer (Research) to whom you submitted your application, for approval to be confirmed.

Signed: .... Date: ...2/5/2000...

Administrative Officer (Research)

(To be completed by the Principal Investigator, or Student and Supervisor, as appropriate.)

The date when I/we expect to commence contact with human participants or access their records is: ....

I/We hereby declare that I/We am/are aware of the conditions governing research involving human participants as set out in the Research Projects Ethics Committee's *Guidelines and Instructions for Researchers/Students* and agree to the conditions stated above.

Signed: .... Date: ...5/3/00...

(Principal Investigator (if staff) or Supervisor, as appropriate)

Signed: .... Date: ...10. 5. 00...

(Researcher (if student))

OR/E30/974

5.3   Disposal of data

How will the data be disposed of after complying with the requirement to retain data for a minimum of 5 years (e.g. erasing of tapes, shredding of questionnaires, etc.)?

All tapes will be erased. Information on computer will be deleted. Survey will be shredded.

5.4   Dissemination of Results

Note: Participants must be advised in the Information Letter and on the Informed Consent Form that results from the study may appear as aggregated data in publications or be provided to other researchers in a form that does not identify them in any way.

Do you intend to inform the participants of the possible use of the results of the study?

☑ YES   ❏ NO (If "NO", please explain)

SECTION 6:   ANONYMITY OF PARTICIPANTS AND CONFIDENTIALITY OF THEIR RESPONSES

6.1   **Anonymity** is defined as the identity of the respondent not being known in any way to anyone, including the researcher.   *Note: All research must comply with State and Commonwealth Government Freedom of Information and Privacy Legislation.*

(a)   Will participants be anonymous? ❏ YES   ☑ NO If "NO", include a copy of the consent form which the participants will be asked to sign. *(Note, the Informed Consent Form must be signed by the researcher and the respondent in duplicate, one copy for the respondent to keep and one copy for the researcher to keep.   This should be stated on the Consent Form.)*

(b)   If the respondents will be anonymous, indicate how you will ensure anonymity.

All respondents will be given a code number. The number only will be used to identify particular responses.

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Australian Catholic University

INFORMED CONSENT FORM

Research Project: The role of the Learning Technology Coordinator in the professional development of teachers as they integrate technology into classroom practice

Name of Researcher: Margaret O'Donnell

I .... (name of participant) have read and understood the information provided in the Letter to the Participants and any questions I have asked have been answered to my satisfaction. I agree to participate in this activity, realising that I can withdraw at any time.

I agree that the research data collected for the study may be published or provided to other researchers in a form that does not identify me or my school in any way.

Name of participant: .... (Block letters)

Signature .... Date: ....

Name of Researcher: MARGARET O'DONNELL

Signature ... *J.M.O'Donnell* .... Date: ... *18. 6. 00*

Australian Catholic University

Research Project: The role of the Learning Technology Coordinator in the professional development of teachers as they integrate technology into classroom practice.

Name of Researcher: Margaret O'Donnell

I .... (name of participant) have read and understood the information provided in the Letter to the Participants and any questions I have asked have been answered to my satisfaction. I agree to participate in this activity, realising that I can withdraw at any time.

I agree that the research data collected for the study may be published or provided to other researchers in a form that does not identify me or my school in any way.

Name of participant: .... (Block letters)

Signature .... Date: ....

Name of Researcher: MARGARET O'DONNELL

Signature ...McDonnell...   Date: ...18.6, 00...

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