New Zealand primary teachers’ ICT professional development and classroom practices

by

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I am the author of the thesis entitled: New Zealand Primary Teachers’ ICT Professional Development and Classroom Practices

submitted for the degree of Doctor of Philosophy (Education)

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ABSTRACT

This thesis reports on a study of the impact of information and communications technology (ICT)-focused professional development on the classroom practices of fifteen primary school teachers in one geographical area in New Zealand. The participating teachers undertook the three-year ICT Professional Development School Clusters programme, an initiative of the New Zealand Ministry of Education. This current study reported on the professional development activities that were undertaken by, and the opportunities afforded to, the teachers in the use of ICT in their classroom programme. The focus of my study was on the teachers’ perspectives of how the professional development impacted on their classroom practices, and the extent to which their classroom practices had changed over a period of eight years. The ICT professional development programme is described in the context of the literature and on teachers’ professional development more broadly.

This project that this thesis reports is based on interview data collected over a period of eight years. The research participants were primary school teachers of Years 1 to 8 (students aged five to thirteen years), from four clusters comprised of a variety of urban, suburban, semi-rural, and rural schools.

The thesis presents the teachers’ stories of the impact the integration of practical skills, theories and strategies, presented in the ICT Professional Development School Clusters programme, had on their classroom practices. The fifteen teachers were interviewed at the end of the professional development programme and then one year later. Twelve of the fifteen participants were interviewed again eight years later. Data collected from the three sets of interviews were analysed using a thematic analysis approach. Narrative research methods, which allow people to reflect on their experiences and to give an insight into the sense people make of their lived experiences, were used.

This thesis contributes to knowledge about the impact of professional development on teachers’ utilisation of ICT in their teaching and learning programmes, and the changes teachers make in their pedagogical knowledge as reflected in their classroom practices. The study reported on in this thesis, differs from the main body
ABSTRACT

of literature focusing on school-based teacher professional development in that the teachers’ voices and perspectives are privileged. The interpretation and narration of teachers’ experiences of professional development in terms of their involvement and the opportunities provided as part of a professional learning community are presented and discussed.

From a theoretical perspective, the research contributes further insight into the use of Narrative Inquiry for educational research, particularly in regards to temporality (change over time). Specifically, it relates to allowing teachers participating in professional development to have the ‘voice’ of their experiences, and the impact the professional development in utilising ICT has had on their classroom practices, to be heard.

The findings presented in the thesis, indicate that teachers make changes in their classroom practice in accordance with appreciating the need for change, changes in their pedagogical thinking, their beliefs about teaching and learning, overcoming barriers to, and their skills and confidence in using ICT in the classroom. There were varied opinions on the use of ICT in the classroom depending on the teachers’ classroom levels – Junior, Middle, or Senior. The factors that influence the extent to which teachers’ existing practices change or are modified are presented and discussed. The significance of the findings for New Zealand further contribute to the literature on the use of ICT in primary teachers’ classroom practices and approaches to professional development.
Board of Trustees – term used in New Zealand for a school council or school board.

Decile rating – rating scale of schools based on the socio-economic level of the community surrounding the school that determines the amount of funding a school receives from the Ministry of Education; scale from 1 (low socio-economic) to 10 (high socio-economic).

Digital literacy – the ability to use digital technology, communication tools, or networks to locate, evaluate, use and create information.

e-Learning – there are two dimensions to e-Learning: 1) learning to use ICT effectively (developing the knowledge, skills and attitudes to engage in e-Learning meaningfully), and 2) learning through ICT (when ICT is used to promote engagement in learning and provide opportunities to build on their information and critical thinking skills) (ERO, 2005, p. 4).

ICT – Information and Communication Technology/ies; the learning tools and infrastructure that support e-Learning (ERO, 2005, p.4). Examples of the types of ICT that are referred to by the term ‘ICT’ in this study include computers, digital still and video cameras, data projectors, interactive whiteboards, and tablets.

ICT literacy – the set of abilities that enables learners to access, manage, integrate, evaluate, communicate and create diverse information in an ethical way, and to meaningfully engage with a range of ICT-mediated communities.

ICTPD – Information and Communication Technologies Professional Development School Clusters programme developed and run by the Ministry of Education 1999 – 2012. Both the abbreviations ‘ICTPD’ and ‘ICT PD’ are used in reference to the programme in the various reports to the New Zealand Ministry of Education. In this thesis, the abbreviation ‘ICTPD’ is used.
Information literacy – the lifelong ability to locate, evaluate, use and create information.

Inquiry learning – an approach to or model of conducting an investigation or ‘inquiry’ into an area of interest by students that follows a series of steps: immersion, presentation of learning.

Integrated (State) School – used to be private and have now become part of the state system. They teach the New Zealand Curriculum but keep their own special character (usually a philosophical or religious belief) as part of their school programme. State-integrated schools receive the same government funding for each student as other state schools but their buildings and land are privately owned, so they usually charge compulsory fees called “attendance dues” to meet property costs (www.minedu.govt.nz).

Junior School – Years 0 to 2 (Grade 1 to 3) of primary (elementary) school; children aged five years old to seven years old.

Laptops for Teachers (TELA) Scheme – provides all permanent full-time and part-time (up to 0.8) teachers the opportunity to lease a laptop for a three-year period, with government funding meeting most or all of the leasing cost and the individual teachers or their schools meeting any shortfall (Cowie et al., 2010). Schools are expected to provide professional development for using the laptops out of their professional development funding available through their operating grant.

Learning management system (LMS) – a software package to manage and deliver learning content and resources to students, usually comprising a variety of applications amalgamated as an ‘integrated’ package and use within an online learning environment (OLE).

Middle School – Years 3 to 5 (Grade 4 to 6) of primary (elementary) school; children aged eight years old to ten years old.

Primary (elementary) School – generally cater for students aged between 0-8 (full primary) although some only go up to year 6 (contributing schools).
Programme and program – in this thesis the word ‘programme’ (commonly used in New Zealand) is used to describe a plan of what is to be done in order to achieve a specific result while ‘program’ is used to describe a set of instructions that tell a computer what to do, i.e., a software program.

Senior School – Years 6 to 8 (Grade 7 to 9) of primary (elementary) school; children aged eleven years old to thirteen years old.

Virtual learning network (VLN) – a web-based brokerage service that was established by the New Zealand Ministry of Education to facilitate the delivery of courses provided by education organisations (for example, schools) using range of applications, including video conferencing.
CHAPTER ONE: INTRODUCTION

1.1 Overview
The use of information and communication technologies (ICT) in primary school classrooms is not new and has, at times, been controversial (see Collins & Halverson, 2009; Cuban, 1993, 2001, 2015; Stoll, 1999). From the use of slates in the late 1800s to the use of innovations such as ballpoint pens, slide projectors, calculators, and now tablet technology, ICT have always been a part of classroom teaching and learning programmes.

The work of Walter Ong and David Hamilton is germane here. Hamilton (1990) suggests that what we call technologies are, in fact, actually tools, and asserts that a tool does not become a technology until it has human input. For example, a pen or a computer does not become a technology until the teacher or the student uses it as part of the teaching and learning programme. Ong (2012) views writing as the technology, with use of a pen or computer as the means of recording the writing. Hamilton (1990) cautions, “it does not follow that the educational potential of a tool is always realised by the pedagogic context of its deployment” (p. 76). The pedagogic context that the tool is used in will determine whether it reaffirms prior experiences and current practices or it is transformative in nature (Hamilton, 1990).

The use of digital ICT has become more prevalent in New Zealand primary classrooms (Williamson-Leadley & Ingram, 2013). Holmes, Gardner, and Galanouli (2007) put forward that, “ICT have arguably constituted the most prevailing innovation ever to be imposed on education” (p. 390). The use of the word imposed is deliberate by Holmes et al. (2007) and this point could also be argued with regard to education in New Zealand. In this thesis, the author explores the extent to which the use of ICT is reported by teachers and their perspectives of the impact of these tools and technologies on their classroom practices.

This thesis reports on the experiences of fifteen primary teachers after they participated in a three-year ICT Professional Development (ICTPD) School Clusters programme in New Zealand. The aim of the study was to present and analyse the
narratives of these teachers, and thereby describe their perspectives of professional
development for integrating ICT into the classroom and their perspectives of the
impact this professional development had on their classroom practices. These
perspectives contributed a detailed understanding of the extent to which participation
in cluster-based professional development on the educational uses of ICT affected
fifteen primary teachers’ classroom practices, from their point of view. The fifteen
teachers were interviewed at the end of the ICTPD programme in 2006, then one
year later in 2007, and then twelve of the original fifteen teachers were interviewed
again in 2014.

During the analysis and writing up phase of this study, a series of catastrophic
earthquakes occurred in Christchurch. These had a profound impact on my personal
and professional life as my home was severely damaged (and was later demolished),
the school where I taught had also been badly damaged, and the majority of my
students were traumatised. During the time that this series of four major earthquakes
and over 12,000 aftershocks occurred, and the aftermath of trying to return to some
sort of normalcy at home and at school, work on my thesis was put on hold. By the
time I returned to my writing, the data were dated. It was decided to re-interview the
study participants.

In the latter part of 2014, twelve of the original fifteen study participants were taken
through a reflective interview to find out enduring effects of the professional
development and where the teachers were positioned. The contemporary data gave a
longitudinal aspect to the study, which was not originally intended, and enhanced the
overall study.

This chapter introduces the thesis and explains the rationale for undertaking this
research. The catalysts for the study, the context in which the study occurred, the
research questions, the theoretical perspectives, the significance of the research, and
the scope and limitations of the research are previewed sequentially. Finally, the
thesis structure is described.
1.2 Catalysts for the study
This study commenced in 2006 when I was a research officer for CORE Education Ltd, a not-for-profit research organisation. All of the projects on which I worked involved the use of ICT in primary and secondary school settings. One of the projects researched was the ICTPD School Clusters programme. I was part of the team that conducted the various surveys (baseline, online, and end-of-project) with the participants. My responsibilities included analysing data from the surveys, reporting the main findings to Cluster Facilitators/Project Directors of individual clusters, and reporting the national trends to the Ministry of Education.

I was also a primary school teacher with twenty years’ experience, including as an ICT resource teacher and deputy principal, with school-wide responsibility for ICT. I have been responsible for facilitating professional development for primary school teaching staff. I have often reflected on the programmes I delivered and wondered whether these professional development sessions made any long-term difference in the professional knowledge/pedagogical views or classroom practices of the staff.

I have been involved in three different ICTPD programme clusters as a person ‘on the fringe’ – not completely involved in, but not wholly removed from, the programme. This made me an ‘outsider’ as I was not in the professional development programme as a ‘true’ participant, which gave me a different perspective on the programme. This different perspective became evident when the research team, National Facilitation team, and a Ministry of Education official discussed the development of the online survey instrument; I was able to look at the wording of the questions proposed not only from a researcher’s viewpoint, but also from that of a teacher-participant.

Having been part of the senior management team of a primary school, I was also interested to know whether the professional development programme effectively reflected the policies/ethos of the Board of Trustees (the term used in New Zealand for a school council or school board), senior management and the majority of the staff. Although the Ministry of Education provided funding for the clusters, the ICTPD programme still took a large proportion of a school’s professional
development budget yet the professional development, at times, seemed to be more done ‘to’ teachers, rather than ‘with’ and ‘for’ teachers.

From my work on the analysis of the ICTPD School Clusters programme survey data, I became curious about teachers’ answers to the survey question (see Question 5 in Survey Questionnaire in Appendix 4), “To what extent have your classroom practices changed as a result of your participation in the ICTPD programme?” Teachers could choose from the following responses:

- Not at all
- Very little
- To some extent
- To a large extent
- Completely

The question I asked myself was why, after three years of participating in a professional development programme, did teachers answer the above question as they did? What were the reasons behind a teacher in a cluster stating they had not changed their practices at all, while another teacher in the same cluster responded that they had changed their practices completely? Was it because they had a different starting point and, therefore, their change in classroom practices was not as extensive? Aspects such as addressing the individual needs of the participants, what professional development was undertaken, and what happened after the end of the ICTPD programme made me question how primary teachers viewed the professional development they had undertaken. What happened for the teachers in light of their responses to this question? As a researcher, my role was to look at and report the national trends, which was done for the reports to the Ministry of Education, *ICTPD Through Three Lenses: An Evaluation of the ICTPD School Clusters Programme 2001 – 2003* (Ham, Moeau, Williamson-Leadley, Toubat & Winter, 2004) and the evaluation report on the 2002 – 2004 cohort (Ham, Toubat & Williamson-Leadley, 2005). However, it was the stories behind the individual answers that led me to conduct the research, presented in this thesis, with fifteen of the primary school teachers involved in the ICTPD 2004-2006 cohort.
1.3 New Zealand historical context and background

The use of computers in New Zealand classrooms was first introduced in the early 1970s. From this point to the present, the New Zealand Government has provided some funding, through various initiatives such as the TELA Laptop for Teachers scheme (Cowie, Jones, Harlow, Forret, McGee, & Miller, 2010), towards schools purchasing equipment for use by teachers and students. The history of the introduction of computers and later ICT into New Zealand schools is documented in the 1991 document, *A Study of Computers in New Zealand Schools*’ (Nightingale & Chamberlain, 1991), with further information provided over the years in reports by various agencies, such as the Education Review Office, government press releases, and commentary in the media.

In 1998, the New Zealand Ministry of Education announced its intention to fund an initiative for clusters of schools to undertake professional development in the area of integrating ICT into classroom teaching and learning programmes. The clusters of schools consisted of groups of two to (approximately) ten schools that could be similar or diverse in their geographic location (urban, suburban or rural), number of staff, and type of school (primary [elementary], secondary, area or special character). The schools involved were also diverse as they represented schools from Decile 1 (low socio-economic community) to Decile 10 (high socio-economic community).

In 1999, 23 New Zealand-wide clusters began their three-year ICTPD School Clusters programme. Each cluster had a project director, a facilitator or group of facilitators, and the staff of the schools to whom the professional development programme was to be delivered. Individual clusters were able to develop or utilise a professional development programme model that would allow them to address the needs of their particular staff. No particular professional development model had to be used, and the clusters were allowed to use an existing model or create a new one that would best serve their needs. Each cluster was accountable for their professional development programme through a series of milestone reports at set dates throughout their three-year programme.

In order to examine the effectiveness of the programmes overall and to give indications of national trends, the research of the ICTPD School Clusters programme
was contracted to an independent agency by the Ministry of Education. This independent research was carried out initially by the Christchurch College of Education, and then contracted to Ultralab South Ltd (now known as CORE Education Ltd). Primary and secondary school teachers from throughout New Zealand were organised into geographic clusters of schools, and participated in six surveys over the three-year period they were involved in the ICTPD programme. They completed a baseline survey at the beginning of the three-year period to establish their individual and collective needs and their preferences for professional development session times and types of activities. During the three years, four online surveys were also completed at set time points (starting at the end of the first year and then approximately every six months). Just prior to the end of the programme, cluster participants completed an end-of-project survey. In this final survey, teachers were asked to answer questions about the ICTPD programme itself and the outcomes and effects of participating in the programme.

The survey results were then collated, analysed and reported for each cluster, as well as the collective results for all of the clusters involved in the 2004 – 2006 cohort. As noted earlier, the recurring question for me was, “Why had teachers responded as they had to the question as to the extent their classroom practices had changed?” After three years of taking part in a professional development programme, why had some teachers answered that their classroom practices had not changed at all while others had changed completely? Were the teachers who answered, ‘Not at all’ already at that stage of their professional development or had they found that nothing presented in the professional development programme “struck a chord” (Holmes et al., 2007, p. 389) with them? Were the teachers who answered that the ICTPD programme changed their classroom programmes, ‘Completely’ ready for a change or found that what was presented in the programme worked well for them? What happened to the teachers who still perceived they had needs or lacked confidence to integrate the ideas and skills presented in the professional development programme? What follow-up happened for the participants in the year(s) subsequent to the conclusion of the ICTPD programme? Were these teachers ‘left to their own devices’ for continued professional development in using ICT as the emphasis for professional development for the school shifted? While the reports to the individual cluster facilitators and the collated report to the Ministry of Education on the end-of-project survey gave the overall cluster or national trends respectively, the above
questions remained unanswered. The subsequent interviews in 2014 afforded me the opportunity to investigate the answers to these questions.

1.4 Purpose of the study
The Ministry of Education had a vested interest in what was happening with the ICTPD programme on a national basis, which formed the nature of the research and evaluation of the programme as reported by CORE Education Ltd (see Ham, 2009); however, this study specifically focused on fifteen primary teachers who participated in the programme and the impact of the programme on their classroom practices over an eight year period.

The purpose of this study was to investigate how and in what ways the professional development delivered through the ICTPD School Clusters programme changed fifteen New Zealand primary school teachers’ practices at the time, one year after the end of the programme, and then eight years later. Specifically, the aims of this study were to examine:

- fifteen primary teachers’ perspectives of professional development in the use of ICT in the classroom; and,
- their self-reports on how this professional development impacted on their classroom practices and pedagogical understandings at the end of the ICTPD programme, one year later and then eight years later.

This study involved collecting and analysing the narratives of fifteen primary school teachers who participated in the ICTPD programme, and who also responded to the quantitative surveys. The data for Question 5 of the end-of-project survey (see Survey Questionnaire in Appendix 4) were used to identify potential research participants and group them in one of three response-based categories (very little; to some extent; and, to a large extent/completely). Fifteen primary school teachers in the Canterbury region responded to the invitation and gave informed consent to participate in the author’s study. While CORE Education’s end-of project survey was used to identify potential participants, this study was completely separate to the research work carried out by CORE Education on evaluating the effectiveness of the ICTPD programme for the 2004 – 2006 cohort.
1.5 Research questions

The main research question guiding this study is, how has professional development undertaken by fifteen study participants, regarding their use of ICT within their classroom teaching and learning programmes, impacted on their classroom practices?

The study focused on fifteen primary school teachers’ perspectives on the extent of the changes to their classroom practices immediately after the completion of the programme, again one year after the completion of the professional development programme, and then eight years after their completion of the ICTPD programme. The main research question assumes that the professional development programme did have an impact on the fifteen teachers’ classroom practices. The research examines the experiences that made teachers appreciate the need for change and/or the barriers or resistance to making changes. The two sub questions for this study are:

1) What is the nature and effect of the professional development on the study participants’ classroom practices according to the participants’ self-reports?
2) What changes in classroom practices have study participants made and sustained eight years later according to their self-reporting?

Data collected from the series of three semi-structured interviews, in 2006, 2007, and 2014, with fifteen primary teachers involved in the 2004-2006 ICTPD cohort, allowed me to investigate the impact, and the reasons for the impact, that the professional development has had and continued to have on their classroom practices and answer these questions.

1.6 Theoretical perspective

An Interpretivist theoretical perspective underpins this research, which is an approach where the nature of reality is socially constructed and that all interpretations are located in a particular context and time (Blaikie, 2004; Crotty, 1998). Blaikie (2004) argues, “the study of social phenomena requires an understanding of the social worlds that people inhabit, which they have already interpreted by the meanings they produce and reproduce as part of their everyday activities together” (p. 509). This research study uses Narrative Inquiry as the
methodology. Narrative Inquiry is used to investigate how participating in a professional development programme, and the pedagogical views of the teacher, affected teachers’ perceptions of changes in classroom practices. The complexity of this relationship between professional development ideas and their integration into classroom practices is explored. The use of Narrative Inquiry also privileges the ‘voice’ of the participants. Squire (2008) asserts, “narratives are sequential and meaningful, relate to human experience, re-present experience, and display transformation or change” (p. 42). Using this view of narratives, it can be argued that narratives are a way individuals, in this case fifteen primary teachers, make sense of themselves and their world. Narratives can be found in written material, such as diaries, in the spoken word, such as interviews, in electronic communication, such as texts or emails, or in visual form, such as film (Riessman, 2008; Wells, 2011). When narratives are spoken, such as when study participants recount their experiences as part of a research interview, “the time, the place, the occasion, the narrator, the audience, and the narrative are immediately intertwined” (Wells, 2011, p. 6).

Taking on the role of a narrative inquirer meant that the researcher’s own story becomes part of the narrative and entwined with those of the study participants and, therefore, must be acknowledged (Clandinin & Huber, 2010; Pinnegar & Daynes, 2007; Sikes, 2012). For this reason, in this thesis the researcher is referred to in first person where appropriate. An in-depth description of Narrative Inquiry, and how it informs this study, is provided in Chapter 2.

### 1.7 Research significance and limitations

While ICT can be viewed as having great potential for teaching and learning, a teacher needs to have a clear idea of which learning objectives ICT address and how the use of ICT will enhance the teaching and learning process. Weiss (2000) asserts that before any ICT are used in the classroom, educational goals need to be established and only then should technology be viewed in terms of how it can assist in achieving those goals - it is the learning outcomes that should drive the process, not the use of ICT. The end result should be a learning experience that has meaning for the student and allows them to gain a deeper understanding. Loveless (2003) postulates that it is effective teaching, rather than whether or not ICT are used, that is
crucial to the learning process and the presence of ICT does not change the role of the teacher as a facilitator of learning.

This research contributes to knowledge about teachers’ perceptions of the impact of professional development, in particular, but not limited to, their utilisation of ICT in their teaching and learning programmes, and the changes teachers make in their pedagogical knowledge as reflected in their classroom practices. The study privileges these fifteen teachers’ perspectives. The research interprets and narrates teachers’ stories and experiences of professional development in terms of their perceptions of the opportunities provided as part of a professional learning community.

From a theoretical perspective, the research contributes further insight into the use of Narrative Inquiry for educational research (see Trevethan & Williamson-Leadley, 2014). Specifically, Narrative Inquiry is useful for examining change over time from the perspectives of teachers participating in professional development at key intervals: immediately after the conclusion of the professional development, one year later and then eight years later.

Preston (2001) argues that too many studies regarding using ICT in classrooms are conducted with practitioners who are not confident in using ICT. The participants in this study taught in a variety of primary classroom levels, in different school contexts, and had a range of teaching experience. This research contributes to the field of professional development by having teachers, with differing perspectives, share their experiences (positive and negative) of the activities and opportunities presented, and the support received during the professional development programme and while implementing the use of ICT and pedagogical changes into their classroom programmes over time (see Williamson-Leadley, 2013). The findings of this study give an insight into teachers’ perspectives on the extent their classroom practices change as a result of the professional development.

Although this research focuses on fifteen teachers’ perspectives of the impact of the professional development on their pedagogy and on their classroom practices, aspects of this study may be useful in other areas of teachers’ professional development. These include designing professional development to address identified needs, developing leadership capacity within the school, or building
professional learning communities. Additionally, the findings of this research may contribute new knowledge about professional development programmes in other contexts where participants undertake a longer-term professional development programme while continuing to work.

This study was designed to investigate the experiences of fifteen teachers involved in a three-year ICTPD programme as part of the 2004-2006 cohort in one area of New Zealand and, therefore, has limitations of scale, but strengths of depth. The thesis presents an in-depth examination of fifteen participants and their contexts through a series of three interviews; 2006, 2007, and in 2014, and is not intended to exemplify other professional development programmes or contexts. With prudence, however, the study could be interpreted and applied to different contexts. It is envisaged that the findings of this research study will be of worth to teachers, senior school leaders, professional development facilitators, and government policy makers who are involved in the design, development, implementation, and evaluation of professional development programmes for teachers or other professionals.

Another limitation, and strength, relates to my roles as a researcher in the ICTPD programme and as a primary school teacher. It was imperative that the study was centred on investigating the participants’ learning through their experiences within a professional development programme and the impact these experiences and their learning had on their classroom pedagogies and practices. So, although the study was not an external ‘objective’ assessment of the ICTPD School Clusters programme or the effectiveness of the facilitators who delivered the programme, it did have the ‘subjective’ benefits of an ‘insider’s perspective’ with the researcher also being a primary school teacher. Furthermore, the study did not evaluate the effectiveness of the professional development models used, but it did investigate the effectiveness of the professional development activities used within the programmes from the teachers’ perspectives in relation to their impact on classroom practices.

Finally, the following assumptions regarding the theoretical perspectives were made when designing the study:

- Participation in a professional development programme would have an impact on teachers’ classroom practices and utilisation of ICT,
CHAPTER ONE: INTRODUCTION

- The availability of ICT and teachers’ pedagogical stances would have an impact on the adoption and utilisation of ICT in the classroom,
- Narrative Inquiry would provide an appropriate framework for the analysis of data and allow for teachers’ voices to come through when relating their experiences of the professional development.

1.8 Outline of the thesis

A glossary of the key terms used in this thesis is provided in the preliminary pages of the thesis. Some of the terms used are specific to the New Zealand educational context, while others are more generally used in the literature about ICT in educational contexts. Where terms are used interchangeably, or may have more than one connotation, use of the term in the context of this thesis is specified.

This chapter has introduced the catalysts and context for the study, explained the purpose and significance of the research and put forward the research questions. It has also set the study within Interpretivism and the framework of Narrative Inquiry. This methodological and theoretical framework is further described in Chapter 2, which also includes the description and justification for the research design used in this study. A review of the literature regarding change process and professional development, including the main models of professional development that were used by the four clusters the fifteen study participants were part of, and the learning environments in which professional development should ideally occur, are described in Chapter 3. The research context for the study and introduction of the research participants are presented in Chapter 4.

Primary teachers’ perspectives of professional development in New Zealand are described in Chapter 5. Chapters 6 and 7 give voice to the teachers’ stories and experiences based on their participation in an ICTPD programme and use of ICT in their classroom practices. Chapter 8 continues and updates the narratives of the fifteen primary teachers and presents and analyses their current perspectives, through data from the 2014 interviews, giving a longitudinal aspect and currency to the research. Chapter 9 discusses the implications and draws conclusions of the study for primary teachers’ classroom practices and the professional development of primary
CHAPTER ONE: INTRODUCTION

school teachers using ICT, as well as the contributions and limitations of the research.
CHAPTER TWO: METHODOLOGY AND RESEARCH DESIGN

2.1 Introduction

In examining participants’ experiences of professional development (in the context of the ICTPD programme), and the effect on their classroom practices, a theoretical foundation is provided to this study through the literature on Narrative Inquiry. This chapter describes the research methodology and design and explains how the decisions about the research design have been made to ensure credibility, confirmability, and dependability. The chapter begins by briefly stating how the research fits into the interpretive research paradigm using Narrative Inquiry methodology. This is followed by a description of Narrative Inquiry as a way of describing and interpreting what the teachers involved in this research experienced. The data collection and analysis processes are described, along with the ethical implications and measures taken to safeguard the participants.

2.2 Qualitative Research

In quantitative research, measurable and observable methods are used to inform and develop knowledge. Data collection instruments, such as surveys, can be used as they provide statistical data (Cresswell, 2013). Qualitative research goes beyond the statistics that emerge from analysing data from a study; it is concerned with the explanation or detail that informs a participant’s choice of answer and gives a richer understanding as to why they answered the question as they did. Pinnegar and Daynes (2007) posit that qualitative researchers, unlike quantitative researchers, are concerned with interpretation and understanding and “not in prediction and control” (p. 4).

There are several types of qualitative research methodologies. The five major types of qualitative research include case studies, ethnographies, phenomenology, grounded theory and narrative research (see Arthur, Waring, Coe, & Hedges, 2012; Cohen, Manion & Morrison, 2011; Cresswell, 2012; Neuman, 2011; Punch & Oancea, 2009; Stake, 2010; Wiersma & Jurs, 2008; Willis, 2008). Neuman (2011) states that what differentiates qualitative researchers from their quantitative
counterparts is that, “qualitative researchers form new concepts or refine concepts that are grounded in the data” (p. 510). The forming of concepts commences during the collection of data and is an essential component of the analysis of data. The raw data are organised according to these concepts or ‘themes’ which are then used to analyse the data (Neuman, 2011).

This study is concerned with the stories of fifteen primary teachers’ experiences of the ICTPD programme. Narrative Inquiry has been used as a methodology, a method of data collection through semi-structured interviews as well as a method of analysis, although a more inductive approach was used for this study (Riessman, 2008; Thomas, 2006). These aspects of Narrative Inquiry are discussed in the next section.

2.3 Interpretive research paradigm

This research study can be placed within the interpretive research paradigm. A paradigm is a “shared understanding” or “particular way of seeing the world” which stems from the work of Thomas Kuhn, a philosopher of science (Coe, 2012, p. 6). A research paradigm is a system of linked practice and thinking that outlines the nature of inquiry along the three dimensions of the research process: ontological, epistemological and methodological. The ontological and epistemological aspects are concerned with a person’s worldview “which has significant influence on the perceived relative importance of the aspects of reality” (TerreBlanche & Durrheim, 2006, p. 17). Interpretive researchers consider that reality consists of people’s subjective experiences of the external world, which results in them “adopting an inter-subjective epistemology and the ontological belief that reality is socially constructed” (Reeves & Hedberg, 2003, p. 33). The interpretive paradigm is concerned with understanding the world as it is from subjective experiences of individuals through the use of methodologies, such as interviewing (Reeves & Hedberg, 2003).

Interpretivists assert that it is only through the subjective interpretation of reality that reality can be fully understood. The study of phenomena in their natural environment is key to the Interpretivist philosophy; together with the acknowledgement that researchers cannot avoid affecting those phenomena they study (Reeves & Hedberg, 2003). Neuman (2011) states, “for interpretive researchers, the goal of social
research is to develop an understanding…and discover how people construct meaning” (p. 102). The interpretive paradigm “strives to view situations through the eyes of participants” (Cohen et al., 2011, p. 293).

The careful formulation of research questions is required for qualitative research in order to “guide the research process” (Flick, 2006, pp. 105-106). Qualitative research questions, by necessity, are contextualised. Cresswell (2003) puts forward that “interpretative research questions should begin with ‘what’ or ‘how’ to convey an opening and emerging design. ‘Why’ suggests cause and effect, an approach consistent with quantitative research” (p. 106).

Table 2.1 demonstrates how Interpretivism, Narrative Inquiry and Narrative methods are placed in the research process.

Table 2.1 Four elements of the research process

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<td>Experimental research</td>
<td>Sampling</td>
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<td>Constructionism</td>
<td><strong>Interpretivism</strong></td>
<td>Survey research</td>
<td>Questionnaire</td>
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<td>• Symbolic interactionism</td>
<td>Ethnography</td>
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<td>• Phenomenology</td>
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<td>• Hermeneutics</td>
<td>Grounded theory</td>
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<td>Narrative Inquiry</td>
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Adapted from Crotty (1998), p. 5.

Just as Crotty (1998) cautioned about the original table in his book, the above is a representative sampling within each category and “not an exhaustive listing” (p. 5).
The above table demonstrates how the elements of this study, Interpretivism (theoretical perspective or paradigm), Narrative Inquiry (methodology), and Narrative (method), fit into the basic elements of the research process. In the next section, Narrative Inquiry as a methodology and Narrative methods are discussed and described as to how they inform this study.

2.4 Narrative Inquiry

Narrative Inquiry, primarily based on the work of Donald Polkinghorne (1988, 1995), is a qualitative research approach that is used, “when deeper understanding of a phenomenon in its natural setting is the target” (Abdallah, 2009, p. 1). Narrative Inquiry is the study of experience as related by the people who lived the experience (Kim, 2015). John Dewey’s (1938) theory of experience “is most often cited as the philosophical underpinning of narrative inquiry” (Clandinin & Caine, 2008, p. 542). Narrative Inquiry is a reflective process that gives insights into people’s actions, decisions, thinking, understanding and practices. The aim is not finding “one generalizable truth, but many truths” (Byrne-Armstrong, 2001, p. 112). Narrative Inquiry is the use of story to understand and make meaning of lived experience, and about how experience may be studied and represented. Stories offer insights into our own and other’s life experiences, enabling the appraisal of these experiences. People interpret and reflect on lived experiences through telling stories (Clandinin & Caine, 2008; Connelly & Clandinin, 2006). Narrative Inquiry is not only a way of understanding experience, but also a research methodology. Clandinin and Caine (2008) assert that Narrative Inquiry is “both a view of the phenomena of people's experiences and a methodology for narratively inquiring into experience” (p. 543).

This dual role allows for the study of individuals' experiences over time and in context with researchers concerned with temporality, sociality and place (Clandinin & Caine, 2008).

As noted above, Narrative Inquiry has three dimensions: temporality, sociality and place (context) that “serve as a conceptual framework” (Clandinin & Huber, 2010, p. 436).
Temporality

Temporality is placing things in the context of time and the change over time. Connelly and Clandinin (2006) posit that “temporality is a central feature” (p. 376) in narrative thinking.

When we see an event, we think of it not as a thing happening at that moment but as an expression of something happening over time. Any event, or thing, has a past, a present as it appears to us, and an implied future (Clandinin & Connelly, 2000, p. 29).

Sociality

Sociality is both the personal conditions (feelings, hopes, and moral dispositions) and the social conditions (the conditions that people’s experiences and events are happening within) (Connelly & Clandinin, 2006). Clandinin and Huber (2010) put forward “these social conditions are understood, in part, in terms of cultural, social, institutional and linguistic narratives” (p. 437).

Place

The place or context is where the event/s occur. The definition of place offered by Connelly and Clandinin (2006) is “the specific concrete, physical and topological boundaries of place or sequences of places where the inquiry and events take place” (p. 480).

Temporality (change over time) is the dimension of Narrative Inquiry that this study focuses on. While this can be seen as a limitation of this study, it is the changes in the teachers’ classroom practices that are made and sustained over time that is the subject of this study.

Clandinin and Connelly (2000) caution, “in narrative inquiry, interpretation of events can always be otherwise” (p. 31). This tension of ‘certainty’ allows that different interpretations can be possible. Any one interpretation needs to be made tentatively, acknowledging that there could be other possibilities or explanations. The narrative inquirer needs to adopt the attitude “of doing one’s best under the circumstance” (p. 31).
2.4.1 Narrative inquiry as a methodology

The aim of Narrative Inquiry is to understand how people think and act in the situated contexts in which they experience life. Narratives are frameworks through which people view, understand, and make sense of their experience. Narrative Inquiry’s focus on meaning making resonates with that of constructivism. Narrative Inquiry needs to establish the narrative, and cultural history of the events under study for later interpretation in the creation of research texts rather than on the immediacy of the event (Connelly & Clandinin, 2006). Unlike other qualitative methods that have generalised steps for carrying out the analysis of the data, Narrative Inquiry is concerned with understanding the experience through the story told (Maple & Edwards, 2010). Story is the means of reconstruction of experience that is interpreted and made personally meaningful by the storyteller. Therefore, making the decision to use Narrative Inquiry methodology is to assume a particular view of experience as the phenomenon under study (Connelly & Clandinin, 2006).

A narrative may be described as a discourse designed to represent a connected series of events (Kim, 2015). Narrative Inquiry methodology can be used to provide more in-depth understanding of the experiences of the participants. One of the clearest means we have for learning about the inner world of an individual is through verbal accounts and stories, presented by the individual, about their lives and experiences (Clandinin, 2007; Reissman, 2008; Webster & Mertova, 2007).

There are two forms of Narrative Inquiry: descriptive and explanatory. In descriptive narrative, the purpose is to produce an accurate description of the narrative individuals or groups use to make sense of events in their lives or organisations. In explanatory narrative, the focus is to account for the events and the connections between those events (Polkinghorne, 1988). This study uses descriptive Narrative Inquiry.

The use of Narrative Inquiry methodology results in richer data that cannot be obtained from experiments, surveys or observations. As the aim of the study was to find out what the participants’ experiences of professional development were and how this affected their classroom practices, Narrative Inquiry was chosen as the methodology that would enable this study to develop a deeper understanding of
teachers’ experiences through their stories. The Narrative Inquiry approach was chosen to privilege the teachers’ voices. This method provided the most encompassing way to understand the experiences and issues that the participants shared in a way that allowed their stories to remain intact (Elbaz-Luwisch, 2007; Maple & Edwards, 2010). The use of Narrative Inquiry allows the researcher to “retain the complexity of the situation in which an action was undertaken and the emotional and motivation meaning connected with it” (Polkinghorne, 1995, p.11). The ability to be able to understand an experience from the perspective of the teacher participant is important. Webster and Mertova (2007) state, “what we know in education comes from telling each other stories of educational experience” (p. 7). However, Clandinin and Connelly (2000) argue that researchers must be mindful “that the stories we bring as researchers are set within the institutions within which we work, the social narratives of which we are a part, the landscape on which we live” (p. 19).

Riley and Hawe (2005) put forward a number of reasons for using Narrative Inquiry methodology to “endeavour to see the world through the eyes of others” (p. 226). Although they researched health practitioners and their practices, these reasons resonate with classroom practitioners. The use of Narrative Inquiry as a methodology:

- may disclose what primary teachers value most in regards to their classroom practices;
- may expose the thinking that influences and informs primary teachers’ practices;
- examines the way and in what contexts a story is told by considering a number of factors;
- may reveal the many compromises and discussions that form a teacher’s attitude towards and dictate practices in the classroom in regards to using ICT;
- allows the key informant to give insight into the factors that helped or hindered the implementation of new classroom practices; and,
- allows a person to retrospectively articulate aspects of what they did and thought.
Kurtz (2010) posits the following three categories of reasons for using Narrative Inquiry.

1) **Human-social aspects** – social function, emotional safety, and providing a voice. By allowing the participants to tell their story rather than interrogating them with questions to answer, a social function of Narrative Inquiry is in place. Separating the storytelling and the events of the story provides the participants with an ‘emotional distance’ to tell their story and disclose feelings and beliefs in a safe environment. Having people tell their story legitimises and respects their experiences.

2) **Cognitive aspects** – engagement, articulation, interpretation, authenticity and imagination. A story has a ‘natural situation-tension-resolution’ flow and people usually engage in a story to its conclusion. This articulation of the story sometimes reveals feelings and beliefs of which the storyteller was unaware. By asking people to tell their stories and asking questions about it, they are being asked to give their interpretation. This allows for a greater understanding and depth of insight of what the participant has experienced.

3) **Information-gathering aspects** – contextual richness, and redirection of non-responses. Asking people to talk about their experiences allows the researcher to broaden the net of exploration around an experience because the contextual richness of stories provides information beyond what is directly asked. Also, the researcher can give redirection of non-responses in order to allow the story to come out. Richards (2003) notes, “ordinary conversation provides a unique insight into the ways in which people understand and represent their social world” (p. 26).

Through the participants’ storytelling, the researcher investigates the ways in which the teachers experienced the professional development while allowing the voices of the participants to come through (Webster & Mertova, 2007). The experience of professional development and how it affects the classroom practices of the teachers can be given a more holistic interpretation and representation by the researcher (Clandinin & Connelly, 2006). Understanding the reasoning behind teachers’ classroom practices requires an interpretation of what teachers say. This type of
knowledge, a combination between context and event, is expressed by the stories/narratives (Webster & Mertova, 2007).

Narrative Inquiry, as suggested by Webster and Mertova (2007), aims at capturing the ‘whole story’, whereas other methods tend to communicate understandings of studied subjects or phenomena at certain points. The use of a narrative research design allows a “focus on the experiences of one or more individuals with a retelling of personal accounts of actions” (Cresswell, 2012, p. 507). Therefore, for the reasons outlined above, using a Narrative Inquiry methodology for this study was appropriate.

### 2.4.2 Narrative Inquiry as a method of data collection and analysis

Narrative Inquiry does not follow a linear path and this absence “highlights an interactive, engaging, one-step-forward, two-steps-back kind of journey” (Maple & Edwards, 2010, p. 33). This allows for a richness of data to be collected that goes beyond the mere answering of questions. However, this advantage of using narrative methodology must be tempered with the sheer quantities of data that are accumulated and the interpretive nature of the work (Clandinin & Caine, 2008; Reissman, 2008; Webster & Mertova, 2007). In order to combat the volume of data generated by the stories, a Narrative Inquiry researcher analyses it by organising it into categories on the basis of critical, like, and other events (Webster & Mertova, 2007).

Working with narrative material requires taking into account three different dimensions: the voice of the narrator that is represented by the recorded tape or the transcribed text; the theoretical perspective which provides the concepts, and the tools for interpretation that allow the process of drawing conclusions from the data collected (Clandinin & Huber, 2010; Kim, 2015; Reissman, 2008; Webster & Mertova, 2007). The researcher must also be cognisant of the “need to honour the experiences” of the participants (Maple & Edwards, 2010, p. 44). The narratives have been analysed to signal and clarify the issues involved with making changes to classroom practices in the primary classrooms of the fifteen participants and outline the individual and collective issues that occurred for these participants.
The framework to analyse participants’ stories and produce narratives, from the mass of data gained from the semi-structured interviews, was provided by Narrative Inquiry. The use of Narrative Inquiry privileges the ‘voices’ of the participants rather than just “mining the data for themes and the danger this has to depersonalise and decontextualize the stories from the participants” (Maple & Edwards, 2010, p. 35). The analytic focus of the Narrative Inquiry approach is the way the participants “configure their stories and the meanings they convey about the events they have experienced” (Maple & Edwards, 2010, p. 35). This study required a methodology that would allow the exploration of the professional development experiences through the stories of the participants that unfolded during the interviews (Riessman, 2008).

To answer the research questions, it was necessary to delve into the teachers’ professional development experiences by having them tell their stories through a series of questions in semi-structured interviews (Squire, 2008). The interviews provided the participants with a scaffold or guide to the research focus of this study, namely, the story of their professional development experience (Maple & Edwards, 2010). Interviews lasted from 30 to 60 minutes, depending on how fully participants answered the questions. Pring (2004) suggests that a semi-structured interview “overcomes the problems experienced by other tools” (p. 39) as the interviewer can delve deeper into the significance that the interviewee conveys about the event. Some interviewees will require more structure and direction in the interview while others will tell their stories with little prompting other than the initial question. According to Maple and Edwards (2010), each participant will need to be approached differently, with adjustments to the style of the interview, depending on the relationship between the researcher and the participant, the personality of the participant, and their responsiveness to the particular questions asked.

Hunter (2010) cautions that, “representing and interpreting another’s voice is not a simple task and needs to be done with respect and humility” (p. 50). Interviews were used in this study to help the researcher understand the significance that participants attached to experiences and allow these to be explored in more depth. The participants gave consent for each of the interviews to be recorded. A digital tape recorder was used to record the participants’ interviews. Where interviews were conducted face-to-face, the digital recorder was placed as unobtrusively as possible.
“to minimize the effect of its existence” (Abdallah, 2009, p. 7). The recording of the interviews facilitated the data collection process and allowed for the transcription of the interviews to be fuller and more accurate than relying only on the notes taken.

To be able to analyse the stories and create the individual and collective narratives, I needed to find the commonalities and differences of the teachers’ experiences of the professional development programme. In Narrative Inquiry, Polkinghorne (1995) explains, “the goal of analysis is to uncover common themes or plots in the data. Analysis is carried out by hermeneutic techniques for noting underlying patterns across examples of stories” (p. 177). This thesis presents and discusses an analysis of narratives gathered from the fifteen teachers during semi-structured interviews about their perspectives of the pedagogical and technological impact of participating in the ICT professional development on their classroom practices. The method of analysis will be discussed in further detail in the research design section.

The next section outlines the research design, positions the researcher in the study, and details how the research participants were recruited for the study. The data collection methods, data management and analysis, and the ethical considerations are presented. Finally, the matter of the trustworthiness of the findings is discussed.

### 2.5 The research design

The selection of methods and instruments for collecting data is just one of the many aspects of designing research. Decisions also need to be made about the conceptualisation of the research, the methods of conducting the research, and the intended contribution of the research to the development of knowledge in a particular field. Cheek (2008) contends that “the process of developing a research design combines three broadly connected and interdependent components: the theoretical, methodological, and ethical considerations relevant to the specific project” (p. 761).

According to Cresswell (2012), recognised authors in the field of research methods, such as Robert Bogdan and Sari Knopp Biklen, Norman Denzin and Yvonna Lincoln, Elliot Eisner, and Sharan Merriam, are in agreement that qualitative research occurs in ‘a natural setting’ with the researcher acting as an ‘instrument of data collection’ who inductively analyses the data, and describes the process. Cresswell (2013) further expands this definition by emphasising qualitative research...
as an inquiry process where “the researcher builds a complex, holistic picture, analyses words, reports detailed views of informants, and conducts the study in a natural setting” (p. 15). In this study, the natural setting is the school and the classroom(s) where the participants teach.

Cresswell (2013) outlines a number of reasons for employing a qualitative research design. When considering these reasons, the use of a qualitative research design for this study is indicated by:

1) The nature of the research questions, presented in Chapter 1 of this thesis, as they ask ‘how’ and ‘what’.

2) The topic of this study, the impact of professional development on New Zealand primary teachers’ classroom practices is best explored via qualitative methods because of the number of variables would make a quantitative study difficult to design.

3) The need to present a detailed view of the topic. Rather than just presenting the quantitative data from the survey, I wanted to find out about teachers’ perspectives/beliefs behind the responses to give a more holistic picture of the professional development experience of these teachers.

4) The ability to study individuals in their natural setting. Cresswell (1994) argues that, “if participants are removed from their setting, it leads to contrived findings that are out of context” (p. 17). All but one interview, about participants’ individual experience of professional development in using ICT in their classroom practices, was conducted in their own classrooms.

5) The interest in using story-telling narration to privilege teachers’ voices.

6) A large proportion of time spent on data collection in the field and detailed data analysis.

With the decision made that the research is qualitative in nature, the researcher can design the study. Cresswell (1994) posits that “the format for the design of the study follows the traditional research approach of presenting a problem, asking a question, collecting data to answer the question, analysing the data, and answering the question” (p. 18). The qualitative approach to research design, however, contains
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some points of difference. Rather than having a detailed research plan, the researcher plans a more general approach to the study in order to allow for “emerging issues that develop in a field study” (Cresswell, 1994, p. 18).

Open-ended questions are used to garner information from the participants in order to answer the research questions posed. Depending on the responses of the participants, the questions that are asked can change during the process of research to elicit further information and allow the stories of the participants to come through – in this case, the lived experiences of the teachers. The amount of data collected in qualitative research can be unwieldy and the research needs to be designed in a way that allows the researcher to be able to deal with this large amount of information. Consideration of ethical issues must also be allowed for in the research design – seeking consent, maintaining confidentiality, and protecting the anonymity of the participants (Josselson, 2007). Pseudonyms are used to protect the anonymity of the participants and careful consideration is given to the storage and use of the data (Bogdan & Biklen, 2007; Cohen et al., 2011; Cresswell, 2013; Neuman, 2011). Once the data have been collected, it needs to be organised before it can be analysed. The data for this study were organised by putting the responses from the fifteen participants together to each of the questions in the interviews (see Appendix 3 for interview questions) to allow for comparisons and contrasts to be made between the participants’ own and collective responses. The data are then examined, “working inductively from particulars to more general perspectives, whether these perspectives are called themes, dimensions, codes or categories (Cresswell, 1994, p. 20). The analysis of the data allows the researcher to form the narratives to privilege the participants’ voices.

2.6 Ethical considerations
Ethics approval for this research was sought from and granted by the Deakin University Ethics Committee (DUHREC) prior to the commencement of the study (see DUHREC approval for Project EC 179-2006 - Appendix 1). Furthermore, as a member of a research organisation that dealt with the schools / clusters, from which the participants were invited to take part in the research, the researcher needed to conduct herself as a professional and ethical member of that organisation (Bogdan & Biklen, 2007; Davidson & Tolich, 1999; Neuman, 2011). In order to meet this
professional and ethical obligation, the researcher sought permission from the Directors of CORE Education Ltd to use the results database of the ICTPD programme end-of-project survey for the 2004-2006 cohort to identify potential participants (see Appendix 2). The researcher did not directly contact any of the participants until they had responded to the invitation of the Director of Research (see Appendix 3) to allow her access to individual end-of-project surveys and to give their contact details in order for DUHREC approved plain language statements (PLS) and consent forms to be sent out for their consideration (see PLS and consent forms – Appendix 6). A PLS was also sent to the principal at each of the schools where the participants taught to ensure they were informed about the study being conducted with teachers at their school (see Appendix 5).

When the decision was made in 2014 to re-interview the study participants, ethics approval through Deakin University was required, as the time limit for the original ethics approval had expired. A further ethics application was submitted to and approved by the Human Ethics Advisory Group [Project: HAE-14-067 – see Appendix 9] in July 2014. The participants were contacted via email (gained from school websites or from telephone calls to schools to get email addresses) and sent a PLS and consent form to complete to participate in the 2014 interviews (see Appendix 10).

### 2.6.1 Issues of researcher power and coercion

While the author’s position at CORE Education Ltd gave her the opportunity to access participants for this study, it also meant that she had to be aware of issues of researcher power and coercion. In order to address the possibility of these issues arising, the following steps were taken:

- After receiving permission from the Directors of CORE Education Ltd, the pool of potential primary school teacher participants were identified by the author from the 2004-2006 cohort end-of-project survey results database.
- Then the Director of Research at CORE Education Ltd sent the potential participants a letter that briefly outlined this study and the fact that this study was not part of the ICTPD programme evaluation being conducted by CORE Education Ltd, as well as a form to indicate their willingness for their name and contact details and access to their end-of-project surveys to be given to the
author. Fifteen primary teachers sent in the forms with their contact details (see Appendix 3).

- The author then contacted the primary school teachers, who had given permission to CORE Education Ltd for their contact details to be passed on, and sent them a DUHREC-approved plain language statement and consent form to complete to participate in this study.
- Once the consent forms were received, the teachers were telephoned to arrange a time for the interviews to be conducted, out of school time, in their classrooms.

The initial letter sent to potential participants by the Director of Research for CORE Education Ltd (see Appendix 3) was because the ICTPD end-of-project survey information was property of that company. Even though the researcher for this study worked for CORE Education, this study was not part of the evaluation work of the ICTPD programme on the 2004-2006 cohort and, therefore, she was not entitled to access the individual surveys without the respondents’ expressed permission. As this allowed the teachers to respond to someone other than the person who was going to be conducting the study, there was no suggestion of coercion or pressure by the author to participate in the study. It must be acknowledged, however, that with the letter coming from the Director of Research for CORE Education Ltd, some potential participants may have felt pressure to participate in the study. The author was aware that her position as a researcher in the programme could be viewed as one of power over the teachers and took measures, as outlined above, to minimise this possibility.

When the decision was made to interview the participants in 2014 and ethics approval was gained from Deakin University, the following steps were taken to address the issues of researcher power and coercion:

- Contact with participants was made via email so that the participants could choose to respond or not. Email addresses were gained from schools’ websites or via telephone contact with schools’ offices. For two of the participants, I attempted to make contact via a private Facebook posting.
- The participants, who indicated that they were willing to be part of the 2014 interviews, sent an email back with the signed consent form or handed in the
form at the time of the interview. A mutually convenient time for an interview, either by telephone or in person at their school, was arranged.

- Any participants who did not respond to the original email or private Facebook post, I followed up with a second email or post. At this point, three of the participants did not respond and no further follow up was undertaken. Further information about these three participants is provided in the participants’ biographies in Chapter 4 (see section 4.4).

By communicating with the participants, initially via email or Facebook, they had the option to respond to or ignore my invitation to participate further in my study. My decision to only attempt to contact the participants twice was to avoid making them feel as if they were being coerced or harassed to participate.

2.7 The researcher and the research participants

In this section, the researcher is positioned in the study, the cluster groups are presented, and the recruitment of the participants is outlined.

2.7.1 Positioning of the researcher

As presented previously in Chapter 1 (see section 1.2), the author was a research officer for CORE Education Ltd at the beginning and during the 2006 and 2007 data collection phases of the study. Prior to and after being a researcher at CORE Education Ltd, the author taught in primary schools for a total of eighteen years. Currently, the author is an academic at a New Zealand university, in a different geographic area, where she specialises in pre-service teacher education related to the use of ICT in the classroom.

The author’s responsibilities as a researcher at CORE Education Ltd included working on the evaluation of the ICTPD School Clusters programme. The data entry of the end-of-project surveys, and the subsequent analysis of the data, allowed her access to the responses of the survey respondents. Her interest was in teachers’ responses to the end-of-project survey question, To what extent have your classroom practices changed as a result of your participation in the ICTPD programme? The five responses that the teachers were able to choose from ranged from ‘Not at all’ to ‘Completely’ without the opportunity to expand on their reasons for selecting a
particular response. It was the stories behind the individual answers that really interested the author and are the subject of this thesis. Another aspect of the above survey question that intrigued her was the understanding of the survey respondents of the word ‘change’ and the effect this understanding possibly could have had on their answer to this question.

The author’s own professional journey and professional development in using ICT has influenced her classroom practices. The author’s professional journey has involved a number of ICT professional development courses, although this comprised a small proportion of her overall professional development.

2.7.2 The ICTPD school clusters

Each of the school clusters that were part of the 2004 – 2006 ICTPD School Clusters programme cohort were comprised of between two and (up to) ten schools that were similar or diverse in the type of school (primary, secondary, area or special education), the number of staff, and the nature of their location (urban, suburban, or rural). The schools involved also reflected diversity in that they represent schools from low to high socio-economic status based on government criteria.

Twenty-seven of the clusters of the 2004 – 2006 cohort comprised primary schools or had primary schools involved. The primary school teachers in the five clusters in the Canterbury region of New Zealand were the ones invited to participate in this study.

2.7.3 Recruitment of participants

As indicated in the ethical considerations section, as CORE Education Ltd had conducted the ICTPD programme end-of-project survey, the Directors of CORE felt that they needed the permission of the potential participants for this study to release the individual survey information and contact details of the primary teachers. The then Director of Research for CORE Education Ltd, Dr Vince Ham, sent letters to the primary teachers involved in the 2004 – 2006 ICTPD School Clusters programme cohort in one geographical region, who were identified as potential participants through their end-of-project survey responses. The teachers completed a form to indicate their willingness to have their name and contact details passed on to the
researcher and permission to access to their individual end-of-project surveys. The teachers responded directly to the Director and the researcher was given the names of those who were willing to be contacted (see Appendix 3 for letter of invitation and consent form). For teachers to participate in the study, they needed to give informed consent (Bogdan & Biklen, 2007; Mutch, 2005; Neuman, 2011). The teachers were then sent the DUHREC-approved plain language statements (see Appendix 6), which outlined what the study was about, the nature of involvement and what would happen to the data storage and use, as well as consent forms for the potential participants to sign if they agreed to participate. They were informed that they could withdraw from the research study at any time and that all information they had provided would also be withdrawn (Cohen et al., 2011). Once I had received the consent forms, I contacted the primary teachers to arrange a time for the first interview.

To preserve anonymity, pseudonyms are used in this thesis for the teachers and clusters. As New Zealand is a small country, the precise geographical locations of the clusters and types of schools are not given. Snook (1999) emphasises that “the preservation of confidentiality is essential” (p. 78). To maintain confidentiality, no data are recorded, analysed or reported in a way that may lead a person independent of the research to identify individuals (Snook, 1999). The data were kept on a password-protected file on my computer and only pseudonyms are used in the data to identify participants. The data were only accessed by myself and, if required, by my supervisor.

Abdallah (2009) posits that sharing research findings with participants may have the following beneficial implications.

- Participants may feel that their participation was a beneficial contribution and, therefore, may be more inclined to participate in future research studies.
- Based on the findings, they may reflect more upon their practices with a view to improve them.
- They may feel that the project is concerned with their professional development.
- They may interact with others in future conversations that may help them improve their practices.
• They may implement some practical ideas that resulted from each other’s stories in their practices.

Preliminary results of this study will be shared with participants after submission of the thesis for examination.

2.7.4 The research participants

The participants involved in the study on which this thesis reports were from four different clusters, in one geographical area, that were part of the 2004 – 2006 ICTPD School Clusters programme cohort. The clusters were diverse in the number of staff, the nature of their location, and their socio-economic status. The four clusters, however, were made up solely of primary schools. Teachers involved had a range of experience – from beginning teachers to those near retirement, and both genders were represented.

Fifteen primary teachers (7 - Junior, 4 - Middle, and 4 - Senior) agreed to take part in the study and were approached to participate in two interviews at twelve-monthly intervals. The first interview took place at the end of the three-year ICTPD programme (i.e., November/December 2006) and the second interview took place approximately one year later (i.e., November/December 2007). For the question, To what extent have your classroom practices changed as a result of your participation in the ICTPD programme?, there were two or more participants for four of the five response categories (not at all; very little; to some extent; to a large extent; and, completely), with none of participants indicating their classroom practices had not changed at all. The participants interviewed reflected a range of years of teaching experience, both genders, and different levels of expertise in the use of ICT in the classroom.

For the 2014 interviews, the fifteen participants were sent an invitation to participate, Deakin University Human Ethics Advisory Group-approved PLS and consent forms (see Appendix 10) either via email or private Facebook postings. Twelve of the participants agreed to be interviewed (with three participants unable to be contacted or did not respond to attempts to be contacted) and completed the Deakin University Human Ethics Advisory Group consent form. The participants were informed that
they could withdraw from the interview and/or any new data collected would be withdrawn from the study. The interviews took place either in person at the participant’s school or by telephone, between August and November 2014.

A detailed description of the participants in the study is given in Chapter Four as part of the background to the teachers’ stories of changes in classroom practices. An updated biography, at the time of the 2014 interviews, for each of the participants is given in Chapter Eight.

2.8 Data collection
The main source of data for this study were the semi-structured interviews conducted at the conclusion of the ICTPD programme for fifteen participants, then again twelve months later, and then once more eight years later. Using interviews to collect data allowed the researcher to gain richer description of the participants’ experiences of the professional development programme and their perceptions of whether their ICT practices in the classroom changed and sustained following the ICTPD programme of professional development.

2.8.1 Interviews
Interviews allow a researcher to investigate and probe participants’ views and accounts of experiences. According to Wellington (2000), “the research interview’s function is to give a person or a group of people, a ‘voice’ and in this sense, an interview empowers people” (p. 72) although differential power relations between interviewer and interviewee complicates this. I asked teachers at the school I worked at to pilot my interview questions to ensure that the questions I asked elicited the type of responses that would assist me in drawing out the information I sought to answer my research questions. Data from the pilot interviews were not used within the study and were securely disposed of (i.e., notes were shredded and digital recordings erased).

Interviews were held at mutually convenient locations and times. The majority of the participants were interviewed in their classrooms where the surroundings were familiar and could possibly trigger recollections. This allowed teachers to expand on
their responses by showing artefacts from an environment that they may have shaped to reflect their classroom practices.

For the semi-structured interviews, the interviewees were asked to reflect on their participation in the professional development programme for their cluster. The questions in the interviews were adapted to the participants’ survey responses by using information revealed by the interviewee in previous questions to frame subsequent questions or clarify information given. The interview questions were designed to elicit information about the impact the ICTPD programme had on the participants’ integration of ICT into their classroom practices. While the responses of the participants influenced the direction of the interview, the interview design ensured that there were consistent questions across the interviews (Kvale & Brinkmann, 2009).

The interviews were audio-recorded and transcribed. All interviewees were given a transcript of their interviews. Interviewees were invited to indicate any additions, deletions or other amendments they wished to be made to their transcripts before analysis of the data (Bogdan & Biklen 2007). The interviewees could indicate amendments to the transcript either by using the track changes feature of a word processing program or could indicate amendments on a hard copy of the transcript. Only two of the fifteen participants indicated that they wanted amendments made to their transcript. In one case, the participant wanted to expand on an answer because they felt the explanation they had given was insufficient. The other participant reworded one of the answers given to clarify what had occurred.

The researcher conducted all the interviews and they typically lasted for 20 – 45 minutes. A week prior to their interview, the participants were sent the list of questions to enable them to reflect on their experiences and to consider their responses. This enabled them to provide a richer description during the interviews (Kvale & Brinkmann, 2009).

The interviewees’ responses allowed me to build a picture of the teachers’ experiences of the professional development they participated in as part of being involved in the ICTPD programme, and the reasons that led them to make changes
or not) in their classroom practices. Using interviews for the collection of data created space for teachers’ experiences and perceptions to emerge.

Semi-structured interviews have been used in this research study as they provided flexibility. Although questions were given to the interviewees prior to the interviews, the direction was not completely pre-determined, which allowed for some control by the interviewer. The questions were sequenced to ease the interviewee from more descriptive questions to those that required introspection by the interviewee in order to ease them into the telling of their story. Wellington (2000) emphasises:

[The] need to establish rapport is vital, and the ease with which it can be established will vary according to the ease of interaction of the parties, the venue of the interview and the personal interests and backgrounds of both the interviewer and the interviewee (p. 78).

For the 2006 interviews, rapport was established with the interviewees by introducing the researcher to them via email and then following this up with a telephone call to arrange mutually convenient interview times and locations. The DUHREC-approved plain language statement describing the study also gave them information about the researcher. As a researcher involved in the ICTPD programme evaluation carried out by CORE Education Ltd, I reassured the participants that the information I gained from the interviews was not part of the evaluation work or would be accessed by CORE Education Ltd. The process for the 2007 and 2014 interviews was similar to that outlined for the 2006 interviews. The DUHREC-approved consent forms covered the interviews in 2007 as well as 2006. Deakin University Human Ethics Advisory Group consent forms were required to be signed before the 2014 interviews took place. These were sent out via email and then followed up with a telephone call or email to arrange a mutually convenient time and location. As I no longer worked for CORE Education Ltd and the evaluation of the ICTPD programme was completed, I reassured the participants that the information I gained from the interviews would not be accessed by CORE Education Ltd. With having been a primary school teacher, this enabled them to identify with a fellow professional, but one who had no influence on their position at the school (Bogdan & Biklen, 2007; Wellington, 2000).
2.9 Data management and analyses

2.9.1 Interview analysis

Each of the interviews was transcribed by the researcher from the digital recording of the interview. This allowed the researcher to ‘relive’ the interviews and make notes on the transcripts regarding gestures, pauses and tone of voice (Bogdan & Biklen, 2007). The transcripts were given to the participants to check for accuracy and they were invited to make amendments, additions or deletions. The transcripts were then coded to themes/categories that emerged regarding the experiences expressed by each participant (Schensul, 2014).

2.9.2 The process of interview coding

Each participant’s transcript was read while listening to the digital recording so that the emphasis placed by the participant on certain experiences or activities came through as well as being able to reflect on the stories that were shared (Schensul, 2014). The coding of the responses to the interview questions was derived from the change process literature as presented in Chapter 3. Three coding themes were identified: 1) appreciating the need for changes to classroom practices (Timperley, Wilson, Barrar, & Fung, 2007), 2) concerns or barriers to change (Ertmer & Ottenbreit-Leftwich, 2013; Guthrie, 2011), and 3) changes in pedagogy (Fullan, 2007; Fullan & Langworthy, 2014). These themes enabled the researcher to classify commonalities or sub-themes across all of the interviews of the participants in 2006, 2007, and 2014.

2.10 Establishing the trustworthiness of the findings

According to Denzin and Lincoln (2011), Lincoln (2002), and Toma (2006), interpretive research should be evaluated according to the criteria of confirmability, credibility, dependability, and transferability. The application of these criteria to a study needs to be incorporated into the research design and processes (Toma, 2006). This differs from the approaches for establishing rigour used in quantitative research, as the positivist measures of reliability, objectivity, internal validity, and external validity are not a good fit within the interpretive research paradigm (Cresswell, 2013; Denzin & Lincoln, 2011; Toma, 2006). The qualitative researcher must minimise misunderstanding and misrepresentation of participants’ responses and ensure that findings are authentic and trustworthy (Stake, 2010; Toma 2006). Strategies, which
are appropriate to the particular study and context, need to be embedded into the research design (Toma, 2006). Sufficient information and detail needs to be provided in order for similar or alternative interpretations of the data presented to be reached by the reader (Stake, 2010).

The criteria of confirmability, credibility, dependability, and transferability have been incorporated into this study, as outlined below, to demonstrate how trustworthiness has been built into the design and implementation of this research.

### 2.10.1 Confirmability

The confirmability of qualitative research is the degree to which another person, in reading and interpreting the data, would arrive at the same conclusions. The findings of the study can be verified as being reflective of the participants’ perspectives and not affected by researcher bias (Jensen, 2008a). According to Jensen (2008a), “confirmability is an accurate means through which to verify the two basic goals of qualitative research: 1) to understand a phenomenon from the perspective of the research participants and 2) to understand the meanings people give to their experiences” (p. 112). In presenting quotes directly from the transcripts of the participant interviews, I have consistently privileged the ‘voice’ of the participants to tell the story of their experiences and to provide evidence for the interpretations I have made of these experiences.

### 2.10.2 Credibility

The credibility of qualitative research is reflected in the methods used to establish the accuracy between the participants’ stories, and the researcher’s interpretation and representation of them (Jensen, 2008b). According to Jensen (2008b), the analysis of the data should reveal a realistic link between what the participants said and the themes and categories that emerged from the data. The interviews were digitally recorded and transcribed in their entirety, and then given to the interviewee to amend/delete or add to in an effort to improve the quality and credibility of data. The extensive use of direct quotes from the interviews to emphasise a point being made in the thesis also lends to the credibility of the research presented.
2.10.3 Dependability

The dependability of a qualitative study equates to reliability in a quantitative study (Neuman, 2011). Unlike a quantitative study, however, qualitative research does not strive for replicability (Toma, 2006). Instead, Jensen (2008c) suggests that it needs to be recognised “that the [qualitative] research context is evolving and that it cannot be completely understood a priori as a singular moment in time” (p. 208). In order for dependability to be demonstrated in qualitative research, there needs to be consistency between the research questions and the research design, the positioning of the researcher and their possible biases need to be declared, and the findings should be an accurate representation of the meanings intended by the participants (Huberman & Miles, 2002; Miles, Huberman, & Saldana, 2013). These criteria have been kept to the forefront through the design, implementation and reporting of this research. By declaring the researcher’s position, interests and assumptions, the biases and orientations that have influenced the study are revealed (Merriam & Tisdell, 2015). These biases and orientations cannot be eliminated and, therefore, need to be acknowledged and become part of the researcher’s narrative in order to recognise their influence. My positions as a researcher for CORE Education Ltd and as a primary teacher who has taken part in the ICTPD programme have been declared. To overcome any possible conflict of interest or bias in being a researcher involved in the evaluation of the ICTPD programme for the 2004-2006 cohort for CORE Education Ltd, the study did not seek to appraise or report on the quality of the teaching by the participants, used questions in the interviews that had points of difference from the surveys, and did not draw comparisons with the results data from the end-of-project survey.

2.10.4 Transferability

Due to the nature of the qualitative methodologies, the sample population is small in comparison to quantitative studies. Jensen (2008d) cautions against assuming a small participant group being interpreted as representing the entire population. Transferability allows for the readers of the study to make connections between the findings of the research and contexts other than that specified in the research. According to Jensen (2008d), “to increase transferability, qualitative researchers should focus on two key considerations: a) how closely the participants are linked to the context being studied, and, b) the contextual boundaries of the findings” (p. 886).
This is achieved by the researcher ensuring that the participants are “relevant members of the community related to the study” (Jensen, 2008d, p. 886), the context of the study is specified, and the research questions are answered (Jensen, 2008d). With this information, the reader can determine if the findings of the research can be transferred to their context.

To increase the transferability of this study, thick description has been used to provide accounts of the context of the study, the participants, and the research design (Maxwell & Mittapalli, 2008; Merriam & Tisdell, 2015). The perspectives of the participants are privileged through the use of quotations from their interviews. Again, this assists the reader in making an informed decision about the transferability of the research findings to their own context.

2.11 Summary

This chapter has presented the theoretical perspective, methodology and research design for this study. The Interpretivist research paradigm, Narrative Inquiry methodology and narrative research methods have been used to inform the research design for this study. Details of the position of the researcher and the recruitment of participants in the study have been provided with further information about the individual participants to be presented in Chapter 4. The methods of data collection and the management and analyses of the data that were generated have been outlined. The ethical considerations in regards to this study have been presented and how these issues were resolved has been detailed. Finally, the methods for establishing the trustworthiness of the findings have been outlined.
3.1 Introduction

In this chapter, a selection of literature on the educational change process, professional development and learning environments is reviewed. This literature review begins by outlining the major educational changes in New Zealand and how the integration of ICT can be seen as the basis of a further educational change. The change process as it relates to changing teachers’ classroom practices is then described. In particular, it explores the concepts of appreciating the need for change, implementation of the change, resistance or barriers to change, and ongoing support needed for change to occur. Literature on the role of professional development in changing classroom practices is then reviewed, looking at professional development and educational reform, and the professional development models experienced by the fifteen primary teacher participants in this study. The learning environments of communities of practice and situated learning and their connections with professional development are then explored. The chapter closes with a consideration of the framework of technological pedagogical content knowledge or TPACK and the connections to this study.

In the next section, literature around educational change is reviewed. Specifically, the change process itself, appreciating the need for change, implementation of change, barriers and resistance to change and the ongoing support needed for change to happen are explored.

3.2 Educational Change

There have been a number of educational changes made in New Zealand, for example, Tomorrow’s Schools in 1989 and the curriculum reform in 2007. Watson (2001), drawing on the work of Michael Fullan, endorses the point that “the success or failure of educational change largely depends on teachers” (p. 259). He also asserts that in order for change to occur, teachers must have their “needs addressed and supported through the change process” (Watson, 2001, p. 256).
In 1998, the New Zealand Ministry of Education announced the ITPD (later ICTPD) Cluster Schools Programme initiative and invited schools to form clusters and apply to participate in this professional development designed to address the needs of and support teachers, individually and collectively, to integrate ICT into their classroom practices.

The New Zealand Ministry of Education invested substantial funding into the ICTPD programme (1999 – 2012) in order to develop teachers’ capacities in the use of ICT. Hayes (2000) cautions, however, “the introduction of innovation into any system is an undertaking fraught with potential difficulty. Innovations are often seen as threats to stakeholders in the system” (p. 136). The innovation may be advantageous to teachers on many levels, but different to current practices. Bishop (1986), drawing on the earlier work of Havelock and Huberman (1978), contends that the practicalities of the process of change for individuals (at a personal level) and the collective (at an institutional level) need to be taken into account. An individual teacher will consider what changes they have to make personally and professionally when they are looking at adopting any innovation (Bishop, 1986; Rogers, 2003). Hayes (2000) takes this further and states, “it needs to be recognised that teachers are at the heart of any innovation within national education systems and, therefore, that they and the contexts in which they work need to be studied to inform the innovation process” (p. 136).

The introduction and use of ICT in New Zealand schools began in the 1970s and became more pronounced in the 1980s. The 1990s and 2000s saw the move to widespread teachers’ professional development. The rationale was pedagogical and it was envisioned that ICT would transform classroom practices and equip students for the future. While individual teachers, or even schools, may have worked towards this aim, it is unclear whether widespread transforming of educational practices was achieved. As Karasavvidis (2009) and Smeets (2005) assert, research suggests that technology generally supports established classroom practices, rather than transforms these practices. The availability of technology in classrooms does not necessarily result in any substantial change in teaching practices or improve student learning (Cuban, 2003, 2015; Sandholtz, Ringstaff, & Dwyer, 1997). Wright (2010) contends, “that teachers who use digital tools to replace older technology, but use them without altering their pedagogy, will have minimum effects on [student] learning” (p. 38).
Karasavvidis (2009) argues that the ‘compatibility’ or fit of the ICT with teachers’ current pedagogical practices and knowledge determines whether ICT change teachers’ practices. Cuban (1993) gives the example of the overhead projector, which he states extended, rather than changed, the practices of teachers. In New Zealand, data projectors and interactive whiteboards are common in primary classrooms with Apple TV or similar being available to a lesser extent, but the question whether the introduction of these ICT changed pedagogical practices or merely enhanced established practices remains. Bigum and Rowan (2008) contend the integration, rather than application, of ICT “privileges existing ways of doing things. It reflects a view of linear, manageable change and…has allowed teacher education and schools to keep up technical appearances” (p. 247).

Although not all schools or classrooms have the ICT that they wish or need, the availability of ICT has, and continues to, increase for teachers and students. This does not suggest that ICT are effectively integrated into teachers’ classroom practices. Knight (2012) contends that:

> Many teachers know how to use various computer programs and actually use many of them in the classrooms; but they use them in ways that do not advance their teaching methodology or improve student learning, because their methods of utilising technology are not effective, efficient or relevant (p. 7).

Knight (2012) asserts that knowledge of ICT skills does not mean that these skills are utilised effectively as, “acquiring ICT tool skills may be relatively easy but gaining wisdom to use them effectively is not” (pp. 255-256). This resonates with the earlier work of Davis et al. (1997) who contended that “effective use of information technology, like any other tool, has to be acquired. Watson (2001) also suggests that for students and teachers to be able to effectively utilise ICT they need to have opportunities to use them regularly and in authentic contexts.

Becker (2001) proposes constructivism (i.e., building one’s own understanding and knowledge through experiences and reflection on those experiences) as a necessary part of progress and change in pedagogy. In regards to using ICT in classroom practices, Twining, Raffaghelli, Albion & Knezek (2013) posit that ICT offer “new approaches to supporting learning and changes pedagogy in ways that often align better with new understandings of how children learn through constructivist and
socio-cultural approaches” (p. 432). Becker (2001) claims teachers with the most constructivist teaching philosophies are more frequent and committed users of ICT. Not only do they use ICT more frequently within their classroom practices, they use them in more challenging ways. Additionally, they use ICT to a greater extent for administrative requirements and planning, and possess more technical expertise than those who do not have constructivist teaching philosophies (Becker, 2001).

Johnson and Liu (2000) define a constructivist ICT learning environment as one “that turns the computer into a tool to enhance learning by allowing the learner to create, manipulate and produce” (p. 126). In constructivist terms, teachers are changing their practices to allow the learner to shape the curriculum and utilise ICT to assist in constructing knowledge (Newhouse, 2014). These changes to pedagogy “increase the potential to transform, rather than simply support and extend” classroom practices (Twining et al., 2013, p. 432). The process of how these changes occur is presented in the following section.

3.2.1 The change process

Changing teachers’ practice is complex, follows a series of stages or phases, and is vulnerable to variables affecting the outcome. Understanding the reasons behind educational change being adopted or rejected requires an appreciation of the teachers’ perspectives and is the focus of this study. External factors are also important, such as the contexts in which teachers operate, societal pressures, and policies and directives of the government (Fullan, 2007).

Changes can be adopted superficially with renamed and organised structures or new terminology, while the old practices remain (Fullan, 2007). Teachers must accept the rationale, need and relevance of a change in order to change their classroom practices. How teachers actually experience change, in contrast to how it was, affects the outcome of the intended educational change (Fullan, 2007; Fullan & Langworthy, 2014). For change to occur, it is necessary to appreciate and understand both the ‘what’ and the ‘how’ of change. Fullan (2001) argues that:

The problem of meaning is one of how those involved in change can come to understand what it is that should change, and how it can best be accomplished, while realising that the what and how constantly interact and reshape each other (p. 8).
If only one of these two aspects is understood, the change will be adopted superficially and it will not have the coherence and deeper meaning needed to ensure that real change occurs.

Fullan (2007), identified three phases in the change process:

- **Phase 1: Initiation or adoption** – which consists of the process that leads up to and includes a decision to adopt or proceed with a change;
- **Phase 2: Implementation** – involves the first experiences of attempting to put an idea or reform into practice; and,
- **Phase 3: Continuation or incorporation** – refers to whether the change gets built in as an ongoing part of the system or disappears by way of a decision to discard or through attrition.

Timperley et al. (2007) reported similar findings and proposed that teachers engage in three professional learning processes when they undertake professional development. These processes may overlap when teachers undertake the activities offered in a professional development programme. The three processes and their associated outcomes are set out in Table 3.1 below.

Table 3.1 Teacher learning processes and outcomes

<table>
<thead>
<tr>
<th>(Iterative) Learning Processes</th>
<th>Definition</th>
<th>Outcome</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Cueing and retrieving prior knowledge</td>
<td>Prior knowledge consolidated and/or examined</td>
</tr>
<tr>
<td>2</td>
<td>Becoming aware of new information/skills and integrating them into current values and beliefs system</td>
<td>New knowledge adopted or adapted</td>
</tr>
<tr>
<td>3</td>
<td>Creating dissonance with current position (values and beliefs)</td>
<td>Dissonance resolved (accepted/rejected), current values and beliefs system repositioned, reconstructed</td>
</tr>
</tbody>
</table>

(Adapted from Timperley et al., 2007, p. 8).

These learning processes (Table 3.1) are engaged when teachers undertake professional development to develop new understandings and skills, and may occur independently or collectively. The first process, cueing prior knowledge, occurs
when the teachers access what they already know. The professional development may consolidate their knowledge or cause them to question it. The second process involves teachers developing awareness of information and skills that are or are not consistent with their current values and beliefs about teaching and learning. The third process, creating dissonance with teachers’ values, beliefs and philosophy with regard to classroom practices, allows teachers to consider the new information, to accept or reject the new understanding, and make changes to their current practices or adopt the new practice in its entirety (Timperley et al., 2007; Prestridge, 2007; 2010). The ICTPD programme was designed to expose teachers to new skills, theory and pedagogy, question their current classroom practices, and finally, support them in making changes to their existing or adopting the new practices in their classrooms (Billowes & Alexander, 2010).

3.2.2 Appreciating the need for change

It is important that teachers understand the need for change. Fullan (2001) emphasised that, “one of the most fundamental problems in education reform is that people do not have a clear and coherent sense of the reasons for educational change, what it is and how to proceed” (p. 8). The teachers who are resistant to change may not reject the need for change, but rather need to appreciate the reasons for change and how this will improve their teaching and the students’ learning. For teachers to consider making pedagogical changes, they need to see the relevance and advantages relative to the effort involved. If teachers do not appreciate the value of change to their classroom practices and are not sufficiently informed, they are likely to reject the change (Timperley et al., 2007).

3.2.3 Implementation of change

The scope of change, the question of who develops and initiates the change, as well as the activities and support that will be put in place for implementation, need to be considered (Fullan, 2007). The extent to which change is implemented and continued is dependent on the methods by which the change is initiated and the support that exists to assist the implementers. Initiation of change rarely occurs without an advocate (Fullan, 2007; 2008). The Ministry of Education, on behalf of the government, usually initiates reforms to the education system in New Zealand. Locally, school principals usually determine how such reforms are adopted, although
they have some authority to initiate their own changes within their school. If the change is directed from the outside, such as an initiative from the Ministry of Education, then the facilitator leading the professional development programme, who acts as a change agent, plays an important part in initiating these changes. Since implementation is what actually happens in practice, as distinct from what was intended to happen, the way in which change is implemented determines the outcome. As implementation is the essence of change, it follows that teachers’ roles, as implementers, are central to the process (Fullan, 2007). In regard to the ICTPD programme, the cluster facilitator acted as the change agent through introducing the teachers to new skills, theory and pedagogy, to implement changes to or enhance the existing classroom practices through the use of ICT (Lai & Pratt, 2004).

Fullan (2007) drawing on the earlier work of Marris (1975) cautions that “[a]ll real change involves loss, anxiety and struggle” (p. 41). Whenever teachers make changes to teaching activities they experience a loss of the familiar, anxiety about the consequences and struggle to understand the new approach (for example, the new way of teaching numeracy that was introduced into New Zealand primary schools in 2004). When first integrating ICT into the classroom, many teachers would have experienced, to varying degrees, a sense of loss, anxiety and struggle as they made changes to their existing classroom practices. In order to make sense and meaning of the use of these new approaches, teachers tend to put them into a familiar context in order to reach an understanding of the rationale behind the need or desire for the change (Senge, 2006). In education, changes may occur through the imposition of policy reforms or the dissatisfaction of practitioners with their current approaches. Real change involves ambivalence and uncertainty during the period in which the new activity or approach is being established. Whether the change is adopted and continued is determined by the degree to which this ambivalence and uncertainty is resolved.

Fullan (2007) suggests that there are at least three components in educational change:
1. The possible use of new or revised materials (e.g., instructional resources such as curriculum materials or technologies);
2. The possible use of new teaching approaches (i.e., new teaching strategies or activities); and,
3. The possible alteration of beliefs (e.g., pedagogical assumptions and theories underlying particular new policies or programmes).

Through the ICTPD programme, teachers may have experienced all three of the above components: the use of digital ICT, which required new approaches to teaching to integrate into their classroom practices, which, in turn, would possibly challenge their pedagogical beliefs.

All three components are essential to achieve a particular educational goal or set of goals. Some teachers, however, may use new curriculum resources or technologies, but not change the teaching approach used, may use the resources and incorporate a new teaching approach without understanding the beliefs underlying the change. These examples result in superficial change, whereas real change involves changes in conceptions and practices.

Changes to teaching approaches or to curriculum materials usually require new skills to be learnt. Alterations of beliefs may challenge teachers’ core values, both individually and collectively, concerning the purposes of education. Fullan (1999) argues that opportunities to explore beliefs and understandings must be part of any process of change because, “[c]hanges in beliefs and understandings (first principles) are the foundation on achieving lasting reform”. He sees “the possibility that beliefs can be most effectively discussed after people have had a least some behavioural experience in attempting new practices” (p. 45). Part of the ICTPD cluster facilitator’s role was to introduce the teachers to new skills and pedagogy, then support them to implement these new practices in their classroom in order for changes to occur (Billowes, personal communication, 21 November, 2006).

3.2.4 Restructuring versus reculturing

Fullan (2001) introduced the idea of ‘restructuring’ versus ‘reculturing’ for change. Restructuring is concerned with structures, policies and activities. This strategy for reform can be seen in many recent initiatives in the New Zealand education system. However, a change in structure does not mean that change has actually occurred. Reculturing or the means by which teachers come to change their beliefs and habits, is much more complex. The way in which change is introduced and the opportunities afforded to teachers to engage in deeper questioning and sustained learning has a
bearing on whether change occurs. If these opportunities are not given, the change tends to be superficial and episodic, rather than becoming part of the teacher’s beliefs and practices (Fullan, 2007).

In educational settings, there may be systemic barriers and resistance to change. These types of barriers are discussed in the following two sections and investigated via interviews over eight years with the fifteen primary teachers.

3.2.5 Systemic barriers to change

Guthrie (2011) suggests “teachers’ perceptions of the relative advantages of changing teaching styles may also have a strong foundation in realism” (p. 67). System-based issues may be the barriers to change that are responsible for teachers’ negative appraisal of innovations, and “may be rational responses to actual systemic problems” (Guthrie, 2011, p. 67). These practical barriers, even if the teachers support change, may hinder the change process. These include: inappropriate physical classroom facilities (Newhouse, 2014); insufficient time for teachers to work through pedagogical change; Ministry of Education requirements incompatible with the proposed change; the professional culture of the school; the lack of ability of educational administrators to provide adequate or appropriate support (particularly during the extension phase of the change); the potentially prohibitive costs (personal, professional or monetary) associated with the change; and, an underestimation of the obstacles associated with introducing change (Guthrie, 2011).

3.2.6 Teacher resistance to change

Further to the practical barriers to change described previously, teachers’ personal and professional constructs will also have a bearing on if and how the innovation will be adopted (Ertmer & Ottenbreit-Leftwich; Guthrie, 2011; Newhouse, 2014). Constructs, which are shaped by social, cultural and, in the case of teachers, educational environments, are “ways of making sense of past experiences to give meaning to present and future ones by providing a world view that can itself change through experience” (Guthrie, 2011, p. 63). Teachers bring their existing knowledge and prior experiences to the classroom and, alongside the professional development in which they participate, give shape to their classroom practices. The teachers’ perceptions and understandings are major influences on attempts to change how they approach pedagogical practices (Guthrie, 2011; Prestridge, 2010). Guthrie (2011)
argues that “teachers are not resistors of change but rational decision-makers concerned with factors that could limit successful implementation, weighing the practicality of innovations in the classroom, their congruence with prevailing conditions and professional costs” (p. 64).

Mutch (2012) adopts a slightly different view of teacher resistance to change and questions whether “resistance to change is necessarily a bad thing” (pp. 1-2). She advocates that teachers and educational leaders should be trusted to use their professional judgment to decide what is best for the students in their school or classroom:

> When we trust teachers and educational leaders to make decisions based on their professional judgement, their years of experience, their commitment to students’ learning and their engagement with their communities, these acts are more likely to be thoughtful and positive rather than negative and detrimental (Mutch, 2012, p. 2).

Teachers can resist change because of inadequate resources and time. Although teachers may have received the necessary training, they may lack access to ICT at school or are not given the time to review and plan lessons that incorporate the use of ICT (Cox, Webb, Abbott, Blakely, Beauchamp, & Rhodes, 2003; Cox, 2012). Initiatives, such as the New Zealand Ministry of Education’s TELA (laptops for teachers) scheme, have gone some way to addressing this issue. In their review of the literature, Cox et al. (2003) found that teachers who had use of ICT, personally as well as professionally, to develop their confidence and skills in using ICT, were more likely to use them in their classroom practices. Cox (2012) found this to be the case in teachers’ use of mobile devices. Cox et al. (2003) also found that teachers who had participated in longer-term professional development and practised within their own classroom or school were likely to adopt the innovation and assimilate changes to their practice. The findings of the evaluation of the ICTPD programme (Ham, Gilmore, Kachelhoffer, Morrow, Moeau, & Wenmoth, 2002; Ham, Toubat, & Williamson-Leadley, 2005; 2006) reflect those of the literature reviewed by Cox et al. (2003). Fullan’s (2007) research suggests that engaging a whole staff in the process of planning for change is the most effective way to bring about the adoption of an innovation in schools. Hence, teachers need to be involved in the decision to adopt the use of ICT in their school and be supported, individually and collectively, through professional development. If there is not the support for their efforts, staff
will be less inclined to change their practice or adopt the use of ICT (Cox et al., 2003).

3.2.7 Ongoing support needed for change to happen

The support provided by educational leaders while teachers participate in professional development and are immersed in the change process is crucial. Providing teachers with ICT will not necessarily bring about the desired change (Cowie et al., 2010, p. 4). Schools where administrators provide professional development with expert facilitators, give staff time to integrate ICT in their planning and mentoring, and offer access to resources are more likely to see a positive attitude towards adoption of the integration of ICT into teachers’ practices than those who do not (Webb, 2011). The ICTPD programme was designed so that the schools’ leadership teams and the professional development facilitators could work together to develop a plan to meet the needs of their staff in order to improve individual and collective practices, and, ultimately, students’ learning. For schools, the sustainability of the ICTPD programme beyond the three years of funding was a concern. Mel Rodden, a former ICTPD programme cluster facilitator, conducted a research project on the sustainability of clusters beyond the three-year programme and gave schools and clusters practical advice to sustain professional development in relation to ICT (Rodden, 2004).

3.3 Changing classroom practices: The role of professional development

A professional development programme can provide the means to enable changes to classroom practices to occur. Teachers, however, need to appreciate the need for change; the effects that change will have on their teaching practice and, importantly, the effects of change on students’ learning. In order for teachers to make changes to their classroom practices, they require: activities that address their needs and that demonstrate how to implement the changes; support to implement the changes; and, being able to see the benefits of making these changes. These matters are discussed below.
Various definitions as to what constitutes professional development exist, but they have common elements such as activities or experiences, professional enhancement, ongoing processes, and benefitting students. A selection of these definitions follows:

- “Activities to enhance professional career growth” (http://eric.ed.gov).
- “Processes and activities designed to enhance professional knowledge, skills, and attitudes of educators so that they might, in turn, improve the learning of students (Guskey, 2000, p. 16).
- “An intentional, ongoing and systematic process” (Timperley et al., 2007, p. 3).
- “The sum total of formal and informal learning experiences throughout one’s career from preservice teacher education to retirement” (Fullan & Stiegelbauer, 1991, p. 326).
- “A career-long process in which educators fine-tune their teaching to meet student needs (Diaz-Maggioli, 2004, p. 5).
- “Teachers learning, learning how to learn, and transforming their knowledge into practice for the benefit of their students’ growth” ( Avalos, 2011, p. 10).

As indicated in these definitions, professional development is more than just the acquisition of skills and knowledge – it is the ongoing learning that is part of a teacher’s professional life. Timperley et al. (2007) contend that professional development has “taken on connotations of delivering some kind of information to teachers in order to influence practice” (p. 3). Regardless of whether the intent of the development is to introduce a new curriculum document, the use of a new innovation or resource, or a new teaching strategy or method to a teacher’s repertoire, the driving force behind the development is to enhance teachers’ classroom practices in order to improve learning outcomes for students (Diaz-Maggioli, 2004).

According to Evans (2002), however, a precise definition of professional development is lacking, and a number of authors on the subject fail to provide a definition. There is a need for a shared understanding of the concept of professional development to “make it clear precisely what [people] understand by the term” (Evans, 2002, p. 128) and, in educational research, overcome “the difficulties in establishing the parameters of the field of study and identifying the teacher development process” (Evans, 2002, p. 128).
3.3.1 Professional development and educational reform

The term, ‘professional development’ in the context of this thesis refers to activities that assist teachers and other members of a school staff to learn, apply, and hone new skills and knowledge. It is an essential component when change in classroom practices is desired. Joyce and Showers (2002) and Loucks-Horsley, Stiles, Mundry, Love, and Hewson (2011) assert that effective implementation of new practices and the desire to do so on the part of those involved in using the new practices will result when professional development:

- is directed toward a job-related issue that represents a collective concern;
- involves participants in planning the activities;
- encourages and supports collaborative approaches to solving the problem; and,
- provides support following the initial training.

Educational reform efforts in New Zealand, especially from the late 1980s to date, have meant a change in focus on teaching and learning programmes for teachers and students. Teachers are expected to learn and implement new curriculum, upgrade their knowledge and skills, master new skills and change their teaching practices to ensure that all students achieve high learning standards. This involves a developmental process requiring teachers to focus on changing their own practice through participation in professional development (Hayes, 2000; Moon, 2000; Timperley & Alton-Lee, 2008; Wilson & Berne, 1999). Darling-Hammond (2005), and Hiebert, Gallimore and Stigler (2002) argue that traditional professional development delivery of ‘one-shot’ workshops or sessions offer limited opportunities for teachers to change their classroom practices. They contend that, in order for professional development to have the most effect on teachers’ practices, it needs to be long term, collaborative, school-based and linked to student learning and the required curricula. Loucks-Horsley et al. (2011) and Owston, Sinclair and Wideman (2008) emphasise that teachers who undertake professional development where the focus is on collaboration and a constructionist view of learning are better equipped to introduce new practices into their classrooms, as they have experienced this strategy of learning themselves.

Professional development can be structured in a variety of ways. Choosing the most effective model means looking at the strengths and weaknesses of various models,
considering the individual and collective needs of the staff, and matching them with the changes that are to be achieved. Ongoing assistance is required to support teachers as they put the new practices in place and gain skill in using them. The provision of continuing support for the implementation of changes focused on in the professional development of teachers is, therefore, crucial (Albion, Tondeur, Forkosh-Baruch, & Peeraer, 2015; Joyce & Showers 2002; Timperley & Alton-Lee, 2008).

The characteristics of effective professional development are remarkably consistent across many studies. Joyce and Showers (2002) and Loucks-Horsley et al. (2011) state that the following are common characteristics of effective professional development for teachers.

- Driven by a well-defined image of effective classroom learning and teaching;
- Integrated with aims to improve education through addressing student learning goals and needs;
- Guided by a coherent long-term plan;
- Designed according to individual and collective teacher-identified needs;
- School-based;
- Provide a strong foundation in subject content, pedagogical content knowledge and skills, and critical reflection on practice and methods;
- Informed by research on teaching and learning, and engage teachers as adult learners;
- Provide opportunities for teachers to work with colleagues and other experts, in and beyond their school building;
- Continuous and ongoing with the provision of follow-up support for further learning;
- Incorporate principles of adult learning;
- Provide links to other parts of the education system;
- Provide sufficient time and other resources; and,
- Evaluated ultimately on the basis of the impact on teacher effectiveness and student learning.

Taken together, these characteristics combine to create professional development that is able to meet the challenges of systemic educational reform and allow teachers to
make changes to their classroom practices. Loucks-Horsley (1998) states that “the purpose of systemic reform is to improve student learning, which cannot be accomplished without excellent teaching” (p. 1). She further states, “that professional development plays a critical role in the success of systemic reform, as it directly influences the quality of teaching and learning” (p. 1). Fullan (2008) emphasises the role of teachers and, in fact, all educators as change agents. It is through the professional development of teachers that changes in classroom practices and improved achievement of students can occur. Loucks-Horsley (1998) contends that professional development for systemic reform is larger than other professional development in three aspects: scale, scope and duration.

Senge (2006) argues that in professional development, both the individual and the organisation need to develop and change. An organisation needs to support the individuals who undergo professional development in order for their new learning to be implemented and sustained. This support needs to be in the form of resources, time for collaborative planning, and appraisals of the implementation of the new learning. As well, the organisation, in this case a school, also needs to become a learning organisation that undertakes analysis of teaching and learning, as well as creating opportunities for extending and enhancing practice (Senge, 2006). There are, however, various models of professional development – all with their proponents and opponents – available to assist teachers in acquiring new skills and learning new teaching methods/strategies.

Prior to the implementation of the ICTPD programme, schools were focused on purchasing hardware and software. In schools collectively, little was done in terms of providing professional development for the staff to be able to utilise ICT in their classroom. The New Zealand Ministry of Education recognised the importance of and the need for providing professional development for teachers to enable them to integrate ICT effectively into their delivery of the curriculum (N. Billowes, personal communication, 21 November, 2006). Each of the clusters in the ICTPD programme is able to construct and implement its own professional development programme using or adapting the model that best suits the needs of their particular context.
3.3.2 Characteristics of an effective professional development programme

Effective professional development requires strategies to promote a sense of ownership of the programme for teachers, school leaders and programme facilitators. If this is absent, the success and subsequent sustainability of the programme is unlikely (Hayes, 2000). Guskey and Yoon (2009) conducted comprehensive analysis of findings from over 1300 studies about professional development, from which they identified the following characteristics as contributing to the effectiveness of professional development:

- **Inclusion of workshops.** To provide hands-on learning experiences, research-based pedagogical practices and opportunities for teachers to trial and adapt the practices to their classroom contexts.

- **Presentations by outside experts.** Individuals with expertise who presented ideas and worked directly with teachers to assist them facilitate implementation.

- **Allocation of adequate time.** Sufficient time needs to allocated and that time must be scheduled, well organised, and focused on content and/or pedagogy.

- **Provision of follow-up activities and assistance.** Essential for teachers to feel supported as they implement change by modifying or replacing classroom practices.

- **Inclusion of appropriate activities** that examine ‘best practices’ and that can be adapted to the specific needs and context of the teacher, students and school.

- **Inclusion of appropriate content.** Focus of content should be on the direct enhancement of teachers’ knowledge.

- **Provision of wider networking.** The ability to maintain and form new links to learning communities outside their current professional learning community to provide additional ideas and information.

- **Use of distributed leadership** (i.e., multiple leaders). Edwards (2011) notes, “one leader does not have the experience, knowledge or time required to assist in the range of contexts represented” (p. 44).

The abovementioned characteristics, particularly the inclusion of workshops, presentation by outside experts, and provision of wider networking were present in the professional development offered within the four ICTPD programme clusters that the fifteen study participants were part of. The degree to which other characteristics,
such as allocation of adequate time, inclusion of appropriate activities, and content, were present in the professional development programme is varied and debatable regarding one’s understanding of adequate and appropriate. The participants’ perspectives on the characteristics of time, activities and content are discussed further in Chapters 6 and 7.

In section 3.3.3, the various models of professional development that have been used for delivering professional development programmes for using ICT in classrooms and experienced by the fifteen study participants are presented and critically discussed. The learning environments of communities of practice and situated learning that are used to deliver the professional development are discussed in section 3.4.

3.3.3 Professional development models

Various clusters have used the professional development models described in this section, either alone or in conjunction with other models, to deliver professional development to teachers involved in the ICTPD programme. The professional development models used by the clusters that the fifteen study participants were part of included: the training model; the mentoring model; blended learning; and, professional learning community.

On the baseline survey that clusters complete at the start of their three-year programmes, respondents are asked to state their preference for each of the professional development activities/models listed. This information assisted the cluster facilitator to set up a professional development programme that utilised the preferred methods of learning of the majority of participants.

Ham et al. (2002) found that the basic concept of school clustering for the provision of professional development through devolved funding was very successful. Any difficulties that were experienced were more the result of practical implementation difficulties, often related to the organisational or political dynamics of a cluster, than to the concept of clustering in itself.

When researching the 1999–2001 cluster cohort, Ham et al. (2002) found that, while no single, replicable model for teacher professional development was more effective
in meeting stakeholder goals than others, there was a commonality to the necessary components. Ham et al. (2002) state that the main factors affecting the extent to which clusters’ professional development programmes met their stated goals and objectives were:

- **The organisational form of the cluster.** This included sector composition, geographical spread, the number of schools and/or the number of teachers involved, the frequency and timing of professional development events, and the length of time an individual teacher was actively involved in a programme.

- **The programme content.** Programmes that focused on all three of the areas of personal skill development, practical classroom ideas for the use of ICT, and the development of sound pedagogical or theoretical rationales for the use of ICT in teaching and learning had wider ranging and, possibly, longer term effects than those that had a narrower focus.

- **Professional development strategies** that maximised the time available to teachers to become proficient with ICT skills and uses, and that combined substantial release time with ongoing access to collegial support were most valued.

- **Social, interpersonal and political dynamics.** The extent to which programmes acknowledged and addressed the needs of teachers, the terms of employment and professional abilities of the facilitators, and the extent of commitment and understanding shown by senior management in participating schools, all had a significant effect on the operation and effectiveness of the programmes.

It must be reiterated here that the aim of this section is not to evaluate the effectiveness of the ICTPD programme, but rather to present the models used and to look at the advantages and disadvantages of each model. As the ICTPD programme continued, the professional development models used by the individual clusters varied while the overall cluster model was retained. The professional development offered included elements of training, mentoring, blended learning, and professional learning communities, which are elaborated below. All fifteen participants in my study were exposed to one or more of these models within the programme provided by the cluster their school belonged to.
3.3.3.1 Training model

The training model utilises an expert presenter who selects the objectives, learning activities and outcomes, which are then delivered face-to-face. Poplin (2003) states that this type of training “is a widely used model of professional development” (p. 39). A commonly used training strategy involves a trainer modelling the integration of ICT into the teacher’s classroom programme, while the teacher observes. Usually the outcome involves awareness, knowledge or skill development, but not changes in attitude or transfer of training to one’s own practices.

The improvement of teachers’ thinking and practices should be a critical outcome of any training programme. The most effective training programmes include exploration of theory, professional readings, demonstrations of practice, supervised trials of new skills with feedback on performance, and training within the classroom (Loucks-Horsley et al., 2011). For the process to be considered a form of professional development, the participants must consciously consider it as a form of development (Henwood & Taket, 2008). However, the success of this model can vary, as it depends on whether it is a process that is being imposed from the top-down and is being done ‘to’ participants or it is a mutually agreed improvement that is required and is being done ‘with’ participants. Poplin (2003) states that “the focus should be on providing high-quality professional development that fosters the appropriate integration of technology, curriculum, teaching strategies and learning activities” (p. 39), to improve the classroom practices of teachers, as well as improving outcomes for students. The professional development of those study participants involved in Cluster 1 was based on the training model.

3.3.3.2 Mentoring model

Onchwari and Keengwe (2008) state that “mentoring has often been portrayed as an intentional, nurturing, instructive, and supportive activity by an older, more experienced person that helps shape the growth and development of a younger, less experienced person” (p. 20). Traditionally in education, mentoring programmes often matched beginning teachers with more experienced teachers who shared their knowledge and expertise. The term ‘mentor’ has now come to refer to a person who serves as a trusted friend, guide or adviser to another (Onchwari & Keengwe, 2008).
The mentoring model is set up to provide professional development on a one-to-one basis within a school. This can be seen as having greater potential for success and sustainability because of its collegial nature and on-site support. There are benefits to be gained by both parties involved in the mentoring model. Teachers are able to discuss pedagogy, observe each other’s practices and cooperatively plan, deliver and evaluate curriculum while imparting what they know about teaching and learning (Onchwari & Keengwe, 2008, p. 21).

Modeling of classroom practices by the mentor is another aspect of the model. The sessions are tailored to meet the specific needs of the teacher. After the modeling session, the teacher and mentor discuss the practices observed and the teacher is given the opportunity to question and seek clarification about what was modeled during the session (Wasik, 2010). Through these observations and discussions, the mentor is able to assess the teacher’s understanding of the practice that they were working on and scaffold the teacher’s knowledge and pedagogy of that practice (Wasik, 2010).

Joyce and Showers (2002) found that when mentoring takes place with the intention to facilitate and support teacher learning in context, teachers are more likely to implement or integrate new classroom practices. Mentoring is also considered a cost-effective model when compared with other in-service professional development strategies because the expertise, training and support are located within the school (Barth, 2001; Onchwari & Keengwe, 2008). Mentoring and e-mentoring are a means of continuing ICT professional development when a formal programme has finished. This co-construction experience allows the teachers to support each other and continue their professional development journey (Preston, 2001; Tugel, 2004). The study participants in Clusters 2 and 3 experienced this model of professional development.

3.3.3.3 Blended learning

While there are many different definitions and interpretations of what constitutes a blended learning model (see, for example, Stacey & Gerbic, 2009), it is generally accepted to mean courses or professional development that are a combination of face-to-face (physical) and online (virtual) delivery (Graham, 2006; Loucks-Horsley
et al., 2011; Stacey and Gerbic, 2009; Stubbs, Martin, & Endlar, 2006; Wall & Ahmed, 2008). Blended learning offers the advantages of traditional face-to-face sessions with the flexibility of online learning (Owston et al., 2008). According to numerous authors in Bonk and Graham (2006) and Owston et al. (2008), blended learning enables professional development providers to design courses or programmes that blend attributes, such as socialisation and spontaneity, that can occur in face-to-face sessions, with the online sharing of ideas and reflections, ongoing discussion, and flexibility of learning when and where it is convenient to the learner. Blended learning also offers institutions the opportunity to use technology in conjunction with traditional delivery (Derringer, 2010). Learners attend face-to-face classes, either on a regular basis or as block courses, which are then supplemented by online discussions regarding issues, readings, etc. This allows the participants in the course to meet the facilitator and other students, and develop a rapport that is continued in an online environment.

Blended learning allows teaching and learning to extend beyond the walls of a classroom (Derringer, 2010; Pape, 2010). According to Pape (2010), the advantages of using blended learning include “giving students a variety of ways to demonstrate their knowledge while appealing to diverse learning styles and fostering independent learning and self-directed learning skills in students, a critical capacity for lifelong learners” (p. 23). Clusters 3 and 4 used this model to deliver professional development to their teachers.

The purpose behind any decisions about using a particular model should be to improve student learning. Osguthorpe and Graham (2003) identified the following six reasons for a facilitator or institution to choose a blended learning model:

1) **Pedagogical richness/improved pedagogy** - the blended learning model increases a teacher’s pedagogical options. For example, it allows teachers to change the way they use their face-to-face time (materials can be put online for students to access), which leaves more time in class for discussions and practical activities.

2) **Access to knowledge and resources** - teachers are able to provide links to readings and resources, which increase students’ ability to access a wider range of information and knowledge.
3) **Social interaction** - the use of blended learning allows for enhanced social interaction both in the class and online, that benefits students by assisting them to relate to others “in new and more productive ways” (p. 231).

4) **Flexibility** – students and teachers gain flexibility with blended learning. Students have more choice with regard to when and how they participate online. For students and teachers, discussions can continue online rather than waiting until the next face-to-face class session.

5) **Cost effectiveness** – blended learning reduces the costs of time and travel for students relative to having to attend regular class sessions. For institutions, the cost of having physical facilities available for longer hours is reduced by having some of the sessions online.

6) **Ease of revision** – blended learning environments have online resources that are easy revise, usually by the course instructors themselves. This means that there is no need for lengthy delays while the IT support load resources or implement changes and, therefore, the courses can be much more responsive to student needs.

As Cluster 4 was made up of semi-rural and rural schools, access to resources may have been a factor in using this model of professional development. Cluster 3 had the option of taking courses towards an ICT-related qualification through a tertiary institution to supplement their professional development programme.

The blended learning model can provide an effective model for meeting the needs and learning styles, as well as catering to the time commitments, of teachers (Curtis & Swenson, 2003; Mackey, 2010; Owston et al., 2008; Wright, Dewstow, Topping, & Tappenden, 2006). The flexibility of the online portion of the course is able to cater for students who take these courses while continuing to work full time and need to balance family and other personal commitments. The blended learning model can be developed so that “online activities and resources can be blended with in-school experiences to create programmes that would not be feasible to offer entirely on-site” (Owston et al., 2008, p. 1037).

There is, however, a push for teachers to work more collaboratively in order to encourage teacher learning. The thinking behind this push for collaboration is that while feedback can be received, new information gained, and ideas generated
through individual learning, it is through dialogue and interaction with other people that greater gains are made (Chou, 2011). Chou (2011) takes this concept further and states “collaboration is assumed to create a learning culture and to help build a community in which further learning is supported and stimulated” (p. 421).

3.3.3.4 Professional learning community

There are a number of terms, such as ‘cluster groups’, ‘learning circles’, ‘networks’ and ‘professional learning communities’, that are used by researchers and authors to “label a range of endeavours where people work together (either [in] real or virtual time/space) to collaboratively and critically reflect on their practices, to learn together and to plan for improvement” (Edwards, 2011, p. 26). In the context of this thesis, the term professional learning communities is used to encompass all the above terms. It was envisioned that the clusters in the ICTPD programme would become professional learning communities. All of the clusters, that the fifteen study participants were part of, adopted this model of professional development to greater or lesser degrees.

Stacey and Gerbic (2009) contend that “communities are traditionally groups of people drawn together through face-to-face interaction to meet a common purpose or shared need, particularly in a professional context” (p. 12). Teachers’ participation in professional groups, such as the ICTPD cluster, helps create a community of learners that promotes continuous professional growth as a way of life in the school. Matzat (2013) asserts “many regard professional learning communities as one important way to support effective professional development” (p. 40). For teachers, moving out of the isolation of one’s classroom to share ideas with peers in a supportive group fosters a sense of professionalism and collegiality. Professional learning groups also provide an opportunity for teachers to develop a common discourse to reflect on classroom practices, and the individual and collective needs of their students. Use of this strategy is based on the assumption that teachers have the knowledge, skills and desire to design learning groups that best meet their own needs and those of their students. Addressing issues related to their own classrooms allows teachers to develop new practices directly related to authentic contexts and improving outcomes for their students. Unlike professional development activities designed by others, professional learning communities provide a forum where teachers can address
issues that are relevant to their own context, classroom practices and students’ learning (Loucks-Horsley et al., 2011; Stoll, Bolam, McMahon, Wallace & Thomas, 2006; Twining et al., 2013).

New practices are learned most effectively when the whole institution or workplace becomes a professional learning community, that is, where everyone is committed to learning and to supporting others in their learning – continued learning is seen and accepted as the norm. A professional learning community stimulates ongoing, collective inquiry into teaching and learning. The model involves a facilitator who sets up interactive learning experiences for a group of educators who communicate through face-to-face discussion, e-mail, online forums (bulletin boards) and synchronous online chats. Networks provide teachers with a supportive professional community beyond their own school. They are usually organised around specific subject matter, and seek to deepen teachers’ understanding of content, as well as exposing them to new teaching strategies (Loucks-Horsley et al., 2011; Matzat, 2013; Stacey & Gerbic, 2009).

Professional learning communities, as discussed in section 3.3.10, and their networks can provide the means for desired change to occur (Hopkins & Jackson, 2003). With professional learning communities, some of the features that contribute to change are: capacity-building, distributed leadership, lifecycle of the community, monitoring of effectiveness, and connections (Edwards, 2011); these are explained below.

- **Capacity-building.** Drawing on the work of Stoll et al. (2006), Edwards (2011) defined capacity-building as “a broad term that includes motivation, skills, dispositions and knowledge of teachers, individually and collectively, as well as the culture of the school, including its organisational conditions and infrastructure of support” (p. 27).

- **Distributed leadership.** This about sharing roles, responsibilities and power rather than being about delegation (Stoll et al., 2006; Fullan, 2011). The New Zealand Ministry of Education see members of professional learning groups as having responsibility, being responsible, taking responsibility and sharing responsibility (www.tki.org.nz).

- **Lifecycle of the community.** Edwards (2011) suggests that growth and change be seen as a “lifecycle or a series of phases” in a learning community (p. 30).
• **Monitoring of effectiveness of learning communities.** This includes using sustainability as an indicator (Hargreaves, 2007).

• **Connections.** Making connections with other professional learning communities can be important. This was the vision behind having the schools take part in the professional development in clusters (N. Billowes, personal communication, 21 November 2006).

Being part of a professional learning community, both individually or collectively, legitimises change and makes it an accepted part of a teacher’s professional life (Matzat, 2013; Stacey & Gerbic, 2009). Professional learning communities already exist within schools in the forms of resource committees, syndicates, and the like. Being able to extend these professional learning communities beyond the staff within one school allows for the sharing of ideas/expertise and provides opportunities for discussions with teachers who have tried such strategies in their own classrooms. Online professional learning communities are capable of supporting traditional, face-to-face professional learning communities and promoting further sharing through networks of communities (Matzat, 2013, p. 42).

In his editorial in Volume 38 (2012) of the *Professional Development in Education* publication, Bates (2012) raises the question:

> when teachers become linked in networks are they genuinely ‘agents of change’ or are they ‘objects of the change agendas of others’? If the former, then genuine professional learning in professional communities will have become a reality (p. 516).

For teachers to change their classroom practices and incorporate classroom discourse that support students’ learning, they need the support of learning communities that parallel those they are trying to establish in their classrooms (Edwards, 2011; Smeets, 2005). By having all of the teachers on the staff at a school take part in the ICTPD programme, they had a shared experience and were able, as a professional learning community, to discuss and support each other through making changes to their classroom practices. In the following section, the learning environments in which these groups can best function are explored.
3.4 Learning environments

Teachers, like all professionals, are having to become lifelong learners, and are being required to constantly upgrade their skills and knowledge to maintain their professional standing. While many teachers are engaged in post-graduate studies, as well as short courses for professional development, (see, for example, Mackey, 2010; Wright, Dewstow, Topping, & Tappenden, 2006), the issue of professional quality and continuing accreditation requires a similar approach to that undertaken by doctors, engineers, lawyers and other knowledge professionals (Tinkler, Lepani & Mitchell, 1996). The test of the effectiveness of professional development for teaching practitioners is how well it translates to classroom learning. Personalising the professional development experience and fostering professional relationships that allow teachers to share their expertise and to engage fully in their own learning are the keys to successful professional development (Carter, 2004). In order for teachers to get the most out of the professional development in which they participate, whatever the model used, they need to be clear about their own approaches to teaching and learning (Pachler, 2005; Timperley & Alton-Lee, 2008). To be able to work alongside other practitioners in their institution or workplace, as well as colleagues in other locations, allows these professionals to be part of a learning environment that can enable them to reflect on and critique their own practices, while being exposed to the practices of others in a similar, authentic context.

The ICTPD School Cluster programme is an example of both situated learning and communities of practice. The professional development’s focus was on pedagogical knowledge and practices, as well as skills in using ICT, and transferring this new knowledge and skills to improve teachers’ own practice. The engagement of teachers in professional dialogue and the forming, transforming and maintaining of collegial relationships in schools and professional learning communities are valuable outcomes of this initiative (Billowes & Alexander, 2010). This has been able to be achieved through situating the professional development in the authentic contexts of teachers’ classrooms and schools and presenting pedagogy as well as technical skills (Lloyd & McRobbie, 2005; Prestridge, 2009). The ICTPD programme was delivered, for the most part, in the schools and classrooms of the participants. The focus of the professional development was not only to have the teachers acquire new skills but also the pedagogy that underpinned the use of ICT in their classroom practices.
3.4.1 Communities of practice

The term communities of practice refers to learning environments where all members, who share a common interest, cooperate and contribute to “enhance their individual [and collective] acquisition of knowledge and skills” (Gebhard, 2008, p. 124). Wenger, McDermott and Snyder (2002) suggest that communities of practice may be defined as “groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly” (p. 4).

According to Wenger (2000), in order for a community of practice to be considered as such, the following three elements are crucial:

1) **Domain** – a community of practice is defined by a common field of interest and is not “merely a club of friends or a network of connections between people” (p. 229).

2) **Community** – members of the community engage in common activities and discussions, assist each other, and share information.

3) **Practice** – the members of a community of practice are practitioners and participate in sharing resources, experiences, tools, and practices.

In this study, although not all of the participants belong to the same community of practice, the common domain, community and practice of each of these communities of practice is a group of teachers taking part in professional development in using ICT for teaching and learning. In each community of practice, the practitioners are engaged with each other as members of a professional group, sharing a collection of knowledge (in this instance about pedagogical practices and effectively integrating ICT), and working collaboratively through activities and experiences to “deepen their knowledge and expertise in this area by interacting on an ongoing basis” (Wenger et al., 2002, p. 4).

Wenger (2012) states on his website (www.wenger-trayner.com) that communities of practice are able to build capacity and capabilities within an institution or workplace by enabling practitioners to:

- take collective responsibility for managing the knowledge they need, recognising that, given the proper structure, they are in the best position to do this;
- create a direct link between learning and performance;
• address the tacit and dynamic aspects of knowledge creation and sharing, as well as the more explicit aspects; and

• create connections among people across organisational and geographic boundaries.

In relation to this study, the above ‘enablers’ were present in the clusters that the study participants were part of, in particular, the inclusion of integrating ICT into classroom practices as part of the appraisal cycle of teachers, visiting other schools to observe how teachers had integrated ICT into classroom practices, and developing links with different clusters and educationalists.

A community of practice is the result of the interaction between a group of practitioners, a domain of knowledge, and the shared practice that the community members are developing in order to be effective in this domain (Wenger et al., 2002). With these three aspects interacting effectively, “the social structure that can facilitate the construction and stewardship of knowledge is formed” (Edwards, 2011, p. 26). Wenger (1998) views learning “as social participation which shapes not only what we do but also who we are and how we interpret what we do” (p. 3). The knowledge that the individual members bring to the community certainly aids with the identity of the group, the knowledge they create and the common understanding that informs the shared practice.

The concept of communities of practice is not without criticism. According to Wenger et al. (2002), some of the attributes of a community of practice that are seen as strengths in facilitating learning, such as, “shared perspectives on a domain, trust, a communal identity, longstanding relationships, an established practice” are also the attributes which “can hold it hostage to its history and achievements” (p. 141). In order to continue to improve, reflection on and critique of practice needs to occur rather than having a practice continue just because it works and that is the way the group has always done it.

Reflective practice and situated learning are two of the hallmarks of professional learning communities in the education sector, thus, these groups of educators can act as communities of practice (Clarke, 2006). When describing situated learning within
communities of practice, Greeno (1998) suggests that “learning is becoming attuned to constraints and affordances of activity and becoming more centrally involved in the practices of a community” (p. 11). In the next section, the concept of situated learning as a learning environment is explored.

3.4.2 Situated learning

Situated learning focuses on “the relationship between learning and the social situations in which it occurs” (Lave & Wenger, 1991, p. 14). Anderson, Reder and Simon (1996) emphasise the notion that “much of what is learned is specific to the situation in which it is learned” (p. 5). The relationship between what is learned in the learning environment and what is needed outside the learning environment needs to be given greater attention in order to ensure that successful transfer of learning can occur (Anderson et al., 1996).

Anderson et al. (1996), put forward the following four claims of situated learning and its relevance to professional development.

1) Learning is grounded in the specific situation or context in which it occurs. Some skills, however, such as reading, transfer from one context to another.

2) Knowledge does not always transfer between tasks. If knowledge is wholly tied to the context of its acquisition, it will not transfer to other contexts.

3) Training by abstraction is of little use. Abstract instruction can be ineffective if what is taught in the classroom is not what is required on the job.

4) Learning is inherently a social phenomena. As Lave and Wenger (1991) contend, “learning is not merely situated in practice as if it were some independently reifiable process that just happened to be located somewhere; learning is an integral part of generative social practice in the lived-in world” (p. 35).

The situated learning of the ICTPD cluster allows the teachers to replicate the pedagogy of the professional development in their own classrooms. This authentic context allows for teachers to be in familiar settings, with students they know and where their practices are established in order for the changes to classroom practices to be trialed and informed decisions made whether the practice is adopted, amended or rejected. “Situated learning arguably gives teacher participants a ‘why’ rather than
a ‘how’ to implement ICT[s] in their classrooms and schools thus allowing greater diversity in outcome through translation from theory into local practice” (Lloyd & McRobbie, 2005, p. 349). Resnick (1987) contends that learning that is contextually situated may not necessarily be able to be transferred or applied by learners to new contexts. Being focused on student learning is also essential for professional development to be effective, as improved outcomes for students should be the reason for making changes to pedagogical practices (Lloyd & McRobbie, 2005).

Just as teachers work to ensure they create classroom learning environments that enable students to be fully engaged in the teaching and learning process, professional development programmes should provide the conditions needed to “optimise learning and promote the transfer of knowledge and skills” (Smeets, 2005, p. 344) for the teachers. Authentic contexts, independent and collaborative learning tasks, and differentiated activities need to be provided to cater for the range of identified needs and capabilities of the practitioners, as well as creating a “powerful learning environment” (Smeets, 2005, p. 344) for the professional development to occur.

In the next section, how the professional development undertaken by teachers links to making changes to pedagogy is presented and discussed in relation to this study.

3.5 Changes in Pedagogy
The integration of ICT into teaching and learning requires the melding of established classroom practices with innovation. For teachers to change both their pedagogical practices and thinking to effectively integrate ICT, they need to learn more than the technical skills required. Teachers’ ICT professional development needs to provide them with a theoretical basis to revise their pedagogical thinking and practices in order to replace their established practices without changing just for the sake of changing (Cox et al., 2003). Otherwise, they will come away from professional development sessions feeling frustrated, confused and demotivated about making changes (Moore, 2002; Rogers, 2003). Prestridge (2009) contends “what is important for ICT professional development is the circumstances required to enable teachers to change their pedagogical practices (p. 44). One of the key aspects of these circumstances is time: time to become familiar with the ICT; time to explore their use in the classroom with students; and, time to reflect on their existing practices and
make informed decisions regarding integrating the ICT into their classroom practices (Prestridge, 2009; 2010).

John Daniel (2002), the UNESCO Assistant Director-General for Education 2000 – 2004, in his address at the 2002 LEARNTEC Conference, suggested that ICT professional development providers need to consider the following questions:

- Why should teachers want to use ICT?
- Which ICT are best?
- How and where should ICT be used for learning and teaching?
- Who can benefit most from educational technology?

Change is necessary for progress to be made and Fullan (2008), Kozma and Anderson (2002), Loveless, DeVoogd, and Boblin (2001), and Watson (2001) argue that this change needs to come from teachers themselves. It has been suggested by Fullan (2007), who argues that the biggest barrier to teachers’ integrating technology is perhaps change itself; even with easy access to technology, change is not simple. “Change is itself a complex issue, and a change in learning or teaching is perhaps the most complex” (Pratt, Lai & Munro, 2000, p. 24). Fullan (2008) argued that changing formal structures is not the same as changing norms, habits, skills and beliefs. Many such scholars suggest that teachers and their ability to sustain change is the essence of technology integration. As Loveless (2003) asserts, it is people, rather than technology, that changes practice.

### 3.5.1 Technological pedagogical content knowledge (TPACK)

ICT used in schools have changed over the years, as discussed in Chapter 1, and the developments have become more rapid in recent years. Ertmer (2005) contends, “technology changes quickly, causing hardware and software applications to become outdated... The instability of digital technologies requires that teachers become lifelong learners who are willing to contend with ambiguity, frustration and change” (p. 8). With the evolution of ICT, teachers and students have been provided with new ways to access and process knowledge across a variety of content areas (Martinovic & Zhang, 2012). ICT can potentially transform pedagogy, and teachers’ classroom practices, by providing new ways to engage learners (Finger et al., 2015; Neiss, 2011). ICT can be popular and innovative, and introducing them into classroom
practices may have the potential to change the way teachers think about teaching and learning, as the inclusion of ICT “in pedagogy further complicates teaching” (Koehler & Mishra, 2009, p. 3).

According to Mishra and Koehler (2006), however, there has been “a tendency to only look at the technology and not how it is used” (p. 1018) and they argue, “merely introducing technology to the education process is not enough” (p. 1018). They contend that if teachers are to integrate these ICT into their teaching and learning programmes in meaningful ways, “they require a specific kind of knowledge that we call TPACK” (Mishra & Koehler, 2009, p.15).

The seminal work of Koehler and Mishra (2006) builds on the earlier work of Lee Shulman (1986) to add technological knowledge to Schulman’s construct of pedagogical content knowledge (Koehler, Mishra & Cain, 2013; Mishra & Koehler, 2006) to create what is known as TPACK (see Figure 3.1).

*Figure 3.1 TPACK Image (rights free) retrieved from [http://www.mattkoehler.com/tpack/what-is-tpack/](http://www.mattkoehler.com/tpack/what-is-tpack/).*

TPACK is described as a “teacher knowledge framework for technology integration” (Koehler et al., 2013, p. 13) and introduces the three knowledge bases (content,
pedagogy, and technology) and the relationships and the complexities between all three basic components of knowledge as shown in Figure 3.1 (Koehler & Mishra, 2009; Mishra & Koehler, 2006). The interactions between these components of knowledge are represented as pedagogical content knowledge (PCK), technological content knowledge (TCK), technological pedagogical knowledge (TPK) and technological pedagogical content knowledge (TPACK) (Kimmons, 2015; Koehler & Mishra, 2009; Schmidt, Baran, Thompson, Mishra, Koehler, & Shin, 2009). These components intersect to provide seven components, defined in Table 3.2. At the intersection of these three knowledge types is an understanding of teaching content using appropriate pedagogical methods and technologies (TPACK).

Table 3.2 Seven components of TPACK framework

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Pedagogical knowledge (PK)</td>
<td>The methods and processes of teaching; includes knowledge in classroom management, assessment, lesson plan development, and student learning.</td>
</tr>
<tr>
<td>Content knowledge (CK)</td>
<td>Knowledge about the specific content that is to be learned or taught and how the nature of knowledge is different for various content areas.</td>
</tr>
<tr>
<td>Technological knowledge (TK)</td>
<td>Knowledge about various technologies, ranging from low-tech technologies such as pencil and paper to digital technologies such as Internet, interactive whiteboards, and software programs.</td>
</tr>
<tr>
<td>Pedagogical content knowledge (PCK)</td>
<td>The knowledge required to blend content and pedagogy with the goal being to develop better teaching practices in the various content areas.</td>
</tr>
<tr>
<td>Technological content knowledge (TCK)</td>
<td>Knowledge of how using specific technology can change the way learners practice and understand concepts in a specific content area.</td>
</tr>
<tr>
<td>Technological pedagogical knowledge (TPK)</td>
<td>Knowledge of how various technologies can be used in teaching, and the understanding that using technology may change the way teachers teach.</td>
</tr>
<tr>
<td>Technological pedagogical content knowledge (TPACK)</td>
<td>Knowledge required by teachers for integrating technology to teach content using appropriate pedagogical methods.</td>
</tr>
</tbody>
</table>

(Adapted from Schmidt et al., 2009, p. 125).
Teachers need to develop their technological pedagogical content knowledge or TPACK in order to successfully integrate the use of ICT into their teaching of various content (Koehler & Mishra, 2009; Neiss, 2011). To develop their TPACK, teachers need to make links between content (what is being learned), pedagogy (how it is taught), and technology (the appropriate tools) (Koehler et al., 2013; Neiss, 2011).

Given the added complexity that technology brings to the teaching and learning process (Bigum & Rowan, 2008; Koehler & Mishra, 2009; Neiss, 2011) the TPACK framework is useful for thinking about what knowledge teachers must have to integrate technology into their teaching of various content areas and how they might develop this knowledge (Neiss, 2011; Schmidt et al., 2009). Mishra et al. (2013) posit that “by better describing the types of knowledge teachers need (in the form of content, pedagogy and technology contexts, and their interactions), educators are in a better position to understand the variance in levels of technology integration that occurs” (p.18).

The TPACK framework suggests that the content, pedagogy, and technology components have parts to play individually and together. The interaction between the components of the framework, however, is not static and requires teachers to keep their knowledge current to teach successfully with ICT (Schmidt et al., 2009). As such, it impacts on the type of professional development experiences that are designed for teachers, as well as those who are involved in preparing teachers. As Schmidt et al. (2009) argue, “there is a continual need to rethink our preparation practices in the teacher education field and propose new strategies that better prepare teachers to effectively integrate technology into their teaching” (p. 126). The TPACK framework assists teachers, as well as teacher educators and researchers, through highlighting the need to focus on all three knowledge components rather than having ICT as an add-on to existing teaching practices in various content areas (Koehler & Mishra, 2009; Newhouse, 2014).

The TPACK framework was originally designed as a framework of knowledge required to integrate ICT effectively into teaching practices in various content areas, as opposed to being a tool to measure this knowledge. After its initial development, it has been used in a number of ways, and a number of researchers (see Abbitt, 2011;
 CHAPTER THREE: LITERATURE REVIEW

Archambault & Barnett, 2010; Cavanagh & Koehler, 2013; Graham, Cox, & Velasquez, 2009; Jamieson-Proctor, Watson, Finger, Grimbeek, & Burnett, 2007; Jamieson-Proctor, Albion, Finger, Cavanagh, Fitzgerald, Bond, & Grimbeek, 2013; Koh, Chai, Hong, & Tsai, 2015; Schmidt et al., 2009) have worked to develop surveys aimed at measuring TPACK and its various components, with varying levels of success. There have also been a number of criticisms of the TPACK framework, both of the construct itself (see Archambault & Barnett, 2010; Avidov-Ungar & Eshet-Alkalai, 2014; Brantley-Dias & Ertmer, 2014), as well as how it is being used as a tool to measure teachers’ technological pedagogical content knowledge (see Kimmons, 2015). Mishra & Koehler (2006) describe the purpose of the TPACK framework:

Theories and frameworks help to make sense of the world. They provide us with concepts and terminologies with which to describe phenomena accurately. In this regard, the TPACK framework allowed us to make sense of the complex web of relationships that exist when teachers attempt to apply technology to the teaching of subject matter (p. 1044).

Koehler and Mishra (2009) warn us that “teaching with technology is a difficult thing to do well” (p.67). When teachers decide to use ICT in their classroom practices, they need to consider the “affordances for teaching content and engaging learners, as well as a number of constraints on what functions technologies can serve in the classroom” (Koehler & Mishra, 2008, p.6). The affordances of ICT explain how teachers and students interact with the ICT while the design of ICT can constrain what you can do with it. Koehler and Mishra (2008) provide the example of a single use tablet technology application as an idea of affordances and constraints. An app, such as Alphabet Flashcards, “affords students to practice their alphabet knowledge but the constraint is that the teacher is not able to make changes to make it specific to an individual student’s needs or context” (Koehler & Mishra, 2008, p. 6).

“Understanding how these affordances and constraints of specific technologies influence what teachers do in their classrooms is not straightforward and may require rethinking teacher education and teacher professional development” (Koehler et al., 2013, p. 14). The diverse contexts, even within one school, that teachers teach in means that professional development also needs to be diverse in its approach to technology integration (Koehler et al., 2013).
In the next section, the requirement for professional development to cater for the diverse needs of primary teachers as well as what the teachers potentially take from the professional learning opportunities is discussed.

3.5.2 Professional development for primary teachers

Timperley et al. (2007) emphasised that, “teachers in New Zealand, as in other countries, are diverse and have diverse learning needs. The same professional development experience can result in very different outcomes for teachers” (p. 6). Even though teachers may engage in the same or similar professional development, what they take from and how they react to their professional development experiences can be quite different. Teachers may be very enthused by and positive about the professional development, have the key elements resonate with their beliefs about teaching and learning, and be able to implement and make changes to their classroom practice. Other teachers, however, may have negative views about the professional development experience, not understand or see the relevance to their situation, reject the ideas being presented, and continue to use the classroom practices they are comfortable with and that resonate with their philosophy about teaching and learning (Timperley et al., 2007, p. 6)

Timperley et al. (2007), in their Best Evidence Synthesis on Teacher Professional Development, put forward the notion of ‘the black box’ of teachers’ learning (p. 7). This black box is the teachers’ understanding and utilisation of the skills and activities offered during the professional development. This black box is the bridge between the professional development programme participated in by the teachers and the impact the programme has on their classroom practices as shown in Figure 3.2.

Figure 3.2 The black box of teacher learning
(adapted from Timperley et al., 2007, p. 7)

Through the narratives of the participating teachers, the aim of this thesis is to explore their perspectives of the theory, skills and activities offered in the ICTPD
programme, and their reports of the impact of these on their pedagogy and classroom practices. It must be noted here that any change is self-reported by the study participants. Timperley et al. (2007) caution that:

Little is known about how teachers interpret the understandings and utilise the particular skills made available through professional learning opportunities, and about the consequent impact on teaching practice, except that the relationship is far from simple (p. 7).

When teachers undertake professional development, a process of change – of varying degrees for each individual – takes place. This thesis is an investigation of the black box from fifteen primary teachers’ perspectives.

3.6 Summary

The ICTPD programme encouraged individual clusters to adopt or develop a model of professional development that addressed the identified individual and collective needs of the participants, as well as introducing new ideas and strategies. Over the years, there were almost as many models of professional development utilised, as there were clusters. In fact, one or more of the models of professional development, presented in section 3.3.3, were incorporated into the variety of professional development programmes devised by the various clusters during the ICTPD programme. Importantly, in order for changes in practices to occur, teachers need to understand not only the how but also the why. This allows the professional learning community, of which they are part to have a common understanding, create shared knowledge, and make informed decisions.

The professional development provided needed to allow time for the teachers to develop their technological knowledge, build on their pedagogical knowledge, reflect on their content knowledge, and develop their understanding of how these three types of knowledge interact in order to be able to effectively use ICT in their classroom practices. In order to make changes to or adapt new classroom practices that improved outcomes for their students, the teachers needed to critique their practices in light of their technological pedagogical content knowledge (TPACK).

In the following chapter, the context of the research is presented with each of the research participants introduced.
CHAPTER FOUR
THE RESEARCH CONTEXT

4.1 Introduction
This chapter describes the research context in order to show how the professional development experiences of the participant teachers reflected the political and educational factors of contemporary New Zealand education. The individual research participants and their contexts are introduced in the second half of this chapter.

The following sections describe the ICTPD programme and outline the New Zealand Ministry of Education’s ICT and e-learning strategies and its intentions for utilising ICT in education.

4.2 History of information and communication technologies in New Zealand schools
The introduction, first, of the use of computers, then of Information Technology (IT) and finally, of ICT in New Zealand classrooms occurred over what can be deemed to be three distinct phases. Phase One was the period from the early 1970s up to the educational reform, known as Tomorrow’s Schools, in 1989; Phase Two was the period from 1989 until the introduction of the first ICT Strategy in 1998; and, Phase Three spanned from the introduction of the first ICT Strategy to beyond the time of this study. The research context of this study takes place within Phase Three, starting with the introduction of the first ICT strategy and the ITPD programme which later developed into the ICTPD programme, the topic of this research.

4.2.1 The ITPD and ICTPD programmes
In order to meet the professional development obligation of the ICT strategy plan, the Ministry of Education developed and initiated the Information Technology Professional Development (ITPD) project in 1998 (Ministry of Education, 1998). The Strategic Plan stated that the government would continue to fund this project beyond 1999 as part of the ICT Strategy. The ITPD was a professional development programme to help schools improve their information technology capability. Schools
chose their own programmes and models of professional development. Funds were available to supplement or support the costs of training or development for staff, but hardware and software purchases were excluded. Schools or clusters of schools had to apply for funding based on a series of criteria set by the Ministry of Education (Velde, 1999). The application required schools to outline their strategic plan and explain how the money would be disbursed (Ministry of Education, 1998). Only successful applicants received assistance for a professional development programme for their school, otherwise Boards of Trustees or teachers themselves would need to fund their professional development (Velde, 1999).

With the introduction of the government’s ICT Strategy and the provision of government funding to support schools with ICT infrastructure and capability, the Education Review Office (ERO) began to include information in their accountability review reports of individual schools as to “how well ICT[s] is being implemented in New Zealand Schools and the extent to which it is integrated into the delivery of the curriculum” (ERO, 2000, p.1). In June 2000, a collection of the findings of these reviews was published by the ERO in its report, *The Implementation of Information and Communications Technology (ICT) in New Zealand Schools 2000*. In June 2001, this was followed by a subsequent report, *The Implementation of Information and Communications Technology (ICT) in New Zealand Schools 2001*. It was reported that, by April 2001, most schools had implemented ICT to some degree but that difficulties, such as networking, still needed to be addressed by many schools. The 2001 Report also acknowledged the effort that had been expended on professional development, and argued that more was required to enable teachers to integrate ICT effectively into classroom programmes. It was suggested that there remained a need for national leadership to enhance the effectiveness of ICT in schools. One of the recommendations was that consideration be given to the extent to which the curriculum should be more prescriptive about the use of ICT. The Report also looked at the barriers to the successful use of ICT, in particular, finance (hardware/software/age of equipment) and teachers’ expertise (ERO, 2001, p.12).

In 1998, the Ministry of Education announced its intention to fund the ICTPD initiative for clusters of schools to undertake professional development on integrating ICT into classroom teaching and learning programmes (Creech, 23 March 1998 press release). In 1999, 23 clusters nationally began their three-year ICTPD programmes.
Each cluster had a project director, a facilitator or group of facilitators, and the teaching staff of the schools to whom the professional development programme was to be delivered. Individual clusters were able to develop their own or use an existing professional development programme model that would allow them to address their needs. Each cluster was accountable for their programme through a series of milestone reports throughout their three-year contract period.

The Ministry of Education also contracted an independent agency to research the ICTPD programme to ascertain the effectiveness of the cluster programmes, and to give indications of national trends in the use of ICT in teaching and learning. This research was initially implemented by the Christchurch College of Education and then transferred to Ultralab South Ltd (now known as CORE Education Ltd) when the lead researcher took up his role as a founding director. As declared in Chapter 1, in 2004 I was employed by Ultralab South Ltd as a Senior Researcher on the ICTPD evaluation team who were under contract to the Ministry of Education.

Over the three-year period of each ICTPD programme, the participants were surveyed at the beginning and the end of the programme and were observed in their classrooms by the researchers. In 2001, another 28 clusters were established, followed by the establishment of between 20 to 40 clusters annually until 2010. The staff involved in the cluster cohorts after 2001 completed a baseline survey and an end-of-project survey, but did not have classroom observations. In 2002, online surveys were introduced by CORE Education Ltd, which were administered at six-monthly intervals.

The Ministry of Education developed a website, Te Kete Ipurangi, which made available teaching resources, curriculum information, assessment exemplars, and more (www.tki.org.nz). It evolved, supporting students, teachers, and teacher educators with resources, assessment exemplars, and showcasing examples of contemporary teaching and learning within the context of The New Zealand Curriculum document. The Ministry also developed an online environment in which members of the ICTPD programme could connect and share resources. This online environment developed into ICTPD Online, which then evolved into the Virtual Learning Network (VLN) – an online professional learning environment. The cluster
participants shared their experiences, perspectives and expertise, thereby, creating an online community of practice through the following means:

- sharing information about personal experiences and viewpoints collegially;
- exploring ideas about effective practice collaboratively;
- sharing links to useful online classroom resources;
- making links between classroom practice and current research;
- modeling online learning situations;
- contributing to a national network of people with experiences in the ICT field;
- gaining support by working with others;
- maintaining contacts across a geographically dispersed group; and,
- participating at a place and pace that suited them (see http://elearning.tki.org.nz/Archive/ICT-PD).

The ICTPD programme, in its original format, ceased at the end of 2012. According to the TKI website in November 2012 (http://elearning.tki.org.nz/Professional-learning/Professional-development/ICT-PD) now archived at (http://elearning.tki.org.nz/Archive/ICT-PD), the intention was that, “Professional Development in ICT will transition to a regional programme that combines online and face-to-face support”.

4.3 ICT strategy documents

4.3.1 Interactive Education: An Information and Communication Technologies Strategy for Schools

It was hailed as the most significant development in the history of computers in New Zealand schools. On 28 October 1998, the much anticipated, Interactive Education: An Information and Communications Technology Strategy for New Zealand Schools, was launched. In the Foreword, the then Minister of Education, Wyatt Creech, stated that, “information and communication technologies comprise a range of tools to support all seven essential learning areas” (i.e., the Arts, Health and Physical Education, Technology, Social Studies, English, Learning Languages, Science, and Mathematics) (Ministry of Education, 1998, p. 4). He further emphasised the use of ICT in schools by stating that, “it is important that all schools take the opportunity to
integrate these tools into their teaching and learning programmes” (Ministry of Education, 1998, p. 4).

The ICT Strategy was to guide the implementation and integration of ICT into teaching and learning programmes. Its introduction stated that, “this strategy has been developed to help teachers and schools to integrate these technologies into their classroom programmes” (Ministry of Education, 1998, p. 5). The Strategy document explained the Ministry’s aims, objectives and schedule for the implementation and integration of ICT into classroom programmes. It stated:

By the year 2002, it is envisaged that schools in New Zealand will be demonstrating that they are:

• improving learning outcomes for students by using ICT to support the aims and objectives of the New Zealand curriculum and by providing ICT professional development to teachers and principals;
• using ICT to improve the efficiency and effectiveness of educational administration; and
• developing partnerships with their communities to enhance access to learning through ICT (Ministry of Education, 1998, p. 5).

This document was replaced in 2002 with the strategy document, *Digital Horizons: Learning with ICT*, discussed below.

### 4.3.2 Digital Horizons: Learning Through ICT

*Digital Horizons: Learning Through ICT* was published in 2002 and revised in 2003 (Ministry of Education, 2002, 2003). The 2003 *Digital Horizons* strategy document continued the focus of the aforementioned 1998 and 2002 documents, that is, “helping schools to extend their use of ICT to support new ways of teaching and learning” (Ministry of Education, 2003, p. 3). Its vision statement was that “[a]ll learners will use ICT confidently and creatively to develop the skills and knowledge they need to achieve personal goals and to be full participants in the global community” (p. 3). The document outlined the learning environments that were conducive for this vision to be fulfilled. A framework for action was provided covering seven key action areas and the goals and strategies to achieve them. This framework is reproduced in Figure 4.1.
<table>
<thead>
<tr>
<th>Key Action Areas</th>
<th>Goals</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learners</td>
<td>Learners have systematic opportunities to develop digital and information literacy, and enjoy using ICT creatively, constructively and critically in extending their horizons and growing as lifelong learners.</td>
<td>The strategies outlined in this document focus on: • fostering a deeper understanding of the role of ICT in developing the essential skills of the curriculum, especially higher-order thinking and information skills. • <em>extending the capability of teachers and school leaders through cluster-based and online professional development activities.</em> • creating a culture of collaboration and facilitating the sharing of best practice through school clusters and online communities of interest. • building partnerships between schools, government, communities and business. • developing and delivering quality online learning resources. • enhancing the effectiveness and sustainability of infrastructure. • developing agreed standards for interoperability of systems and infrastructure to facilitate the sharing of information across the sector.</td>
</tr>
<tr>
<td>Teachers</td>
<td>Teachers become confident and capable users of ICT, use of ICT to support their professional growth and administration, and integrate ICT flexibly and effectively within the curriculum to enhance learners’ knowledge, skills and attitudes.</td>
<td></td>
</tr>
<tr>
<td>Leaders</td>
<td>Leaders (principals, boards of trustees, ICT and information managers) enable staff to use ICT to explore innovative practice, lead whole-school change, and promote and use ICT to model best practice.</td>
<td></td>
</tr>
<tr>
<td>Māori</td>
<td>Māori students enjoy using ICT to embrace tikanga and te reo Māori, to access Māori medium education, and to participate fully and experience success in learning.</td>
<td></td>
</tr>
<tr>
<td>Families, Communities, Businesses, and other Stakeholders</td>
<td>Schools work in partnership with families, businesses and the wider community to share knowledge about ICT and extend opportunities for learning through ICT.</td>
<td></td>
</tr>
<tr>
<td>Curriculum and Learning Resources</td>
<td>Schools have ready access through ICT to a wide and well-focused range of learning resources that are selected, organised, and managed to be responsive to their needs and relevant to the curriculum.</td>
<td></td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Schools are able to access reliable, sustainable, efficient, and appropriate ICT equipment, systems and services that meet their current and emerging needs.</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 4.1 Framework for Action (derived from Ministry of Education, 2003, p. 3)*

The second strategy listed in the *Framework for Action*, namely, “extending the capability of teachers and school leaders through cluster-based and online professional development activities” (Ministry of Education, 2003, p. 3), is the one that is relative to this study given the emphasis on the ICTPD programme and focus on the impact this had on participating teachers’ classroom practices.
There was, however, one criticism of the Digital Horizons document. While the goals were viewed as addressing the needs of the Key Action Areas (i.e., learners, teachers, leaders, Māori, families, communities, businesses and other stakeholders) and ensuring there was access to curriculum and learning resources and the infrastructure was in place to allow this to happen, there were no measurable outcomes nor times for the goals to be achieved in the document (Hambleton & Zwimpfer, 1998).

### 4.3.3 e-Learning Action Plan for Schools

In 2006, the Ministry released another document entitled, Enabling the 21st Century Learner: An e-Learning Action Plan for Schools, which built on the previous ICT strategies for schools. The document asserts that:

> e-Learning has the power to transform the way we learn. It is about exploiting technologies in everything we do and using ICT effectively across the curriculum to connect schools and communities and to support evidence-based decision-making and practices in schools (Ministry of Education 2006, p. 4).

Furthermore, it argues, “e-Learning can provide accessible, relevant and high quality learning opportunities so that every student is better able to achieve their full potential” (Ministry of Education 2006, p. 4). It explained that e-Learning would accomplish these goals according to the process shown in Figure 4.2.
Schools’ e-Learning Action Plan

Figure 4.2 Schools e-Learning Action Plan (derived from Ministry of Education, 2006, p. 5)

Figure 4.2 shows how all of the various parts contributed to the goal of the Ministry of Education’s Schooling Strategy (Ministry of Education, 2006) of “all students achieving their potential” (p. 8). The three priorities of the Schooling Strategy include: 1) all students experience effective teaching; 2) children’s learning is nurtured by families and whānau (Māori word for extended family); and, 3) evidence-based practices are used by all involved in schooling (Ministry of Education, 2006, p. 4). The 2006 Strategy document stated that the previous ICT strategies for schools had “laid the foundations for the effective use of ICT in schooling” (p. 6) through the provision of professional development, making
CHAPTER FOUR: THE RESEARCH CONTEXT

appropriate online resources available, building infrastructure and integrating the role of ICT into schooling (Ministry of Education, 2006, p. 6).

Alongside the e-Learning Action Plan, the e-Learning Planning Framework was also available from the Ministry of Education’s TKI website (www.tki.org.nz). This planning framework was a tool to help schools and teachers self-review and measure their e-Learning capability. Figure 4.3 shows the phases that a school and/or a teacher go through as they develop their e-Learning capability “to learn with and through technologies” (http://elearning.tki.org.nz/Professional-learning/e-Learning-Planning-Framework2). As schools and teachers progress in the e-Learning capability, decisions were driven more by learning needs than by the technology itself.

Figure 4.3 Phases of Schools’ and Teachers’ Growing e-Learning Capability (derived from the New Zealand Ministry of Education’s website, Te Kete Ipurangi (www.tki.org.nz)).

From their introduction in 2006 to the present, the e-Learning Action Plan and the e-Learning Planning Framework have remained as guides for integrating ICT into classroom practices and continued development of teachers’ e-Learning capabilities. The Ministry of Education, through the website, Te Kete Ipurangi (www.tki.org.nz), have continued to provide resources for students and teachers, discussion boards for interest groups and communities of practice, and support for schools, teachers and students to enable e-Learning capability to continue to develop. The description on the ‘enabling e-Learning’ webpage (http://elearning.tki.org.nz) states, “Enabling e-Learning brings together relevant information, resources, and communities to
support teachers and schools in developing their e-learning practice”. Through the various tabs, such as Teaching, Beyond the Classroom, Professional Learning, VLN Community, and VLN Primary School, on the enabling e-Learning webpage, teachers, schools and students have access to a wide variety of information and resources to support their use of ICT for teaching and learning as well as develop their e-Learning capability.

The participants in this study described the development of their e-Learning capability and use of ICT for teaching and learning within the context of their narratives that are presented in Chapters 6 to 8. In the previous section, the research context of the participants in this study has been provided. The various Ministry of Education’s ICT and e-Learning strategies have been outlined to highlight the motivation for and goals that the Ministry had and has for the integration of ICT into schools. As well, a brief overview of the ICTPD School Clusters programme has been given. The purpose of this study was on professional development and the impact the ICTPD programme had on the classroom practices of the fifteen primary teacher participants, and the subsequent sustainability of the changes made to participants’ classroom practices, from the completion of the ICTPD programme at the end of 2006 to the end of 2014.

In the next section, the individual research participants are introduced through brief biographies and their professional contexts are outlined.

4.4 The research participants
The research participants involved in this study participated in the ICTPD Schools Cluster programme (2004 – 2006 cohort) for between two to three years, with the majority (fourteen) of the participants doing so for a period of three years. The fifteen male and female participants were all involved in the primary sector, teaching classes that included one or more year levels from Year 0 (those children who turn five years old after 1 July each year) to Year 8 (twelve to thirteen year olds). The range of years of teaching experience spanned from about two years to thirty-one years, with nine holding positions of responsibility, for example, Senior Teacher (responsible for leading a team of teachers), Deputy (Vice) Principal or an Assistant (Vice Principal usually in the Junior area of the school) Principal, and Principal. The participants spanned a variety of schools: suburban, suburban integrated, semi-rural,
and rural. These schools also ranged from having a socio-economic decile rating of 5 (mid) to 10 (highest rating) and were located in four different ICTPD clusters in the Canterbury region of New Zealand.

It should be noted here that with so few participants, no conclusions can be or have been made about any of the abovementioned factors impacting on teachers’ outcomes from the ICTPD programme, nor is it possible to generalise to all teachers in New Zealand.

In the end-of-project survey for the 2004-2006 cohort taking part in the ICTPD programme (see Appendix 4), the following quantitative question was asked: To what extent have your classroom practices changed as a result of participating in the ICTPD School Clusters programme? Table 4.1 shows the responses of the participants concerning the extent they reported their classroom practices had changed as a result of participating in the ICTPD programme and are grouped according to the level of primary school the study participants taught.

Table 4.1 The extent participants self-reported their classroom practices had changed as a result of participation in the ICTPD programme and the primary school level taught at the time of the 2006 interviews

<table>
<thead>
<tr>
<th>Teacher Statements</th>
<th>Junior School Teachers</th>
<th>Middle School Teachers</th>
<th>Senior School Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sally</td>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Mary</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Barbara</td>
<td>5</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Irene</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Ann</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Julie</td>
<td>3</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Tania</td>
<td>2</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>George</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Hannah</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Michael</td>
<td>4</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Aaron</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Carol</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Alex</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Nancy</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Charlotte</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

1=Not at all    2=Very little  3=To some extent  4=To a large extent  5=Completely

As can be seen in Table 4.1, all of the teachers stated that their classroom practices had changed somewhat, with no one choosing the response ‘not at all’. Two teachers, Irene and Tania, however, answered that their practices changed very little. Four of the teachers, George, Mary, Michael, and Julie, stated that their classroom practices
had changed *to some extent*. The remaining nine teachers, Sally, Barbara, Hannah, Carol, Ann, Paul, Alex, Nancy, and Charlotte, stated that their classroom practices had been changed *to a large extent or completely*. It should be noted that all of the participants had a laptop for their personal and professional use through the ‘The Laptops for Teachers’ (TELA) scheme (Cowie et al., 2010) funded by the New Zealand Ministry of Education and their school.

### 4.4.1 Participants’ biographical information

A summary of the participant’s biographical and school information is presented in Table 4.2. All names are pseudonyms.

Table 4.2 Participants’ biographical information from the 2006 interviews

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Gender</th>
<th>Number of years teaching</th>
<th>Type of school</th>
<th>Position of responsibility, e.g. syndicate leader, deputy principal</th>
<th>Cluster</th>
<th>Decile</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Junior School Teachers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sally</td>
<td>F</td>
<td>23</td>
<td>Suburban</td>
<td>Yes</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Mary</td>
<td>F</td>
<td>21</td>
<td>Suburban (Integrated)</td>
<td>Yes</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Barbara</td>
<td>F</td>
<td>14</td>
<td>Suburban (Integrated)</td>
<td>No</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Irene</td>
<td>F</td>
<td>8</td>
<td>Suburban</td>
<td>No</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Ann</td>
<td>F</td>
<td>23</td>
<td>Suburban</td>
<td>Yes</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Julie</td>
<td>F</td>
<td>27</td>
<td>Suburban</td>
<td>No</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Tania</td>
<td>F</td>
<td>8</td>
<td>Semi-rural</td>
<td>Yes</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td><strong>Middle School Teachers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>George</td>
<td>M</td>
<td>9</td>
<td>Suburban</td>
<td>Yes</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Hannah</td>
<td>F</td>
<td>12</td>
<td>Semi-rural</td>
<td>Yes</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Michael</td>
<td>M</td>
<td>&lt;2</td>
<td>Suburban</td>
<td>No</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Aaron</td>
<td>M</td>
<td>4</td>
<td>Suburban</td>
<td>No</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td><strong>Senior School Teachers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carol</td>
<td>F</td>
<td>18</td>
<td>Suburban (Integrated)</td>
<td>Yes</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Alex</td>
<td>M</td>
<td>8</td>
<td>Rural</td>
<td>Yes</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Nancy</td>
<td>F</td>
<td>19</td>
<td>Suburban</td>
<td>No</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Charlotte</td>
<td>F</td>
<td>9</td>
<td>Rural</td>
<td>Yes</td>
<td>4</td>
<td>9</td>
</tr>
</tbody>
</table>
The participants’ updated biographical information from the 2014 interviews is summarised in Table 4.3.

Table 4.3 Participants’ updated biographical information from 2014 interviews

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Gender</th>
<th>Number of years teaching</th>
<th>Type of School</th>
<th>Position of responsibility, e.g. syndicate leader, deputy principal, principal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior School Teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mary F</td>
<td>28</td>
<td>Suburban (Integrated)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Barbara F</td>
<td>21</td>
<td>Suburban (Integrated)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Irene F</td>
<td>15</td>
<td>Suburban</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Julie F</td>
<td>34</td>
<td>Suburban</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Ann F</td>
<td>27 (retired in 2011)</td>
<td>Semi-rural</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Middle School Teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>George M</td>
<td>16</td>
<td>Suburban (Integrated)</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Hannah F</td>
<td>18</td>
<td>Suburban</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Senior School Teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aaron M</td>
<td>11</td>
<td>Suburban</td>
<td>Yes (some classroom teaching responsibility)</td>
<td></td>
</tr>
<tr>
<td>Carol F</td>
<td>25</td>
<td>Suburban (Integrated)</td>
<td>Yes (some classroom teaching responsibility)</td>
<td></td>
</tr>
<tr>
<td>Charlotte F</td>
<td>16</td>
<td>Suburban</td>
<td>Yes (some classroom teaching responsibility)</td>
<td></td>
</tr>
<tr>
<td>Principals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sally F</td>
<td>30</td>
<td>Suburban</td>
<td>Yes (no teaching component)</td>
<td></td>
</tr>
<tr>
<td>Alex M</td>
<td>15</td>
<td>Rural</td>
<td>Yes (some teaching)</td>
<td></td>
</tr>
<tr>
<td>Participants who were not interviewed in 2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tania F</td>
<td></td>
<td>Living overseas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Michael M</td>
<td></td>
<td>Living overseas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nancy F</td>
<td></td>
<td>No longer teaching</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.4.2 Brief descriptions of the participants

The following brief descriptions of the participants are grouped according to the level they taught at the time of the 2006 and 2007 interviews (see Table 4.1). The
biographical information on each of the participants from the 2006 interviews is included at the beginning of Chapter 6. The participants were interviewed again in 2014. Any changes to teaching levels, schools the participants taught in, and positions of responsibility held (see Table 4.2) are included in the following descriptions. The updated biographical information on each of the participants is included in Chapter 8.

4.4.3 Junior School (Years 0 – 2)

The Junior School group (see Figure 4.4) taught classes that included one or more year levels from Year 0 (five year olds who start school after 1 July each year) to Year 2 (six – seven year olds). Their interviews provided interesting and insightful narratives of their professional development experiences. All of the participants were interviewed in 2006 and 2007, and the interviews occurred in their own classrooms. The Junior level participants, with the exception of Tania, were interviewed again in 2014. A brief biographical description for each of these seven participants follows.

4.4.3.1 Sally

At the time of the 2006 interview, Sally taught a Year 0/1 class and held a position of responsibility as an assistant principal at a suburban school in Cluster 2. She had 23 years’ teaching experience. In 2007, she was teaching at the same level in the same school and held the same position of responsibility. By 2014, Sally was principal of a different suburban school and no longer directly taught students.

4.4.3.2 Mary

Figure 4.4 Junior School Teachers

The Junior School group (see Figure 4.4) taught classes that included one or more year levels from Year 0 (five year olds who start school after 1 July each year) to Year 2 (six – seven year olds). Their interviews provided interesting and insightful narratives of their professional development experiences. All of the participants were interviewed in 2006 and 2007, and the interviews occurred in their own classrooms. The Junior level participants, with the exception of Tania, were interviewed again in 2014. A brief biographical description for each of these seven participants follows.
In 2006, Mary had 21 years’ teaching experience and taught a Year 0/1 class at a suburban integrated school. She was a Senior Teacher at the school that was part of Cluster 1. In 2014, Mary was at the same school and at the same Junior level as when interviewed her in 2006 and 2007. Mary relinquished her position of responsibility in 2009. During the 2014 interview, she commented that she was contemplating retiring in the next two years.

4.4.3.3 Barbara

At the time of the 2006 interview, Barbara’s school was part of Cluster 1 and she taught a Year 0/1 class at a suburban integrated school. She had fourteen years’ teaching experience. At the time of both the 2007 and 2014 interviews, Barbara was at the same school and at the same Junior level as when I previously interviewed her.

4.4.3.4 Irene

In 2006, Irene taught a Year 0/1 class, without a position of responsibility, at a suburban school. She had had been teaching eight years and her school was part of Cluster 3. At the time of the 2014 interview, Irene was in a position of responsibility at the same school. She had changed year levels between 2008 and 2012 and had taught at the Middle level, but gained a position of responsibility and returned to teaching at the Junior level.

4.4.3.5 Ann

Part of Cluster 3, in 2006 Ann taught a Year 0/1 class at a suburban school. She had 23 years’ teaching experience and held a position of responsibility at the school as Deputy Principal. Ann changed schools in 2008 to assume a position of responsibility for ICT and taught at the Junior level. Ann retired from teaching in 2011.

4.4.3.6 Julie

With 27 years’ experience, in 2006 Julie taught a Year 1 class at a suburban school that was part of Cluster 3. She did not hold a position of responsibility at the school. When I interviewed Julie in 2014, she was teaching the same level and had gained a position of responsibility at her original school.
4.4.3.7 Tania

Tania taught a Year 2/3 class at a semi-rural school in Cluster 4 in 2006. She had eight years’ teaching experience and held a position of responsibility at the school. At the time of the 2014 interview, Tania was teaching overseas and could not be contacted.

4.4.4 Middle School (Years 3 – 5)

The participants who taught classes that included one or more year levels from Year 3 (seven – eight year olds) to Year 5 (nine – ten year olds) made up the Middle School group (see Figure 4.5). Again, their interviews proved to be interesting and provided insightful narratives of their experiences with the professional development programme in which they participated. All of the participants were interviewed in 2006 and 2007, and all but one of the interviews occurred in their own classrooms to allow the participants to be in a familiar environment and enable them to refer to work that they had done to demonstrate or clarify a point being made. In 2014, all of the participants, except Michael, were interviewed. A brief biographical description for each of these four participants follows.

4.4.4.1 George

In 2006, George taught at a suburban integrated school in Cluster 1. He had nine years’ teaching experience and taught a Year 4/5 class, as well as being a Senior Teacher at the school. At the time of the 2014 interview, George had gained a position of responsibility at a different integrated suburban school. He had his own Middle level class with a release (from class responsibilities) component.
4.4.4.2 Hannah
At the time of the 2006 interview, Hannah had twelve years’ teaching experience and held a position of responsibility as Assistant Principal at the school. She taught a Year 4/5 class at a semi-rural school that was part of Cluster 4. Hannah resigned from her position of responsibility and ceased teaching in 2009 for personal reasons. When she returned to teaching in 2010, she changed schools and levels (Senior to Middle area). At the time of the 2014 interview, she was still teaching at the Middle-level at the same suburban school.

4.4.4.3 Michael
At the commencement of the cluster’s ICTPD contract, Michael was a beginning (provisionally registered with the New Zealand Teachers’ Council now Education Council New Zealand) teacher with less than two years’ teaching experience. The Year 3/4 class in the suburban school he taught at was his first and he did not hold a position of responsibility at the school. The school was part of Cluster 2. At the time of the 2014 interviews, Michael was teaching overseas and was not able to be contacted.

4.4.4.4 Aaron
Aaron taught a Year 4/5 class at a suburban school that was part of Cluster 3. He had four years’ teaching experience. In addition to the ICTPD programme, Aaron was enrolled in further study at the local College of Education in an area other than ICT. By the 2014 interview, Aaron had completed further study and gained a position as a deputy principal at another suburban school. He did not have his own class, but taught as a member of a team in the digital technology classes that had commenced at the school.
4.4.5  Senior (Years 6 – 8)

At the upper level of primary schooling is Year 6 (10 – 11 year olds) to Year 8 (12 – 13 year olds). The Senior School group (see Figure 4.6) taught classes that included one or more year levels from this age range. The experiences shared by this group gave a detailed insight into the professional development programmes of which they were part. All the interviews occurred in their own classrooms to allow for the participants to be in a familiar environment and enable them to refer to work that they had done to demonstrate or clarify a point being made. All of the participants were interviewed in 2006, 2007, and, with the exception of Nancy, again in 2014. Below is a brief biographical description for each of the four participants that taught at the Senior primary school level.

4.4.5.1  Carol

At the time of the 2006 interviews, Carol taught at a suburban integrated school and held a position of responsibility at the school as Deputy Principal. She had eighteen years’ teaching experience and was teaching a Year 7 class. In 2014, Carol continued in her position of responsibility and did not have a class of her own. However, she taught middle and senior classes as part of the release time classroom teachers had.

4.4.5.2  Alex

In 2006, Alex taught and was Deputy Principal at a rural school in Cluster 4. He had eight years’ teaching experience and was teaching in a mixed level (Years 6 to 8) Senior class. Alex changed his position of responsibility and, in 2014, was a
principal in a different school. He did not have his own class but worked with students on a project collaborating with a school overseas.

4.4.5.3 Nancy
At the time of the 2006 interviews, Nancy had nineteen years’ teaching experience and taught a Year 7/8 class at a suburban school in Cluster 2. Nancy had left the teaching profession shortly after I interviewed her in 2007 and was not part of the interviews in 2014.

4.4.5.4 Charlotte
In 2006 and 2007, Charlotte taught at a rural school that was part of Cluster 4 where she was a Senior Teacher and taught a Year 5/6 class. She had nine years’ teaching experience. Charlotte changed positions of responsibility twice and in two different schools since 2007. At the time of the 2014 interview, she was in a senior position at a suburban school. She did not have her own class but taught gifted and talented education classes.

For ease of reference to the primary school teaching level for each participant or group of participants, the level will be indicated in brackets, i.e., (Junior), (Middle), and (Senior) in Chapters Five to Nine.

4.5 Summary
This chapter outlines the research context of this study through a description of the history of ICT in school in New Zealand from 1998 to beyond the time of this study. The policy context of the same timeframe was outlined through the New Zealand Ministry of Education’s various ICT and e-Learning strategies that highlighted the motivation for and goals that the Ministry had and has for the integration of ICT into schools. The research participants were introduced and their biographical information presented. The participating teachers differed in their years of experience in the classroom, the type of school they taught at, and the cluster they were part of for the ICTPD programme. With only fifteen study participants, it cannot be determined how these differences impacted on teachers’ outcomes from the ICTPD programme.
In the next chapter, the self-reported perspectives on aspects of the professional development programme, of the fifteen primary teacher research participants are presented and critically analysed. The narratives of these perspectives are the interpretations of the responses to questions from the first and second interviews. This is to give a more complete picture of each of the participants and an insight into their professional development experiences in using ICT in the classroom teaching and learning programmes.
CHAPTER FIVE
RESEARCH PARTICIPANTS’ PERSPECTIVES ON ICT PROFESSIONAL DEVELOPMENT

5.1 Introduction
This chapter commences with the participants’ expectations of the ICTPD programme and the extent to which their expectations were met. Next, their contribution to the design of the ICTPD programme and the choice they had about participating in the programme are presented. An overview is then presented and discussed of the various professional development activities the fifteen teachers participated in through their involvement in one of the four ICTPD clusters and their perspectives on these activities. This is followed by the analysis of those aspects of the ICTPD programme that the participants appreciated the most and the least based on data from the first round of interviews. Finally, consideration is given to the extent to which participants changed uses of ICT in the classroom, reported in 2006 and 2007, was attributable to the ICTPD programme, and to their overall development as teachers.

The analysis and discussion in this chapter addresses the research question:

• What was the nature and effect of the professional development in utilising ICT on the study participants’ classroom practices according to the participants’ self-reports?

5.2 The professional development of the participant teachers
According to Diaz-Maggioli (2004), Lieberman and Wood (2001), and Triggs and John (2004), past approaches to professional development positioned teachers as passive recipients, with professional development being something that was done to, rather than with, them. There was little consideration of their needs or their existing skills; instead, professional development was driven by the need to impart something new (e.g., a new curriculum or teaching strategy) to teachers in an efficient and cost-effective manner. According to Lieberman and Wood (2001), little evaluation was
done to measure the degree to which teachers incorporated or implemented these new skills and/or ideas into their classroom practices. Although Diaz-Maggioli (2004) and Lieberman and Wood (2001) were referring to American teachers, this was also the experience of many New Zealand primary teachers with regard to professional development (see, for example, Timperley et al., 2007). Timperley et al. (2007) state this was the case during the introduction of the new curriculum documents in the eight learning areas during the 1990s. In New Zealand primary schools, the delivery of this style of professional development was undertaken by either: 1) external facilitators who usually had little knowledge of the culture of the school or took little account of the varying experiences, skills, and attitudes of the teachers at that school; or, 2) in-school personnel who attended a training workshop and then ran a workshop at the school to deliver the professional development to the rest of the staff (Timperley et al., 2007). Such professional development usually had little or no follow-up and was frequently decontextualised (Diaz-Maggioli, 2004; Lieberman & Wood, 2001). Changes to teachers’ classroom practices were variable and teachers became “weary of efforts to ‘develop’ them” (Lieberman & Wood, 2001, p. 175).

The implementation of the ICTPD programme constituted a different approach to the ‘one size fits all’ model of professional development. Teachers were surveyed by CORE Education to find out their existing skills, areas of need and preferences with regards to the delivery of the ICTPD programme and the results reported to the cluster facilitators. By giving the teachers a say in this professional development programme, albeit structured by others, it was intended that the teachers would be motivated and have ownership of the programme. Therefore, teachers could be ‘developed’ from their current skills, knowledge and pedagogical approaches to become proficient in the use of ICT in transforming their classroom practices (N. Billowes, Personal Communication, 21 November 2006).

The research participants joined the ICTPD programme for a period of up to three years. A mixture of practical activities, professional readings, observational visits, and in-class support were provided (see Table 5.2 for a complete list of professional development activities undertaken by the participants). In many cases, teachers were given release time from their classrooms in order to undertake parts of the
professional development, as well as being given support to integrate the use of ICT in their classroom practices. The 2009 report by the OECD on creating effective teaching and learning environments included the following statement on effective professional development:

Effective professional development is on-going, includes training, practice and feedback, and provides adequate time and follow-up support. Successful programmes involve teachers in learning activities that are similar to ones they will use with their students, and encourage the development of teachers’ learning communities (OECD, 2009, p. 49).

In the ICTPD programme, the development of professional learning communities was encouraged through its use of a ‘cluster’ or professional learning community model with teachers from a variety of year (grade) levels involved in each community, both within their own school and with teachers across the cluster. Teachers were encouraged to develop professional links with teachers of similar year levels as well as with those who had similar interests and skills or who could assist in their development (N. Billowes, Personal Communication, 21 November 2006).

This concept of professional development resonates with the work of Lieberman and Wood (2001), and Prestridge (2009). According to Lieberman and Wood (2001):

Participants build collegial learning communities where they have opportunities to develop stronger voices to represent their perspectives, while learning to exercise leadership among their peers. Participating in learning communities built around shared understandings, where peers learn to give and receive critical support, helps teachers to enrich their classroom practices while providing the intellectual and emotional support necessary for personal and enduring growth (p. 175).

Prestridge (2009) asserts that in order for teachers to engage in professional discussion about classroom practice, space and place needs to be provided. This engagement in ‘collegial dialogue’ leads to the development of a professional learning community, which provides “organised social places for collegial dialogue” to happen (Prestridge, 2009, p. 45). These professional learning communities enable teachers to discuss and work together to address needs and improve classroom practices. The cluster-based professional development that the participants were involved in was designed to facilitate professional learning communities and collegial dialogue (N. Billowes, Personal Communication, 21 November 2006).
Diaz-Maggioli (2004) states, “professional development should be understood as a job-embedded commitment that teachers make in order to further the purposes of the profession while addressing their own particular needs” (p. 5). As professionals, teachers need to be lifelong learners who continue to develop their pedagogical knowledge and professional practices in order to be effective practitioners (de Vries, Jansen, & van de Grift, 2013). The quality of professional development is determined by a variety of factors, including the support of the school(s)/organisation, opportunities for teacher learning, effectiveness of the facilitator and the attitudes of teachers towards the professional development as well as the responsive design of the programme (Mohamed, 2008; Tondeur, Cooper, & Newhouse, 2010). The components of effective professional development are explored in the following section.

5.3 Effectiveness of professional development

Although there is a plethora of literature on professional development, the question remains of what constitutes effective teachers’ professional development. Gaible and Burns (2005) and de Vries et al. (2013) suggest that in order for teacher professional development to be effective, it must be of high quality and be relevant and responsive to teachers’ needs. This is particularly true of ICT professional development for the classroom, as the amount of ICT used or covered cannot compensate for being unresponsive or irrelevant to teachers’ needs (Twining et al., 2013). Adey (2004) suggests that the effectiveness of a professional development programme is governed by:

- individual teachers’ philosophy and attitude (i.e., positive or negative);
- the school environment in which the teacher works (i.e., supportive or unsupportive).

Figure 5.1 shows a simple representation of this effectiveness.
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It is easy to predict the fate of a professional development programme in an unsupportive school environment with teachers who have a negative attitude. It is also easy to predict the outcome of a professional development programme set in a supportive school environment with teachers who have generally positive attitudes to professional development. Adey (2004) argues, however, that this representation is too simplistic because school environments are not merely supportive or unsupportive and teachers are not simply positive or negative in their attitudes towards professional development. The component parts, the delivery, the facilitation, and the attitudes of the teacher(s) towards their professional development programme must all be considered for the effect(s) they individually and collectively have on the effectiveness of the programme (Adey, 2004). Teachers’ expectations of a professional development programme will also have some bearing on its effectiveness. In the next section, the fifteen participants’ expectations of the professional development programme experienced are presented and analysed.

5.4 Participants’ expectations of the ICTPD programme
In the 2006 interviews, the participants were asked about their expectations of the ICTPD programme. Using the same categories as in question 11 of the 2004-2006 cohort’s end-of-project survey (see Appendix 4), participants were asked to identify the types of expectations they had of the ICTPD programme. These expectations were:

• Developing technical skills;
• Generating ideas for using ICT within the classroom;
• Enhancing quality of teaching and learning in general;
• Using ICT for administration; and,
• Gaining a qualification.

Table 5.1 shows the types of expectations that the fifteen teachers had of the professional development programme they participated in. In the following section, each of these expectations is discussed in turn with examples from the participants’ 2006 interviews.

Table 5.1 Expectations of the ICTPD programme

<table>
<thead>
<tr>
<th>Level</th>
<th>Junior School Teachers</th>
<th>Middle School Teachers</th>
<th>Senior School Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher Expectations</td>
<td>Sally</td>
<td>Mary</td>
<td>Barbara</td>
</tr>
<tr>
<td>No expectations / no idea what to expect</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Technical skill development</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Ideas for using ICT with classes</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Quality teaching and learning enhancement in general</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Using ICT for administration</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Gaining a qualification</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

As can be seen in Table 5.1, none of the participants had the expectation of using ICT for administrative purposes. With the implementation of electronic Student Management Systems (SMS), the expectation by school leaders was that administrative tasks, such as attendance and recording students’ testing results, were to be completed by the teachers, as was indeed the case for all of the participants. As each school could use the SMS that suited the needs of their school, training was provided by the SMS providers rather than through the ICTPD programme (Billowes, personal communication, 21 November 2006).

The six participants, Sally, Barbara, and Ann (Junior), George (Middle), and Alex and Charlotte (Senior) who stated that they had no expectations, or did not know
what to expect of the professional programme, were generally positive about what they had achieved by participating in the programme. The following abstract from Charlotte’s 2006 interview exemplifies this.

I don’t think I had expectations. I felt like I didn’t know an awful lot and it was going to take me somewhere but I wasn’t quite sure where. Now I think it’s amazing how much I’ve learnt in a short time (Charlotte, 2006 interview).

Five participants, Mary (Junior), Hannah, Michael, and Aaron (Middle), and Nancy (Senior) indicated that one of their expectations was that they would increase their technical skills. Mary saw that effort was needed on her part in order to increase her technical skills. “You expect to get really proficient [at using ICT] but soon realise that that isn’t going to happen at all unless the interest, motivation and time are put in” (Mary, 2006 interview). The five participants saw the ICTPD programme as a means of increasing their technical skills in using ICT, with only Hannah and Aaron also expecting that the ICTPD would also address quality teaching and learning enhancement in general.

Three of the participants, Irene and Tania (Junior), and Michael (Middle) expected to gain ideas for using ICT with classes. While Michael reported that his expectation of the ICTPD programme had been met, Tania and Irene stated that this was not the case. Irene was disappointed that the professional development did not cater specifically for Junior level children. “I thought I would get more direction and structure for the [age level of the] children I have being able to use ICT in the classroom … If I knew how to do it, I would have been doing it already” (Irene, 2006 interview).

The expectation of enhancing the general quality of teaching and learning was mentioned by five participants, Irene and Tania (Junior), Hannah and Aaron (Middle), and Carol (Senior). Hannah and Carol felt that their expectations in this regard had been met or exceeded. Carol said, “My expectations were to take my teaching to the next level and to bring my teaching in line with what I had been reading about other clusters. I think [my expectations] have been met very well and even exceeded” (Carol, 2006 interview). In contrast, Tania did not feel that her similar expectation was met; “I thought that I would understand the theory and then
we would employ the practice to support the theory … I don’t believe we have achieved that at all” (Tania, 2006 interview).

Although six participants, Sally, Irene, Ann, and Julie (Junior), Michael (Middle), and Nancy (Senior) took an online or blended learning course through a tertiary institution (see Table 5.2), only Julie commented that she expected to gain a qualification through her participation in the professional development programme. During her 2006 interview she stated that she was disappointed that her expectation was not met.

While six participants had no expectations or did not know what to expect, nine of the participants had specific expectations of their participation in the ICTPD programme. As reported above, the majority of the nine participants had their expectations met, to varying degrees, with only three of the participants stating that their expectations were not met.

In the following section, the participants’ perspectives on various aspects of the ICTPD programme are discussed. These aspects include the professional development activities offered by the clusters, participants’ contributions to the design of the ICTPD programme, and the participants’ experiences of the professional development programme that they appreciated the most and the least.

5.5 Aspects of professional development for participating teachers

The six aspects of professional development that were identified by the fifteen participants in the 2006 interviews as affecting their experiences are listed below.

Firstly, the range of professional development activities undertaken by participants depending on the cluster with which they were involved and the facilitator of that cluster. For example, Barbara’s comments on visiting schools in the North Island; “That was fantastic! It was the best professional development I’ve ever done” (Barbara, 2006 interview). Aaron commented positively on the support of the cluster facilitator; “[Name of facilitator] has been mentoring or giving us examples on how
you could [use ICT] in your classroom. I can just email him if it is something I want to know about” (Aaron, 2006 interview).

Secondly, the variety of professional development models used. For example, Charlotte commented on the mentoring model that her cluster facilitator used; “[Name of facilitator]’s been very good and I’ve learned heaps off him coming into the classroom and modelling, especially when things can go wrong” (Charlotte, 2006 interview). Hannah commented on the professional learning community that developed within their cluster and with other schools of a similar size to her school; “We’d meet with other schools and have a discussion with the lead teacher first about what was going on at their school. Then we would go into the classrooms with the teachers and we would share what we were doing” (Hannah, 2006 interview).

Thirdly, the style of professional development (i.e., being done with, rather than done to). For example, Julie commented on the professional development that was done within the school; “We had workshops that catered for your needs … you felt comfortable with where you were at. You could ask for assistance and you weren’t belittled … you got support to then go and implement it in your classroom” (Julie, 2006 interview).

Fourthly, not being invited by the facilitator to help design the professional development, but given a say in the ICT on which they wanted to focus. For example, Ann’s comments about being supported and having choice in what she wanted to learn about; “I’ve had support from [name of cluster facilitator] to do what I wanted to do of my own choice” (Ann, 2006 interview).

Fifthly, the opportunity to achieve formal qualifications was not a major concern for the majority of the participants but a number undertook courses associated with an ICT qualification. For example, Michael commented on the papers he took via a blended learning option through the local College of Education; “The two ICT papers – one was looking at the practical side of using ICT and the other was more theory-based; looking at the thinking behind [using ICT] for teaching and learning” (Michael, 2006 interview). Nancy also commented on the theory-based paper offered through a blended learning option; “The theory one … it opened my mind to new
possibilities … and it started me thinking in different ways about teaching and learning” Nancy, 2006 interview).

And finally, the participants’ attitudes towards professional development activities and the objective of the professional development (i.e. “What’s in it for me and my students?”). For example, Tania’s comments about professional development activities but not having an understanding of the pedagogy behind using ICT for teaching and learning;

[Name of facilitator] talks a lot about pedagogy but … I haven’t walked away from the contract knowing how ICT can actually enhance learning … We’ve done a lot of work on the computer before understanding our own philosophies (Tania, 2006 interview).

The above examples give an indication of the aspects that affected the fifteen participants’ experiences of the ICTPD programme. For each of the participants, their expectations may also have influenced how they viewed these experiences. During the interviews, most of the participants discussed the types of professional development activities they undertook. Table 5.2 shows the types of activities within the ICTPD programme provided by their clusters. These activities are grouped under four headings: skill sessions/workshops with the lead teacher or cluster facilitator, skill sessions/workshops with an external provider, conferences/school visits, and tertiary qualifications/professional readings.
Table 5.2 The types of professional development activities experienced by the research participants as part of the ICTPD programme

<table>
<thead>
<tr>
<th>Participant</th>
<th>Skill sessions / workshops with lead teacher or cluster facilitator</th>
<th>Skill sessions / workshops with external provider</th>
<th>Conferences / school visits</th>
<th>Tertiary qualifications / professional reading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Junior School Teachers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mary</strong></td>
<td>Cluster facilitator taking groups of students; training students; in-class observation and feedback; using KidPix; inquiry learning; integrating ICT into planning</td>
<td>Course at provider’s facilities (study of the brain, different types of learning); learning to use digital camera, iPhoto, iMovie and PowerPoint</td>
<td>ULearn conference</td>
<td></td>
</tr>
<tr>
<td>Cluster: 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Barbara</strong></td>
<td>Breakfast sessions with lead teacher</td>
<td>Learning @ School conference; tour of schools in North Island</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cluster: 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sally</strong></td>
<td>Using digital camera, iMovie, PowerPoint, Excel</td>
<td>Skills workshops with cluster; course at provider’s facilities (with students); free computing course at local polytechnic (using the Internet, search engines, using PowerPoint)</td>
<td>Visiting other schools in cluster; ULearn Conference</td>
<td>Classroom resources ICT paper at College of Education (own time); professional reading</td>
</tr>
<tr>
<td>Cluster: 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Irene</strong></td>
<td>Using PowerPoint</td>
<td>Teaching and learning styles</td>
<td>Visits to other schools; cluster celebration of learning (sharing work done with other schools in cluster)</td>
<td>University paper</td>
</tr>
<tr>
<td>Cluster: 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ann</strong></td>
<td>Using wordprocessing and iMovie; Thinking Hats thinking skills</td>
<td>Cluster celebration of learning; ULearn conference</td>
<td>Classroom resources ICT paper at College of Education</td>
<td></td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Julie</th>
<th>Cluster: 3</th>
<th>Facilitator-led workshops (PowerPoint, digital camera)</th>
<th>Celebration of learning (within cluster); Ulearn conference</th>
<th>Pedagogy paper at College of Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tania</td>
<td>Cluster: 4</td>
<td>Facilitator- or lead teacher-led workshops; facilitator coming into classroom and modeling and working with groups of students</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Middle School Teachers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>George</td>
<td>Cluster: 1</td>
<td>Breakfast sessions with lead teacher; facilitator working in class modeling or working with groups of students using ICT (twice per term)</td>
<td>Course at provider’s facilities (once per term for 1 day); using digital camera, iMovie, iPhoto, downloading images</td>
<td></td>
</tr>
<tr>
<td>Michael</td>
<td>Cluster: 2</td>
<td>Using Microsoft Photo Editor, Claymation; teacher only days (sharing with other teachers in own school)</td>
<td>Christchurch tour of schools (outside provider)</td>
<td>Classroom ICT resources and Pedagogy papers at College of Education</td>
</tr>
<tr>
<td>Aaron</td>
<td>Cluster: 3</td>
<td>Facilitator-led skills workshops; learning styles and higher order thinking strategies; in-class mentoring and modeling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hannah</td>
<td>Cluster: 4</td>
<td>Digital camera workshop with facilitator; using iChat</td>
<td>SAUCE model of inquiry</td>
<td>Guest speakers; school visits with other schools of similar size; virtual school meetings with teachers of same level</td>
</tr>
</tbody>
</table>
As can be seen in Table 5.2, there was a variety of professional development activities offered through the ICTPD programmes, with differences between and within the clusters. Three of the participants, Sally (Junior), George (Middle), and Alex (Senior) commented not only on what they did, but also how they felt about their professional development activities.

There were lots of readings, professional readings which I found quite stimulating … The workshops that we did as part of the cluster, going down to the [name of external provider], then going around the schools and seeing how it’s been incorporated. It’s just been terrific (Sally, 2006 interview).

We were given professional training that we would hopefully be able to apply to the classroom. The first year I just worked alongside other teachers. The second year of the contract I went on the course and then the third year, this year, has been all classroom based with the facilitator. The [professional development] has been great – I can’t speak highly enough of it (George, 2006 interview).

Some of the big things have been listening to guest speakers, educationalists really. That’s probably been the most beneficial and especially that smaller sort of group time with [name of speakers] and having that close round table discussion. Being part of the conferences
George’s opening comment, “We were given professional training that we would hopefully be able to apply to the classroom” is significant. His use of the word, ‘hopefully’, implies that he was unsure if he would be able to implement what he had learned into his classroom practices. This notion will be explored further in George’s story about the extent of the changes made to his classroom practices in Chapter 6.

Nancy (Senior) was forthcoming about the positive effect that the ICTPD programme had on her teaching philosophy, but also had some reservations concerning the school ceasing some aspects of its classroom programmes:

I’ve learned as I’ve needed to, that ‘just in time’ learning rather than ‘just in case’ as they say. It’s changed my whole philosophy about teaching and learning really. At the same time, I think some of things that we were doing before were good and we have probably lost a few things along the way that we need to re-evaluate (Nancy, 2006 interview).

The above comments show that the fifteen participants had varied experiences of the ICTPD programme, even within schools in the same cluster with the same facilitator. Of all of the activities available to teachers in the various clusters, those least used by participants were tertiary papers or skills sessions/workshops provided by an external provider. Both of these activities are ‘outside’ the professional learning community of the cluster and this may have been a factor in the uptake by the participants.

5.5.1 Participants’ input in setting up the professional development programme

According to Loucks-Horsley et al. (2011), when teachers contribute to the design and content of their professional development programmes, they are more motivated to participate in the activities and more likely to incorporate their learning into their professional practices. In the 2006 interviews, participants were asked to indicate their contributions to the design of their ICTPD programmes; ten of the participants reported that they made no or very little contribution. Four of these ten participants, Julie and Irene (Junior), and George and Aaron (Middle) stated that they had some choice in the professional development activities they participated in, but not in the design of the programme itself. George commented; “I had a little bit of input, not a
lot … the IT and the management team…set the programme but the input that I had was that I was able to choose the software I wanted to learn about to use in the classroom” (George, 2006 interview).

Irene also stated that she was given a choice of what she wanted to learn, but she was unsure as to what she needed to learn to develop her use of ICT in her classroom practices:

I think we were encouraged to see … the areas we’d like to work in and to buy into things that were going. One thing that I always find hard and still find it hard is that with computers, you don’t know what you don’t know. And so when people say what would you like to find out about – I don’t know what there is to find out about and I don’t know what’s logical for me to learn (Irene, 2006 interview).

Irene believed that she needed guidance as to what was available and what might suit the age level of her students in order for her to make informed choices about her professional development activities.

Michael (Middle) was a young, recently qualified teacher who was very confident in his ability to use ICT. He used computers as part of his own schooling and could be considered to be a ‘digital native’ (Prensky, 2001; 2012). His previous experience with ICT may account for his perspective on choosing activities being slightly different from the others:

[Lead teacher] knew what I was capable of doing, but still for the ICT programme you had to do the Word document and do the Publisher document. For me that was sit down and 20 minutes later I was done the assignment, whereas for some people it was two hours. Later on, I liked having the choice of which workshop you wanted to do and that accommodated your needs to learn new things (Michael, 2006 interview).

At least some of Michael’s professional development was of a ‘one-size-fits-all’ kind with each participant having to show their competence in using certain computer programs. While Michael may have known how to use particular programs on the computer, he did not necessarily know the pedagogy behind using them in his teaching and learning programme or what other ICT were available for him to use in his classroom practices (Ertmer & Ottenbreit-Leftwich, 2013).
Three of the remaining participants, Tania and Sally (Junior), and Charlotte (Senior) made some contribution to the design of the ICTPD programme through staff discussions on what should be included at their respective schools. Charlotte stated that the staff at her school discussed their inclusions in their ICTPD programme; “We suggested some stuff and some of it was changed but [ICTPD] was definitely an area we wanted to head as a staff” (Charlotte, 2006 interview).

Sally’s school was proactive about taking part in the ICTPD programme after a group of the teachers attended the ULearn Conference about using ICT to support teaching and learning.

First of all, three of our people went to ULearn and we came back and said, ‘we’ve got to get on this ICT cluster’ … As a group, we contacted other schools and then we did a workshop presentation for the other schools that may have wanted to come on board. That just sparked the enthusiasm and from then on [name of deputy principal] and [name of principal] drove it, got the cluster application done and we got on the [programme] (Sally, 2006 interview).

By having a group of school staff, including the school’s leaders, attend a conference, enabled a discussion of the professional development sessions they had participated in at the conference and the development of a shared understanding of using ICT for teaching and learning. Sally also stated that this experience gave staff the impetus to participate in the ICTPD and what professional development activities needed to or could be included for the staff to incorporate ICT into their professional practices.

Although Tania stated that as a school staff they influenced the ICTPD programme sessions, she found that there were wide disparities in the views and approaches of teachers concerning ICT use.

As a school we discussed the options for what we wanted but we have people who are non-users right up to people whose philosophy was an ICT-based philosophy … I think it would be fair to say that our discussions became quite emotive rather than focused on your own knowledge and feeling about teaching and learning. We have our say in what activities we take part in so we could opt in or out of [professional development] that was available (Tania, 2006 interview).

In contrast to Sally’s school, it would appear that at Tania’s school the staff did not have a shared understanding of using ICT in their classroom practices. With a
A diverse range of opinions and philosophies about using ICT for teaching and learning, this may have led to the discussions being emotive rather than objective.

Alex and Carol (Senior) made significant contributions to the design of the programme as part of their leadership teams and were ICT lead teachers in their respective schools. Alex observed:

I work with the Principal and we have regular meetings. There we sit down and work out our benchmarks … The principals [of the schools in the cluster], they are the ones who devised the overall or yearly structure but for our staff, we [the principal and Alex], we sat down and did that (Alex, 2006 interview).

Carol was responsible for professional development for her school and, with the Principal, developed the professional development that incorporated access to the activities provided by the school’s cluster.

Each participant completed a baseline survey when they commenced their ICTPD programme to assist the cluster facilitator(s) and leaders with designing an ICTPD programme that met the needs of the staff. Some questions asked teachers to indicate their preferences for the types of activities, individual or group learning, and the scheduling of their professional development sessions. None of the teachers saw these as influencing the design of their ICTPD programme. Their choice about participating in professional development is discussed in the next section.

### 5.5.2 Participation in the ICTPD programme

The participants were asked during their 2006 interviews whether they had a choice about joining the ICTPD programme and how they felt about being required to undertake professional development in the use of ICT. Michael, Nancy, Tania, Ann, and Charlotte explained that they had some degree of choice about participation. Some of the participants were concerned that the school was also involved in the Numeracy Project (mathematics professional development). Ann commented:

We did sort of. It was [whether] the school [staff] wanted to do it or not because we were doing the maths [professional development] at the same time. I suppose I had a choice in that I could have said no (Ann, 2006 interview).
Irene’s school was also involved with the Numeracy Project. She revealed that she felt that the school was undertaking too much simultaneous professional development:

For me, there was so much else that I wanted to be upskilling myself in that the time wasn’t really right because we were doing the numeracy project and the ICT in the same year … We kept getting told that numeracy was our priority and that in ICT we would do as much as we can. I just think it was too much to try and take on (Irene, 2006 interview).

Significantly, the National Coordinator for the ICTPD School Clusters programme encouraged such multiple professional development programming:

I think there are schools [which] have chosen to withhold [participating in the ICTPD programme] for a variety of different reasons including strong messages like you can’t do the numeracy initiative at the same time as doing this, which they should have done (Billowes, Personal Communication, 21 November 2006).

The National Coordinator further stated that being part of both programmes was to be encouraged as they could be complementary rather than competing professional development. Using ICT in numeracy and literacy gave an authentic context for the ICT to be used in teaching and learning. “If you get the opportunity to be on numeracy and literacy and then at the same time use that as a focal point of your ICTPD programme then you’ll gain a whole heap more success in that regard” (N. Billowes, Personal Communication, 21 November 2006). The focus on using ICT in literacy or numeracy in this way could be regarded as a starting point with the possibility of the transfer of skills to other curriculum areas.

Tania explained that her school’s staff decided to be involved in the ICTPD programme because being a semi-rural school, opportunities were few for professional development provided by the Ministry of Education.

We opted as a school to take part. The principal decided that we had this opportunity and, with being in [name of area], you don’t get opportunities to be on many contracts. If we turned it down, we might never get the chance again and the majority of the staff very much wanted to be part of it. I’m sure if everyone had said we don’t want to be, then we wouldn’t have taken part in it (Tania, 2006 interview).

With being out of a main centre, the perception is that opportunities to be on professional development contracts are fewer. The staff did not want to miss
out when they might not be given another opportunity. It is unclear whether the staff wanted to be involved in the ICTPD or just did not want to miss out on a professional development opportunity.

Although nine of the fifteen participants indicated that they did not have a choice about participating in the ICTPD programme, most of them were positive about their eventual participation.

I guess coming from a school in [name of city], where there was a very limited ICT focus, I didn’t really question it. It was made clear to me at the interview when I applied for the job here that the school had been part of an ICTPD [programme] contract and that the expectation was that I would just take that on board and so really the option was just taken away from me (George, 2006 interview).

As George had chosen to join a school that already had an ICTPD programme, he was expected to participate in it.

Barbara was not concerned that she did not have a choice about participating in the ICTPD programme; however, she was concerned about not having any influence over its design. “No, we didn’t have a choice. No worries about that, it’s professional development. I didn’t like not having any input as to how it was delivered but I didn’t mind having to do it” (Barbara, 2006 interview).

Sally did not consider whether she had a choice to participate in the professional development or not. For her, it was more about improving the quality of teaching and learning.

Didn’t even consider it. I just thought that to improve the quality of teaching and learning, this was the way to go... My colleagues are people that I really respect and they were just so enthused... Even though it was incredibly busy; it had a huge impact (Sally, 2006 interview).

Adey (2004) argues that teachers’ attitudes can affect their participation in professional development. Sally’s positive attitude towards the ICTPD programme meant that not having a choice about participating was irrelevant to her.

Overall, thirteen of the fifteen participants were positive about joining the ICTPD programme, irrespective of whether they had a choice to do so. The next two sections
analyse and discuss the participants’ views about the aspects of the programme that they appreciated the most and the least.

5.5.3 Aspects of the ICTPD programme that were most appreciated

During the 2006 interviews, the participants were asked which aspects of the professional development programme that they most appreciated. As the programmes, facilitators and the staff participants in the four clusters were different, the answers given varied regarding the activities and aspects of the professional development. Table 5.3 shows the most appreciated aspects for each of the participants.
Table 5.3 Aspects of the ICTPD programme most appreciated by participants

<table>
<thead>
<tr>
<th>Teacher Aspects</th>
<th>Junior School Teachers</th>
<th>Middle School Teachers</th>
<th>Senior School Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sally</td>
<td>Mary</td>
<td>Barbara</td>
</tr>
<tr>
<td>Skills-based workshops</td>
<td>✓</td>
<td>✓</td>
<td></td>
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<tr>
<td>Pedagogy-based workshops</td>
<td>✓</td>
<td></td>
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<tr>
<td>Visits to other schools / classrooms</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Conferences</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guest speakers</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>External professional development provider</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cluster facilitator support / feedback</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Modeling</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Cluster facilitator working with students</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertiary course/paper or assignments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Just in time learning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharing ideas / working with other teachers</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Opportunities to celebrate children’s learning</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Technical support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Release time</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timing of sessions</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Access to equipment</td>
<td></td>
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<tr>
<td>Communication</td>
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</table>

In the 2006 interviews, the most appreciated aspects were: cluster facilitator support, feedback and sharing ideas, and working with other teachers. There was a diversity of opinion possibly attributable to their different teaching philosophies, about
appreciating the need for changes to classroom practices, and/or concerns regarding using ICT in their particular classrooms. This is explored further in Chapter 6 when the narratives of the participants’ experience of the professional development are presented and discussed.

The same question was also asked during the 2007 interviews. Most of the responses were similar to those given for 2006 shown in Table 5.3. However, with the teachers no longer having the support of a cluster facilitator, a year after completing the ICTPD programme the aspect that twelve of the fifteen participants appreciated the most was the opportunity to share ideas and work with other teachers. Julie and Tania’s comments are representative of those of the twelve participants.

Probably the sharing amongst the cluster. It was good to actually get out of your own school and see what is happening in the other schools. So we haven’t done that with the other contracts we have been on and that was beneficial just to network and see what other people have trialed; things that worked and didn’t work for them (Tania, 2007 interview).

Just the opportunity to talk to other teachers to ask questions. There is always something new you can learn. Somebody has always got something that they have discovered that they can share or you can share with them (Julie, 2007 interview).

The other three participants focused on particular activities, such as going to the ULearn conference, having technical support, and visits to other schools as being the aspects they appreciated the most.

5.5.4 Aspects of the ICTPD programme that were least appreciated

During their interviews in 2006, the participants were asked to nominate the aspects of their professional development they least appreciated and to give their reasons for such. Table 5.4 presents their responses.
Table 5.4 Aspects of the ICTPD programme least appreciated by participants

<table>
<thead>
<tr>
<th>Teacher Aspects</th>
<th>Junior School Teachers</th>
<th>Middle School Teachers</th>
<th>Senior School Teachers</th>
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<tbody>
<tr>
<td></td>
<td>Sally</td>
<td>Mary</td>
<td>Barbara</td>
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<tr>
<td></td>
<td>Irene</td>
<td>Ann</td>
<td>Julie</td>
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<tr>
<td></td>
<td>Tania</td>
<td>George</td>
<td>Hannah</td>
</tr>
<tr>
<td></td>
<td>Michael</td>
<td>Aaron</td>
<td>Carol</td>
</tr>
<tr>
<td></td>
<td>Alex</td>
<td>Nancy</td>
<td>Charli</td>
</tr>
<tr>
<td>Skills-based workshops</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pedagogy-based workshops</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Visits to other schools / classrooms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conferences</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Guest speakers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External professional development provider</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Cluster facilitator support / feedback</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Modeling</td>
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<td></td>
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</tr>
<tr>
<td>Cluster facilitator working with students</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertiary course/paper or assignments</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Just in time learning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharing ideas / working with other teachers</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Opportunities to celebrate children’s learning</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Technical support</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Timing of sessions</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to equipment</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Communication</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

George, Mary, and Barbara least appreciated the use of an external professional development provider, as activities were not tailored specific to their needs, unlike sessions were that were presented by the cluster facilitator. The other participants all chose different least appreciated aspects. Nobody selected just in time learning,
cluster facilitator support/feedback, modeling, cluster facilitator working with students, skills-based workshops, visits to other schools, conferences, or guest speakers as their least appreciated aspect. When comparing Tables 5.3 and 5.4, however, the participants chose far more aspects that they appreciated the most, compared to the number of least appreciated aspects. Also, for every least appreciated aspect, there was at least one teacher who appreciated it the most. An example of this is the university courses that were provided by external providers. For Irene, the university course was the aspect she most appreciated. “I really enjoyed that [name of paper]. That was really helpful for me” (Irene, 2006 interview). In contrast, the university paper was the aspect that Nancy least appreciated. “I would have really liked to have done [the paper] without doing the assignments because it means not one iota to me in terms of having a piece of paper saying that I passed it” (Nancy, 2006 interview).

When asked about the aspects of the ICTPD programme that they least appreciated, the responses given by the participants during the 2007 interviews again were varied, but overall remained similar to their 2006 responses. Three or more of the participants least appreciated ICT papers/assignments and sharing ideas/working with other teachers at meetings of the cluster participants. The latter aspect is noteworthy as twelve of the fifteen participants commented that sharing ideas/working with other teachers was the aspect that they appreciated the most. Hannah, Carol, and Tania nominated the cluster meetings, where all the teachers in the cluster met as a group for professional development, as the aspect they least appreciated, but for different reasons. Carol was a lead ICT teacher in her school and so was expected to coordinate professional development with other lead ICT teachers in the cluster, which she found very time consuming. “I was a lead teacher and that meant I always had to prepare things. It’s really just the time it takes” (Carol, 2007 interview). Hannah found it frustrating that some of the schools in the cluster were not as engaged in the professional development as her school and, therefore, the expectations and accountability were different. “What I don’t miss is the fact that some schools aren’t on the same journey and they are not accountable. You are expected to meet together and share ideas. You have it all set up and they don’t turn up” (Hannah, 2007 interview). Tania commented that attending meetings and having to listen to information that was irrelevant to the age level of children she was
teaching was an aspect that she least appreciated. “I think listening to stuff that I disagree with and trying to meet people halfway on that information … It always became a Senior – Junior issue as opposed to anything else” (Tania, 2007 interview).

As can be seen in the comments above, the three participants who listed sharing ideas/working with others as the least appreciated aspect of the ICTPD programme had quite diverse reasons for their choice. It was not sharing ideas or working with their own staff, it was when they had to participate in these types of activities in a whole cluster setting.

In the next section, the responses given by the participants during the 2006 and 2007 interviews regarding the overall effects of participating in the professional development programme are examined.

5.6 Overall effects of participation in the ICTPD programme

The following interview questions were asked concerning the overall affects the ICTPD programme had on the participants’ classroom practices:

- To what extent has any increase in teachers’ use of ICT with classes been attributable to the ICTPD programme?
- To what extent has the ICTPD programme contributed to teachers’ understanding of teaching and learning in general?

The responses are presented in Table 5.5 and Table 5.6. For each question, a four-point scale was used where higher values indicate an increase in attribution or significance.
### Table 5.5 The extent to which any increase in teachers’ use of ICT with classes is attributed to the ICTPD programme

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Junior School Teachers</th>
<th>Middle School Teachers</th>
<th>Senior School Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sally</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Mary</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Barbara</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Irene</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Ann</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Julie</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Tania</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>George</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Hannah</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Michael</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>George</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>After ICTPD programme</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One year post-ICTPD programme</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

1=Not at all  2=Partly attributable  3=Largely attributable  4=Completely attributable

Sally and Barbara (Junior), Hannah (Middle), and Nancy and Charlotte (Senior) indicated in 2006 that their increased use of ICT with classes was ‘completely attributable’ to participating in the professional development programme offered by their cluster (Table 5.5). In 2007, although again five participants indicated that their increased use of ICT in the classroom was completely attributable to the ICTPD programme, only Sally, Nancy and Charlotte were consistent in both interviews. Julie and Aaron had changed from ‘largely attributable’ to ‘completely attributable’ while Barbara and Hannah had changed from ‘completely attributable’ to ‘largely attributable’. Other participants’ responses were consistent across both interviews.

Mary, Ann, and Julie (Junior), Aaron and Michael (Middle), and Alex (Senior) stated in 2006 that increased use of ICT with their classes was largely attributable to participating in the ICTPD programme (Table 5.5). Ann commented that it was her “own desire for increased knowledge” (Ann, 2006 interview) that was responsible for her increased use of ICT with classes. Aaron reported that he gained “more knowledge from National Library courses on information literacy and [my] own look at Inquiry Learning” (Aaron, 2006 interview). Alex indicated that his increased use of ICT with his classes was attributable to the “excellent facilitator who was positive, dedicated, and genuinely interested in improving ICT for all schools in the cluster. A great group of schools and teachers who are willing to share and take risks” (Alex, 2006 interview). In 2007 the same six participants, plus Barbara and Hannah,
reported that their increased use of ICT in their classroom practices was ‘largely attributable’ to the ICTPD programme. These participants believed that the ICTPD programme was a catalyst and had given them the confidence to search out ICT to use in their classroom programmes.

Irene (Junior), George (Middle), and Carol (Senior) reported in their 2006 interviews that participating in the ICTPD programme was partly attributable for the increased use of ICT in their classroom (Table 5.5). Irene stated that the “availability of a computer science paper at university and need to ‘pass’ was a great motivator” (Irene, 2006 interview). This paper, however, was not taught as part of the ICTPD programme. Carol stated that she was already using ICT before participating in the ICTPD programme (Carol, 2006 interview) while George did not offer any explanation for his increased use of ICT in his classroom. In 2007, George and Irene both responded that such increase was largely attributable to the ICTPD programme. Carol’s response remained unchanged.

One participant, Tania (Junior), did not feel that increased use of ICT in her classroom was attributable to participating in the ICTPD programme and that any increase was the result of personal and peer training. She did not feel that there was any real direction or clarity concerning “why it has not benefitted me as a professional and has led me to further question the validity of ICT in primary education” (Tania, 2006 interview). Tania’s views about the use of ICT in her classroom being attributable to the ICTPD programme remained unchanged by 2007 interview and, if anything, were more strongly held; “I think that is probably where the ICTPD [programme] went wrong in that we didn’t actually get enough of the pedagogy behind why we should use ICT” (Tania, 2007 interview).

The extent to which the participants felt the ICTPD programme contributed to their general understanding of teaching and learning in 2006 and 2007 is shown in Table 5.6.
Table 5.6 The extent the ICTPD programme contributed to teachers’ general understanding of teaching and learning

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Junior School Teachers</th>
<th>Middle School Teachers</th>
<th>Senior School Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>The extent the ICTPD programme contributed to teachers’ general understanding of teaching and learning</td>
<td>After ICTPD programme</td>
<td>1=Not at all</td>
<td>2=Confirmed ideas/understandings</td>
</tr>
<tr>
<td>Sally</td>
<td>Mary</td>
<td>Barbara</td>
<td>Irene</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>1=Not at all</td>
<td>2=Confirmed ideas/understandings</td>
<td>3=Contributed some new ideas</td>
<td>4= Whole new approach</td>
</tr>
</tbody>
</table>

In the 2006 interviews, Tania (Junior), did not feel that the professional development programme contributed to her understanding of teaching and learning in general.

I would like to see measurable gains that have been made for students as a result of this contract but I don’t believe the gains have been made. I think teachers need to be clear as to what our main purpose is as an educator in a primary school (Tania, 2006 interview).

Tania’s responded similarly in 2007. “We were asked to implement ICT in a classroom and given ideas of what we could implement but the connections weren’t there with how that was more effective teaching” (Tania, 2007 interview). In 2006 and 2007, Tania was not convinced that the use of ICT in her Junior level classroom enhanced her classroom practices, because her pedagogical questions were not answered during the ICTPD programme.

In contrast, Sally, Ann, and Barbara (Junior), Hannah and Michael (Middle), and Nancy, Alex, Carol, and Charlotte (Senior) commented in 2006 that the ICTPD programme provided a new approach to pedagogy. They gave diverse positive comments about the aspects of the programme that provided a new approach to their understanding of teaching and learning. Nancy, who works in a team teaching environment, commented; “The change in teaching strategies has not always been easy. We continue to refine this and make changes with the needs of our children in mind” (Nancy, 2006 interview). Charlotte stated that the ICTPD programme had provided a whole new approach to her understanding of teaching and learning; “The
ICTPD programme has completely changed my outlook on teaching and how children learn” (Charlotte, 2006 interview). A year later, in the 2007 interviews, Barbara and Michael revised their view of the extent the ICTPD programme contributed to their general understanding of teaching and learning. Michael was aware of the information that was presented in the ICTPD programme from his recent training but it was now “more about consolidating that knowledge and incorporating new ideas for activities in the classroom” (Michael, 2007 interview).

Irene (Junior) and Aaron (Middle) responded in the 2006 interviews that the ICTPD programme confirmed ideas and understandings that they already possessed about teaching and learning in general. Aaron had undertaken post-graduate level study, not related to ICT, while participating in the ICTPD programme. He commented that the post-graduate study had contributed to his understanding of teaching and learning in general and the “ICTPD [programme] has helped with integrating ICT” (Aaron, 2006 interview). Irene commented, “I have to remind myself it’s not just about computers” (Irene, 2006 interview). In the 2007 interviews, both Irene and Aaron had re-evaluated the extent the ICTPD programme had contributed to their understanding of teaching and learning in general to ‘contributing some new ideas’. Irene stated that for her it is, “just being aware of the different ways of thinking, teaching children to think using different strategies” (Irene, 2007 interview). Aaron stated that the ICTPD programme affirmed his thinking, but also contributed new ideas, “particularly around Inquiry Learning and information literacy” (Aaron, 2007 interview).

Julie and Mary (Junior) and George (Middle) reported in 2006 that the ICTPD programme contributed some new ideas to their understanding of teaching and learning in general. In his 2006 interview, George reported on incorporating Inquiry Learning into his classroom programme and that “it has made me much more open and flexible in my teaching – more student-driven” (George, 2006 interview). Mary and Julie both commented on the incorporation of thinking skill strategies provided by the ICTPD programme. Mary said, “I think the teaching is more focused now in getting the children to think; to use the Six Thinking Hats [thinking skill strategy]” (Mary, 2006 interview). Both George and Julie reported in their 2007 interviews that the ICTPD programme continued to contribute new ideas to their understanding of
teaching and learning in general. Julie said that the ICTPD programme gave her, “an insight into other ways of teaching … looking beyond what you have been doing and saying, ‘Can I do this better?’” (Julie, 2007 interview). In contrast, Mary revised her opinion of the extent to which the ICTPD programme had contributed to her understanding of teaching and learning in general and felt that it confirmed her ideas/understandings rather than contributing new ideas (Mary, 2007 interview).

As can be seen in the previous paragraphs, there were some changes in the perspectives expressed from the 2006 to the 2007. This may have been as a result of the participants having reflected on their classroom practices and the changes that had occurred over time and what they attributed these changes to.

5.7 Summary

This chapter presented part of the stories of the fifteen participants’ experiences of ICTPD and the self-reported impact on their classroom practices. Their various ICTPD programme activities included activities that were categorised under the following headings – skill sessions provided by cluster personnel or by external providers, conferences or visits to other schools, and undertaking tertiary qualifications / professional reading.

The contributions (or not) that participants had in designing and choosing their ICTPD programme were discussed, as were the aspects that participants appreciated the most and the least. While the majority of the participants did not have the opportunity to make contributions to the design of the ICTPD programme, they did have a choice in the activities they participated in within the programme. The aspects of the programme that participants appreciated the most were support/feedback from the cluster facilitators and sharing ideas and working with other teachers. The least appreciated aspect of the professional development programme by participants was working with an external professional development provider.

The participants’ expectations of their ICTPD programmes, and the extent to which these expectations were met, varied considerably. While almost half of the participants indicated that they did not have any expectations or had no idea what to expect of the programme, they were generally positive about their participation in the
programme.

The last section of the chapter reported on the overall affects of participation in the ICTPD programme for the fifteen primary teachers. These affects included: 1) the extent to which the participants thought any increase in their use of ICT with classes was attributable to the ICTPD programme; and, 2) the contribution of the ICTPD programme to their understanding of teaching and learning in general. The extent to which the participants felt any increase in their classroom use of ICT was attributable to participating in the ICTPD programme varied considerably. The participants’ responses ranged from not at all to completely attributable, with the majority of the participants indicating that any increase was either largely or completely attributable to the ICTPD programme. As to the contribution of the ICTPD programme to their understanding of teaching and learning in general, the majority of the participants responded that the programme gave some new ideas or provided a new approach.

Tables 5.1 – 5.6 provide an overview of the 2006 and 2007 interview data, however, they represent an incomplete picture of the complexity of the participants’ experiences of the professional development. The following three chapters present and discuss the participants’ professional development experiences and the affects on their classroom practices over a period of eight years. Chapter Six puts forward the perspectives of fifteen primary teachers about professional development immediately after the end of the ICTPD programme; Chapter Seven presents the stories of changes to participants’ classroom practices a year later; and, Chapter Eight presents the participants’ reflections on the impact of ICTPD on their professional lives eight years later.
6.1 Introduction

Timperley et al. (2007) emphasised that, “teachers in New Zealand, as in other countries, are diverse and have diverse learning needs. The same professional development experience can result in very different outcomes for teachers” (p. 6). Although teachers may engage in the same or similar professional development, what they take from and how they react to their professional development experiences can be quite different. Teachers may be very enthused by and positive about the professional development, have the key elements resonate with their beliefs about teaching and learning, and be able to implement and make changes to their classroom practice. Other teachers, however, may have negative views about the professional development experience, not understand or see the relevance to their situation, reject the ideas being presented, and continue to use the classroom practices they are comfortable with and that resonate with their philosophy about teaching and learning (Timperley et al., 2007).

This chapter presents the narratives, from the 2006 interviews, of the fifteen participants regarding the changes they had made to their classroom practices as a result of their participation in the ICTPD programme. In particular, the teachers’ perspectives on the effects of these changes are discussed.

6.2 Narratives of the teacher participants

The 2006 interviews with the participants followed up their answers to Question 5 from the end-of-project survey regarding the extent to which their classroom practices had changed after participating in the ICTPD programme (see Appendix 4). The possible responses were not at all, very little, to some extent, to a large extent or completely. Depending on their response to Question 5, they were asked the following question.
In your survey you indicated that you felt that your classroom practices had changed very little / to some extent / to a large extent / completely. I would like to ask you about the changes you have made to your classroom practices that you had in place before taking part in the professional development programme.

Other interview questions regarding the changes study participants made to their classroom practices through their participation in the ICTPD programme included:

- What do you see as being the benefits of integrating ICT into your classroom practices?
- What barriers to or concerns about integrating ICT into your classroom practices do you have? If there are any, please describe these.
- What changes have you made to your classroom practices that you had in place before participating in the ICTPD programme?

For a full list of 2006 interview questions, see Appendix 7.

The participants’ stories provided explanations for their answers to the extent-of-change question asked in the survey and gave insight into their professional development and learning. Their perspectives, beliefs about teaching and learning, and experiences all appear to have contributed to their responses. The participants’ stories and responses to interview questions were divided into three themes: 1) appreciating the need for changes to classroom practices, 2) concerns or barriers to change, and 3) changes in pedagogy. These themes, for the 2006 interviews, are presented and analysed in the following sections.

6.3 Narratives of appreciating the need for changes to classroom practices

For change to occur, teachers need to be sufficiently informed and appreciate the need for the change (Fullan, 2007; 2008; Timperley et al., 2007). As stated in Chapter Four, the ICTPD programme was designed to introduce new skills, ideas and pedagogy to the participating teachers, allow them to reflect on their classroom practices, and support them to amend their current practices or adopt the new practices in their teaching and learning programmes. In this section, the analysis of participants’ stories regarding appreciating the need for changes to their classroom practices is presented.
During the 2006 interviews, the fifteen participants were asked about what they considered to be the benefits of integrating ICT into their classroom practices. When analysing their responses, four common sub-themes emerged for appreciating the need for changes to their classroom practices: 1) ICT as a tool to use with and by students to support their learning; 2) teachers’ emphasis on students’ ownership of learning/empowerment of students; 3) introduction of thinking skills and inquiry learning to students; and, 4) use of ICT as motivation for and engagement of students. Other reasons for appreciating the need for changes to classroom practices mentioned by only one or two teachers included the ease of completing administration tasks electronically and more communication with parents. Each of the four aforementioned common sub-themes will be discussed in turn.

6.3.1 ICT as a tool to use with and by students to support their learning

Eleven of the participants commented that ICT were a tool that could be used with and by students to support their learning. They appreciated the need to change their classroom practices to integrate ICT to support students’ learning. Barbara (Junior) commented that by integrating ICT into her classroom the students had another tool that could assist them in their learning: “The children don’t think anything of it when I bring the laptops in. They see children around the school using laptops. They access information off the Internet…It is just so much a part of their lives, they don’t think anything of using them” (Barbara, 2006 interview). She also commented, however, that ICT should be used in a support role to the learning that was happening in the classroom. “It’s far more important to learn numeracy and literacy than ICT but I see it as a support for the learning that’s already going on in the class” (Barbara, 2006 interview). This was a viewpoint that Barbara, as well as Mary and Irene (all Junior), emphasised throughout their interviews.

Although Tania (Junior) reported only making small changes to her classroom practices following the ICTPD programme, she appreciated the need for changes that better supported the learning of the students. Integrating ICT into her classroom practices to support student learning had practical implications. “Being able to relive the moment and recall things that perhaps otherwise we might have forgotten because the photographs jog the memory and bring back the moments that a five year
old couldn’t retain” (Tania, 2006 interview). In addition to Tania, Irene and Julie also used ICT to help their students with the recollection of events. They saw the use of digital cameras, in particular, as being useful to record what the students had done or seen to help them with their recall to assist their writing.

Nancy (Senior) appreciated the need for changes to her classroom practices to integrate ICT as she saw that using ICT for their learning was part of the future for students. Nancy further commented that the students needed to be confident in their use of ICT so that they were able to try and manage new programs and experiences that arose. “You want the children to be confident enough and have a go at [using various ICT]. I think it is quite crucial that they get to try lots of different things” (Nancy, 2006 interview). George (Middle) shared this opinion. George’s comment captured this view; “Children are aware of ICT…and one has to respond to that” (George, 2006 interview). Hannah (Middle) appreciated that students using ICT to find current information was essential. She commented, however, that it was beneficial for her to go online and find resources and ‘bookmark’ them for her students to use, rather than having them ‘surf the net’. This meant that their learning was supported and focused by having suitable websites to use without wasting valuable learning time searching through a plethora of material on the Internet. It also meant that Hannah had more control over access to ‘undesirable’ or non-educational sites (Hannah, 2006 interview).

Hannah particularly mentioned students who struggled with writing and how the use of ICT, such as a word processing program, supported their learning; “Access to the computer makes [writing] very quick for them, they don’t even have to do rough drafts. It just takes away all that pressure. We can focus on deeper features rather than all the surface features of writing” (Hannah, 2006 interview). Alex (Senior) made similar comments and saw that ICT also provided motivation as well as support for less able learners; “I think it also appeals to those reluctant learners as well…they get a bit more enthusiastic about it. I get more children in before school and at lunchtimes who choose to do their work than I have ever had before” (Alex, 2006 interview). Nancy echoed these comments; “For some of our kids who have difficulties learning, there are ways they can use ICT to help them with their learning” (Nancy, 2006 interview).
Nancy also mentioned the affordance of ICT to support students to express themselves in creative ways, “[The technology] allows them to be very creative as well. There’s a creative side to it so they can get their ideas in different ways (Nancy, 2006 interview). As well as being creative, Aaron (Middle) commented on not only the process but also the end product of students’ work: “The process is important but with technology, the product at the end can also look nice...and that gives satisfaction for some children as well” (Aaron, 2006 interview). Michael (Middle) and Mary (Junior) also commented on this affordance of ICT for students to produce work where they could focus on the content rather than the mechanics of writing during their interviews.

The comments by the eleven participants, who represent all three levels of primary school, demonstrate their appreciation of integrating the use of ICT into their classroom practices to support the learning of their students. These comments also lead into the next sub-theme of teachers’ emphasis on empowerment of students / students’ taking ownership of their own learning.

6.3.2 Teachers’ emphasis on students’ ownership of their learning / empowerment of students

Ten of the participants – Sally, Barbara and Ann (Junior), Hannah, Michael and Aaron (Middle), and Charlotte, Alex, Nancy and Carol (Senior) – appreciated the need for changes to classroom practices to allow students to take ownership of their learning and/or the empowerment of students.

Carol succinctly stated her appreciation of the need for changes to her classroom practices, “to challenge the children and to allow them to have control over their learning” (Carol, 2006 interview). Sally, who taught at the Junior school level, appreciated the need for and perceived the changes that she made to her classroom practices as positive, particularly the empowerment of the students. Her enthusiasm about the changes she had made was very evident.

Incorporating the ICT, I had the children when they came in the morning write their name up on the computer to say that they were here. Then they were learning to change the font and the size...Just little things like that that are fabulously simple but so empowering for the children (Sally, 2006 interview).
Hannah appreciated the use of ICT as giving the students more control over their learning: “It’s been seeing the sheer excitement in their own learning because they are just able to get the tool that fits [their learning] best” (Hannah, 2006 interview). Alex commented on the positive affect that ICT had on the students’ learning. “I think that it makes the learning experiences more powerful for the children. Like making things like movies, it gives it that WOW factor and children are more empowered doing it” (Alex, 2006 interview). When ICT were used, Ann saw the empowerment of the students as paramount in appreciating the need for changes to her classroom practices.

That the children have more input and more say in what is happening. Greater ownership [of their learning] for them. And that was a mental jump because I always thought that my role was to scaffold them for the future and teach them the structure so that as they went along, they could make choices, but now it is more the other way around (Ann, 2007 interview).

Ann identified that her role as a teacher was evolving with the changes that she had incorporated into her classroom practices. Her shift in thinking can be seen as her appreciating the need for changes to her classroom practices. Michael viewed the use of ICT as empowering the students to pursue their learning in different ways.

It lets children go off on their own tangent if they want to. So for example, you’re doing an inquiry learning unit and the children would like to use the digital cameras, they can pick them up and go with them…Once those essential [ICT] skills have been taught, then hopefully they should retain it and then carry on with it (Michael, 2006 interview).

Carol, Hannah, Alex, Ann and Michael all appreciated the empowerment of students and giving students’ ownership of their learning as important regarding making changes to their classroom practices.

Despite limited access to equipment, George was very enthusiastic about what he had learned from the ICTPD programme. In particular, his students were using ICT and assisting each other, which constituted positive changes to his classroom.

Just seeing them engaged and…the kids are actually troubleshooting for one another. Someone will say, ‘Oh look I can’t get this animation on’, and someone will say, ‘Oh, I know what to do, bring it over here’. The kids are helping one another; they’re giving ideas, they’re engaged, [and] they’re focused (George, 2006 interview).
George saw changes in his students’ interactions as a result of using ICT in his classroom practices. The students were able to assist each other when they came to an aspect of using ICT that some did not know. The students took on part of the teacher’s role and were learning from each other.

Aaron described an appreciation for the changes he had made to his classroom practices as he saw them as empowering his students. He also saw he was teaching his students skills in using ICT correctly and safely, and the ability to apply these lessons to other areas of their learning.

Well, ultimately for children, that I’m teaching them skills in relation to Internet safety as well as being able to conduct searches, use a video camera, use a digital camera properly and download photographs. So if you are teaching [ICT] skills to children, as well as being able to integrate inquiry learning and have that as part of it, they would be able to do all sorts of things (Aaron, 2007 interview).

Aaron felt that the changes he had made to his classroom practices allowed him to prepare his students to be lifelong learners. The growth in her students’ confidence in using ICT and the ability to pursue a topic that was of interest to her students were the reasons Charlotte appreciated making changes to her classroom practices. The students taking more responsibility for their learning was also seen as a positive aspect to the changes made.

They are more in charge of their learning. They feel that their opinions matter and they can do something about it...They looked at poverty overseas and found we weren’t up to the percentage that we are supposed to be for aid. They emailed the Prime Minister and they got a letter back...and they asked all these hard questions and they...just felt like they were doing something (Charlotte, 2006 interview).

This extract from Charlotte’s interview refers to using ICT for inquiry learning and the learning becoming more student-focused as appreciating the need for the changes she made to her classroom practices. The introduction of using inquiry learning pedagogy and explicitly teaching thinking skills to students is the next sub-theme for participants appreciating the need for changes to classroom practices.
6.3.3 Introduction of thinking skills and inquiry learning for students

The ICTPD programme placed an emphasis on the teaching of thinking skills and the use of inquiry learning alongside the integration of ICT. Nine of the participants, Mary, Barbara, Julie, and Irene (Junior), Michael and Hannah (Middle), and Charlotte, Nancy, and Carol (Senior), appreciated the need to make changes to their classroom practices to include these approaches to learning.

Although Irene indicated that her classroom practices had changed very little, she did appreciate the need for changes to her classroom practices. “The awareness of the thinking skills and ideas and getting the children to think more about things…as well as giving the children opportunities to use the computers” (Irene, 2006 interview). These aspects had less to do with using ICT in class and more to do with thinking skills emphasised in the ICTPD programme.

Mary appreciated the use of thinking skills and being able to integrate them as the need for making changes to her classroom practices following participation in the ICTPD programme, but she also noted other developments. “As well as the ICTPD programme, we’ve been on the maths contract this year and that’s been fantastic for numeracy development… There’s a lot more to teaching maths now than there used to be” (Mary, 2006 interview). She appeared more enthusiastic about the relevance of the mathematics professional development than the ICTPD programme. “The maths is a key part of the children’s learning where I see the ICT more as an add-on, not the thinking skills but, using the computers” (Mary, 2006 interview). Mary did not view ICT as an integral part of the classroom programme, but rather as supplementary. She saw the relevance of the thinking skills that she had acquired during the ICTPD programme, but less so for the skills concerning the use of ICT.

Barbara and Julie also mentioned inquiry learning and thinking skills when commenting on appreciating the need for changes to her classroom practices. The following extract from Julie’s 2006 interview exemplifies this.

I think the positive effects come through in inquiry learning. I think that the main thing is that the children keep asking more questions. We talk about ICT but part of that is also inquiry skills. We have used the Seven Servants [thinking strategy] and the thinking hats in [the classroom]… It’s more expected now and so there are more opportunities for the children to use them (Julie, 2006 interview).
Julie also saw the use of inquiry learning as being a positive change to her classroom practices. Her comments also indicate that she felt vindicated for activities and strategies that she had been using in her classroom prior to participation in the ICTPD programme and that were now being promulgated as good classroom practices.

Hannah embraced the introduction to a wide range of thinking skills and strategies through the ICTPD programme and she appreciated the need to make these changes to her classroom practices to incorporate ICT.

> We’ve been looking at Bloom’s Taxonomy [Bloom et al., 1956] in depth in the reading programme. They’ve been able to make their own Bloom’s activities for other students to do. There’s also the Six Thinking Hats [De Bono, 1985]; they can apply that to not only researching, but [also] presenting. We’ve looked in-depth at the Thinker’s Keys [Ryan, 1990] and they’ve been able to make up their own rubrics. They know that thinking is such a powerful tool…so that when they are reflecting or goal setting, they know what they are talking about (Hannah, 2006 interview).

Hannah’s comments also link the use of the thinking skills and strategies to giving students’ ownership of their learning.

Nancy saw the ability of students to choose what they learned about and follow their interests as the need for making changes to her classroom practices. “I think the opportunity for those children who have different ideas to follow them. They have done some things that perhaps we wouldn’t have because we were hamstrung by the things we require or the things that we thought they should do” (Nancy, 2006 interview). Using inquiry learning, a model of investigating an area of interest (see, for example, Wilson & Murdoch, 2008), meant that work could be differentiated and tailored to individual or groups of students while allowing them choices about what they learned. Nancy appreciated the need for incorporating inquiry learning into her classroom practices, particularly for the more able students in the class.

6.3.4 Use of ICT as motivation for and engagement of students

Six of the teachers – Julie (Junior), George and Hannah (Middle), and Nancy, Alex and Charlotte (Senior) – all commented on the use of ICT for motivation and engagement of students as appreciating the need for changes to their classroom practices.
practices. George, Alex and Hannah mentioned their students’ enthusiasm for learning tasks when ICT were used to find information, complete tasks, and present their work. Nancy stated that the ICT allowed her Senior-level students to present their work to a high standard; “Their work looks kind of professional when they’re finished. It’s an added thing that makes them so proud of what they did” (Nancy, 2006 interview). It is not only the Senior-level students, however, who were motivated by using ICT to support their learning. Julie commented on her Junior-level students being very motivated to work on tasks when they used ICT. “The children are so keen, they get so much from it. You watch a little one’s face when you hand them a camera or get the children on the computer. It’s hugely beneficial to the children” (Julie, 2006 interview). Charlotte’s comment summarises the essence of those made by the six participants who mentioned motivation and engagement of students as to why they appreciated the need to make changes to their classroom practices. “A lot of children are more motivated by [ICT]. Doing it on the computer rather than on paper. It’s that motivation and enthusiasm factor” (Charlotte, 2006 interview).

The fifteen participants appreciated the need to make changes to their classroom practices for varying reasons. The four main aspects that they appreciated were using ICT as a tool to support student learning, giving students ownership of their learning, the emphasis on thinking skills and inquiry learning as well as the motivation and engagement of students. While the participants appreciated the need for changes, there were also concerns about and barriers to using ICT in their classroom practices. In the next section, these barriers and concerns are discussed.

6.4 Narratives of resistance or barriers to changes to classroom practices

The participants were asked about their concerns for integrating ICT into their classroom practices during their 2006 interviews. They were given a list of concerns that had been derived from 2004-2006 cohort end-of-project survey (see Appendix 4). These concerns included:

- Access to equipment for students’ use
- Equipment reliability/insufficient technical support
• Lack of time to cope with it all
• Keeping up-to-date with required skills and knowledge on ICT developments
• Making the links between ICT and quality teaching and learning
• Lack of ideas on how to use ICT with classes
• Need for continuing professional development

Of the concerns listed in the 2004-2006 End-of-Project survey, making the links between ICT and quality teaching and learning, was not mentioned by any of the participants and has, therefore, not been included in Table 6.2. The concern regarding the need for continuing professional development will be discussed separately in section 6.7. As well as commenting on the above list of concerns, some of the participants also identified two further concerns: too much focus on using ICT; and managing classroom environments when using ICT. Table 6.2 presents the concerns the fifteen participants had about using ICT in their classroom practices.
Table 6.2 Participants’ concerns about using ICT

<table>
<thead>
<tr>
<th>Teacher Concerns</th>
<th>Junior School Teachers</th>
<th>Middle School Teachers</th>
<th>Senior School Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to equipment for students’ use</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Equipment reliability/insufficient technical support</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Lack of time to cope with it all</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Keeping up-to-date with required skills and knowledge on ICT developments</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Lack of ideas to use ICT with classes</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Too much focus on using ICT</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Management of classroom environment when using ICT</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 6.2 indicates that access to equipment for students’ use, equipment reliability/technical support, lack of time, keeping up-to-date with required skills and knowledge, and too much focus on using ICT were the aspects that concerned the participants the most. Of these aspects, access to equipment for students’ use and equipment reliability/insufficient technical support each concerned the greatest number of participants (eleven) closely followed by lack of time to cope with it all and keeping up-to-date (ten). Irene was the only participant who expressed concern regarding the lack of ideas on how to use ICT in classroom. As a Junior-level teacher, her comment stemmed more from having the children being able to use ICT independently than not knowing how to use them at all: “This is just the lack of ideas of how to use them, that the children can use independently and meaningfully without always having to have teacher input” (Irene, 2006 interview).

When analysing the teachers’ responses about concerns regarding the use of ICT in their classroom practices, the issues such as access to equipment for students and
equipment reliability/insufficient technical support are obvious concerns. Other concerns mentioned by teachers, however, such as lack of time and keeping up-to-date with required skills and knowledge, are also important, although as Karasavvidis (2009) reports these are “more difficult for outsiders to comprehend” (p. 437). Research suggests that for teachers using ICT, factors relating to time are the greatest concerns (Karasavvidis, 2009; Smeets, 2005). This may be time to: learn new skills; find out about resources; plan and trial new approaches to teaching and learning; reflect upon experiences and consolidate learning; and, share those experiences with others. While time-related concerns were reported, these were only some of the teachers’ concerns about using ICT in their classroom practices as shown in Table 6.2. Other concerns expressed were management of classroom environment when using ICT, Internet safety, and the pedagogy underpinning the use of ICT for teaching and learning.

With regards to improving access to equipment for student use, ‘bring your own device’ (BYOD) schemes are one way of addressing this issue, although not all schools in New Zealand, who have wanted to introduce this scheme, have met with community support (Quigley, 2012). The ability to address concerns about equipment reliability depends on the systems that are in place in the individual schools, for example, the regular services of a technician. The concerns about keeping up-to-date with required skills and knowledge on ICT developments has been less straightforward to address. Nick Billowes, the National Coordinator for the ICTPD programme, commented that a number of clusters continued to work as a professional learning community directly after the conclusion of the ICTPD programme despite the government funding being withdrawn, while other schools have formed new clusters of schools and have developed new professional learning groups (N. Billowes, personal communication, 21 November 2006). However a school or cluster of schools chooses to address continuing professional development and other issues, the main considerations are that the concerns of the teachers are seen as important and measures are put in place to support them in their efforts to integrate ICT into their pedagogical practices (Billowes & Alexander, 2010).

The concerns expressed by the participants were: equipment reliability / insufficient technical support; student access to ICT; lack of time / time management; too much
focus on ICT; management of classroom environment when using ICT; and, keeping up to date with required skills and knowledge on ICT developments. Each of the aforementioned concerns will be discussed in sub-sections 6.5.1 – 6.5.6.

6.4.1 Equipment reliability / insufficient technical support

Equipment reliability or insufficient technical support was seen as a barrier to integrating ICT into classroom practices by twelve of the fifteen participants who represented all three levels of primary school. Tania (Junior), and George and Hannah (Middle) did not mention equipment reliability/insufficient technical support as a concern. The concern expressed by the twelve participants was that if they had problems with the equipment and could not resolve the problems, then they lost the use of the ICT. The following comment from Mary (Junior) is typical of the equipment reliability/insufficient technical support concern expressed by the participants; “Something blew up and we had nothing for two weeks until someone could come and get things running again” (Mary, 2006 interview). There was a sense of frustration that came through clearly in comments during the participants’ interviews. Nancy (Senior) used an interesting comparison when discussing her concern.

The thing with ICT is that they break down. You need someone available who can fix [the ICT] because I can’t fix them. It’s a bit like a car, I can drive it but I can’t fix it. You need to have the back up technician and I don’t think schools have that or the funding to maintain them to the level we would like (Nancy, 2006 interview).

Julie (Junior) and Aaron (Middle) also mentioned the lack of funding for schools to have a technician available. Julie expressed concern that, “if you can’t afford to have technicians in or people like that then it becomes a difficulty” (Julie, 2006 interview). Aaron commented that he felt that the Ministry of Education had put this project in place but had not backed it up with sufficient technical support for it to really work.

The fact that there is one teacher in the school that is required or is expected, because they have a [management] unit for it, to know everything about every problem that could happen to any piece of technology in the school which is completely unrealistic (Aaron, 2006 interview).
Further to Aaron’s comment, the concern about having teachers within the school who were designated to assist their colleagues if they had problems using ICT was also expressed. Irene (Junior) mentioned that for her the concern was, “that realisation that when something goes wrong, you will encroach on other people’s time to deal with it” (Irene, 2006 interview).

Aaron’s school developed a solution to help teachers with setting-up ICT and troubleshooting when problems occur. “Our Year 5 and 6 children are being taught…how all the programs work and to problem solve around the computers…So if the teacher wants them to come in and set up a pod of laptops then that kid can just go in and do it” (Aaron, 2006 interview). The staff embraced this solution as teachers were not hindered in their attempts to use ICT in their classrooms, and confidence and a sense of responsibility were instilled in students. If an ICT was not working and the teacher or student could not rectify the problem, then they had to wait for a technician to fix the problem. While Aaron mentioned the use of students as set-up technicians or troubleshooters, this solution is not unique to Aaron’s school.

Irene, Tania and Mary, all Junior-level teachers, expressed concern about equipment reliability and the management of student groups when integrating ICT into classroom teaching and learning programme. Because of the students’ age, they relied on their teacher for assistance, rather than being able to assist each other to solve problems. If this happened during a teaching session, then the teacher would need to stop working with another group of children to be able to address the problem and enable the children working with the ICT to continue. This extract from Mary’s interview is indicative of the concern these three teachers had: “When the computers break down or the children say ‘I don’t know what to do – what’s happened? Can you fix it?’” (Mary, 2006 interview). This concern was not, however, unique to the Junior-level teachers. Nancy and Carol, who both worked with Senior-level students, also expressed a similar concern with not being able to fix the ICT if a problem occurred or students not being able to problem solve when something went wrong.
While equipment reliability was the concern expressed by the most participants, a similar number of participants (but not the exact same participants) expressed concern about the lack of student access to ICT.

6.4.2 Students’ access to ICT

Students’ access to ICT was mentioned during the 2006 interviews by eleven of the fifteen participants. Carol, Nancy and Charlotte (Senior), Aaron, George, Hannah, and Michael (Middle), and Sally, Julie, Barbara and Irene (Junior) commented on the limited availability of ICT for use by students. Carol’s comment is representative of the comments other participants, across all levels, made regarding this concern: “Just the fact of the limited number of computers that we have access to” (Carol, 2006 interview). For the majority of the participants, when they were commenting on the availability of ICT, in most cases they meant computers or laptops, rather than peripheral ICT such as digital cameras. Julie saw that access to equipment was also a funding issue. “If you can’t afford to buy new computers or upgrade what you’ve got, then it really isn’t going to work” (Julie, 2006 interview).

While Hannah commented in her interview about the limited availability of ICT at her school, she also commented on how she managed with having limited equipment – use of a data projector and a SmartBoard (interactive whiteboard). “We just got the data projector out and put it up on screen. Lots of great discussion and lots of interactive stuff going on” (Hannah, 2006 interview). Hannah’s use of the ICT available meant that she was able to use ICT with the students and, with using the interactive whiteboard, students were able to have access to ICT.

Michael stated that his experience of using ICT at each of the two schools he had taught at was opposite to each other and equally problematic. At the school he was currently teaching at, access to equipment was a concern and professional development was available, which had not been the case at his previous school. “At my last school we had access to the equipment but hadn’t been through the PD so didn’t know how to use it. We have the opposite problem here” (Michael, 2006 interview).
Students’ access to ICT was dependent on the amount of ICT a school was able to obtain. In a number of schools, such as Hannah’s school (Hannah, 2006 interview), a booking system was used so that teachers could plan to use ICT for teaching and learning sessions. This planning for using ICT in the classroom also led to some participants being concerned about their management of classroom environments when using ICT. These concerns are discussed below in sub-sections 6.4.3 to 6.4.6.

### 6.4.3 Insufficient time to cope with it all

Ten of the fifteen participants (Tania, Julie, Irene, and Ann (Junior), Nancy, Michael, and Aaron (Middle), and Aaron, Charlotte, Carol, and Alex (Senior), mentioned time management or insufficient time to cope with integrating ICT as a barrier to implementing ICT into their practices.

Irene expressed concern about balancing the amount of time spent on using ICT and on teaching the curriculum. “If you are spending all the time on ICT, then something has to go and, to me, it has to be other curriculum areas [everything other than English and mathematics] of which ICT is supposed to be integrated into them all but isn’t actually one on its own” (Irene, 2006 interview). Aaron had similar concerns: “There is just so much that you have to kind of pick and choose the things you are going to do” (Aaron, 2006 interview). Aaron carefully considered how, and to what extent, ICT would be integrated into his classroom practices. Charlotte mentioned the additional time it took for her students to learn to use the ICT as a concern regarding integrating ICT into her classroom practices.

Children learning how to use the equipment takes time. And often because there is so much to do and so many programs, I feel like there’s not enough time to do something again. Like you make a movie once and it takes ages to make that movie. To do that again, in that year, you need time so that those children can do that again…time’s a big thing (Charlotte, 2006 interview).

Julie also expressed this concern and stated that, “the process of teaching children a program is slow. Time is a factor in everything” (Julie, 2006 interview).

In contrast, Alex did not see using ICT within his own classroom practice as affecting the time he spent on curriculum. He did feel, however, that the amount of
time his role as the lead teacher for ICT at his school entailed had negative effects on
his classroom practices.

I am the [ICT] technical person. I am heavily involved with getting
everyone sorted and doing the ‘techy’ things. It just totally dominates
your time if you are dealing with hardware issues and this kind of
thing...It is starting to impact on my teaching because at the end of the
day when you could be doing planning or you could be doing
assessment, you are taking a computer in to be fixed (Alex, 2006
interview).

With being in a rural school, taking equipment in to the city to be repaired or trying
to repair it himself, took time away from his classroom preparation.

Another aspect of time that was a concern was keeping up-to-date with the required
skills and knowledge of ICT developments. This was a concern expressed by ten of
the participants.

6.4.4 Keeping up-to-date
Charlotte and Carol (Senior), Michael, Aaron and Hannah (Middle), and Barbara,
Irene, Ann, Julie and Mary (Junior) all mentioned keeping-up-to-date with the
knowledge of and skills in using ICT as a barrier to changing classroom practices.
All ten of the participants expressed concern about the amount of time and effort
involved, especially when ICT and their associated software programs changed so
rapidly. Aaron’s comment is representative of the concerns these ten participants
expressed: “Things are changing at such a fast rate...so you will always be
continually reviewing what you know, both technically and pedagogically. We don’t
know what skills those children are going to need” (Aaron, 2006 interview). As well
as the rapid change in ICT, Charlotte also commented on the changing time
commitments with subsequent PD demands after the ICTPD programme was
completed. “We won’t get the release time that we now do [for ICTPD]. We’ve got
another [professional development] contract to do” (Charlotte, 2006 interview). After
having release time as part of the ICTPD programme, finding the time to keep up-to-
date with skills and knowledge was a recurring theme in the interviews.
Five of the teachers, from all three levels of primary school, considered that there was an over-emphasis on using ICT for teaching and learning and this issue is discussed in the following section.

### 6.4.5 Too much focus on using ICT for teaching and learning

Five of the participants, Charlotte (Senior), Michael and George (Middle), and, Mary and Tania (Junior) considered that there was an over-emphasis on using ICT for teaching and learning. These teachers were from all three of the groups based on the extent to which they changed their classroom practices after participating in the ICTPD programme. George commented that his priority as a Middle-level teacher was to ensure that his students had good literacy and numeracy skills.

> I still would err on the side of caution of having too much of a focus on ICT. I still come back to the point that I feel a responsibility that the children can read well, write well, and have got good spelling skills. To me, I see ICT as a tool that assists the children’s learning (George, 2006 interview).

While Mary used ICT in her classroom practices, her emphasis was that all her students focused on the learning that was happening, particular literacy and numeracy skills. “When it is reading time, it’s reading time and when we do handwriting, we all do handwriting. That’s a shift I haven’t made yet. I only allow [my children] to use [ICT] at certain times” (Mary, 2006 interview).

Michael (Middle) and Charlotte (Senior) had similar views regarding the students’ using ICT in all aspects of their learning. The following comment from Charlotte captures their concern about there being too much focus on using ICT.

> I don’t agree with digital classrooms. Right from the beginning I’ve always said that there is a place for ICT, especially as we have a digital world and the kids were born to that. It’s all about balance. There is nothing wrong with children painting their art or reading a book rather than doing it on the laptop (Charlotte, 2006 interview).

Tania, a Junior-level teacher, also reflected on the emphasis placed on using ICT in her classroom practices. She had a similar view to Michael and Charlotte, but questioned the time it took to use ICT for certain projects, when traditional resources may have required less time to achieve similar results.
I’m still unable to see the learning that benefited the children through that means [using ICT to record their learning]. I’m not sure why I should do it on a KidPix slideshow that would probably take about 15 hours. I could do that in a class lesson by making a large book and getting them to do exactly the same thing in probably 30 minutes. We have limited time of class contact and we need to be clear about how to use that time to maximise children’s learning (Tania, 2006 interview).

The theme of relevance to teaching and learning was important to Tania and was a recurring theme throughout her interview. She did use some ICT in her classroom practices but needed to be convinced of the educational value that the ICT contributed.

As can be seen in the above extracts, all five of the participants were adamant about their concern of too much emphasis being placed on using ICT for teaching and learning. While other concerns were expressed by greater numbers of the participants, this was the concern that evoked the strongest response during the interviews.

Four of the participants, Ann and Julie (Junior), and Michael and George (Middle) that expressed concern about insufficient time also commented about the time the management of the classroom environment took when using ICT. The next subsection focuses on the concern of the management of the classroom environment when using ICT.

6.4.6 Management of classroom when using ICT

One may expect that Junior-level teachers would have a concern with the management of the classroom environment when using ICT as their students may not be as independent in problem solving when faced with issues using ICT. Of the four participants who did express such a concern, two were indeed from the Junior-level (Ann and Julie), however, two were from the Middle-level (George and Michael).

Julie and Ann expressed concern about the management of the classroom environment when using ICT. Julie felt the management of students when they were using ICT was a negative aspect to the classroom changes she had made as a result of her participation in the ICTPD programme: “Occasionally a child will turn a program off when they just push a button and the next one needs it sorted out to have their
turn: That can be disruptive” (Julie, 2006 interview). Julie contended that she did not really see the use of ICT in the classroom as being negative, but rather that their use could be disruptive to classroom practices, which needed to be managed. Ann also described her concerns as principally being about the management of the ICT and students: “These kids are not as capable at teaching each other. A lot of them don’t have that experience beforehand…so you’ve actually got to teach them how to use it, as well as what you are going to be using it for” (Ann, 2006 interview). Ann was willing to use ICT with her students but found the management of using the technology while she was working with the rest of the class challenging: “While you are working with one group [in reading or maths], that the kids will get into something that they shouldn’t. I don’t mean porn or anything like that. It’s just having to stop your group and go and sort it out for them” (Ann, 2006 interview).

George and Michael both had concerns about the management of the classroom environment when using ICT. George was given advice during the ICTPD programme from the cluster facilitator about managing the use of ICT in his classroom: “I was told to run my ICT programme like you run your reading or maths programme” (George, 2006 interview). He found this difficult to achieve: “I find it quite stressful when I do ICT because I’m so tight in my management that it’s not as relaxing as working with maths or reading groups. It’s not the fact that I don’t want to teach it. It’s the management of the groups and how to manage the learning time” (George, 2006 interview). Michael had similar views about incorporating ICT in his classroom practices. He reported that time management and having a number of groups working on various activities simultaneously were difficult.

Like during reading time, you’ve got to work with your guided reading groups…and taking time away from those reading groups to sort out a group with their digital storyboard – time management is hard with children who haven’t been around ICT (Michael, 2006 interview).

Michael saw that being deflected from one group to help solve another group’s problem had a negative effect on his classroom practice. However, his relative inexperience as a teacher may have been a contributing factor.

These four teachers made use of ICT as part of their teaching and learning programmes, but they needed support or guidance to do this in a way that would
overcome their concerns. Even though the cluster facilitator, in George’s case, had addressed this issue with George, it remained a concern for him.

The participants commented on a variety of concerns, with equipment reliability, student access to equipment, insufficient time and keeping up-to-date with required skills and knowledge of ICT developments as the most common concerns. Despite the participants’ concerns, each all used ICT, to varying degrees, in their classroom practices. The changes in pedagogy that the participants made to their professional practices are discussed in the following section.

6.5 Narratives of changes in pedagogy
As discussed in the review of the literature that informed this study, Chapter 3, teachers generally engage in three learning processes (see Table 3.1) when they participate in professional development to develop new understandings and skills (Timperley et al., 2007). These processes include cueing and retrieving prior knowledge, becoming aware of new information/skills and integrating them into current values and beliefs system, and creating dissonance with current position (values and beliefs). The outcomes of these learning processes determine whether change will occur. Timperley et al. (2007) argue that in order to make changes to professional practices, teachers need to “examine their prior knowledge, adopt or adapt the new knowledge, and resolve the dissonance and reposition or reconstruct their current values and beliefs” (p. 8). Whether teachers make changes to their classroom practices is determined by how the proposed changes fit in with their values and pedagogical beliefs about teaching and learning.

While all fifteen participants reported that they had made changes in their classroom practices, ranging from very little to completely, after participating in the ICTPD programme, not all of the changes involved the integration of ICT. From the participants’ comments, four commonalities of changes in pedagogy emerged from the analysis of their 2006 interviews. These are: 1) providing students with opportunities to use ICT regularly; 2) inclusion of inquiry learning and/or explicitly teaching thinking skills; 3) anytime, anywhere learning and empowering students;
and, 4) inclusion of information literacy skills. Each of these commonalities is discussed in turn in the following sub-sections.

### 6.5.1 Providing students with opportunities to use ICT regularly

Whether the participants reported that the extent of the changes they had made to their classroom practices ranged from very little to completely, fourteen of the participants had made changes, to a greater or lesser degree, to their pedagogy to provide students with opportunities to use ICT on a regular basis. The other participant, Tania, a Junior-level teacher, did provide opportunities for her students to use ICT but on a more selective basis. When analysing the interviews, the extent of the changes to pedagogy appeared to be influenced somewhat by the level at which the participant taught.

Six of the Junior-level teachers (Irene, Mary, Sally, Julie, Ann, and Barbara) reported that they provided opportunities for their students to use ICT, to varying degrees, on a regular basis. For Irene, Mary, and Sally, their use of ICT in their classroom practices was as part of their literacy and numeracy programmes to support students’ learning. The changes they made to their pedagogy appeared to have more to do with the year level that they were teaching (New Entrants/Year 1), and their beliefs about teaching and learning at that level as well as using ICT. This extract from Irene’s interview is representative of the three Junior-level teachers’ comments.

> I always use [ICT] as part of my reading programme with the ABC programme, fill in the gap or a phonics program that are as much about learning to use a computer as to tie in with their reading…kids need the opportunity to explore the equipment before they can be made to do things with it (Irene, 2006 interview).

ICT were used as another activity to support the teaching and learning of literacy and numeracy as well as having the students become familiar with using ICT. Ann also regularly used ICT as part of her literacy and numeracy programme. She explained further changes she made to her classroom practices following participation in the ICTPD programme. “The children are using [ICT], not just me…I just set them up with the ICT for them to use whereas, before, it would have been me telling them what to do and how it was going to be done” (Ann, 2006 interview). Ann’s statement shows that she gave students the opportunity to use ICT regularly and provided choices about what and how the ICT could be used. Julie was another Junior-level
teacher who regularly used ICT as part of her literacy and numeracy programmes. Furthermore, she considered ICT valuable as support for students who had special learning needs.

I have one [child] in here that has gross and fine motor problems. For that child to be able to record his thoughts on a computer is brilliant because he can do it fluently and have huge success and you can read what he has written (Julie, 2006 interview).

Barbara not only used ICT in her literacy and numeracy programmes, but she now planned for the students’ regular use of ICT to support their learning.

When we plan…ICT and thinking skills get as much time or as much effort put into them. They have a space on our planning sheet just like science and maths and everything else does...It is planned for at the time…and is integrated with whatever the theme is that we are working on (Barbara, 2006 interview).

With the syndicate (year level team) including ICT in their planning, as Barbara indicated, the integration of ICT was planned and not just an ‘add on’ into the unit of work.

In contrast to the other six Junior-level teachers, Tania did not provide her students with opportunities to use ICT regularly. Her use of ICT in the classroom programme was more selective and used mainly for recording events and to assist students with recalling the activities they had done.

In terms of my classroom programme, we would very rarely use laptops. We may use digital cameras on occasion. It would only be where I see direct relevance…I would use it on school trips with the kids taking photographs. I would use it to record a process in maths or writing instructions and show the steps. I wouldn’t let it overtake the learning or the purpose of the school trip (Tania, 2006 interview).

Tania was sceptical that integrating ICT into her classroom practices would make sufficient difference to her students’ achievements and progress to warrant changing her classroom practices. She was willing to change, but felt that there was insufficient evidence that integrating ICT into her classroom practices would make a significant difference. Relevance is noted repeatedly in Tania’s story about her ICTPD programme experience.
George, Hannah, Michael and Aaron, the four Middle-level teachers, also reported making changes to their classroom practices to provide opportunities for students to use ICT regularly. George’s comment exemplifies the teachers’ reasons for making changes to their classroom practices: “I am very much aware that the children want to use ICT and, as a classroom teacher, I have to somehow provide more than just that one off opportunity to give them ICT skills” (George, 2006 interview). The changes the participants made were in response to the students asking to use ICT to support and demonstrate their learning: “I guess I suppose it’s coming back to that same point, that. I guess that is the change in my understanding and my teaching… It is enhancing [students’] learning” (George, 2006 interview). Integration of ICT by both George and Michael, appeared to be resultant from their increased confidence in using ICT with their students as Michael’s comment demonstrates, “with doing the ICTPD course, I felt comfortable enough and learned the way to show the children so that they picked it up and they could run with it themselves” (Michael, 2006 interview). The positive result for the students was seen as the primary factor for integrating ICT into their classroom practices. Michael was also very willing to try new ideas and, as a new teacher, his classroom practices were not entrenched and, therefore, less threatening for him to change. Aaron’s comments were similar to those of Michael as, although Aaron was a teacher with five years’ experience, he was new to his school. Some of the classroom practices he encountered had already been implemented at his previous school. Nevertheless, he stated in his interview that he made further changes to his classroom practices as a result of the ICTPD programme.

Since taking part in the ICTPD programme, we’ve made movies, used Super Duper Music Looper and tried to make some music, and we’ve got a website where every child has their own page on that website…I still don’t use it all the time. I think that, with ICT, it needs to aid teaching and learning and not be separate from it (Aaron, 2006 interview).

Aaron integrated ICT into several aspects of his classroom practices, but felt that ICT have to support teaching and learning and not be used just for the sake of using technology. Aaron asserted that ICT should be used when they supported his teaching and his students’ learning, but that he had other teaching strategies that he could also use. He appeared to subscribe to the adage, ‘use the best tools for the job’. If ICT were not the best tools, then they were not used. Hannah had a complementary stance to that of Aaron in that she felt that the integration of ICT in
the classroom needed to be made explicit to the students. Moreover, she viewed the use of ICT by her students as essential to their learning and skill development.

I’ve always made sure that the students are aware that ICT is integrated throughout everything that we do…I think that the students know that ICT is embedded in everything. It’s part of their life…they just know when it’s better for their own learning. It’s for their future (Hannah, 2006 interview).

Hannah saw the use of a range of ICT as important; students needed to develop these skills to be effective, lifelong learners, as they would need to have a range of skills to cope with whatever the future held for them.

The four Senior-level teachers (Charlotte, Alex, Nancy and Carol) also reported making a conscious effort to include ICT in their lessons and have students use ICT purposefully in ways that would support and enhance their learning. Nancy and Charlotte had made similar changes to their classroom practices. The nature of these changes is captured in the extract from Charlotte’s interview.

I think that with doing the [ICTPD] programme, I just started thinking about how can we use ICT…In all areas, like in maths and reading this term, I looked at how I could use ICT to enhance their learning (Charlotte, 2006 interview).

Alex gave his students opportunities to use ICT constantly and regarded the ICT as learning tools: “It’s a tool, just like their pencil case” (Alex, 2006 interview). Alex held similar views to Aaron in that ICT were just some of the tools that students had at their disposal to support their learning.

Carol and Alex reported thinking similarly to the other Senior-level participants about integrating ICT into their classroom practices. As they both had positions of responsibility within the management team as well as classroom teaching responsibilities, their experiences of visiting other schools convinced them that, even though they themselves provided regular opportunities for their students to use ICT, further changes were required. Both commented that, even more importantly, school-wide change was required. Carol’s comment explains this thinking further: “It’s not just the technology, it’s more about developing school-wide learning models and fully integrating ICT” (Carol, 2006 interview). This view would appear to be due to their observations of teachers’ integration of ICT in other schools. The majority of
schools that were visited by ICTPD programme participants were ones that were considered by the ICTPD School Clusters programme’s national facilitators as exemplary in their integration of ICT (Billowes, personal communication, 21 November 2006).

For fourteen of the fifteen participants, providing students with opportunities to use ICT on a regular basis was a direct result of participating in the ICTPD programme. There was also an emphasis on the inclusion of inquiry learning and higher order thinking skills into teachers’ classroom practices during the ICTPD programme. In the following sub-section, the inclusion on these learning approaches is discussed.

6.5.2 Inclusion of inquiry learning / higher order thinking skills for students

Eight of the participants, Mary, Sally, Barbara (Junior-level teachers), Michael and Aaron (Middle-level teachers), and Nancy, Carol, and Charlotte (Senior-level teachers) mentioned the inclusion of inquiry learning and/or thinking skills in their classroom practices after participating in the ICTPD programme.

Mary, Barbara, Michael, and Sally commented that they incorporated thinking skills extensively into their classroom programmes. Barbara’s comment captures how these teachers had changed the way they taught to include higher order thinking skills. “The use of thinking skills because we didn’t do anything in thinking skills before that and…the rubrics, the thinking hats and all those things we now use. It has changed the way I teach” (Barbara, 2006 interview). The changes to these teachers’ classroom practices incorporated strategies for teaching thinking skills, as well as having students using ICT regularly. Michael also mentioned the use of graphic organisers, a tool used in conjunction with higher order thinking strategies. “Using graphic organisers…they are constantly used in my reading planning, my writing planning and visible all around the room” (Michael, 2006 interview). Michael’s introduction to, and use of, graphic organisers for teaching and administrative purposes were professionally significant. Sally commented on not only on how she had incorporated thinking skills, but also inquiry learning into her classroom programme:

The thinking tools thing was huge. That was really exciting and I tried to incorporate those wherever I can. I think it is great for children to access
that and think about things in different ways. The questioning, I’d always been hot on questioning but that kind of reinforced it, that it was even more important. I think [inquiry learning] takes children to a whole different level then we’ve ever done before, particularly in the Juniors (Sally, 2006 interview).

Carol, Nancy, Charlotte and Aaron also mentioned the introduction of inquiry learning into their classroom practices. All of these teachers reported making a significant shift in their pedagogy for this change in practice to occur. Carol’s comment captures the extent of the change in pedagogy that these teachers made to introduce inquiry learning following their participation in the ICTPD programme.

Now going the way of inquiry learning is that you are not in control of every step of the way anymore so that you have to stand back, you have to assist them and guide them…Once the children have asked the good questions, then it is to research and find an answer for that question. They can then publish and present their findings. That’s the difference, now I’m not standing at the front at the whiteboard anymore explaining things (Carol, 2006 interview).

Charlotte indicated that she felt that her classroom practices had been student-focused prior to participating in the ICTPD programme, but commented that following participation in the ICTPD programme and the introduction of inquiry learning into her classroom practices, that the change was more about her approach to teaching.

I have completely changed my way of teaching…my whole philosophy of teaching has changed. Even though I thought [my teaching] was student-focused, with using inquiry learning it seems to be more genuinely student-focused now (Charlotte, 2006 interview).

Charlotte based the extent of the changes on her use of inquiry learning and her classroom practices becoming more student-focused, rather than the amount she used ICT.

Complementary to the introduction of inquiry learning and higher order thinking skills, as alluded to by some of the abovementioned teachers, is a student taking more responsibility for their own learning. In the next section, the change in teachers’ practices to encourage student ownership of their learning and being able to learn anytime and anywhere is discussed.
6.5.3  **Student ownership of learning / anytime, anywhere learning**

Ann and Sally (Junior), Hannah (Middle), and Alex, Carol, and Nancy (Senior) made changes to their professional practices to have students take ownership of their learning and encourage anytime, anywhere learning.

Sally was very enthusiastic about her participation in the ICTPD programme. During her interview, she described her experiences in detail and was able to pinpoint what caused her to change her classroom practices completely.

> Having gone to [name of educationist], I re-evaluated what my core purpose was and...what I was doing and why I was doing it and what the children were getting out of it...I think it was probably empowering children even more, making them realise that they have a choice to make in how they can assist in their learning. It makes the children more accountable for why they do things (Sally, 2006 interview).

A number of visiting educationists came to speak to teachers involved in the different clusters (Billowes, personal communication, 21 November 2006). As can be seen in this passage from Sally’s interview, after hearing one of these speakers, she questioned what she was doing in the class and how she could improve her classroom practices to make learning even more powerful for her students. Ann and Hannah reported similar thinking about including the use of ICT as part of their classroom practices and letting the students make decisions about what ICT they use and how they do so. This thinking is captured in Ann’s comment: “Giving them a choice of how they want to follow up on their learning. How they want to record or present or whatever they were learning” (Ann, 2006 interview). Nancy had also made some major changes to her classroom practices, including classroom structure, timetable and her style of teaching so that her students had more choice about and ownership of their learning.

> The way we used to study something...that always came from me. Now stuff comes from me to start with and then we look at where we can take it. The children follow their interests...so I don’t actually know where it is going (Nancy, 2006 interview).

Sally, Ann, Hannah and Nancy accepted these changes as necessary to continue to develop their classroom practices to empower and support their students in their learning.
Alex and Carol described not only the changes made to their classroom practices to allow students more choice about and ownership of their learning after participating in the ICTPD programme, but also that this learning was no longer restricted to the school day. Carol’s reflects how both teachers viewed students’ learning after integrating ICT to a greater degree in their classrooms: “Just the thinking that school is not five days and five hours a day anymore. Learning is not confined to five days anymore, now learning is all the time” (Carol, 2006 interview).

With students having more ownership of their learning and being able to learn anytime/anywhere, three of the participants also changed their classroom practices to include the teaching of information literacy skills to support the students’ learning. This change is discussed in the following section.

### 6.5.4 Inclusion of information literacy skills

Carol (Senior), and Aaron and George (Middle) made changes to their teaching and learning programme to include information literacy skills. George expressed a concern that his students “go home and spit something off Google and think they’ve done research” (George, 2006 interview). George saw the need to teach his students information literacy skills such as, “skimming, note taking and main ideas” (George, 2006 interview). Aaron reported similarly and he specifically taught information literacy skills; “we’ve taught information literacy through by looking at keywords, [and] doing Internet searches for information” (Aaron, 2006 interview). Carol saw the need to ensure that students are able to formulate the right questions to be able to access the information they wanted on the Internet: “We embarked on a focus of asking good questions” (Carol, 2006 interview). Carol, Aaron and George included the teaching of information literacy skills to enable their students to be able to access, evaluate, and synthesise information to be able to answer the questions they posed and inform their learning.

To be able to address the concerns about using ICT that had been expressed in section 6.5 and to cater for the needs of the students, now and in the future, the participants were asked to comment on what they felt were their continuing
professional development needs. The participants’ responses to this question are discussed in the following section.

6.6 Continuing professional development needs for the integration of ICT into teachers’ classroom practices

During the 2006 interviews, the participants were asked about any professional development needs they still had in regards to integrating ICT into their classroom practices. The two most common needs were: 1) time to consolidate learning and ‘play’/become familiar with a range of ICT to use in classroom practices (seven teachers), and 2) opportunities to observe in other classrooms/schools and gain ideas for using ICT in classroom practices (five teachers). The other continuing professional needs mentioned were to continue regular ICTPD sessions, having just-in-time sessions (particularly for using specific ICT), and learning about the pedagogy behind using ICT for teaching and learning.

Seven teachers commented that they wanted time to consolidate their knowledge of ICT and how to use them in their classroom practices and saw this as a priority to being able to use ICT effectively for teaching and learning. Sally illustrated the need for time: “I want the time to be able to plan and work [ICT] into my programme. Not using a computer for its own sake but having activities that not only support the children’s learning, but also enhance it. It’s just about having a go, consolidation really” (Sally, 2006 interview).

Five of the teachers stated that they wanted the opportunity to visit other classrooms or schools to gain further ideas for integrating ICT into their classroom practices. Mary commented: “We need to go and see, not just for ICT, but in general to see how other classrooms operate because you get good ideas from that” (Mary, 2006 interview). Julie also suggested; “I don’t think it should be finished. I think we all need to be constantly aware of what is out there and build it into our planning for the years to come” (Julie, 2006 interview). Hannah and Carol also thought that professional development sessions should continue but on a ‘just-in-time’ basis. Hannah commented, “There was something I was going to use the other day and I
thought I must figure out how to do that…I just need to have access to someone who can show me how to do something I’m not sure about” (Hannah, 2006 interview).

After three years of the ICTPD programme, Tania still wanted to know the pedagogy behind using ICT for teaching and learning. “Other people have embraced ICT but I don’t really believe in it. Have they got any evidence to show me that the children in their classes are achieving more than what my children are?” (Tania, 2006 interview). Tania’s concern about the lack of evidence for using ICT was a recurring theme throughout her interview as she felt that this aspect was not adequately addressed during the ICTPD programme.

Although the fifteen teachers had participated in an intensive professional development programme, all of them mentioned that there was a need for continuing professional development activities or sessions to be able to integrate ICT effectively into their classroom practices.

6.7 Summary
Teachers’ professional development is undertaken with the aim of changing or improving teachers’ pedagogies and/or practices. The teacher or school may initiate such changes or improvements, or they could be mandated by an external agency, such as the New Zealand Ministry of Education. Broadly, the process of change to teachers’ classroom practices involves initiation, implementation and continuation or incorporation. As contended by Timperley et al. (2007) and discussed earlier in this chapter, teachers go through a series of processes during professional development.

For change to occur, according to Fullan (2007, 2008), teachers first need to appreciate the need for change. In this study, four commonalities were identified by the participants in their appreciation for the need for changes to their classroom practices. These included: 1) ICT as a tool to use with and by students to support their learning; 2) teachers’ emphasis on students’ ownership of learning/empowerment of students; 3) introduction of thinking skills and inquiry learning; and, 4) motivation and engagement of students.
As well as appreciating the need for change, barriers to and concerns about the proposed change also need to be identified and addressed. The participants in the study identified six concerns about integrating ICT into their classroom practices: 1) equipment reliability/insufficient technical support; 2) student access to ICT; 3) lack of time/time management; 4) too much focus on ICT; 5) management of classroom environment when using ICT; and, 6) keeping up to date with required skills and knowledge on ICT developments.

All of the participants made changes, to greater or lesser degree to their classroom practices after participating in the ICTPD programme.

In the next chapter, the experiences and perspectives of the teachers as reported in the 2007 interviews are presented. These narratives are compared and contrasted with the narratives from the 2006 interviews presented in this chapter.
7.1 Introduction

This chapter continues the presentation and discussion of the stories of the teachers regarding changes to their classroom practices. In Chapter 6, the stories of the teachers from their 2006 interviews were presented. In this chapter, the focus turns to the stories from the 2007 interviews, which are compared and contrasted with those from the earlier interviews. As in Chapter 6, the participants indicated their appreciation of the need to make changes to their classroom practices, the barriers to or concerns about integrating ICT into their classroom practices, and finally, the self-reported extent to which they had changed their classroom practices. Similar questions regarding the changes made to their classroom practices and barriers or concerns about the changes to the fifteen primary teachers’ classroom practices were asked during the 2007 interviews. The full list of questions asked during the 2007 interviews is included as Appendix 8.

A significant change to the curriculum occurred in 2007 when the NZ Ministry of Education introduced a new national curriculum document, *The New Zealand Curriculum* (Ministry of Education, 2007). This single volume curriculum document replaced the eight separate documents that outlined the curriculum requirements for the eight learning areas for Years 1 – 13 (Grades 1 – 12). This significant change had important implications for educators across New Zealand. Schools and teachers had more freedom of choice in the contexts used to teach the curriculum content, reflecting the community that the school was situated in, which “allow[ed] teachers the scope to make interpretations in response to the particular needs, interests, and talents of individuals and groups of students in their classes” (Ministry of Education, 2007, p. 37). It also meant that the focus of professional development turned to ensuring that in-service teachers had working knowledge of the new curriculum document and were able to use the document to plan their teaching and learning programmes in preparation for the full implementation of *The New Zealand Curriculum*. 
Curriculum by February 2010 (Schagen, 2011). The impact that the introduction of The New Zealand Curriculum (Ministry of Education, 2007) was mentioned by the participants in their interviews and will be discussed in section 7.2.

This chapter presents aspects of the fifteen participants’ experiences of the ICTPD programme, focusing on the stories of the individual teachers. The themes from the change process literature that were used in Chapter 6 have been used in Chapter 7 to allow for the direct comparison of responses. These categories are: appreciating the need for changes to classroom practices; resistance or barriers to changes to classroom practices; changes in pedagogy and practices; and, continuing professional development needs for the integration of ICT into teachers’ classroom practices. Representative quotes are used to illustrate the identified sub-themes and conclusions drawn. The first of these themes, teachers appreciating the need for changes to classroom practices, is discussed in the following section.

7.2 Narratives of appreciating the need for changes to classroom practices
For any change to classroom practices to happen, teachers need to see the relevance and appreciate the need for the change (Fullan, 2007; 2008; Timperley et al., 2007). During the interviews, the participants were asked to describe what they perceived as the benefits of integrating ICT into their classroom practices. As with data from the 2006 interviews, common sub-themes emerged during the analysis of the 2007 interview data. The five sub-themes are consistent with those from the 2006 data, however, the emphasis on the various sub-themes changed and an additional sub-theme emerged. These sub-themes included: 1) ICT as a tool to use with and by students to support their learning; 2) the way students learn/preparing students for the future; 3) teachers’ emphasis on students’ ownership of their learning/empowerment of students; 4) emphasis on thinking skills and inquiry learning for students; and, 5) use of ICT in motivation for and engagement of students. The new sub-theme, the way students learn/preparing students for the future, had not been mentioned during the 2006 interviews, but came through six of the fifteen participants’ interviews in 2007. In addition to the abovementioned sub-themes, other aspects that were appreciated by one or two participants included meeting parental expectations,
accessing up-to-date resources, ease of completing administration tasks, and more communication with parents. The following comments from Irene (Junior), George (Middle), and Charlotte (Senior) are representative of these other sub-themes. Irene’s comment is about appreciating the need for accessing up-to-date resources: “feeling quite confident in being up-to-date, particularly New Zealand curriculum [information]” (Irene, 2007 interview). George’s comment shows that he felt the pressure of parental expectations to include ICT in his classroom programme. “I feel as though you know the parents would question me if I didn’t at least have some ICT component each term” (George, 2007 interview). Charlotte mentioned ease of communication with parents: “fantastic for communicating about learning to [parents]” (Charlotte, 2007 interview). The common sub-themes that four or more participants mentioned during their interviews are discussed in the following sections.

7.2.1 ICT as a tool to use with and by students to support their learning

Eleven of the participants, Tania, Barbara, Ann, Julie, and Nancy (Junior), Hannah, George, and Aaron (Middle), and Carol, Alex, and Charlotte (Senior) mentioned appreciating the need for changes to their classroom practices to include ICT as a tool to use with and by students to support their learning. The participants reported that their schools had ICT for teachers and students to use. Whether the access to or types of ICT for student use was adequate will be discussed in section 7.3

George commented that as the school had the ICT available that teachers needed to be using them in their classroom practices. “I think the benefit is…that we do have facilities here to provide ICT for these children. I think teachers just need to see that it’s a tool that can help enhance and support the children’s learning” (George, 2007 interview). Carol was of the opinion that as the students had access to ICT at home, they also expected to be able to use these tools at school; “they use high tech communication and information tools at home and when they come to school, they need to do exactly the same…otherwise it will frustrate them as learners” (Carol, 2007 interview). Alex and Barbara also agreed with George’s comment in that ICT were another tool to support the learning. Barbara commented, however, that “[ICT are] never used for [their] own sake” (Barbara, 2007 interview). Both Barbara and Alex saw that just having the students use the ICT was not enough; the use of ICT
had to be purposeful and support the learning of the students. This view resonates with a teacher’s development of technological pedagogical content knowledge or TPACK (Mishra & Koehler, 2006; 2009) and the effective use of ICT in their classroom practices.

Aaron commented that software programs, particularly those that focused on numeracy and literacy, could be used to supplement the activities provided and to support students’ learning in these areas:

Some of the programmes that…the children are using are specific to particular strands within numeracy or…which is specific to, say, purple [reading level] on the colour wheel…and the children can go on [the computer] and go to whatever book they have had with me and there is a whole lot of follow up activities… So it is supporting the learning that they are having in the classroom. The same with the numeracy stuff; they can go…to the particular numeracy programme which we have and do the follow up activities (Aaron, 2007 interview).

Two of the Junior level teachers, Ann and Julie, made similar comments to Aaron in that they used computer programs to support their students’ literacy and numeracy learning. With the Ministry of Education expecting the focus of classroom programmes to be on numeracy and literacy skills, using ICT as further support for students to develop their skills in these areas is seen as essential (Tolley, 2 February 2010 press release). Tania viewed using ICT, particularly the digital camera, as a way to support her Junior level students with their literacy skills:

Using digital cameras to create instant pictures for children so that they…can recall [the experience]. It could be for writing or it could be for discussion. We have got lots of pictures that we used for maths for position language… There is definitely a place for those things (Tania, 2007 interview).

In her 2006 and 2007 interviews, Tania was vocal about knowing the pedagogy underpinning the use of ICT with Junior-level children and only using ICT when she saw the relevance to the children’s learning. As can be seen in the above quote, Tania viewed the use of digital pictures to assist children in the recall of activities as a purposeful use of ICT in her classroom practices.

Nancy (Senior) and Hannah (Middle) commented that students who struggle with using traditional tools, such as pen and paper, for writing and other tasks benefit from using ICT as it supports them to express ideas rather than worrying about the
mechanics of writing. Hannah gave an example that exemplifies the use of ICT to support students’ learning:

I have got a boy in my classroom who would have been considered a struggler… He doesn’t have primary coordination to even print all that well. We could see he had a strength in using ICT and so we said, ‘Don’t worry about writing things down. Just get the laptop and write your work on there’. All of a sudden the work output is just so much greater (Hannah, 2007 interview).

Nancy put forward that the presentation of the finished product was “so much more professional looking” (Nancy, 2007 interview). Claverly (2008) argued that the use of ICT as an assistive technology enables students with fine or gross motor skill difficulties to be able to focus on getting their ideas out rather than on the mechanics of writing.

Nancy commented on another aspect of using ICT to support students’ learning was that their use of ICT, in particular the Internet, meant that they had access to contemporary information, “not whenever the book was published” (Nancy, 2007 interview). This resonates with the view that Aaron expressed in the 2006 interviews as discussed in the previous chapter.

Charlotte (Senior) had reported in the 2006 interview that she was still developing her skills in using ICT and integrating them into her classroom practices. In her 2007 interview, she exhibited more confidence in her technological knowledge and her technological pedagogical content knowledge to the extent that she thought about how to use ICT to support her students’ learning. “I think I use it more because now I’m not so worried about how to use the programme but thinking more like in what way can the children use ICT to enhance that particular learning” (Charlotte, 2007 interview). Charlotte’s comment demonstrates how she has made the transition from focusing on technological knowledge to focusing on TPACK to integrate ICT into her classroom practices (Koehler et al., 2013; Mishra & Koehler, 2006).

In comparing the 2006 with the 2007 data, in both years the majority of the participants viewed ICT as tools to be used with and by students to support their learning. Providing students with opportunities to use ICT to support their learning
was seen as preparing them and developing the skills required for the future. This sub-theme is the focus of the following section.

7.2.2 The way students learn / preparing them for the future

Mary, Julie, and Sally (Junior), Michael and Hannah (Middle), and Carol (Senior) observed that using ICT was one of the means of supporting students’ learning and that being able to use ICT prepared students for the future and “the wider world” (Michael, 2007 interview). The abovementioned six participants all made similar comments during their interviews. The following quote from Julie is representative of the views expressed. “That is another avenue to learning. We have to be very aware of the future, and the future for our children will obviously have a lot of technology. Therefore, we have to be prepared to get the ball rolling” (Julie, 2007 interview). Mary also reflected this view of being future-focused in students’ learning, however, she saw that, as a Junior level teacher, her foundational responsibility was to teach them literacy and numeracy:

“They are going to eventually live in a digital world and they need to get some experience. But I still see my role as a New Entrant teacher. [The students] come in with very few skills and they need to learn to read and write and do basic maths. I don’t think you can do all that on a computer (Mary, 2007 interview).

Mary’s statement suggests that although her technological knowledge was developing and she appreciated that using ICT in her classroom practices was beneficial, her technological pedagogical content knowledge had not developed sufficiently. Teachers’ development of TPACK is an ongoing process and one that continuing professional development can support (Neiss, 2011). It might also be inferred that Mary subscribes to the adage, ‘using the best tool for the job’.

Sally expressed the use of ICT as “the way of the future” (Sally, 2007 interview), but tied their use with learning to learn and being creative. “That whole philosophy of knowing why children are doing things and...why they are learning the strategies...that they need to use to learn to learn... I think [ICT] allow us to be creative in a different way” (Sally, 2007 interview). Using ICT in this way was one of the stated goals of the ICTPD programme (Billowes & Alexander, 2010; Wright, 2010), however, this aspect of appreciating the need for change to classroom practices was not mentioned by the participants during the 2006 interviews. Having
the students develop the skills and strategies to learn to learn empowered the students and gave them ownership of their learning (Wright, 2010). The sub-theme of the empowerment of students is discussed in the following section.

7.2.3 Teachers’ emphasis on students’ ownership of their learning / empowerment of students

In the 2006 interviews, ten of the participants had expressed appreciating the need to make changes to their classroom practices to give students more ownership of their learning/empowerment of the students. This aspect, however, was mentioned by only four of the participants during the 2007 interviews. Of these four participants, Hannah and George (Middle), and Alex and Nancy (Senior), only George had not expressed this view in the previous interview. Having students take ownership of their learning was the aspect that George appreciated. “Just seeing the children working together. I suppose the positive side of that is they are managing their own work…with very little input from me” (George, 2007 interview). Nancy had similar views to George in that she saw that the inclusion of ICT gave students more say both in the direction of their learning, and in how they respond to particular tasks to show their learning and understanding. “The same journey can have many pathways instead of all the same pathways. The children are more aware of what they are learning and why. The process is far more important than the product at the end” (Nancy, 2007 interview). Hannah took this further and saw the use of ICT as “enabling our students to be 21st century learners and show their learning in a variety of ways” (Hannah, 2007 interview). Charlotte expressed a similar view to Hannah by stating that she thought the use of ICT enhanced student learning and empowered them. “Podcasting helps with getting ideas out rather than always writing which takes time. Being able to hear themselves and self-correct is empowering” (Charlotte, 2007 interview).

Alex appreciated the need for changes to his classroom practices in that he saw the main benefits of using ICT was that it makes learning authentic for the children. “It empowers them. It’s the depth of the learning. The children are able to represent their ideas more clearly” (Alex, 2007 interview). Alex gave an example of an inquiry learning topic about Hector’s dolphins that his students had undertaken. The students had wanted to create magnets to share the information they had found and to present
their learning. The students found a source for the magnetic paper and contacted the supplier to ask for their assistance to create the finished product by supplying them with the materials they required. The students did all of this without the assistance of their teacher:

In tandem with our learning model, the inquiry learning model that we’ve got here with the ICT, it’s given that deeper level of thinking and the children are actually producing work which is on par with what an adult would produce in the real world... It opened up the whole world for the kids and made it more meaningful (Alex, 2007 interview).

Alex viewed using ICT and the inquiry learning model gave the students the opportunity to take their learning to a different and more meaningful level. He claimed that their work was purposeful and of a high standard.

These four teachers viewed the use of ICT in their classroom practices as allowing the students to make choices about their learning, thus empowering them to take more responsibility for their learning. This could lead to students being more motivated about and engaged with their learning (Knight, 2012). Engagement and motivation of students is discussed in the next section.

7.2.4 Use of ICT in the motivation for and engagement of students

The regular use of ICT in classroom practices had become more common by 2007 (Ham, 2008) which may account for the slight reduction in the number of participants, seven in 2006 compared to five in the 2007 interviews, mentioning this aspect. Three of the five participants, Hannah (Middle), and Alex and Nancy (Senior), noted motivation and engagement in both interviews as a reason for appreciating the need to make changes to their classroom practices.

Mary (Junior) and Hannah (Middle) mentioned that their students were motivated by and engaged longer with tasks when they used ICT. Mary’s comment exemplifies this view. “The kids are interested. They do love using the computer... I have got one child in here who prefers working on the computer than doing any work at the table” (Mary, 2007 interview). Aaron (Middle), and Nancy and Alex (Senior), commented that work with ICT motivated and engaged their students because the students were allowed to be creative and demonstrate their learning in a different way than they could with traditional tools. Aaron’s comment is representative of the
view expressed by these three teachers. “It keeps them engaged. It’s not just a ‘busy work’ sort of a thing. It lets them to show their learning in creative ways, so that certainly helps keep their enthusiasm” (Aaron, 2007 interview).

The motivation and engagement of students through the use of ICT is also evident when students undertake inquiry learning on topics of their choice. The emphasis on using inquiry learning and higher order thinking skills is presented in the following section.

7.2.5 Teachers’ emphasis on thinking skills and inquiry learning

The 2006 interviews evidence comments by the participants on the introduction of higher order thinking skills and inquiry learning. By 2007 interviews, four of the participants, Barbara and Mary (Junior), Hannah (Middle), and Carol (Senior), had moved from introducing thinking skills into their classroom practices and emphasised both thinking skills and inquiry learning. Carol and Mary commented that the emphasis on thinking skills had been of benefit to the students in their classes. Mary expressed the view that the students used a deeper level of thinking. “Being more creative in their thinking and making them think about what they are saying and giving reasons for spending more time on the why” (Mary, 2007 interview). Hannah shared this view and saw her students become more global in their thinking. “They are just extending their thinking constantly. They have become global thinkers” (Hannah, 2007 interview).

Barbara used thinking skills as part of her oral language programme and saw ICT as supporting this learning.

I think the thinking skills are fantastic. I think that they made a huge difference to the children. I use that a lot, particularly with oral language… I see the computer and the programmes are supporting [the children’s] learning of thinking skills (Barbara, 2007 interview).

There were changes in the reasons for the participants appreciating the need for changes to their classroom practices, as noted in the section above, when comparing the 2006 to the 2007 data. There were also changes in the barriers to or concerns about making changes to classroom practices. These are discussed n the following section.
7.3 Narratives of resistance or barriers to changes to classroom practices

As well as appreciating the need to make changes, the participants identified barriers to making changes to their classroom practices in the 2007 interviews. These identified barriers are listed in Table 7.1 and are compared with the barriers or concerns expressed by the participants in the 2006 interviews.

Table 7.1 Participants’ concerns about or barriers to using ICT

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<tr>
<th>Teacher</th>
<th>Sally</th>
<th>Mary</th>
<th>Barbara</th>
<th>Irene</th>
<th>Ann</th>
<th>Julie</th>
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<th>Nancy</th>
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<td>Access to equipment for students’ use</td>
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<td>Lack of time to cope with it all</td>
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<td>Management of classroom environment when using ICT</td>
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✓ 2006 data  ★ 2007 data

Overall, the participants identified fewer concerns about, or barriers to, using ICT in their classroom practices in 2007 compared to 2006, as can be seen in Table 7.1. The most common concerns expressed in 2006 – access to equipment for students’ use, keeping up-to-date with required skills and knowledge on ICT developments, and lack of time to cope – had all greatly reduced by 2007. Access to equipment for students’ use had reduced from eleven to three; keeping up-to-date with required skills and knowledge on ICT developments reduced from ten to two; and, lack of time to cope with it all had reduced from ten to two. In each of these three aspects one participant, who had not previously identified that aspect as a concern, in the 2007 interviews commented on that aspect as a concern. The most common concern
expressed in the 2007 interviews was equipment reliability/insufficient technical support. This had been one of the most common concerns in 2006 as well, however, the number of participants who expressed this concern had reduced from eleven to six, five of who were from the Junior level of primary school. This finding was similar to concern about variations in the reliability of equipment and level of technical support expressed by the teachers involved in the InterActive Education project (Triggs & John, 2004). Lack of ideas to use ICT with classes was not seen by any of the participants as a concern in 2007. The concerns of individual teachers are addressed in the following sub-sections.

For each of the matters – management of classroom environment when using ICT, insufficient time to cope, and keeping up-to-date – only two participants mentioned these categories as a concern during the 2007 interviews. The number of participants that indicated that management of the classroom environment when using ICT was a concern remained the same, but they were different participants in 2007 (Mary and Julie) than in 2006 (Ann and George). The matter seemed to be more related to the class level the participants taught at with three of the four participants being Junior level teachers, although the other five Junior level participants did not raise this as a concern. Keeping up-to-date with required skills and knowledge on ICT developments were problems for ten of the participants in 2006 and then by only two participants, Alex and Charlotte (both Senior) in 2007. Similarly, insufficient time to cope with it all had been expressed as a barrier by ten participants in 2006 and this had reduced to two participants, Sally and Tania (both Junior) in 2007. Sally’s comment exemplifies the concern regarding insufficient time to cope with it all:

It’s just fitting everything in during a day in a New Entrant room. You have all the ideas in the world but when it comes down to the nuts and bolts of learning to read and write and do mathematics, it takes up such a considerable part of the day (Sally, 2007 interview).

It is unclear why there was a reduction in each of these concerns. It could be that the participants were becoming more competent in using ICT in their teaching, and/or they are further removed from the ICTPD and other matters had come to the fore.

As well as the concerns outlined in Table 7.1, other matters that were mentioned by one or two teachers included Internet safety (Nancy and Michael) and pedagogy (Tania). The issue about the lack of pedagogical evidence for using ICT expressed in
2006, remained for Tania. “I think that there is no evidence that we are actually improving outcomes for students and it a hugely time consuming operation with what it would appear of being little gain” (Tania, 2007 interview). While Tania did use ICT in her classroom practices (Tania, 2007 interview), she remained unconvinced that she needed to change her classroom practices to integrate the use of ICT completely.

Two of the participants, Carol and Hannah, both stated that they had no concerns at all about using ICT in their classroom practices. “I don’t have any concerns about it at all. They are just such a dynamic aspect of our teaching really” (Hannah, 2007 interview). For the other thirteen participants, while the number of concerns about using ICT in their classroom practices had reduced, there were still some concerns expressed in the 2007 interviews and these are outlined in following sections from the most to least common.

7.3.1 Equipment reliability / insufficient technical support

Equipment reliability or insufficient technical support was the most common concern expressed during the 2006 interview. Twelve participants mentioned this concern as compared to five participants in the 2007 interviews. Mary, Barbara, Julie, and Ann (Junior) and Alex (Senior) commented on the reliability of the ICT available for use at the school and/or insufficient technical support available to them. The reduction in the number of participants who commented on this aspect as a concern in the 2007 interviews could be contributed to schools having a greater number of ICT available for use, schools ensuring they had sufficient technical support available, or teachers becoming more proficient at troubleshooting problems and/or having student ‘tech angels’ (Bolstad & Gilbert, 2006) available to assist teachers. Barbara sums up the views of the four Junior level teachers that expressed this concern in the comment. “It is dependent on the person in charge of ICT because if you have equipment that is not working or isn’t fixed quickly, then you get frustrated and don’t use [the ICT]” (Barbara, 2007 interview). As students at the Junior level are less independent in using ICT and/or less able to solve problems that occurred, then this may contribute to these participants viewing this aspect as a barrier to using ICT in their classroom practices.
As Alex was the teacher in charge of ICT as well as the technician, the barrier of equipment reliability was more that he spent time addressing the issues on a school-wide basis, which took away from preparation for his classroom programme. “The technical side, the troubleshooting, is really the only thing that is preventing or hindering the learning. It is stopping to fix this computer or whatever, rather than my own work…that just goes with the job” (Alex, 2007 interview).

Although all of the participants used ICT to some extent in their classroom practices, some of the participants felt that there was too much emphasis on using ICT for teaching and learning. This concern is discussed in the next section.

7.3.2 Too much focus on using ICT for teaching and learning

Five of the participants – Nancy, Tania, and Irene (Junior) and Michael and Aaron (Middle) – stated that there was ‘too much focus’ on using ICT for teaching and learning. While these teachers saw the benefits of using ICT to support students’ learning, they expressed a concern that students expected to have ICT always available for use and saw these as the only tools rather than considering what could be the ‘best tool for the job’. Michael’s comment exemplifies this view. “The overuse of it… The children expect that with every activity or everything they do that it has to have an ICT link and I don’t think it has to be in absolutely everything” (Michael, 2007 interview). While Nancy agreed about the emphasis being more on using ICT, she saw this as an evolutionary process:

Sometimes we can see [using ICT] as the only way… As new technologies come in people don’t need the old technology so much. We are moving away from pen and paper and people are going to be more computer literate, text literate and less pen and paper literate (Nancy, 2007 interview).

Nancy saw the move from traditional tools to using ICT in the classroom as needing a different type of literacy. Irene commented that this new literacy meant that a different set of skills was needed and to teach these skills could be at the expense of curriculum content.

I think sometimes the content gets lost… Using ICT is sort of twofold; one is the learning of the computer and the other is the activity that they are doing… When my children are typing their story, the typing has no relevance whatsoever to what their story is, but they have learnt to use the space bar and they have learnt to use the back space key (Irene, 2007 interview).
Not only were students using ICT more often than traditional tools, but teachers were changing the teaching tools they used. To some extent, Aaron reflected similar views to those of Nancy and Irene. His comment, however, indicates that he saw ICT being used extensively by some teachers but in ways that perpetuated, rather than changed pedagogy.

There are certain teachers that are really onto it with ICT… They use the old ‘chalk and talk’ [author’s emphasis], but now because they do it with a laptop and a projector it is seen as the cutting edge but, in fact, they are still doing exactly what they used to do… They are using heaps of ICT in their classroom but all of their kids are still sitting in line facing the board and just watching a slide show (Aaron, 2007 interview).

Aaron’s comment indicated that he viewed that using ICT for teaching and learning was not just a matter of replacing the tools, but that there needed to be a change in the teaching strategies teachers used. This comment is evidence of a teacher’s development of pedagogical knowledge in the use of ICT (Koehler & Mishra, 2006, Koehler et al., 2013).

Tania questioned the advantages of using ICT compared to using traditional tools considering the amount of time activities took when using ICT. Her argument was that the gains in learning by the children did not justify the time the activities took.

The time it takes…on the computer when you could have done it another way in half the time. I think that there is no evidence that we are actually improving outcomes for students and it a hugely time consuming operation with what it would appear of being little gain (Tania, 2007 interview).

As stated previously, Tania was consistent in her scepticism about using ICT extensively in a Junior level classroom due to what she viewed as a lack of evidence that justified the time taken for the benefits received.

The other concerns mentioned by participants during the 2007 interviews – student access to ICT, insufficient time to cope, keeping up-to-date, and management of the classroom environment – are discussed in the following four sub-sections.
7.3.3 Student access to ICT

In the 2006 interviews, eleven of the participants expressed concern about students’ limited access to ICT. By 2007, this matter was raised by only three of the participants: Mary (Junior), and George, and Aaron (Middle). Mary’s concern was that Junior level students demand immediate access which was not always available. “Little kids want to do things there and then. They want to be on the computer and we can only have a few at a time” (Mary, 2007 interview). George and Aaron had similar concerns in that they wanted their students to have ICT available for use when they needed them. George’s comment exemplifies this view:

Not having immediate access to the iBooks that the children would like to use. I have no concerns about the amount of time allocated to ICT and I have no concerns about how to exhibit it in the curriculum but it would be nice…if they could just go and get an iBook and do it (George, 2007 interview).

George did not consider that having ICT available whenever students wanted to use them as being too much emphasis on ICT, but rather supported students in their learning.

7.3.4 Insufficient time to cope with it all

Sally and Tania (Junior), and Nancy (Senior) expressed insufficient time to cope with it all as a barrier to using ICT in their classroom practices. Sally’s comment exemplifies this view of there being insufficient time: “It’s just that time thing and…it takes a little bit of organisation and orchestration as opposed to just picking up paper or some scissors” (Sally, 2007 interview). Nancy and Tania were two of the ten participants who expressed this same concern in the 2006 interviews.

7.3.5 Keeping up-to-date

The number of participants who expressed a concern about keeping up-to-date reduced from ten in 2006 to three in 2007. Irene (Junior), and Alex and Charlotte (Senior) all expressed concern about keeping up-to-date with developments. Irene and Charlotte mentioned keeping up-to-date as a concern in both the 2006 and 2007 interviews.
7.3.6 Management of classroom environment

In 2006, four participants mentioned management of the classroom environment as a barrier to using ICT in their classroom practices. In 2007 Julie, Mary, and Barbara (all Junior level teachers) expressed concern about management of the classroom environment when using ICT to support students’ learning. Julie’s comment is representative of their concern: “If the technology working doesn’t work…then you have got to try and sort that while you are still trying to manage the rest of your class. It’s just that logistical nightmare of trying to manage it all” (Julie, 2007 interview). Of these three participants, only Julie had expressed this as a concern in 2006.

Although the concerns expressed in the 2006 and 2007 interviews were similar, as discussed in the previous subsections, the number of participants that mentioned each of the concerns had reduced substantially by 2007. In both years, equipment reliability/insufficient technical support was the participants’ most common concern. The concern about there being too much focus on using ICT for teaching and learning was mentioned by the same number of participants in both interviews, however, only two of the participants, Michael and Tania, mentioned this concern in both interviews. Despite the participants still expressing concerns about using ICT in their classroom practices, the participants all used ICT to some extent for teaching and learning. The changes the participants made to their classroom practices are discussed in the following section.

7.4 Narratives of changes in pedagogy

As with the changes to participants’ classroom practices reported in Section 6.6, not all of the changes made involved using ICT but were part of the broader pedagogical content delivered in the ICTPD programme. In 2007, three commonalities were apparent after the analysis of the interview data. These commonalities include: 1) using ICT to support teaching and learning programmes; 2) teachers’ emphasis on student ownership of learning/anytime, anywhere learning; and, 3) inclusion of inquiry learning/higher order thinking skills for students. The changes in pedagogy mentioned in the 2007 interviews were similar to those in the 2006 interviews. There was a difference, however, in the number of participants who mentioned each of the
changes, thus modifying the order for the most common changes from 2006 to 2007. The fourth change mentioned in 2006, inclusion of information literacy skills, did not feature in the 2007 data.

Other changes noted during the 2007 interviews by two of the participants included using ICT for planning (Hannah) and administrative tasks (Irene). Tania, on the other hand, commented that she did not alter her pedagogy following participation in the ICTPD programme. Although Tania used ICT in her classroom practices, she was consistent with the view she expressed in 2006, questioning the benefits of the use of ICT in a Junior level classroom. Her comment demonstrates that a year after the end of the ICTPD programme, her demand for evidence that ICT made a difference to Junior level students’ learning had still not been satisfied:

I have made decisions based upon what I saw in the ICT contract and what I felt I already knew with regards to ICTs’ place in a primary school, particularly [at the] junior level. I have actually undertaken...other contracts and I think I have taken onboard shifts in other areas such as reading, writing and numeracy, but the ICT shift didn’t really align with my philosophy of junior education (Tania, 2007 interview).

In both interviews, Tania expressed the opinion that the benefits of Junior level students using ICT for an activity did not justify the amount of time required. This did not mean that Tania did not use ICT, but rather she saw other means of completing the activity achieved a better learning outcome more efficiently. Twelve of the fifteen participants reported that they used ICT explicitly to support their teaching and learning programmes.

7.4.1 Using ICT to support teaching and learning programmes

In 2007, the participants’ stories shifted from providing students with opportunities to use ICT regularly to using ICT to support the teaching and learning programme. This shift in pedagogy showed a difference in how ICT were used in the participants’ classroom practices. The participants, who taught at the Junior level of primary school, Julie, Irene, Sally, Barbara, and Mary, were quite descriptive about how they now used ICT to support their students’ learning, particularly for numeracy and literacy. Barbara’s comment is representative of this shift in pedagogy:

It’s used as a tool to support the learning its never used for its own sake...I use [ICT] to support the reading programmes, the phonics
programme, the maths programme...It is always an activity that children can go to but it would never be a priority over literacy and numeracy; it contributes to that learning (Barbara, 2007 interview).

As well as using ICT at school, Julie also stated that the students could use ICT at home to support their learning. “I encourage them to use their computers when they are at home and maybe that has been the next step” (Julie, 2007 interview). Sally viewed the opportunity to use ICT at home and school as a way to involve families in children’s learning.

Making digital books is something that is fantastic for new entrant parents because not only does it record the experience for all time…it can go home and be shared with families as well. The families would love being part of that learning (Sally, 2007 interview).

It was not only the participants who taught at the Junior level who used ICT to support their students’ learning. George, Aaron, Hannah, and Michael (all Middle level teachers) also used ICT to support their students’ learning both in similar and in different ways to those of the Junior level teachers. Aaron used ICT to support his students in literacy and numeracy. “I use computers more as part of my group work with numeracy and literacy” (Aaron, 2007 interview). Michael reported using ICT in his literacy programme, albeit in a different manner to Aaron. “I have used a lot more images around the classroom of the children themselves for instructions” (Michael, 2007 interview). Hannah commented that she saw the use of ICT as supporting her students’ learning in a variety of ways.

The fact that the students are continually buzzing because they know that they can always use the ICT; that they are just extending their thinking constantly. They have become global thinkers and innate users of laptops...It’s just so normal...instead of picking up a library book I’m going to pick up the laptop (Hannah, 2007 interview).

Like Hannah, George believed that his students had opportunities to use ICT to support their learning. He planned for the use of ICT rather than just adding them on to the teaching and learning programme. “As a syndicate, we always include an ICT tool [in the planning of a unit of work]...the children here have had really rich ICT work” (George, 2007 interview). The participants who taught at the Senior level also reported providing students with opportunities to use not only ICT regularly, but also to support their learning. Nancy, Carol, and Alex commented that they used ICT to support their students’ learning by using ICT in a variety of ways. Carol was
surprised how the students used the same ICT differently to support their own learning.

I think the shift in my thinking is that I always knew that a computer is just a tool but I think that shift has moved along further...The creativity comes in the different ways to use that tool and not just in fixed ways. I never thought that one child could use it in a different way to achieve his learning outcome from another child (Carol, 2007 interview).

Nancy had similar views to Carol and saw the students as having more choice about using ICT and how they used them to support and demonstrate their learning. Alex favoured students using ICT to support their learning as well, but argued that rather than teaching students to use a multitude of ICT, that it was best to focus on one or two and teach them in greater depth.

When using ICT, it’s best just to focus on one or two things and do them really well...Do one thing really, really well across your school and then you find that next time you come to it, maybe two or three years later you find that the children that have come up to your class hit the ground running...Just do one or two things to a lot of depth and you’ll get better quality work as a result (Alex, 2007 interview).

Charlotte expressed a similar view to Alex’s in that she advocated using one ICT but thinking about how to use that ICT to not only support but enhance students’ learning.

The way that it has changed it not just knowing what the programmes are but taking one programme like I say the iMovie and then able to do that well so you think on a deeper level so you start thinking about how can I use that better to enhance the children’s learning (Charlotte, 2007 interview).

This view of having students use ICT and have them make choices about the tools they use to support their learning leads onto the idea of students having more ownership of their learning. Having students use ICT at home as well as at school gave the students greater freedom in how and where they learned. These two changes in pedagogy are discussed in the following section.

7.4.2 Teachers’ emphasis on student ownership of learning / anytime, anywhere learning

Barbara, Mary, Julie, and Sally (Junior), Hannah, Aaron (Middle), and Charlotte, Carol, and Alex (Senior) mentioned that the changes they had made to their classroom practices included giving students’ ownership of their learning and
providing opportunities for anytime, anywhere learning. The number of participants who mentioned this change in pedagogy increased from six in 2006 to nine in 2007. A possible explanation for this increase could be the emphasis that the introduction of New Zealand Curriculum placed on students taking more responsibility for their own learning (MOE, 2007). Nancy’s comment represents this change in pedagogy and is representative of the comments expressed by the nine participants.

The changes for the children are that they have got more of a say in the direction of their learning and in how they respond to particular tasks. So the same journey can have many pathways instead of all the same pathways. The children are more aware and so of what they are learning and why, what they need to be doing, and usually can say “I am now working on this because I need to learn such and such”…the process of what they are doing is far more important than the product at the end (Nancy, 2007 interview).

The emphasis on having students take more ownership of their own learning extended to Alex allowing students to take ICT equipment from school at night and on the weekends.

If a kid wants to take a digital camera home over the weekend to film something to bring back, then let it go [home]. Just letting it disperse more, like a community thing rather than just in the classroom…I have kids really excited. They take a laptop home and they come back and show me all the stuff that they did over the weekend. Why have it sitting on the shelf here gathering dust. Why not have it out there and the kids using it every, you know, showing their parents what they’ve been learning (Alex, 2007 interview).

Alex viewed having students take home ICT to continue their study allowed them to take ownership of their learning, thus giving them freedom to make decisions about how and when they learn. Being able to learn anywhere, anytime through using ICT enables students to take the time they need to complete the work and decide how they will demonstrate that learning to others. The emphasis on enabling students to take their learning to a deeper level is supported by the inclusion of inquiry learning in classroom practices and is discussed in the next section.

7.4.3 Inclusion of inquiry learning / higher order thinking skills for students

Inquiry learning and higher order thinking skills were two pedagogical practices that were included and emphasised in the ICTPD programme (N. Billowes, personal communication, 21 November 2006; Billowes & Alexander, 2010). In 2006, eight of
the participants commented on the inclusion of inquiry learning and/or higher order thinking skills as the changes they had made to their classroom practices. Five of the participants, Mary, Nancy, and Barbara (Junior), and Alex and Carol (Senior) mentioned about making changes to their classroom practices to include inquiry learning and/or student directed learning in the 2007 interviews. Mary, Barbara, and Carol had also commented on the inclusion of these pedagogical practices in the 2006 interviews. Mary’s comment exemplifies the inclusion of higher order thinking skills by all three participants in their classroom practices. “I include a lot more thinking skills. I use the [Six] Hats thinking…We do flow charts and other graphic organisers” (Mary, 2007 interview). The participants all included a variety of higher order thinking skills in their classroom programmes and explicitly planned for their inclusion in a variety of curriculum areas.

Inquiry learning was a pedagogical approach that was introduced or reintroduced to teachers during the ICTPD programme. The teachers were encouraged to include this teaching and learning strategy in their planning as another means of making classroom programmes more student-centred and meeting the needs and interests of the students (N. Billowes, personal communication, 21 November 2006). Nancy had made considerable changes to her pedagogy and teaching strategies due to the changes to the classroom structure in the Senior area of her school. Cooperative teaching and negotiated curriculum meant that the students had more voice in what they wanted to learn about and how they would meet the achievement objectives. Nancy and her colleagues included inquiry learning to address these changes. “Inquiry learning has become a more integral part of our timetabling and planning and so we are running more integrated units of work. It is more child-directed rather than teacher-directed” (Nancy, 2007 interview). Alex also commented on the inclusion of inquiry learning in his classroom practices. He observed that inquiry learning gave the students the opportunity to have a greater depth of thinking and work in authentic contexts.

In tandem with our learning model, our inquiry learning model that we’ve got here with the ICT, it’s kind of given that deeper level of thinking and the children are actually producing work which is on par with what an adult would produce in the real world (Alex, 2007 interview).
The use of higher order thinking skills, ICT, and authentic contexts that are of interest to the students, empowers them and provides opportunities to take more responsibility for their own learning. In order for teachers to continue to provide quality teaching and learning programmes, they need to be aware of how they can improve or enhance their existing classroom practices. With new developments in ICT and changing trends in education, the provision of continuing professional development that addresses the needs of teachers is important (Albion, Tondeur, Forkosh-Baruch, & Peeraer, 2015).

7.5 Continuing professional development needs for the integration of ICT into teachers’ classroom practices

In the 2007 interviews the fifteen participants were asked if they had any continuing professional development needs. Thirteen of the fifteen participants stated that they did while two of the participants, Mary and Nancy, made no comment about such. The self-identified professional development needs of the participants included: keeping up to date with new development in ICT and/or curriculum; time; and, more support with integrating ICT into classroom practices.

7.5.1 Keeping up-to-date

Eight participants, Barbara, Irene, and Julie (Junior), Hannah and Aaron (Middle), and Charlotte, Alex, and Carol (Senior), mentioned maintaining their currency with new developments in ICT and/or curriculum, but only three mentioned this as a concern as discussed in section 7.3.5. Charlotte and Irene were the only participants that identified keeping up-to-date as a concern as well as a continuing professional development need. Charlotte’s comment demonstrates her desire to continue to develop her knowledge and skills in this area. “I feel I am quite creative, but I am always looking for something more so I would like to see other schools in what they are doing and what other teachers are doing” (Charlotte, 2007 interview).

Barbara was very pragmatic in identifying her continuing professional development needs: “I’d just like to be kept up-to-date with new programmes and equipment” (Barbara, 2007 interview). To be able to use ICT effectively in her classroom practices, she felt she needed to have the practical skills addressed but made no mentioned of how to use the ICT in her classroom programme. This is in contrast
with Tania, also a Junior level teacher, who felt that the pedagogy underpinning the use of ICT with her Junior level class was missing from her professional development. Tania’s self-identified continuing professional needs are discussed in section 7.5.4.

Hannah was quite confident that she was able to access the appropriate personnel if she or her colleagues needed any continuing professional development. “I know who I can turn to instead for help. I know where to go to find out and also know who is out there to tap into and take a team if they want to extend their own skills” (Hannah, 2007 interview).

Aaron and Julie identified specific software programs that they wanted to revise their learning of the software or learn to use new software to support their classroom practices. For example, “I would really like to learn more about Excel, especially with the equations that you can put into the spreadsheets to make it do fancy stuff for you” (Aaron, 2007 interview). They both commented that they needed to revise the programs or have someone on staff take them through the program. “I did a paper on spreadsheet and databases and I really do have to revisit that” (Julie, 2007 interview).

Both Aaron and Julie’s schools, as well as the schools of many of the other participants, have ‘techie brekkie’ (technology breakfast) sessions where they have a short professional development session on a specific software program or other ICT. These professional development sessions are usually arranged on a needs or ‘just-in-time’ basis (McKenzie, 2002).

As stated in the introduction to this chapter, the new national curriculum was a major change that the participants had to incorporate into their teaching and learning. Two of the participants, Irene and Carol, specifically commented on their professional development need in this area. The comment from Carol is representative of their self-identified continuing professional development need.

I think at the moment it is just the new curriculum to implement the new curriculum and then to make sure that everything matched you know my philosophy the things that we understand about thinking, our thinking skills so it is just the whole planning and integrating the new curriculum (Carol, 2007 interview).
All of the above identified continuing professional development needs involved participants having opportunities and time provided to be able to address these areas. The need for time to address continuing professional needs is discussed in the following section.

7.5.2 Time

Having the affordance of time was an area of professional development that was identified by six of the participants. The areas where five of the six participants identified that they needed time to address their needs were: time to reflect on current practices (Sally); time to visit other schools (George and Charlotte); time to study towards a formal qualification (Michael); and, time to ‘play’ with and learn new programs (Aaron).

Sally (Junior) felt that she needed time to reflect on her current practices and identify areas that she needed to develop further in. She stated that this needed to be part of her continuing professional development plan in order for her to develop her skills and knowledge further (Sally, 2007 interview).

Charlotte (Senior) and George (Middle) identified that they needed to find out what other teachers at their level of primary school were doing about using ICT in their classroom practices. George’s comments below are representative regarding their identified professional development need.

I would quite like to go into a classroom where there is a lot of use of ICT happening...It would be nice just to have a morning or afternoon and go to another school, not necessarily a cluster school, and just sit and watch what the children are doing there (George, 2007 interview).

As both George and Charlotte taught at schools that only had one other class at their level, they commented that they needed to be exposed to the practices of other teachers to expand their knowledge and skills of using ICT in their classrooms.

To address his continuing professional development needs, Michael (Middle) wanted to be able to undertake further study to gain a qualification in using ICT in the classroom. “To be given the time to be able to go that step further. To be given the opportunity to take part in the certificate in ICT” (Michael, 2007 interview).
Although the cluster provided an opportunity to undertake courses at a tertiary institution, as a beginning teacher, this option was not available to him as he had other professional development commitments to gain his full teacher registration.

As stated previously, Aaron (Middle) identified that he needed time to learn new programs to use for administrative tasks as well as for using with the students. “Excel and PowerPoint are probably the [programs] that I would like to sit down with and it’s just a matter of finding time to do it” (Aaron, 2007 interview). Aaron commented that Excel would be helpful with recording student assessment while PowerPoint would be useful for using with the students for presenting their learning (Aaron, 2007 interview).

The comments from Alex (Senior) about time for professional development were different from the others in that he needed time to provide sessions on using ICT in the classroom for his colleagues rather than as a continuing professional development need for himself (Alex, 2007 interview). This idea of providing support for teachers to use ICT in their classroom practices leads to the next areas of continuing professional development needs that were identified by two of the participants.

### 7.5.3 Expectations of using ICT

Irene (Junior) commented that she needed to have more support with integrating ICT into her classroom practices, but she also wanted to have the school leadership’s expectations clarified as to the use of ICT in classroom programmes.

> I need to know the expectations of the school [leadership] and with the new curriculum and new this and new that coming out…The expectations of school [leadership] as to how much…are must dos of the ICT, and to make sure that you have got enough knowledge to be able to do those (Irene, 2007 interview).

Irene wanted to ensure that she was not over- or under-utilising ICT in her classroom practices in respect to the level of ICT use that was expected in order to meet the goals and requirements for her appraisal as a classroom teacher (Irene, 2007 interview).
7.5.4 Pedagogy

Tania (Junior) commented in her 2006 interview that she did not feel that the pedagogy behind, or the evidence for, using ICT in a Junior level primary class was clear in the ICTPD programme. In 2007, she remained unconvinced that she had an adequate answer to her questions about using ICT extensively in her classroom practices.

I think as a school we need to be very clear on different people’s philosophies, pedagogy and what makes for effective teaching. Maybe it does vary from Junior to Senior school. It needs to be a huge discussion so that we can create some common ground that we can work from (Tania, 2007 interview).

Tania saw the need to have a discussion as a staff to ensure that the staff had a shared understanding about the effective use and pedagogy with respect to using ICT in classroom practices, particularly at the Junior level.

As in the 2006 interviews, the self-identified continuing professional development needs of the participants were varied. With the introduction of the new curriculum document, *The New Zealand Curriculum*, keeping up-to-date was the most common continuing professional development need with eight of the participants commenting on this need. This need consisted, however, of two separate areas – curriculum and developments in ICT. There was a reduction in the number of participants who had identified professional development needs, particularly in the area of opportunities to visit other schools, five in 2006 to two in 2007. The continuing professional development needs of the fifteen participants had become more individual in nature as was demonstrated by the needs in the area of time in section 7.5.2.

7.6 Summary

In this chapter evidence from the 2007 interviews with the fifteen participants was presented. This showed the participants’ appreciation of the need for changes to their classroom practices, the barriers to and/or concerns about using ICT in their classroom practices, the changes the participants have made to their classroom practices, and their self-identified continuing professional development needs.
In comparing the analysis of the data from the 2006 to the 2007 interviews, the four commonalities of the participants’ appreciation for the need for change were similar. ICT as a tool to use with and by students remained the most common need for change. Students’ ownership of learning/empowerment of students and motivation and engagement of students continued to be reasons given as the need for changes to classroom practices to occur. While higher order thinking skills and inquiry learning continued to be appreciated as reasons to change classroom practices, it was no longer the introduction of, but rather the emphasis on, these skills/strategies that was seen as essential. A difference between the 2006 and 2007 data was that, by 2007, the participants appreciated the need to include ICT in classroom practices to help develop the ways students learned and/or to prepare them for the future. This commonality was the second most mentioned need for change during the 2007 interviews.

Barriers to, or concerns about, using ICT in classroom practices, remained through to the 2007 interviews. As in 2006, equipment reliability/insufficient technical support remained one of the most common concerns or barriers mentioned by participants although this was greatly reduced from eleven to six participants. Although the number of participants (five) who mentioned there being too much focus on using ICT remained consistent between the two interviews, by 2007 this was the second most common concern in contrast to being the fifth in 2006. The other common concerns mentioned in the 2006 interviews were access to equipment for students’ use (eleven), lack of time to cope with it all (ten), and keeping up-to-date with required skills and knowledge of ICT developments (ten). Each of these concerns were only mentioned by two or three participants in 2007, showing that these concerns had been addressed to some degree, or had disappeared completely for some participants, in the year between the two interviews.

The changes in pedagogy that the participants reported in 2007 differed somewhat from their 2006 interviews. One change of note is that the participants who mentioned using ICT with their students changed from giving students opportunities to use ICT on a regular basis to using ICT to support teaching and learning programmes. This change in terminology used demonstrated a definite shift in pedagogical thinking. Student ownership of learning/anytime, anywhere learning and inclusion of inquiry learning/higher order thinking skills were two changes in
pedagogy that were included in the stories of teachers in both sets of interviews. In 2006, the inclusion of information literacy skills in classroom practices was mentioned, but not in the 2007 interviews.

The majority (thirteen) of the participants expressed the need for continuing professional development in 2007, but the types of needs commented on had changed in the year between the two interviews. Time and keeping up-to-date remained as areas that participants identified as needing to be addressed in their continuing professional development.

In the next chapter, the participants’ stories eight years after they completed the ICTPD programme are presented and discussed, giving a longitudinal view of the changes that teachers have made and sustained regarding their use of ICT in their classroom practices.
8.1 Introduction

In 2014, twelve of the original fifteen participants were re-interviewed to investigate how professional development on integrating ICT into their classroom practices was sustained over time. This allowed me to discern what their current perspectives on ICT and the consequences for their classroom practices since they were interviewed at the end of the ICTPD programme in 2006, and again in 2007. Since then, seven of the participants have moved schools and eight have gained or changed positions of responsibility. As noted in Chapter 4, two of the three participants moved overseas (Tania and Michael) and could not be contacted. One (Nancy) had left the teaching profession in 2007. The twelve participants contacted were very willing to be interviewed in 2014. These interviews lasted between 20 to 40 minutes and were conducted in person or by telephone.

This chapter presents the current perspectives of the remaining twelve participants and extends their professional narratives presented in earlier chapters. These current perspectives include:

- whether their participation in the ICTPD programme continued to influence their practices;
- how they have integrated ICT into their classroom practices and whether these have been sustained over time;
- the main benefits and/or negative aspects of using ICT in their classroom practices;
- concerns they have regarding the integration of ICT into their classroom programmes; and,
- what professional development have they taken part in since completing the ICTPD programme and what they see as the professional development requirements for teachers to integrate ICT into their classroom practices.
In the next section, the participants’ contemporary teaching levels and positions of responsibility, as reported by the participants during the 2014 interviews, are provided and their current types and levels of ICT use.

### 8.2 Updated participant biographies

In the intervening years since 2007, there were a number of changes for the majority of the twelve participants. These changes included moving to a different school, gaining or changing positions of responsibility, changing teaching levels, and retirement.

Sally, Alex, Aaron, George, and Charlotte gained or changed positions of responsibility (Principal or Deputy/Associate Principal) in different schools since 2007. Sally gained a position at another school as Principal and uses ICT in her leadership position, such as iPhone, laptop, Google Docs, SMS (student management system) and a data projector. Alex also gained a position as a principal. He described himself as an ‘Apple fanatic’ and daily used a number of ICT, professionally and personally. Aaron gained a position as a deputy principal at another school. He has responsibility for ICT and taught as a member of a team in the digital technology classes. George gained a position as an associate principal at another school and had his own middle level class with a release (from class responsibilities) component. Charlotte started the ICTPD programme “without really having touched a computer” (2014 interview). She had gained a senior position at a new school and provided professional development for staff on e-Learning. She did not have her own class but taught gifted and talented education classes and extensively used ICT in those classes.

Hannah, in contrast, resigned from her position of responsibility and ceased teaching in 2009 for personal reasons. When she returned to teaching in 2010, she changed schools and levels (Senior to Middle area). She used ICT, such as apps on iPads, Apple TV, and laptops extensively in her classroom programme and had a Bring Your Own Device (BYOD) policy in her classroom. She had gone from being a self-identified reluctant user prior to participating in the ICTPD programme, to an advocate of using ICT in the classroom.
I couldn’t imagine surviving without ICT… I remember when we were first given a laptop…I said to the Principal, ‘No, I don’t need one of those. Give it to someone who really wants it’. Now if I’m without it for a day, I am bereft! (Hannah, 2014 interview).

When I interviewed Carol, Irene and Julie in 2014, they were all in positions of responsibility at their original schools. Carol continued her position of responsibility and did not have a class of her own. However, she taught middle and senior classes as part of the release time classroom teachers have. She used ICT, such as iPads, Apple TV and her laptop, with the classes she taught. Julie was teaching at the same level (Junior) and gained a position of responsibility. She used a range of ICT, such as a digital camera and computer programs that supported her teaching. Irene also continued at the same school and, after having taught at the Middle level, returned to a position of responsibility at the Junior level. She used various apps on a pod of ten iPads as part of her classroom practices.

Mary and Barbara remain at the same school and at the same Junior level as when I interviewed them in 2006 and 2007. Mary had access to an Apple TV but had difficulties connecting her computer to it. A server update meant a program that she used in her mathematics programme was no longer available. Her self-reported use of ICT in her classroom practices was limited and was used more for administrative purposes. Barbara, in contrast, used laptops, a digital camera, and iPad apps to support her literacy and numeracy programmes on a regular basis. She was contemplating retirement within the two years.

Ann changed schools in 2008 and assumed a position of responsibility for ICT and taught at the Junior level at a semi-rural school. She used ICT in her classroom programme including digital camera, Internet, and a classroom blog. Ann retired from teaching in 2011.

The majority of the teachers who have changed schools are now in schools that were part of different ICTPD clusters. Therefore, their new colleagues had different experiences and professional development from their own. The participants’ interviews did not reveal any consequential difficulties in their use of ICT in their
new schools, thus suggesting that there were similarities in professional development provided across the clusters.

The formal ICTPD programme, for the participants involved in this study, finished at the end of 2006. In the 2014 interviews, the participants were asked if there was any continued influence of the ICTPD programme on their classroom practices. Their responses are presented and analysed in the following section.

8.3 Continued influence of participation in ICTPD programme

The majority (eleven) of the participants stated that ICT had changed considerably since their involvement in ICTPD. They acknowledged, however, that their participation in the ICTPD programme continued to influence their classroom practices. This suggests that there is an enabling effect of some forms of professional development, in that people are able to adapt to new technology or contexts. The broad categories of influences that the participants reported were: 1) the potential or possibilities for teaching and learning through using ICT; and, 2) the confidence and ideas to integrate ICT into their classroom practices. Each of these influences will be taken in turn in the following two sections.

8.3.1 Potential or possibilities for teaching and learning through using ICT

Irene, Julie, Sally, Aaron, George and Alex stated that their participation in the ICTPD programme continued to influence their practices as it made them aware of the potential of using ICT. Interestingly, the study participants, who commented on the potential or possibilities for teaching and learning through using ICT, come from different starting points, as self-reported in the 2006 interviews, regarding the extent they self-reported that their classroom practices had changed (very little; to some extent; to a large extent/completely).

Irene (Junior) reported in her 2006 interview that she had made very little change to her classroom practice, now viewed the ICTPD programme as a “springboard to my way of thinking about ICT” (Irene, 2014 interview). Her ICTPD professional development continued to encourage her use of ICT and to challenge her pedagogical thinking eight years later. With regards to the TPACK framework (Mishra &
Koehler, 2006, 2009) as discussed in Chapter 3, the ICTPD programme provided Irene with the opportunity to develop technological knowledge (TK) which enabled her to understand how ICT could support and enhance learning, thus developing her technological pedagogical knowledge (TPK) (Mishra & Koehler, 2009). Despite of reporting very little change in her 2006 interview, Irene now exemplifies how the ICTPD programme was the impetus for sustaining her thinking about ICT and daily use of them in her position of responsibility.

Julie and George reported in their 2006 interviews that their classroom practices had changed to some extent. Julie had an expectation, whether of herself or imposed by the school, that ICT were to be used in her classroom practices, “it has made me aware of the need to constantly think how I can integrate ICT into my class programme” (Julie, 2014 interview). Julie reported in all her interviews that she uses ICT to support students’ learning, which was an aim of the ICTPD programme (Billowes & Alexander, 2010). George views continuing professional development as the means to increase his TPK and skills in using ICT (Mishra & Koehler, 2009). He sees the continued affordance of ICT for teaching and learning, “I have looked for ways and opportunities to further my knowledge and skills base to use ICT with the children” (George, 2014 interview).

Over the past eight years, the participants who in the 2006 interviews stated that their classroom practices had changed very little or to some extent – have come to a stronger belief in the potential and importance of using ICT in their classroom practices. The majority of these participants self-reported that they had integrated ICT more into their teaching and learning programmes in the years since the ICTPD programme, thus suggesting the potential for continuing professional growth from the ICTPD, whereas Mary, appreciated the affordances of ICT (Hammond, 2010) more for administrative purposes.

Aaron, Sally and Alex, who self-reported in 2006 that their classroom practice had changed to a large extent or completely, have continued to see the unfolding potential of using ICT. “The programme helped me to see the potential of ICT in learning and I have continued to develop my understanding and [to] blend ICT into learning” (Aaron, 2014 interview). Aaron appreciated the affordance of using ICT in
his classroom practices and understood the need to continue to develop his TPK as ICT change. Sally also appreciates the affordance of ICT (Hammond, 2010) or what you can do with ICT to support teaching and learning; “Just the fact that you might have an idea about something and you do a Google search on it and that spins off to something else” (Sally, 2014 interview). This demonstrates that Sally has also continued to develop her TPK as outlined in Mishra and Koehler’s (2006) framework. Alex also self-reported in his 2006 and 2007 interviews about how he used ICT extensively in his classroom practices. He reported in his 2014 interview that the use of ICT has provided different opportunities for the students. His students have been communicating with a class at a school overseas and learning about each other’s culture. “It is an exciting time to be in education because the change in the last few years has been phenomenal … [originally] having the children communicate in both schools using video conferencing … now we FaceTime on iPads” (Alex, 2014 interview). It is clear, from this excerpt, that in the ensuing years Alex has continued to develop his technological knowledge (Mishra & Koehler, 2006, 2009).

The potential of ICT to enhance their classroom practices is recognised by these six study participants as evident from their 2014 interviews. In the above excerpts, the six teachers perceived continued potential for using ICT to further enhance teaching and learning. This, thereby, caused them to consider the affordances of ICT and continue to develop their understanding (TPACK) about the effective integration of ICT and what this means for their current classroom practices (Mishra & Koehler, 2009).

In the next section, the continued influence of the ICTPD programme in giving teachers confidence in, and ideas for, using ICT in the classroom, as identified by Ann, Hannah, and Charlotte, are presented and discussed.

8.3.2 Confidence in and ideas for using ICT

Ann reported that the ICTPD programme had continued to influence her practices and had given her confidence to take on an ICT position of responsibility until her retirement from teaching, “I evolved in how I used ICT. It gave me the confidence to take on the responsibility for ICT” (Ann, 2014 interview). Hannah reported that the
ICTPD programme continued to influence her classroom practices and that she is very confident in using ICT, particularly iPads. She and her colleagues discuss how they use apps in their classrooms, “we communicate constantly about what works, what doesn’t work and share ideas across the school” (Hannah, 2014 interview). Charlotte also felt strongly that her participation in the ICTPD programme, and in particular the guidance given during the programme by the facilitator for their cluster, continued to influence her practices. She gained a position of responsibility, first at a rural school and then at a suburban school after I interviewed her in 2007. She believed that her experience and confidence in using ICT led to her being appointed to these leadership positions:

I think the ICT facilitator at the time really influenced my thinking and has been the inspiration behind my wanting to excel in the e-learning area. I hadn’t really touched a computer before the ICTPD. From the ICTPD programme I became the ICT leader in the school and my strength in this area has probably helped with my being employed into leadership positions (Charlotte, 2014 interview).

This was a significant shift for Charlotte, considering her self-reported limited use of ICT prior to commencing the ICTPD programme. By 2014, both Ann and Charlotte were confident in using ICT as a result of their participation in the ICTPD programme and it prepared them for taking on positions of responsibility. As Fullan (2007) has argued, such development of leadership capacity is one of the desirable outcomes of professional development.

With the exception of Barbara and Carol, the study participants stated that the ICTPD programme continued to influence their classroom practices. The main influences were the unfolding potential teachers saw in using new ICT and the effects on their thinking about teaching and learning, and also their increased confidence in, and ideas for, integrating ICT into their classroom practices.

In contrast, Carol and Barbara, who had both reported in their 2006 interviews that their classroom practices had changed to a large extent/completely, reported that the ICTPD programme did not continue to influence their practices. Carol had used ICT in teaching before she took part in the ICTPD programme and continued to do so. The only aspect that has changed is the type of ICT used. This would seem to suggest that Carol’s prior experience was not taken into account in the learning
activities of the ICTPD programme she participated in. Barbara believed that what influenced her practices was having applications and programs available that supported the learning of the students she was teaching, “having what I perceive as being relevant to my age level. Programs and apps that I think are worthwhile and being able to use those. Apps that support the [teaching and learning] programme” (Barbara, 2014 interview). While Barbara had originally reported that her classroom practices changed to a large extent, she was very selective about the ICT she used and how they were used in her classroom practices over the years.

As the narratives of all twelve of the primary teachers in this study reveal, to varying degrees, they have continued to integrate ICT into their classroom practices. It is clear that these teachers have sustained or built on their change in classroom practices and that for all of the teachers, with the exception of Carol, the use of ICT in their teaching and learning programmes was ignited by initial participation in the ICTPD programme. For all twelve of the teachers, the integration of ICT has had varying degrees of lasting impact on their classroom practices.

Whether the study participants changed their practices very little, completely or somewhere in between, their self-reports of change to their classroom practices demonstrate an appreciation of the need for change. The teachers’ appreciation of the need for changes to classroom practices is presented and discussed in the following section.

### 8.4 Narratives of appreciating the need for changes to classroom practices

For teachers to appreciate the need for changes to their classroom practices they need to see the advantages of such and how it is relevant to, and enhances, students’ learning (Fullan, 2007; 2008; Timperley et al., 2007). In terms of integrating ICT into their classroom practices, the study participants’ self-reported varying degrees of appreciation for the need to make continuing changes to their classroom practices. Such appreciation included: the way students worked now / preparing the students for the future; use of ICT for the motivation and engagement of students; and, teachers’ emphasis on student ownership of learning. While the specific areas that
the teachers commented on differed, the overarching theme was supporting students’ learning.

8.4.1 The way students learn / preparation for the future

Irene, Julie, and Sally (Junior), George (Middle), and Carol (Middle/Senior) appreciated the need for changes to classroom practices, to work in the way students did and to prepare them for the future. Irene, who originally reported that she had changed her classroom practices very little, now views it as “a disservice not to be using [ICT] as a tool because it’s taking away what our kids need for the future” (Irene, 2014 interview). This is a significant statement for Irene as it shows the development of her thinking about and integration of ICT since the 2006 interview. During her three interviews, Irene has reported that her classroom practices have continued to change over the years and that she has developed an appreciation for continuing change.

George and Julie reported in 2006 that their classroom practices had changed to ‘some extent’ after taking part in the ICTPD programme. They did, however, voice an appreciation for their need to change classroom practices to benefit their students’ learning. George stated, “ICT is what it is and teachers’ need to embrace it. It is the way for our young learners to succeed in their learning (George, 2014 interview) while Julie stated, “there are endless benefits of using ICT in the classroom, mainly in preparing our students for the future” (Julie, 2014 interview).

Carol and Sally had reported that they had changed their classroom practices ‘to a large extent’ and ‘completely’ respectively. They both appreciated of the need for changing classroom practices to cater for the way students learn now and in the future. “It’s just the way kids are learning. We just need to keep up with it and guide in the right way” (Carol, 2014 interview). “I just think that it’s part of the future and we’ve got to be there … I just feel that we are on the brink of really exciting things here” (Sally, 2014 interview). Carol is an interesting case in that she reported that she used ICT before taking part in the ICTPD programme and yet still felt the need to change her practices to a large extent as a result of her participation in the ICTPD programme.
All five teachers appreciated the need for working with ICT and the importance of keeping their own skills current to be able to support students in the way they learn or for the future. While the ICT that the teachers used were varied, the teachers all saw benefits in using ICT.

8.4.2 Use of ICT for motivation and engagement of students

Sally and Mary (Junior), Hannah (Middle), and Alex and Charlotte (Senior) appreciated the need for changes to classroom practices to include ICT, as using ICT was motivating and engaging for the students.

I just think it is much more exciting for the kids … it hooks kids in. The possibilities are just amazing (Sally, 2014 interview).

The teacher with the interactive whiteboard occasionally begins with a snippet for motivating and creating interest in the topic … the boys especially loved [the activity] because of using ICT (Mary, 2014 interview).

Modern learning practice means that we are meeting the needs of today’s students. There is total student engagement in learning (Charlotte, 2014 interview).

The motivation and engagement of students in their learning can be viewed as one of the affordances of ICT being used in classroom practices. Conole and Dyke (2004) and Conole (2012) suggest that such affordances include accessibility, speed of change, diversity, and communication and collaboration.

Hannah and Alex reported that learning for students does not stop at the end of the school day. When a student is engaged in a learning activity facilitated with many typical ICT, they may continue to study in another setting, such as home Alex observed. “Student engagement and links between the home and the school. The learning can go home … to and from the school. The [ICT] is so portable. Learning doesn’t stop” (Alex, 2014 interview). Hannah commented on the fact that her students were able to share photos, complete tasks or access resources at any time, thus allowing them to continue to engage in their learning after the end of the school day.

Five of the primary teachers mentioned student engagement and motivation as a reason for adopting ICT. Mary discusses this in terms of the majority of children being motivated by using ICT. The caution needs to be that not all students are
digital natives or are motivated by the inclusion of ICT (Prensky, 2012). Just because students are able to use a digital device does not necessarily mean they are able to use it for educational purposes (Knight, 2012).

Complementary to teachers’ emphasis on student engagement and motivation is their giving students’ ownership of their learning and better catering for students’ learning needs which is discussed in the next section.

8.4.3 Teachers giving student ownership of learning / catering for student needs

Students’ ownership of learning and/or better catering for students’ learning needs were mentioned by five of the primary teachers, Ann, Barbara, and Irene (Junior), Aaron (Middle), and Charlotte (Senior), as to why they appreciated the need for changes to classroom practices. Aaron appreciated the need for changes to classroom practices in that, while learning remains the focus, the students can take more ownership of their learning through using a wider range of resources, increasing ways of collaborating, and deciding how they present that learning.

Teaching kids to use a specific app is becoming less important. Most kids can transfer knowledge from one app/programme to another and teach each other … the learning is the focus … you want kids to communicate the learning they have done. The tool they use is less important than the message. It can aid student ownership and increases ways of collaborating with a connectedness to the outside world (Aaron, 2014 interview).

Aaron viewed using ICT as a means to increasing student collaboration and making decisions regarding the presentation of their work rather than the focus being on how to use particular ICT. The students’ transferability of skills in using a variety of ICT also meant less emphasis on teaching them how to use ICT.

Charlotte also used ICT to tailor her programme specifically for her students. She used a variety of ICT, but in particular, she used Minecraft (a massive multi-player online role-playing game), to support students’ learning, such as learning decision-making, through the virtual activities of a character they control.

My programme in GATE is now entirely computer based. Children complete courses on 3D architectural design…they create and print 3D objects…make automated production systems in Minecraft and create websites and apps through coding (Charlotte, 2014 interview).
By using a popular online game, Charlotte has utilised this ICT to offer diversity to her teaching and learning programme while allowing the students to take ownership of their learning.

Three of the teachers, Ann, Barbara and Irene, appreciated the value of ICT to better cater for, and support, students’ learning. Ann appreciated the need for changes to classroom practices to maintain current resources that could be tailored specifically to the students’ learning needs, “being able to have up-to-date resources…for alphabet knowledge and basic facts… The resources can be made very child and group-specific in regards to their needs” (Ann, 2014 interview). By being able to tailor resources for individuals, teachers may differentiate the learning to cater for their particular needs.

Barbara saw using ICT in her Junior classroom practices only as a means of supporting her teaching and learning programme, “I see it as a support and nothing more than that. A support for what I am already teaching” (Barbara, 2014 interview). Barbara reported in her 2006 interview that the ICTPD programme in her cluster was not really making a difference to her teaching of New Entrant children, even though she reported that her classroom practices had changed to a large extent. In the years since the interview in 2007, Barbara seems to have become more convinced in her view that ICT should support her literacy and numeracy programme, rather than being used extensively in her classroom practices.

In contrast, Irene used ICT extensively with her Junior students, which may be a result of having taught at a higher (Middle) level recently. Rather than focusing on teaching ‘the basics’, for example, reading, writing and mathematics, or using ICT as a support to her classroom programme, she saw ICT as a necessary part of students’ learning.

You are always looking at apps and finding which ones are best for kids’ learning... It’s what our kids need to know. It’s a way of accessing things that if you can’t have firsthand that you can help the kids have experience of. Just to have the ability to have a wide range of ways of presenting the same [information] to kids (Irene, 2014 interview).

Since 2007, Irene reported a significant shift and increase in her use of ICT in her classroom practices. For example, by 2014 she used ICT to access activities and/or
experience that her students are unable to experience first hand such as looking at various animals via video clips. This allows her to safely expand the experiences of her students.

The reasons why teachers appreciated the need for changes to classroom practices and the degree to which they embraced and sustained these changes over the years since the 2006 and 2007 interviews varied. The affordances of ICT are appreciated by the primary teachers’ classroom practices as it means that they can provide a wider range of opportunities and better cater for students (Conole, 2012; Hammond, 2010). The reasons for appreciation of the need for changes to classroom practices include motivation and engagement of students, teaching in accordance with the way students learn and preparing them for the future, students taking ownership of their learning, and supporting teaching and learning. The enthusiasm expressed by the majority of participants (eleven) for using ICT as part of their classroom practices was clearly evident during the interviews. Even with the positive aspects that have been presented, however, there were still some concerns about integrating ICT into classroom practices. These concerns and possible barriers are the focus of the next section.

8.5 Narratives of resistance or barriers to changes to classroom practices

In the 2006 and 2007 interviews, all fifteen participants expressed concerns about using ICT in their classroom practices. These included such aspects as lack of technical support, limited access to equipment, lack of resources, insufficient time, and, the need for continuing professional development. In the 2014 interviews, some of these concerns were still present, but there were also new concerns raised, such as, the funding of equipment, the use of technology for technology’s sake, and teachers’ beliefs. Another surprising concern raised by Irene (Junior) was the superfluity of resources. “Instead of being a lack of resources, it is almost like there is too many and being able to make the best use of resources for kids’ learning with what resources are available” (Irene, 2014 interview). Irene indicated that the school’s Principal had been very proactive in making ICT, particularly apps for iPads, available for use by the teachers and students. There were so many options available,
however, that it was difficult and time-consuming to assess and select the resources that best addressed the students’ learning. Irene felt she needed to make use of the resources available at the school but needed to ensure they were suitable for her teaching and the students’ learning.

The concerns or ‘negative affordances’ as Hammond (2010) and Conole (2012) described them, that the twelve primary teachers raised in their 2014 interviews are discussed in the following sections.

8.5.1 Lack of technical support

In the 2006 and 2007 interviews eight (out of the fifteen) teachers expressed a concern for the lack of technical support. By 2014 this reduced to four (out of twelve). Eight of these latter teachers, Mary, George, Hannah reported that they now had technical support onsite, either someone on staff or a technician who attended the school regularly. Hence, technical support was more readily available. Arguably, the need for technical support had reduced because the teachers had developed more competence in using the ICT over the eight years since their ICTPD programme. For George, the concern lessened due to the combination of technical support and ongoing professional development provided by the school. He said that “ongoing PD has made some difference and, with more technical support being provided, integrating ICT is now not so much of a drama” (George, 2014 interview). Mary, however, reported technical problems and lack of support as a barrier to her using ICT in her classroom: “the barriers are that I can’t fix the computer when something goes wrong with the program… Also with the interactive whiteboard. We had PD when they were installed but now I can’t connect so it doesn’t get used” (Mary, 2014 interview). From her interview responses, it is difficult to ascertain whether Mary’s technical problems contributed to her limited use of ICT for teaching and learning.

Hannah’s school had technical support, however, the aged equipment was troublesome. “We are very well-supported here at school… If there are any problems, just fire it over to them straight away. I think the greatest challenge for them is some of our old equipment” (Hannah, 2014 interview). Hannah has sought to overcome this problem by having students bring their own newer devices to
supplement the equipment available in her classroom. While Hannah had resolved her issue of access to equipment for her students’ use, three of the teachers still mentioned limited access to or lack of equipment as a concern in their 2014 interview as discussed in the next section.

8.5.2 Limited access to or lack of equipment

Lack of equipment for students and/or teachers was a concern for the majority of the teachers in the earlier interviews. In the 2014 interviews, however, only Mary (Junior), Aaron (Middle), and Charlotte (Senior) saw this as a barrier. With Mary, however, it is unclear whether the student access to equipment is because there is a lack of equipment in the school or her reluctance to use the booking system to gain access to the equipment. “Student access to equipment is still a concern. We have a booking system for accessing equipment but I don’t use it very often, I just use the equipment that is in my room” (Mary, 2014 interview). Aaron also had problems concerning access to equipment/lack of equipment issues and that some of the equipment available was not suitable for his students to use. “Access to equipment is still an issue, there is never enough… Not all devices are created equal and kids have to use a device that is fit for purpose” (Aaron, 2014 interview). Aaron’s comments indicate that not all the equipment available meets the needs for the learning activities planned for the students. The ICT in Schools Report, conducted by Research in New Zealand in 2011 for the 2020 Communications Trust, reported that, on the most recent data available, the ratio of students to computers in New Zealand primary schools dropped from 5:1 in 2005 to 3:1 in 2011 (Johnson, Hedditch, and Yin, 2011).

Charlotte viewed the current network infrastructure, rather than the availability of devices, as a barrier to students using ICT in her classroom. The students wanted to be able to bring their own devices to their school but the school’s Internet gateway was unable to accommodate this. “Currently the children are almost demanding 21st Century learning. They want to bring their devices to school. However, we have 20th Century infrastructure. So until we get fibre to the gate, the children wait” (Charlotte, 2014 interview). Fibre cabling is currently being installed in different areas of Canterbury, however, while schools are prioritised for cabling, the area that a school
is in and whether cabling is available or readily able to be installed therein determines when they will be serviced (www.enable.net.nz). The measures that the Ministry of Education is taking to assist schools with access are discussed in section 8.6).

Mary’s concern about lack of equipment also stems from the fact that she is only able to access the Internet at school as she has made the decision not to have broadband at home.

I don’t have broadband at home – on purpose. So for work prep, I can’t sit at home with laptop on my lap and get into all sorts of interesting things to bring to teaching. I can only do that at school (Mary, 2014 interview).

It is unclear as to why Mary sees this as a lack of equipment and she would not elaborate on this during her 2014 interview.

### 8.5.3 Funding of equipment

While three of the participants, Sally, Carol and, Alex, expressed concerns about the funding of ICT equipment, two of them, both principals, commented on the steps they had taken at their school to address this concern. Sally was using grants from community charities to purchase equipment to replace the existing, but inadequate, equipment. For example, Sally had received a community grant to buy thirty Chrome books (Sally, 2014 interview). Alex also had concerns about the funding of new and replacing equipment:

In terms of access to equipment, we are not funded adequately by the Ministry [of Education]. All our iPads and laptops are paid for by a community grant. We just can’t afford to without doing that... So we have a team that constantly applies for community funding to get the resources... We didn’t want to wait for the Ministry to get on with our learning (Alex, 2014 interview).

As Sally and Alex have inferred, it is expensive for schools to replace equipment. Applying for ICT equipment grants was not a skill taught in the ICTPD programme. Furthermore, most Boards of Trustees of schools need to develop skills in writing grant applications if they wish to use this means to supplement their operational grant given by the Ministry of Education to purchase equipment.

Carol expressed concern about the amount of funds that had been spent on ICT that were no longer used by teachers. For example, she perceived that some interactive
whiteboards and data projectors that had been purchased and installed in classrooms were no longer used:

The Apple TV seems to be more compatible than the interactive whiteboard. So I’ve got a feeling that the interactive whiteboards are becoming a little bit of a dinosaur…but some teachers are still very happy with them. And if they work well, they are fine but we’ve also got a lot of classes with data projectors and that was a lot of money invested in that… I don’t see them being used that much for teaching (Carol, 2014 interview).

Carol wanted to see the ICT they had purchased being used for teaching and learning before replacing them, not just doing so because something newer was available. As the technology changes, it is understandable that older ICT become obsolete. Filmstrip projectors, videocassette players, analogue televisions, overhead projectors are just some of the equipment that can be found in storage areas at schools.

The next section discusses three teachers’ concerns about lack of time as a barrier or negative affordance to using ICT in classroom practices.

8.5.4 Lack of time

Julie and Mary (both Junior) reported that lack of time was a barrier to them using ICT. For Julie, the concern was a lack of time to find resources or useful apps for the iPads while, for Mary, it was a lack of time for her to learn new programs. Alex shared this view and still felt that lack of time was a barrier to ensuring that his staff was kept up-to-date with developments:

Yes, I probably still have a concern with time, trying to squeeze in with teachers any new developments…bumping something out of a staff meeting so I can sit down with them for an hour and go through some of those changes, something has to be compromised (Alex, 2014 interview).

The various schools where these twelve teachers are located have different ways of ensuring that staff remained informed about ICT. ‘Techie brekkies’ (Irene, 2014 interview), sessions at staff meetings (Alex, 2014 interview) and having ICT lead teachers (Hannah, 2014 interview) are some of the ways schools dedicate time support to staff to use ICT in their classroom practices.
8.5.5  Using technology for technology’s sake

Walking into a classroom and seeing students using tablet technology, on the surface it may appear that the teacher has integrated ICT into their classroom practices. Irene (Junior) and Alex (Senior) both commented on teachers using ICT just for show, for example, reading a book on an iPad, rather than using it as an interactive learning tool. This was not a barrier, so much as impediment, to schools effectively incorporating ICT.

Using them as a device...just not getting the most benefit for learning from them. Not just being busy work or a special treat or a reward or something like that (Irene, 2014 interview).

Perhaps one little negative might be when iPads come out, just the ‘busyness’ of kids on the iPads...they’re not doing anything that kind of adds to their learning that couldn’t be done with pencil and paper...the temptation to put it on a device because it is a device (Alex, 2014 interview).

Both teachers alluded to the fact that using ICT in this way is not effective integration into classroom practices, as it is not challenging students’ learning. It could be argued that having a book available on tablet technology could be motivating for some students, such as those who are seen as ‘reluctant’ readers. These two teachers, however, see that the affordances of ICT and how they can support and challenge children’s learning should be why ICT are used.

As well as barriers within the school, one teacher also commented in their 2014 interview on parental expectation about the integration of ICT in her classroom and how this expectation conflicted with her beliefs about teaching and learning at the Junior level. This tension is presented and discussed in the following section.

8.5.6  Teachers’ beliefs

Mary (Junior) reported a tension between parental expectations of ICT being used by children in the classroom programme and a teacher’s beliefs about the appropriate use of ICT in the classroom. Her continued limited integration of ICT could be viewed as typical of the resistance of some teachers to such changes to their classroom practices (Newhouse, 2014).

One parent came in and was talking about using iPads and laptops. I don’t think it is necessary at this [Junior] level. His daughter gets to use them at home. I am more concerned with teaching the children how to read and write,
basic skills. The children get the other stuff at home anyway (Mary, 2014 interview).

Mary believed that ‘the basics’ of literacy and numeracy skills for New Entrant students are the most important aspect of her teaching and learning programme and that she uses ICT to support such learning. She believes that her students will get ‘the other stuff’ at home, but this, however, may not hold true for all of her pupils. Her beliefs and pedagogical stance potentially raises questions about the link between home and school in a child’s education that are beyond the scope of this study, but which have been explored previously (see, for example, Somekh, Mavers, & Lewin, 2003)

8.5.7  Lack of professional development

Ann (Junior) took responsibility for ICT in her school and found that this had a negative effect on her classroom practices. She argued that she did not have the previous opportunities to learn from her colleagues and felt her students knew more than she did.

The negatives were being the person in charge. I really needed to up-skill and I didn’t have the opportunity for learning from peers. The others were so far ahead [with using ICT in their classroom practices]… The kids knew more than I did (Ann, 2014 interview).

It could be construed from Ann’s comments that she viewed being the teacher in charge of ICT at her school as disabling in regards to using ICT in her own classroom practices. Ann commented on the need to improve her ICT skills and that she saw the other teachers at the school as being more advanced than her in this respect in their classroom practices; it is noteworthy she felt this way even though she was in charge of ICT at the school. Ann was responsible for ensuring the server was backed up, the equipment was serviced as needed and such like – more of a technical support role than a lead teacher of ICT. While the eleven other teachers did not mention lack of professional development as a concern or barrier, they mentioned the need for continuing professional development for teachers to remain effective in using ICT for teaching and learning. Continuing professional development needs are discussed in section 8.7.
Despite the barriers and concerns that were expressed by the participants, data from their interviews indicate that, by 2014, ICT were still being used and/or integrated in their classroom practices. The narratives about these sustained changes in pedagogy are presented and analysed in the next section.

8.6 Narratives of changes to pedagogy
The ICTPD programme was designed to increase teachers’ technological knowledge and enhance pedagogical knowledge as outlined in Mishra and Koehler’s (2006) TPACK framework discussed in Chapter Three. The technological and pedagogical knowledge was to be combined with the content knowledge teachers already had to enhance their teaching and classroom practices in order to raise student achievement (N. Billowes, Personal Communication, 21 November 2006). Content knowledge was not the focus of the ICTPD programme, as it was expected to be already known or gained through other professional development initiatives. These initiatives were either needs-based or determined by the Ministry of Education and provided by the school or through another government programme, such as the Numeracy Project (a Ministry of Education initiative for primary teachers to develop and enhance skills in the teaching of numeracy).

The introduction of digital technology has changed the ways teachers and, indeed, students collaborate and complete activities. The majority of the study participants reported that their schools have registered for the Google Applications for Education programme, “a suite of free productivity tools for classroom collaboration” (https://www.google.com/edu/products/productivity-tools/), and are now using Google Docs, Google Plus, Gmail, etc. These apps are used within the classroom and/or for administration purposes. Alex, Carol, Barbara, Sally, and Hannah explicitly commented that they are using Google Docs for administrative purposes, such as daily notices, communication with teachers, team planning, meeting minutes and policy documents.

Since the participants were interviewed in 2007, the Network for Learning was introduced in November 2013. It was funded by the Ministry of Education and operated by the crown-owned Network for Learning Limited (N4L). This changed
the connectivity to the outside world for schools. According to the New Zealand Ministry of Education website (www.minedu.govt.nz/NetworkForLearning), by the end of 2014, 700 schools had been connected and the aim was for all schools to be connected by the end of 2016. This enables different resources to be accessed by the students and teachers. This, in turn, allowed changes to be made to how ICT are integrated into classroom practices.

From the narratives of the study participants in the 2014 interviews, the use of ICT has changed the way these teachers work within their classrooms and with colleagues, both within the school and the wider teaching profession. These changes include the possibilities of ICT for teaching and learning; students being able to bring their own devices to use at school; developing modern learning environments; and, how ICT are being used, particularly in the Junior level of primary school.

8.6.1 Possibility of ICT for teaching and learning

While the eleven 2014 participants who were still teaching continued to use ICT in their classroom practices, Aaron, Hannah, Alex, Carol, George and Charlotte (all Middle and/or Senior) were very enthusiastic about the possibilities that ICT opened up for teaching and learning. These six teachers reported continued efforts to integrate ICT into their classroom practices.

In the 2006 and 2007 interviews, it became apparent that George used a smaller variety of ICT than some of the other participants but used them consistently in his classroom practices. In the 2014 interview, George reported that he continued to integrate a number of ICT into his classroom practices:

I use the active board extensively in my class. It is used for school-based Inquiry Learning as well as supporting the teaching and learning via Promethean Planet flip charts. The iPads have been used to support literacy and numeracy learning by downloading appropriate applications for this [Middle] level (George, 2014 interview).

In his 2014 narrative, George was critical about his self-reported amount of use of ICT. He commented that other teachers were using a greater variety of ICT for a wider range of activities but that he used a more limited number of ICT, with which he was confident to support his teaching and learning programme. While the range of
ICT may have been less, he was enthused by how they could be used (George, 2014 interview).

While Carol reported using ICT extensively during the earlier interviews, her use of ICT was now more dependent on the particular classroom in which she was teaching. She adjusted how and which ICT she integrated into her teaching according to the facilities in the classroom:

> In Year 7 & 8, the class is set up really well. It’s got a 55” TV and it’s got Apple TV so if I need to take notes or record anything, I just take my laptop and connect it on there. Anything we want to look at, we just go straight to it. Some resources are on our server so I can access it straight away from my laptop… The other class is not set up so well so it is more paper-based. In that class there are children with iPads and they work differently… The boys on the iPads just took a photo of [information on the whiteboard] and put it in their notes… So the kids adapt and use the iPads differently for my lesson (Carol, 2014 interview).

Carol showed how she adapted her use of ICT to reflect the equipment that was available and the students in her classrooms.

During the interviews in 2006 and 2007, Aaron, Alex, and Hannah were eager to show and tell me about the ICT they used in their classroom practices and the artefacts their students had created. In 2014 these teachers continue to be very enthusiastic about integrating ICT into their classroom practices. Aaron has maintained use of a wide variety of programs and (now) apps on various devices in his teaching and learning programme:

> In my classes students have used webpages, blogs, movie making software, created content for the school radio station using GarageBand, used web-based programmes and iPad apps. I try to use creative apps such as Explain Everything to help support learning; encourage kids to be creators rather than consumers. Rock Our World was a great project where we created music with other classes from around the world… We used Ustream TV to conference with one of the head designers at Nike in America while he taught us and other classes around the world to design/draw shoes (Aaron, 2014 interview).

Alex was also an enthusiastic user of ICT, personally and professionally, when I interviewed him in 2006 and 2007, and then again in 2014. He said in 2014, “you’ve heard it all before but [ICT] is fully integrated into my life. I could not cope without it” (Alex, 2014 interview). Since taking on a senior school management role, Alex has continued to be an advocate for integrating ICT into classroom practices and
supports his staff through access to equipment and professional development. Although not teaching in his own classroom, he has been working with the senior students at the school on a project with a school in Japan.

There were a few teething problems but I visited the school at the start of the year and we addressed hesitations about what we were doing. It has got to the stage now where our kids FaceTime on iPads with them which is really cool (Alex, 2014 interview).

Just as she had been during the earlier interviews, Hannah was eager to show and tell me how she has continued to use ICT in her classroom practices:

So I can actually show you. We have this (holds up a laptop) connected to the [Apple TV] box, which connects the screen to the TV… Then we have our iPads and we use these in what we call our reading rotations as they have stories online… For maths we use Explain Everything. So we basically have got these [iPads] full of apps and the children know what they can use as part of their rotations… ICT are just really integrated into the classroom all of the time (Hannah, 2014 interview).

As can be seen in the above excerpts from their 2014 narratives, Aaron, Alex and Hannah are enthusiastic ICT users and see the potential of ICT to support and enhance student learning.

Hannah also believed that it was easy to integrate ICT into classroom practices because of the use of the same apps across the different levels at the school and then adding in more apps as the students progress through the school.

[The iPads] are just part of the school, [the students] know what to use. We have the same apps across the school basically plus a few extras as they go through… We communicate constantly about what works, what doesn’t work and across the school we add apps to the iPads (Hannah, 2014 interview).

This consistency in the apps available for students means that the students have a repertoire of digital tools available and then can draw on the skills learnt to new apps they encounter to continue to develop their ‘digital literacy’ (Jones, & Hafner, 2012).

In order to overcome the barriers of lack of access or limited equipment, teachers and schools have encouraged students to bring their own devices to supplement the equipment available (see for example, Lincoln Primary School, https://lincolnprimary.ultranet.school.nz/WebSpace/147/). This BYOD approach to learning with ICT has also meant a change to the technological pedagogical
knowledge of the primary teachers who work in this way. In the next section, the extracts about five of the primary teachers experiences with BYOD are discussed.

### 8.6.2 Bring your own device (BYOD)

Students bringing their own ICT devices, such as tablets, laptops and hand-held devices, meant that the availability of ICT for student use was usually better. Carol, Charlotte, Hannah, Aaron, and Alex (all Middle and/or Senior), reported varying levels of the adoption of a BYOD policy at their school. Carol had been investigating allowing students to bring their own devices but due to concerns, such as having multiple devices accessing the network, lack of technical support, and security of the devices, her school had not adopted a BYOD policy. She reported that, “we still haven’t gone down the track of BYOD because we feel we would like to just sort out all the possible problems” (Carol, 2014 interview). As presented in section 8.5.2, Charlotte’s students are frustrated with the connectivity difficulties with the school’s network. While Hannah’s school did not yet have a BYOD policy, she was allowed to implement BYOD for her classroom to give the students greater access to equipment and to continue their learning at home.

Aaron and Alex are both at BYOD schools. At Aaron’s school, the classroom programmes are very ICT focused. They use a cloud-based approach to be able to manage a large number of the varied devices students bring as well as the devices that the school provides. The school employs a technical support person to manage their networks.

> We use a cloud-based approach so we don’t have to specify a particular device. The students use a different network to the staff. Our network is managed by our tech support professional who works at the school ten hours a week… Every learner has their own Google account and email address… We use Ultranet as a learning system with each student having a ‘uSpace’ where they put their work, chat to other students, etc. Parents are able to access through a parent portal… Teachers use a variety of apps and Internet based programmes… ICT is blended through everything we do and is a strong focus at [name of school] (Aaron, 2014 interview).

Alex’s school’s Board of Trustees allows students to take the school’s equipment home at night and on weekends. This was a practice that was in place at his last school and he believed that this allowed learning to continue at home.
For Hannah, Aaron and Alex, the shift in technological knowledge and pedagogical knowledge (Mishra & Koehler, 2006, 2009) to embrace BYOD strategies had to be made. While Carol and Charlotte have started this shift, their schools needed to overcome network infrastructure and, in Carol’s case, technical and support problems, in order to be able to complete the technological and pedagogical knowledge transition associated with BYOD learning.

Such changes were also noted by two teachers concerning the rethinking of physical space / renovation of primary schools to incorporate modern learning environments and practices, which encourage collaborative or team teaching. In the next section, how ICT have been taken into account with this change in physical space and pedagogy is presented and discussed.

### 8.6.3 Development of modern learning environments

Sally stated in 2014 that she had recently toured schools with modern learning environments and practices and was very excited about the renovations at her school. Sally saw the move towards modern learning environments and how classrooms are equipped as shaping how ICT were used in classroom practices. This had been her experience at her previous school and meant that when her current classrooms were renovated, she ensured that the use of ICT was taken into consideration:

> I just feel that we are on the brink of really exciting things here… I’ve just got all new furniture…so all of our classes will have modern learning furniture that’s flexible and able to be used with laptops. It’s just going to give my teachers so much more space and flexibility that they don’t have now (Sally, 2014 interview).

Aaron also saw working in a modern learning environment as helping make the shift in pedagogy easier:

> ICT are now part of what we do, part of the learning process and the tools we use, not an extra. Working in a modern learning environment and having a modern learning mindset means ICT are easily worked into practice as our pedagogical knowledge continues to shift and develop (Aaron, 2014 interview).

Both Sally and Aaron commented on, not only the physical shift in how classroom spaces were organised and used, but also the pedagogical shift required to integrate the use of ICT into modern learning practices (Osborne, 2013).
The ICTPD programme was designed for teachers to develop their technological knowledge and to assist them to make changes in pedagogical knowledge to integrate the use of ICT to enhance their classroom practices (Billowes & Alexander, 2010). Through the interview abstracts of the Junior level primary teachers presented in the next section, variations in the changes to pedagogy to incorporate ICT into classroom practices can be seen.

8.6.4 Using ICT in the Junior level of primary school

The five teachers who were teaching at the Junior level demonstrated variation among them in the manner and frequency with which they used ICT. This variation depended on the equipment to which they had access and their pedagogical approaches. All five of the Junior level teachers used the ICT to support their numeracy and/or literacy programmes. Ann, Julie, and Irene used ICT more extensively than Barbara and Mary in that they reported that their integration went beyond just using them for numeracy and literacy programmes.

Ann integrated the classroom computer and digital cameras into her classroom practices in 2006 and 2007. Before she moved schools, the Junior level teachers and classes were using ICT for sharing information with parents and for recording activities and supporting numeracy and literacy programmes:

We used the Internet for our research project. We had a classroom blog and we had a weekly piece on letter of the week. We used the digital camera for pictures for our blog and for letter of the week. It was totally generated by the children. Great way to keep the parents informed about what was happening in the classroom (Ann, 2014 interview).

Julie retained the KidPix program she was using in 2006 and 2007, although it cannot be used on newer computers. Her classroom computer was ten years old but the program supported her reading, writing and maths programmes well. She also uses newer ICT, such as a pod of iPads, which she incorporates in her classroom practices:

The class computer I have had for years still runs KidPix. I also have a class iPad that runs several reading, writing, spelling, phonics and handwriting programmes. We also have a pod of iPads that I have twice a week; once for maths and the other time for Inquiry. I integrate ICT as much as possible. ICT are integrated into reading, writing, Inquiry, spelling, handwriting, phonics and music (Julie, 2014 interview).
Irene reported in the 2006 and 2007 interviews using only one classroom computer and a digital camera to support her literacy and numeracy programmes. By 2014 she was using a pod of iPads designated for the Junior area of the school. These come loaded with apps appropriate for the Junior level programme and for more independent activities. Irene was investigating programs that are more open in their use.

We try and have more open [apps]...we are trying to look into some story writing ones. I’m investigating using Google Plus with the kids for this year. But we do have some [apps] particularly for item knowledge like flashcard ones and alphabet awareness for early literacy and numeracy... Sometimes as a follow up to a classroom activity or sometimes as children know there are things they need to practice, they can do as an independent activity (Irene, 2014 interview).

While Irene stated that she wanted to use more open apps in her classroom programme, the apps that she describes in the above excerpt would appear to be more indicative of ‘electronic worksheets’ as opposed to really capturing the affordances of ICT.

Barbara and Mary have similar limited pedagogical aspirations for the use of ICT in their classroom. In the 2006 and 2007 interviews, Barbara reported that she had changed her practices to a large extent and used ICT in her numeracy and literacy programmes and in some other curriculum areas. In 2014, Barbara continued limited use of ICT, in her classroom. As stated above, Barbara views using ICT only as a support for what she is already teaching. Her concern lies in having her students meet the National Standards for numeracy and literacy rather than exposing her students to a wide range of ICT:

I use [ICT] for maths support and use them for alphabet and phonics. I use them for my reading and writing programmes... There is Book Cover where I might give them a maths problem and they have to present that maths problem in a book format. So they might take a photo, say of four lunch boxes and then they take away two lunch boxes, so they take a photo and put that in the programme and write the story (Barbara, 2014 interview).

The significant changes that Barbara made to her classroom practices were pedagogical knowledge and content knowledge with the introduction of thinking skills into her teaching and learning programme rather than the integration of ICT. Mary also makes limited use of ICT in her Junior level class and for planning, but is frustrated by the lack of ICT available for her classroom and by the unreliability of
the equipment. In 2006 and 2007 Mary’s Junior level students used ICT, such as a
digital camera and programs on the classroom computer. Mary felt that these were
supporting the students’ learning and her teaching. An upgrade to the server meant
her program could no longer be accessed and it was one more ICT that she was no
longer able to use. During her 2014 interview, Mary commented that she did have
access to a pod of iPads to use in her classroom and how she had tried to get a
number of apps loaded onto the iPads to use in her numeracy and literacy
programmes. These were not able to be loaded on all the iPads due to a lack of
funding and so she voiced how she felt thwarted in her efforts to use a wider variety
of ICT in her classroom practices:

I did have an iPod [Touch], which was used by children. The class was split
and a new class was started. The new teacher did not have a camera and so
the iPod went to the other teacher. I used my own camera and the children
used the camera… I was given an Apple TV to use and I really wanted to use
it for modeling writing. All of the other teachers were given interactive
whiteboards but not me, as I am not ICT literate… Our IT person wasn’t able
to get it set up…the ICT was of no use (Mary, 2014 interview).

After three years of the ICTPD programme and a further eight years of using ICT,
Mary does not see herself as being ICT literate, particularly in comparison to other
teachers at her school. This indicates that the ICTPD programme did not help Mary
to become a competent sustainable user of ICT. Mary declined opportunities for
professional development on using different ICT offered at the school:

There are a number of teachers in our school who are computer literate. They
have class blogs and all that kind of stuff. The teachers are really positive. I
don’t go to PD about that, as I don’t use it in my classroom. For me, with
New Entrants, it is really concentrating on the basics rather than using ICT. I
am very clear about teaching things like handwriting, reading and maths
(Mary, 2014 interview).

Mary believed that her Junior level students needed to learn the basics of numeracy
and literacy, rather than using ICT. Whether her experience and frustration of not
being to use the ICT provided by the school or her strongly held pedagogical beliefs
about what Junior level children need to learn are the reason for her not using ICT is
unclear. Mary contradicts herself in that she is willing to use ICT to support her
students’ learning but then does not use ICT to support the important, in her terms,
basics. She does not appear to view ICT as merely a different delivery method,
digital rather than paper, for supporting students’ learning of the basics.
The twelve participants reported in their 2014 interviews about the changes since they completed the ICTPD programme to their pedagogical thinking and classroom practices. These changes included deploying the diversity of capacities of ICT for teaching and learning, engaging in BYOD practices and learning, using modern learning environments, and engaging in contemporary learning practices, and, for five of the teachers, using ICT in the Junior level of primary school where the emphasis is on numeracy and literacy. The ICTPD programme’s goal was development of both pedagogical thinking and technological knowledge to integrate ICT to support and enhance student learning and the teaching (Billowes & Alexander, 2010).

While these twelve primary teachers reported that they continued or have increased their use of ICT, the majority said that they needed to have continuing professional development in the effective integration of ICT into their classroom practices. This was seen as essential to keep their teaching practices current and to cater for the needs of their students and is discussed in the next section.

8.7 Ongoing professional development needs for the integration of ICT into teachers’ classroom practices

After three years (2004 – 2006) of very structured professional development in their ICTPD clusters, the participants reported only some dedicated professional development in the integration of ICT since 2006. In the twelve primary teachers’ schools, the participants reported that the majority of the professional development on ICT was on a needs or ‘just in time’ basis (McKenzie, 2002). Nine of these teachers did, however, see a need for continuing professional development in order to continue to integrate new ICT effectively into their teaching. Mary, Barbara and Ann had some contrasting views to the other study participants concerning professional development. Those participants who expressed the need for continuing professional development in the integration of ICT had a variety of ideas and reasons why this needed to happen. These included: needs-based or just-in-time sessions, pedagogy, access to equipment, time to become familiar with ICT, and school-wide development for shared ICT understanding. These matters are discussed below.
Carol, Hannah, and Sally, who had all reported changing their classroom practices to a large extent in the 2006 interview, saw the continued professional development on the use and integration of ICT being provided through targeted, needs-based or just-in-time sessions. The following excerpt from Carol’s interview exemplifies organising sessions on using ICT when there is a need to, for example, introduce a new app on the iPads, rather than on a regular basis:

> We don’t actually have ICTPD unless it is on a needs basis. If there are some apps that people want to share, we have a quick staff session so it is not like PD anymore. If we feel there is a need in the staff, then we just do it straight away (Carol, 2014 interview).

At Hannah’s school, the role of ICT lead teacher has been retained from the ICTPD programme. They lead just in time professional development in using various apps on the iPads and provide ongoing pedagogical support.

Aaron and Charlotte, who had both reported changing their classroom practices completely, also mentioned the need for continuing professional development to improve and support pedagogical understanding. Aaron stated that while continuing professional development on using particular ICT – for example, using apps on an iPad – was pertinent, it was the pedagogy that underpinned the integration of ICT into classroom practices that was essential (Aaron, 2014 interview). Charlotte stated that professional development sessions in modern learning pedagogy (Osborne, 2013) were essential as schools started to be renovated or reorganised and were developing modern learning environments for students and teachers to work in, which included the integration of ICT. She also asserted that teachers had to believe in modern learning pedagogy for them to be effective in working in this way, “teachers need to believe it makes a difference to the children’s learning” (Charlotte, 2014 interview).

Alex observed that giving the teachers at his school time to become familiar with the ICT, how they worked and what they could be used for in teaching and learning programmes was essential:

> When I think about my own teachers, they quite like time to play, time to experiment. I think that’s quite important not to expect miracles, like here’s your devices now make something cool happen. They need time to make mistakes and learn along with the kids (Alex, 2014 interview).
Alex thought it was imperative for teachers to have access to ICT to be able to
develop their skills and knowledge about how they work and can be used. He also
sees it important that as a school leader, he models good practice in using ICT
professionally and personally (Alex, 2014 interview).

By 2014, the teachers at Julie’s school were completing school-wide professional
development on eLearning, which she believed strengthened the implementation of
eLearning in the school. “This year we are undertaking the eLearning PD school
wide. All of the staff are taking part and we have a shared understanding of what
eLearning is and how to integrate it into your classroom” (Julie, 2014 interview).

Timperley et al. (2007) suggests that school-wide professional development allows
teachers to develop a shared understanding of the concept or activity the
teachers/staff are experiencing in the professional development. Having this shared
understanding also enables teachers to have professional conversations and continue
to develop their understanding and have support for implementation in their
classroom practice (Twining et al., 2013).

Irene’s school had ICT professional development, but she believed that teachers also
needed to take responsibility for their own professional learning:

I think that like lots of our teachers, I was going to be savvy about things, like
blogging and tweeting and connecting educationally through some of the
facilities that are available in terms of keeping up with their own professional
development and knowing some of the things that are happening out there
(Irene, 2014 interview).

Irene also asserted that teachers needed to explore how to use ICT effectively to
support their students’ learning. She disagreed with teachers who insisted that their
Junior level students needed to work mostly with pen and paper:

Like with 5 and 6 year olds, I think that we’ve hardly scratched the surface
with how we can use ICT in the best way for their learning and I think we are
still very hung up on the whole making sure everything is still pen and paper.
So that’s a real area I would like to explore actually (Irene, 2014 interview).

This view of using ICT with Junior level students contrasts with those put forward by
Mary and Barbara (both Junior) in the following section.
Mary and Barbara had more guarded views about the need for ongoing professional development in the integration of ICT into their classroom practices. Mary’s school remains involved in a different cluster from its previous one in the ICTPD programme. The staff used the professional learning network within the new cluster for sharing ideas but Mary does not participate in these opportunities. She commented, “our cluster works together. Teachers email each other with ideas to be shared. I don’t do it because I am not someone who is really interested” (Mary, 2014 interview). Barbara participated in professional development sessions but she had the same concerns in 2014 as in 2006 and 2007 about the professional development not being relevant to the Junior level. She commented, however, that in the intervening years, she gained the confidence and ability to adapt the activities for her students:

Now I am probably confident enough to adapt it for myself or just to say, “no I’m not doing it because it’s not relevant” or I don’t see it as useful or helpful. It has to support [the children’s learning]. My ultimate issue is that I have to ensure my children are happy and confident and meet National Standards so unless that is going to help me with that, I’m not going there (Barbara, 2014 interview).

Mary and Barbara were experienced teachers at the Junior level and had quite strong views about the use of ICT in their teaching and learning programmes, which, contrasted with Irene. She has taught in the same school for several years but had moved to an older age level before returning to the Junior level to take on her position of responsibility. This may have contributed to her differing view of using ICT with Junior level students.

Ann also participated in the professional development offered by her school, but she felt that more experienced teachers, like herself, were able to offer advice in using ICT to help less experienced teachers avoid repeating the sorts of mistakes the experienced teachers had made:

New staff were not interested in older teachers’ experience. They weren’t prepared and they repeated the same mistakes that we had made and learnt from. They had the knowledge but…these 30 year olds thought they knew everything. I watched them making the same mistakes, things that were able to be avoided. Support could have been at hand (Ann, 2014 interview).

It could be construed from Ann’s comment that, as she was the teacher with responsibility for ICT, she may have felt ‘sidelined’ by these younger teachers. Her
own experiences were undervalued in that she believed she could have guided them in their integration of ICT.

While the twelve teachers expressed different opinions about continuing professional development and how it should be constituted, they all asserted that it is essential for teachers to sustain currency in their teaching and learning. For example, maintaining contemporary learning pedagogies (Osborne, 2013), and using ICT effectively to support and enhance their classroom programmes.

### 8.8 Summary

The twelve primary teachers’ careers and experiences during the intervening years, between the 2006, 2007 and 2014 interviews were somewhat diverse. Ten of the twelve study participants stated that their participation in the ICTPD programme, continued to influence their classroom practices. The integration of ICT into their classroom practices was sustained or increased, although to a limited extent in some cases. With the exception of Mary, the participants appreciated the need for changes to classroom practices to cater for their students’ needs and, for some of the teachers, to prepare students for the future. Affordances of ICT (Conole, 2012; Conole & Dyke, 2004; Hammond, 2010) such as accessibility, diversity, and communication and collaboration as well as motivation and engagement were included in the appreciation for the need for changes to classroom practices. While some of the barriers or ‘negative affordances’ (Conole, 2012) of integrating ICT into the classroom had reduced or changed for the participants, concerns were still expressed. Technical support, access to equipment, lack of professional development and insufficient time were still considered as barriers by some of the teachers although less so than previously. New concerns, such as funding of equipment, using technology for the sake of technology, and teacher beliefs about what they considered to be ‘best practice’ (Timperley et al., 2007) were expressed in the 2014 interviews.

The twelve participants were forthcoming about the ICT they used as part of their classroom practices. This ranged from using a limited number of ICT to support parts of classroom programmes, such as numeracy and literacy, to using ICT extensively when working with students. All of the teachers used ICT for administrative
purposes but this varied depending whether they held a position of responsibility or which ICT were used. The need for continuing professional development in using and integrating ICT was expressed by nine of the twelve teachers, with two of the three other teachers expressing contrasting views and the third commenting on the perceived lack of appreciation by younger teachers of the participant’s experience for professional development in the use of ICT in classroom practices. However, the importance the teachers placed on the professional development was contrasting and varied. Their views ranged from one teacher not really being interested in it for themselves to others seeing it as essential, not only in learning how to use ICT, but also to understand the pedagogy underpinning the use of ICT in classrooms. For the majority of the participants’ schools, professional development was on a needs or just-in-time basis. While professional development was offered in this manner, this was not necessarily what the teachers wanted or which met their current or potential future needs.

Examining the 2014 interviews of the twelve primary teachers and comparing and contrasting these with their earlier narratives provides an understanding of the influences that the ICTPD programme over their pedagogies and practices. The analysis of the interviews provides evidence of the significance teachers placed on the various activities and strategies in which they participated in during their three-year ICTPD programme.

In the final chapter, the insights and implications of this study for the professional development of primary school teachers, as well as the possible implications for professional development in other contexts are presented. The contributions and limitations of the study are also presented.


9.1 Introduction

This study focused on fifteen primary teachers’ self-reports of how participation in the ICTPD programme, which promoted their use of ICT, affected their classroom practices over time (temporality). In particular, it researched how these fifteen teachers perceived their classroom practices changed as a result of being involved in the programme and their subsequent use of ICT over a period of eight years. The analysis focused on whether the teachers appreciated the need for changes; the barriers to, and concerns they had about, using ICT; their pedagogical beliefs; and, how different levels of continuing support available in these teachers’ schools influenced change. The preceding chapters reported a detailed analysis of the fifteen participants’ self-reports of their experiences and perspectives from the 2006, 2007 and 2014 interviews. The participants described the processes, activities and attributes that enabled or hindered them in their negotiations of the connections and collisions between their pedagogical beliefs and the ICTPD programme.

The main objective of the study was to understand the participants’ perspectives of the ICTPD programme and its impact on their classroom practices. These perspectives contributed to a detailed understanding of the extent participation in a cluster-based professional development programme, such as ICTPD, influenced primary teachers’ classroom practices. More specifically, this research sought answers to the following research questions:

- How has professional development undertaken by fifteen study participants, regarding their use of ICT within their classroom teaching and learning programmes, impacted on their classroom practices?
- What is the nature and effect of the professional development on the study participants’ classroom practices according to the participants’ self-reports?
- What changes in classroom practices have study participants made and sustained eight years later according to their self-reporting?
This concluding chapter commences with a discussion of the key findings. It highlights the connections made by participants between their values and beliefs about teaching and learning and the new experiences provided by the ICTPD programme. The discussion also considers the ways in which these new experiences addressed the participants’ personal and professional learning needs from their perspectives. The final section focuses on the practical and pedagogical implications of ICT professional development on participants’ self-reported classroom practices. It contends that ICT professional development works well when based on a professional learning community model, geared to making changes to classroom practice.

I argue that there is merit in ICT professional development facilitators and providers designing for situated learning in professional learning communities. This claim is based on my analysis, which demonstrates that professional development situated in schools where facilitators and providers are trying to initiate changes, can influence how teachers perceive the proposed changes. Situated professional development can influence teachers by demonstrating how the changes could look in their own context. It is important to balance the desire to modify, enhance or change classroom practices with an understanding of the pedagogical practices and knowledge teachers already have about the use of ICT in their classrooms (Koehler, Mishra & Cain, 2013).

9.2 Fifteen teachers’ experiences of professional development
Experiences of the ICTPD programme varied between participants in the study, even when they were involved in the same cluster (as discussed previously in Chapter 6). Although the different clusters’ ICTPD programmes were designed to assist their participants with integrating ICT effectively into their classroom practices and to take into account their teachers’ needs, the programmes developed for the clusters usually reflected the cluster facilitator’s own pedagogical understanding, personality, and ICT expertise. These factors are likely to have had some bearing on the participants’ experiences and interactions with the facilitator and the programme.

The participants reported on the various types of activities, such as workshops, professional readings and in-class mentoring, and opportunities, such as attending an
ICT-focused national conference for teachers, that were provided by their cluster (see Table 5.2 for a full listing). Participants were forthcoming with their views about the activities that they found valuable (or not) and the subsequent changes they made to their classroom practices. Participants’ pedagogical beliefs appear to have affected their level of ICT integration into their classroom practices, which resonates, with findings of Somekh (2008) and Ertmer (2005). According to the narratives that emerged from the interviews, the participants were at differing stages in their pedagogical understanding and level of integration of ICT into their classroom practices at the beginning and conclusion of the ICTPD programme. The interwoven nature of the types of activities, the opportunities offered, and pedagogical beliefs emphasised the effect that these factors had on each participant’s experience of the ICTPD programme, thus adding richness to their stories. This was particularly evident in Tania’s stories in that she remained constant in her resolve that the matter of the pedagogy underpinning the use of technology in her classroom practices was never fully addressed during the ICTPD programme or in the year following the completion of the programme. Just as Timperley et al. (2007) found in their study, teachers need to be provided with the theoretical underpinnings in order to understand why they should make changes to their classroom practices.

The participants were primary classroom teachers engaged in the ICTPD programme to develop their skills and pedagogical knowledge in integrating ICT into their classroom practices. The ICTPD programme used ICT as the means to deliver, rather than being the focus of, a professional development programme (Billowes & Alexander, 2010). According to Webb, Robertson, & Fluck (2005), there are four desired outcomes of professional development: 1) enhancing teachers’ pedagogical knowledge and skills; 2) modifying or changing teachers’ classroom practices and enhancing quality teaching; 3) developing leadership capacity within the school; and, 4) building professional learning communities. Although the stated outcome of the ICTPD programme specifically addressed the second of the aforementioned desired outcomes of professional development, there is evidence that all four of the outcomes were addressed to some extent, as shown by participants’ narratives in previous chapters, and I discuss each desired outcome in turn.
Enhancing teachers’ pedagogical knowledge and skills
The inclusion of higher order thinking skills and inquiry learning strategies in the ICTPD programme was to enhance the participants’ pedagogical knowledge and increase their repertoire of teaching approaches and skills to enhance their classroom programmes. In 2006, eight participants reported that they were using higher order thinking strategies and inquiry learning with their students. In 2014, they did not report on the inclusion of higher order thinking skills and use of inquiry learning was a change to participants’ pedagogy, but it was mentioned by all the participants as pedagogical approaches that were regularly utilised in their classroom programmes. The teachers’ pedagogical knowledge of and skills in using higher order thinking skills and inquiry learning were enhanced.

Modifying or changing teachers’ classroom practices and enhancing quality teaching
As discussed above, the stated aim of the ICTPD programme was to enhance or change teachers’ classroom practices, through the use of ICT, to improve student achievement (Billowes & Alexander, 2010). The professional development programme was to act as a catalyst for teachers to develop or improve their technological pedagogical knowledge. This was to be done by introducing teachers to the educational use of ICT and having them critically reflect on their existing teaching practices and supporting them to modify or change their existing pedagogical approaches. The reported findings of the participants’ self-reported experiences of the professional development and the subsequent modifications or changes made to their classroom practices, such as using ICT with and by students to support their literacy and numeracy programmes, and giving students more ownership of their learning, demonstrate that for all of the participants that modifications or changes, to varying degrees, to their classroom practices were achieved.

Developing leadership capacity within the school
One of the desired outcomes of professional development suggested by Webb et al. (2005) is developing leadership capacity in the school. Although not all of the participants had leadership roles within their school, during the ICTPD programme each school in each cluster had a lead teacher for ICT. Teachers who had expertise or reputations for quality practices in various aspects emphasised in the ICTPD
programme also had a role to play, thus assisting with developing the leadership capacity of the school. Although building leadership capacity was not an aspect that was focused on in the interviews, the participants were asked whether they held positions of responsibility within their schools. Three participants, Hannah, Ann, and Charlotte, particularly mentioned the role of the lead teacher. Ann and Charlotte were appointed to be ICT lead teachers when they gained positions at other schools. Hannah reported that she viewed the role of ICT lead teacher as pivotal within the school’s leadership team for leading professional development and supporting teachers in their integration of ICT in their classroom practices (Hannah, 2014 interview).

**Building professional learning communities**

The other desired outcome of professional development, according to Webb et al. (2005), was building professional learning communities. The participants in this study were involved in a cluster-based professional development model that was used to assist clusters and individual schools to become professional learning communities and communities of practice. The purpose was to support the teachers and schools in the integration of ICT to change or enhance teaching practices in order to improve students’ outcomes and to have that support sustained once the formal programme was completed. There is a growing consensus (see, for example, Lieberman & Miller, 2008, 2011; Matzat, 2013; Stacey & Gerbic, 2009; Stoll et al., 2006; Webb et al., 2005) that school-based professional learning communities are more effective strategies for teachers’ learning when change is desired than teachers’ participation in external programmes. Being part of a professional learning community, in the form of a cluster of schools, provided support and expertise while increasing the efficacy of members. While some of the participants taught at schools that continued their involvement with the established cluster (for example, Alex), other clusters dissolved their partnership and either became their own professional learning community or joined into a new cluster/professional learning community (for example, Carol).

The following section summarises how the research participants translated their learning from the professional development programme into classroom practices.
9.3 Impact on classroom practices

Timperley et al. (2007) argued that in order for change to teachers’ classroom practices to occur, teachers need to be sufficiently informed and appreciate the need for the change, and overcome the barriers to integrating these changes into their classroom practices. The outcomes for teachers, ranging from major to minor to no change in practice, following participation in professional development, is determined by teachers’ interpretation and utilisation of available understandings and skills (Timperley et al., 2007). This study endeavoured to uncover what happens in the fifteen participants’ “black box of teachers’ learning” from their perspectives (Timperley et al., 2007, p. 7).

Over the eight years of this study, the stories of the fifteen participants demonstrated common themes across the three sets of interviews. These common themes included appreciating the need for changes, the barriers to or concerns about integrating ICT into classroom practices, changes made to pedagogy, as well as the need for continuing professional development. Each of these themes is discussed in turn in the following sections.

9.3.1 Appreciating the need for changes

The participants reported appreciating the need for changes to their classroom practices across all three sets of interviews in 2006, 2007, and 2014. Although mention was made of appreciating the need to use ICT to make administrative tasks, planning, and so forth easier for the teachers, it was the appreciation for the effect on students’ learning that was seen as the most important rationale for changes. While the frequency of the various aspects and participants who commented on each of the areas changed over time, there was a consistent set of three sub-themes mentioned, which included teachers’ emphasis on: 1) students’ ownership of learning/empowerment of students; 2) motivation and engagement of students; and, 3) the way students learn and preparing students for the future. In the 2014 interviews, the sub-themes of the inclusion in classroom practices of higher order thinking skills and inquiry learning, and the importance of ICT as tools to use with, and by, students to support their learning were no longer mentioned.
**Teachers giving students’ ownership of learning/empowerment of students**

In 2006, ten of the participants appreciated that using ICT assisted students to take ownership of their learning and gave students greater choices about how they presented that learning than using traditional tools, such as pen and paper. Giving students opportunities to take ownership of their learning empowers them to make decisions about and take responsibility for their learning. Having the teacher take a role as a facilitator rather than a director of learning, allows a more student-centred approach to teaching and learning to be used. By 2014, only five of the participants explicitly mentioned student ownership of learning/empowerment of students. The reduction in the number of participants may possibly have been because this approach had become a more widely adopted over the ensuing years. Nevertheless, these teachers continued focus on the importance of the use of ICT to facilitate students’ independence and ownership of their learning attests to their appreciating the need to make changes to their classroom practices.

**Motivation and engagement of students**

Across the three sets of interviews, the use of ICT in the participants’ classroom practices was seen as motivating and engaging students in their learning, with a similar number of the participants (six in 2006, five in 2007, and five in 2014) reporting that they appreciated the need to include ICT in their classroom practices for this reason. Over the period of the study, the participants mentioned the motivation and engagement of students as a result of using ICT in classroom practices. Greater use of ICT was possible as technology, in particular tablet technology, became more common in primary classrooms, and in some cases, with the introduction of BYOD at primary schools.

**Teachers’ perspectives on the way students learn and preparing students for the future**

Following on from motivation and engagement of students, the inclusion of ICT in primary classrooms was also seen as a means of preparing students for future ways of learning through the use of technology. The use of ICT had become more prevalent outside of school and, therefore, the use of ICT for educational purposes was seen as using tools with which students were familiar. This gave students a wider range of tools to choose from to support and demonstrate their learning.
By 2014, the inclusion of higher order thinking strategies and inquiry learning approaches were well established in primary schools across New Zealand with many schools having developed their own inquiry learning model during the ICTPD programme. With the prevalence of ICT in schools, particularly tablet technology, and schools having developed policies to allow and encourage BYOD, it may have been an assumption that ICT would be used with and by students to support their learning. It should be noted, however, that in the 2014 interviews that three participants, who viewed the use of ICT in their classroom practices as preparing students for the future, still had concerns about access to ICT for student use. This concern about access to ICT, as well as other concerns about using ICT in classroom practices, is discussed in the following section.

9.3.2 Barriers to, or concerns about, using ICT in classroom practices

Over the eight years of this study, there were similarities in the barriers participants identified about incorporating ICT in classroom practices, although the number of participants reporting each of the barriers or concerns reduced over the years. In 2014, while some of the concerns expressed previously by the participants remained, there were also new issues raised. The concerns that remained were lack of technical support, limited access to or lack of equipment, lack of time, while the new issues included the funding of equipment, the use of technology for technology’s sake, teachers’ beliefs, and lack of professional development.

Compatibility with existing practices was one factor that shaped whether teachers in this study reported the adoption or rejection of ICT. If a new ICT complemented existing practices, it was more likely to be adopted than an ICT that was incompatible and may disrupt existing practices (Prestridge, 2010). For example, the participants who taught at the Junior level all reported that the use of digital photography supported the students with their recall of events or activities to assist with literacy and numeracy tasks. This study shows, however, that other factors also influenced whether ICT were used in the classroom. Teachers reported they needed to understand how each/different ICT(s) would improve their teaching and student learning outcomes before they would adopt that ICT. Teachers reported that any dissonance with existing strategies and practices, created by the adoption of an ICT, had to be resolved before they integrated the ICT into their classroom practices. For
example, when students used ICT to complete an activity and similar outcomes could be achieved using traditional tools in less time. Teachers, therefore, needed to understand the ‘why’ before the ‘how’ could occur. Prestridge (2010) suggests that teachers often do not use ICT because the implicit pedagogy is not compatible with teachers’ preferred classroom practices. Surry (2008) argues that:

The most powerful and innovative learning technologies are useless if teachers and learners do not know how to use them effectively. Educational professionals will have to continually refine and upgrade existing educational change models to account for changes to educational systems brought about by the rapid advance of technology (p.416).

As ICT continue to evolve, teachers need to continue to amend or change their classroom practices to remain current with developments. The finding from this study of the need for continuing professional development shows that the participants are cognisant of this fact themselves.

The extent to which these barriers were overcome or concerns were addressed determined whether the changes were adopted or rejected. The changes that the participants made and sustained to their classroom practices are discussed in the next section.

9.3.3 Changes to pedagogy

By 2014, all of the participants who were still teaching were using ICT, to varying degrees, in their classroom practices. The majority of the participants in this study reported how they integrated ICT into their classroom practices to support the teaching of curriculum and to assist with students’ construction of knowledge, rather than simply for the sake of students learning skills in using ICT. The participants used ICT as part of literacy and numeracy programmes, for example, facilitating students to create graphs using data they had gathered or search for current information on the Internet about a topic they were studying. The focus of the learning was on information literacy skills and being critical users of the Internet rather than focusing on the specific skills of using the ICT.

Whether there was resonance or dissonance with participants’ existing pedagogical practices determined if they adopted new practices, amended existing practices, or retained their current practices (Prestridge, 2010). As discussed previously, teachers
acknowledged that the changes to or enhancements of existing classroom practices were made to improve student outcomes. Therefore, not all of the reported changes to participants’ practices included the use of ICT. The changes to pedagogy that the participants reported in the 2006 and 2007 interviews were similar. By 2014, however, the sub-themes that emerged had changed considerably and included the affordances of ICT for teaching and learning, experiences of BYOD strategies, the move towards modern learning environments and pedagogy, and the use of ICT in the Junior level of primary school. For some of the participants, the changes to pedagogy were more amendments to their existing classroom practices, while for the other participants it was a continued evolution of their technological pedagogical content knowledge that shaped their classroom practices. This evolution also meant that there was a continued need for some form of professional development.

9.3.4 Need for continuing professional development

After participating in an intensive, three-year professional development programme, the participants still reported the need for continuing professional development during each of the interviews. At the end of the ICTPD programme in 2006, the participants’ most common self-identified professional development needs included time to consolidate learning, ‘play’ and become familiar with a range of ICT to use in classroom practices, opportunities to observe in other classrooms/schools, in order to gain more ideas for using ICT in classroom practices. Other needs reported were having ‘just-in-time’ sessions on using specific ICT and learning about the pedagogy behind using ICT for teaching and learning.

When I interviewed the participants in 2007, a year after the completion of the ICTPD programme, their continuing professional development needs had subtly changed focus. The continuing professional development needs that they reported were keeping up-to-date with new developments in ICT and/or curriculum, time, and more support with integrating ICT into classroom practices.

By 2014, their continuing professional development needs had similarities but had also taken a more wide-ranging focus. This included needs-based or just-in-time sessions, pedagogy underpinning use of ICT for teaching and learning, access to equipment, time to become familiar with ICT, and school-wide development for
shared ICT understanding. The need for school-wide development for shared ICT understanding could have been the result of teachers changing schools, changes in their school’s senior leadership, or the outcome of consultation with the school community. The diverse experiences of the teachers could have led to differences in ICT understanding and thus, for a school to have a cohesive approach to how teachers used ICT in classroom practices, the need for further professional development in this area was essential. Surry (2008) cautions that, as new innovations are introduced into schools, teachers will need to continue with professional learning and making decisions about how, why and whether these innovations will be incorporated into classroom practices. The continuing professional development needs self-identified by the participants as reported in this section, would seem to validate Surrey’s assertion. The interests and self-identified needs of the participants need to be taken into account in the design and content of professional development. The factors that impact on the design of professional development are discussed in the following section.

9.4 Professional development design

The design of a professional development programme needs to be given careful consideration by the designer and the facilitator(s). The self-identified needs and interests of the participants in a long-term professional development programme, such as the ICTPD programme, must be taken into account. Giving teachers the opportunity to take ownership of, and contribute to, the content and delivery of the professional development programme is essential (Hayes, 2000; Loucks-Horsley et al., 2011; Owston et al., 2008). Having the teachers involved in this manner means that professional development is done ‘with’ rather than ‘to’ participants (Loucks-Horsley et al., 2011). As well as valuing teachers’ perspectives, the designing of a professional development programme needs to include authentic activities and situated learning, the establishment of professional learning communities and communities of practice (Triggs & John, 2004), as well as ensuring professional development can be sustained once the formal programme has concluded. Four areas to be included in the design of a professional development programme are discussed in the following sections.
9.4.1 The value of teachers’ perspectives

Giving teachers a voice in the design and content of continuing professional development means they have more ownership of the programme and more vested interest in the outcomes, particularly for improving student achievement. In particular, for this study, inviting ICTPD programme participants to voice their experiences, successes and/or concerns about integrating ICT into their classroom practices provided a means of understanding their approaches to ICT, and provided research to inform future professional development.

The analysis of the fifteen primary teachers’ explicit and implicit priorities regarding the use of ICT showed that in order for changes to occur in classroom practices, the participants had to appreciate and understand the need for any changes to occur while having concerns about, or barriers to, using ICT in their classroom practices addressed. These priorities signified the tensions between existing and new practices. The study revealed that the teachers resolved these tensions by avoiding ICT, using them in ways that served specific needs, or fully integrating their use. An example from this study was the change from using data projectors to the introduction of interactive whiteboards in classroom practices. Some teachers simply avoided the use of the interactive whiteboard altogether by not having one installed in their classroom. By avoiding the use of ICT in their classroom teaching and learning programme, a teacher does not need to change their pedagogical practices to accommodate a new strategy, thus eliminating one tension (Karasavvidis, 2009). Some teachers continued to use the interactive whiteboard in the same manner they had used a data projector (Bigum & Rowan, 2008; Martinovic & Zhang, 2012), for example, showing video clips, while other teachers embraced the affordance of having students work together to record, save, and share their work in a new way.

Karasavvidis (2009) contends, “the understanding of these tensions is critical to understanding teacher reluctance to integrate ICT[s] in their daily practices” (p.437). This study suggests that Karasavvidis’s contention should be qualified in that the opposite perspective is also critical in that understanding the connections would assist with understanding why some teachers embrace the integration of ICT into their classroom practices. In Alex and Hannah’s stories shared during their interviews, it was evident that they embraced the integration of ICT and saw the use
of ICT as a means of not only supporting, but empowering students in their learning, allowing them to do their learning anytime and anywhere and to demonstrate their learning in a different way. For teachers to have the confidence and competence to allow students to use ICT in such a way means that teachers need to have this way of using ICT modeled or supported in their classrooms. The need for participants to undertake authentic activities that are contextualised to their particular situation is discussed in the following section.

9.4.2 Authentic activities and situated learning

The participants in this study, with the exception of Tania, reported that the ICTPD programme effectively changed their pedagogical understanding and classroom practices. Participants reported that one factor in the success of the ICTPD programme was the use of authentic activities in context, such as having the facilitator work with students in a classroom with the teacher observing and/or being supported to integrate the use of ICT. Therefore, the findings of this study have implications for professional development programmes aimed at the effective integration of ICT in teachers’ classroom practices, and for professional development more widely. These implications are the focus of the forthcoming sections 9.5 (implications for pre-service and in-service professional development) and 9.6 (implications for professional development in other contexts).

9.4.3 Professional learning communities and communities of practice

For the participants, working together in a professional learning community provided opportunities to work with practitioners whom they would not have otherwise met. The professional development activities and resulting discussions shared in the professional learning community gave less experienced members a chance to grow professionally, while giving more experienced members an opportunity to build leadership skills as they shared their experience and expertise with their colleagues as was the case with Charlotte. Charlotte had not imagined herself as a leader in using ICT, but after completing the ICTPD programme, with the support of the principal, she developed expertise in the use of ICT in her classroom practices.

The development of professional learning communities also provided teachers with a reference group of other practitioners at the same level of primary school within their
school or cluster that they could work with in order to access a wider range of resources, strategies, and/or ideas than they could working on their own. As the participants in these professional learning communities developed confidence and expertise, they began to take into account the needs of their particular students and school communities. This meant that teachers could differentiate the use of ICT to better address the collective and/or individual needs of their students. Professional learning community members were able to turn to their own staff and school communities to be informed and motivated, rather than needing to involve the wider professional learning community. This fulfilled one of the ICTPD programme’s aims — that the staff of each school or cluster of schools improved their understandings of pedagogical knowledge and practices, thus improving teaching and learning programmes for their students. Given the situated nature of the implementation of change in a school, the building of capacity within a school is important for the change to occur and be sustained.

9.4.4 Sustained development

Better acknowledgement and understanding of teachers’ perceptions of professional development and how it affects their practices may increase the sustainability of professional development in ICT. It is, therefore, crucial that individual schools or clusters establish sustainability plans for professional development in the integration of ICT, and the provision of ICT resources, and make sure they continually research teachers’ perspectives on all these aspects. The self-reports of the participants in this study demonstrate how important teachers’ perspectives are in understanding whether the uptake of the content and practices of any professional development is effective or not. Any changes to classroom practices made as a result in participating in professional development need to be sustained in order for real change to occur.

In summary, this section has reported fifteen teachers’ insights into the design of meaningful professional development. In particular, it identified four aspects that these teachers believe need to be taken into account when designing a longer-term professional development programme. The aspects include valuing teachers’ perspectives to give them greater ownership of the programme, using authentic activities and place-based contexts, developing professional learning communities
and communities of practice, and having contingencies for sustaining the
development after the formal programme has concluded.

9.5 Implications for pre-service and in-service professional
development

This section outlines implications for schools, professional development facilitators, and initial teacher education providers, drawn from participants’ experiences of an ICTPD programme and the integration of ICT into their classroom practices over a period of eight years. In particular, it highlights how participants’ perspectives can inform the design of professional development programmes to address the participants’ individual and/or collective needs.

The extent to which teachers question their existing professional and pedagogical knowledge and practices is one of the challenges for designers of teachers’ professional development (Timperley & Alton-Lee, 2008). The resonance or dissonance between the content of professional development and teachers’ current values and beliefs about teaching and learning determines whether changes promoted by the professional development are adopted or rejected. For thirteen of the fifteen participants, the professional development resonated, to varying degrees, with their beliefs and they reported changes to their practices to integrate ICT into their classroom practices. Participants used ICT to enhance and/or diversify their strategies for teaching and used ICT with students to support their learning and to prepare them for the future.

For the two remaining participants there was a dissonance between their beliefs about teaching and learning and the integration of ICT into their classroom practices, which meant that their established practices, such as using a single use software program in their literacy programme, remained largely intact. ICT were used in their classroom practices but as a supplement to the activities for certain curriculum areas, such as literacy and numeracy, or used to support teachers’ administrative tasks, such as planning. This

The participants’ narratives showed that they acknowledged connections and collisions when faced with new ideas such as implementing BYOD policy into their established classroom practices, or when exposed to the perspectives of teachers
working in different contexts such as blended learning or team teaching situations in modern learning environments (also known as innovative learning environments). There was evidence that, after reflecting on their professional development experiences, activities or experiences that resonated with the participants, led them to modifying or changing their practices, for example, when higher order thinking skills and inquiry learning were included in their teaching and learning programmes or opportunities for students to use ICT on a regular basis.

Collisions, on the other hand, meant that established practices were more likely to be maintained. An example of this was Tania not making changes to her classroom programme because she was not provided with the evidence she sought that the use of ICT would improve the learning outcomes of her students. Tania reported that her existing practices allowed for a similar end product to be obtained but in significantly reduced time. For her, the use of ICT did not warrant the extra time that it took to achieve the same results.

These connections and collisions were evident in the differences between participants’ attitudes towards the use of ICT in classroom practices and were related to the following factors: access to equipment; year level taught; starting point of ICT use; and, level of continuing support.

Access to equipment was the most significant concern for most of the research participants. Participating in the ICTPD programme activities, but being unable to subsequently implement them because of limited access to resources was frustrating for the participants. Not having ICT readily available meant there were delays in the implementation of new strategies and practices, resulting in delays in the integration of ICT into classroom practices and, therefore, delays in achieving the desired change. While access to equipment had improved significantly over the eight years, in 2014 there were three teachers who still reported this as a concern.

According to the participants’ narratives, teachers in the Junior area of primary school were less inclined to integrate ICT fully because of the increased time required to do an activity using ICT compared with using traditional tools, such as pen and paper. The classroom management of Junior students using ICT was also
seen as a barrier while participants who taught at the Middle or Senior level of primary school did not mention this consideration.

The participants’ current experience and level of confidence in the use of ICT for administrative and classroom practices influenced the extent to which they integrated ICT. If participants regularly used ICT in their everyday lives and had greater confidence with using these, they were more likely to be willing to integrate ICT into their classroom practices.

Some participants’ career positions also had a bearing on the use of ICT in their classroom practices, with some mid- to late-career participants being reluctant to integrate ICT into their classroom practices, whereas others who were at similar points in their careers, reported that they embraced the integration of ICT and changed their classroom practices to a large extent or completely. Those participants who were in positions of responsibility, particularly those who were part of a school’s senior leadership team, influenced the use of ICT by other staff at their school. Three examples of this are Charlotte and Carol, who regularly led professional development in ICT for the staff at their schools and, Alex, who as the principal of his school, led by example in his use of and his enthusiasm for using ICT personally and professionally.

The level of support received by participants during and after the ICTPD programme influenced the integration of ICT into classroom practices. From the participants’ narratives, it was clear that teachers who had in-class support, such as a facilitator or outside expert to lead or assist with implementation of an activity or strategy experienced during the ICTPD programme, were more likely to sustain the change in their classroom practices than those without in-class support. Not all of the participants were receptive to or were ready for this level of in-class support at the time it was offered. In order to allow teachers to become comfortable with or ready for this level of support, it needs to be available on a continuing rather than one-off basis.

The implications for initial teacher education providers are that pre-service teachers need to not only have opportunities to develop their content knowledge, pedagogical knowledge, and technological knowledge, but also to develop their pedagogical
content knowledge and their technological pedagogical content knowledge (Larkin, Jamieson-Proctor, & Finger, 2012), as defined in Chapter 3, Table 3.2. Jamieson-Proctor, Finger & Albion (2010) caution “it should not be assumed that tomorrow’s teachers enter the profession with the appropriate confidence and capabilities” (p. 8). Pre-service teachers may know how to use a variety of ICT, but need to be shown how to use ICT in an educational context to support teaching and learning (Finger, Jamieson-Proctor, & Albion, 2010; Valtonen, T., Kukkonen, J., Kontkanen, S., Sormunen, K., Dillon, P., & Sointu, E., 2015). Learning about and understanding the pedagogy that underpins the use of ICT in classroom practices is important for pre-service teachers (Larkin et al., 2012). The ability to differentiate learning to cater for the diverse range of needs and interests of students is one of the affordances of using ICT.

As well as implications for pre-service and in-service professional development, this study also has possible implications for professional development in other contexts. These possibilities are discussed in the next section.

9.6 Implications for professional development in other contexts

The findings from this study may inform other programmes of professional development in the education sector, as well as professional development programmes in other professional contexts. This study demonstrated that teachers preferred professional development that delivered a coherent and focused professional development programme and included: learning activities and experiences situated in professional practice; professional discussions within the professional learning communities and communities of practice; opportunities to interact with and have input from other professionals; and, provision of opportunities and sufficient time to reflect on new practices and how these connected or collided with existing practices.

From the interviews, it can be argued that, for most participants their experience of professional development, as delivered through an ICTPD programme, included the above aspects and presented a coherent, focused programme of professional development on integrating ICT to improve participants’ classroom practices and student outcomes. The most important implication of this research for other contexts
is that it cannot be assumed that the professional development is having its intended
effect or that all participants are in fact starting from the same point. Instead, teachers
need to be asked if their professional development is meeting their needs, and, in
response, the professional development provider needs to be prepared to review and
change the programme.

Within professional development programmes, schools and other professional
development providers need to ensure that the activities provided for the participants
include time for them to develop expected understandings. It is also important that
professional development activities are authentic and contextualised to participants’
particular situations, and address individual and collective needs in order for them to
make informed decisions about making changes to and integrating innovations into
their existing practices.

9.7 Contributions and significance of the study
The contributions and significance of the study presented in this thesis come from
the perspectives presented in interviews conducted between 2006 and 2014 with
fifteen primary school teachers who had participated in an ICTPD programme. The
findings report participants’ overall perspectives and their significant insights into
their ICTPD programme experiences and the subsequent modifications or changes
made and/or sustained to their classroom practices. The participants were able to
expand on their answers and/or indicate the subsequent progression of their
technological pedagogical knowledge and practices. Part of the significance of this
research, from 2006 to 2014, is that it went beyond the evaluation reports of the
ICTPD Schools Cluster programme (see, for example Ham, 2008, 2009; Ham et al.,
2004, 2005, 2006), a major national initiative in New Zealand, and explored
teachers’ stories about their professional development experiences and the impact on
their classroom practices. While not the focus of this research, the findings provide
evidence of the efficacy of such an important national professional development
initiative with this study elaborating on its impact on classroom practices for fifteen
participants. The participants’ narratives of their ICTPD programme experiences —
what they appreciated most and least about the programme, their expectations, and
the contribution the programme made to their technological pedagogical knowledge
and classroom practices — provides professional development providers and facilitators with analyses to inform their future work.

A contribution this study makes to the literature on professional development is the importance of understanding and acknowledging teachers’ perspectives of professional development. The essential elements that professional development providers need to know in order to design effective professional development are: knowing what teachers expect to gain from professional development; what their self-identified needs and interests are; their current confidence and competence levels; what their pedagogical beliefs are and how these affect their receptiveness to new approaches and ideas; as well as the amount of support they will require to implement the desired improvements or changes.

A further contribution is that the findings demonstrate the value in giving teachers the opportunity to take ownership of the professional development and their input into the design of a professional development programme in order to effectively meet their needs and goals. Gaining an insight into what participants appreciate most and least about professional development, consideration of participants readiness for change, providing authentic and contextualised activities, and establishing sustainability plans could assist professional development providers in the design of effective professional development programmes (Twining, Raffaghelli, Albion, & Knezek, 2013)

The significance of this research is found in the nature of the study and the findings from the data over a period of eight years. The findings report the modifications or changes to classroom practices that participants have made and/or sustained over time. In order for teachers to make changes to their classroom practices, they need to appreciate the need for change, and be able to overcome any barriers. As well, the need for continuing professional development must be acknowledged and addressed in order for teachers to continue to develop their technological pedagogical knowledge and sustain or change their classroom practices to support and improve student achievement.

In reporting the participants’ narratives about their experiences of the ICTPD programme and the subsequent modifications or changes to their classroom
practices, these narratives may inform any other such national (or state/provincial) schemes of ICT professional development (and possibly other forms of professional development) and nations considering implementing such programmes.

Although this study makes contributions to the field of professional development design and the value of teachers’ perspectives, it is not without limitations. These limitations, as well as recommendations for future research, are the focus of the next section.

9.8 Limitations of the study and recommendations for future research

Limitations
This study examined the experiences of only fifteen primary teachers from four clusters in one geographical area in New Zealand and should not be construed to represent the experience of every teacher in schools of all levels throughout the country, as Knight (2012) cautions from the findings of her study. Countering the small number of participants or breadth is depth.

This section reflects upon three aspects of this study that had the potential to constrain the reported findings. The first limitation relates to the small number of participants from four clusters of schools in one geographical area in New Zealand. Within my in-depth study, it was necessary to limit it geographically, but the participants reflected typical ranges of gender (male and female) and teaching experience (from two to thirty plus years). The experiences of the fifteen participants cannot be generalised to all primary teachers in New Zealand, but the literature suggests that these teachers reflect, to some degree, what one may expect more broadly of the demographics of primary school teachers involved as research participants.

A second limitation was that the research was based on the participants’ perspectives and did not, for example, compare these with classroom observations and/or student achievement data. As the interviews took place in participants’ classrooms, some of the participants did share artefacts of their use of ICT in their classroom practices. This was done on a voluntary basis and, while these incidents were recorded in the transcripts of the interviews, did not inform the reported findings. It should be noted
that all participants were asked the same base set of questions to identify and report on common themes and sub-themes. Observational research would have required significant periods in each participant’s class, which was logistically impossible for the researcher given professional commitments and geographical limitations. Use of student achievement data was unlikely to have yielded significant useful evidence given the difficulties of isolating the variables associated with ICT and the methodological problems, and even ethical restrictions, of establishing non-ICT affected baseline data or control groups.

A third limitation is that the primary weakness of narrative research method is its retrospective nature (Clandinin, 2007; Clandinin & Huber, 2010). The participants were asked to recall information and opinions about the professional development and their experiences. The researcher relied on the participants’ recall of past events and their own perspectives to inform the study. The findings, however, have revealed how differently each participant engaged with the professional development. One of the study’s key findings suggests that professional development providers or facilitators cannot make assumptions about what participants will gain from the professional development and how, and to what extent, it will be implemented into participants’ classroom practices.

According to Avalos (2011), there is a constant need to study, experiment, discuss and reflect on what influences teachers’ professional development, the needs of their students, the expectations of education systems, teachers’ teaching contexts and the range of opportunities to learn that are available to teachers. The reported findings of this study demonstrated the commonalities, but also the differences in the fifteen teachers’ experiences of professional development, and how these changed, over a period of eight years.

This study does not claim to be exhaustive in identifying the factors that inhibit or support the integration of ICT into classroom practices. Rather, it focused attention on some of the factors that teachers reported inhibited or enabled them to expand the use of ICT in their classroom practices.
Future research
The impact of the use of ICT to support and enhance students’ learning is an area worthy of further empirical research, to further examine and understand the relationship between the integration of ICT into classroom practices and improved student achievement. Consideration could be given to conducting whole school research to look at incorporation of ICT, not just in the classroom, but also across the school, its community, and through its policies to gain a more detailed picture about the impact of the use of ICT on student achievement.

Building on this study, an area of inquiry to pursue would be the use of online ICT or social media to mediate the research of participants undertaking a professional development programme, through to implementing the new or amended practices into their classroom, and then continue to track their use of ICT beyond the initial implementation of the amended or changed practices. This would allow for the researcher to record the professional development activities undertaken and how these translate into teachers’ classroom practices. Additional information as to what does and does not change teachers’ classroom practices might emerge and the impact the professional development has on teachers’ practices. It would give a reference point for the participant and researcher to discuss as to why (or why not) the practices were adopted or rejected. Within such a study, a mix of unstructured and semi-structured questions could investigate participants’ viewpoints, and allow the researcher to pursue dialogue around their focus of inquiry.

A third area of future inquiry may be to conduct a longitudinal study that tracks the development of the use of ICT in the classroom practices of pre-service teachers through their initial teacher education programme and then continue to track these now beginning teachers into their first two years of teaching when they gain full registration as a teacher in New Zealand. This would allow researchers to look at the development of participants’ technological pedagogical content knowledge and how this translated into participants’ use of ICT in their classroom practices.

9.9 In conclusion
The main purpose of this study was to investigate the extent to which participation in a professional development programme on the integration of ICT had an impact on the classroom practices of fifteen New Zealand primary teachers. Teachers’ voices
were privileged to present the narratives about their experiences and perspectives of the ICTPD programme and how it impacted on their classroom practices. The reported findings reflect participants’ individual and collective insights around which aspects appeared to have supported and/or hindered changes to their classroom practices. The fifteen primary teachers acknowledged that the ICTPD programme challenged their beliefs and values about teaching and learning, scaffolded the integration of ICT into their pedagogical practices, helped develop pedagogical knowledge and practical skills in using ICT, and provided support in their implementation of ICT in the classroom.

This study highlights the complexity of the development of the technological pedagogical knowledge of fifteen New Zealand primary school teachers in the use of ICT and the extent to which this knowledge changed their classroom practices. The teachers reported that the sustained professional development programme allowed them to make informed choices about how, why and to what extent changes should be made to their classroom practices.

As evidenced across this thesis, the value of teachers’ perspectives in developing meaningful and practical professional development programmes to achieve change in or enhancement of classroom practices is essential. Professional development needs to be ongoing to support teachers in their endeavours to sustain the changes made to their professional practices to, ideally, improve the outcomes for their students.

This thesis reports on a study of fifteen primary school teachers’ perceptions of their experiences of a major national professional development programme in New Zealand on the integration of ICT into classroom practices. The research enabled the investigation of the teachers’ perspectives of the impact the programme had on their classroom practices, and reports on changes made to and sustained over an eight-year period, from 2006 to 2014. The impact the ICTPD programme had on the fifteen teachers making and sustaining changes to their classroom varied greatly. It appears that this variation depended on the school level the teachers taught, their pedagogical beliefs, and the access to and ongoing support in using ICT. The significance of its findings for New Zealand contributes to the literature on the use of ICT in primary teachers’ classroom practices and approaches to professional development. It yields significant data of interest to schools, teacher education providers, and professional
development facilitators, particularly in regards to the design of professional development programmes to address participants’ individual and/or collective needs.
CHAPTER NINE: CONCLUSION AND IMPLICATIONS
REFERENCES


REFERENCES


REFERENCES

Education Association Conference 2006 (pp. 51-58). Freemantle, Australia: ATEA.


REFERENCES


REFERENCES


REFERENCES


APPENDICES
Appendix 1
Deakin University (DUHREC) Approval: EC: 179-2006

Research Services
Office of the Deputy Vice-Chancellor (Research) (Melbourne Campus)

MEMORANDUM

TO: Ms Sandra Williamson-Leadley
FROM: Secretary, Deakin University Human Research Ethics Committee (DU-HREC)
DATE: 6 October 2006

SUBJECT: PROJECT: EC 179-2006 (Please quote this project number in future communication.)
INFORMATION AND COMMUNICATION TECHNOLOGIES, PROFESSIONAL DEVELOPMENT AND CLASSROOM PRACTICES: NEW ZEALAND PRIMARY TEACHERS’ PERSPECTIVES

This application was considered by Deakin University HREC on 7 August 2006.

APPROVAL HAS BEEN GIVEN FOR SANDRA WILLIAMSON-LEADLEY, UNDER THE SUPERVISION OF DR RICHARD JOHNSON, SCHOOL OF EDUCATION, TO UNDERTAKE THIS PROJECT FOR A THREE YEAR PERIOD FROM 6 OCTOBER 2006.

The approval given by the Deakin University Human Research Ethics Committee is given only for the project and for the period as stated in the approval. It is your responsibility to contact the Secretary immediately should any of the following occur:

• Serious or unexpected adverse effects on the participants
• Any proposed changes in the protocol, including extensions of time.
• Any events which might affect the continuing ethical acceptability of the project.
• The project is discontinued before the expected date of completion.
• Modifications are requested by other HREC’s.

In addition you will be required to report on the progress of your project at least once every year and at the conclusion of the project. Failure to report as required will result in suspension of your approval to proceed with the project.

Vicki Xafis
Secretary, DU-HREC
(03) 9251 7123
Appendix 2
PLS Statement & Consent Form to CORE Directors

DEAKIN UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE
PLAIN LANGUAGE STATEMENT for CORE EDUCATION LTD

Dear Directors of CORE Education Ltd

My name is Sandra Williamson-Leadley and, as you are aware, I am currently enrolled in a PhD in Education at Deakin University in Melbourne, Australia under the supervision of Dr Richard Johnson (Principal Supervisor) and Dr Paul Nicholson (Associate Supervisor), both from the Faculty of Education at Deakin University. I am conducting a research project that investigates the impact information and communication technologies-focused professional development has on primary teachers' classroom practices. The aims of the research are to examine:

• The nature of the professional development undertaken by primary school teachers in the use of information and communication technologies;
• How this professional development impacts on New Zealand primary teachers' classroom practices; and,
• What this professional development means in terms of teachers' professional development journeys.

I would like to request that CORE Education send out letters to the End-of-Project (2004-2006 cohort) survey respondents to consent to their name and survey responses be passed on to me to identify potential participants for this research. My intention is to interview primary school teachers' who have participated in the information and communication technologies professional development programme about the nature of the professional development activities undertaken, their beliefs about the integration of information and communication technologies into their classroom programme and the extent to which their classroom practices have changed as a result of participating in this professional development. I would then interview these same teachers 12 months later on the same topics to see if there have been any changes and the reasons for these changes. Each of these interviews would take approximately 60 minutes and would be set up at a mutually convenient time and place. The interviews will be audio taped and transcribed for analysis. The transcripts will be returned to the teachers so they can ensure it is an accurate representation of what was said.

If you decide to grant this request, you would need to be willing to:

• Send out letters to the respondents to the End-of-Project (2004-2006 cohort) survey respondents to gain permission for their names and survey responses to be passed on to me for the purpose of identify potential participants for this research study. I would request the use of any further information from the survey from the individual participants.

• Once permission from the respondents is gained, allow me to access their raw data from the End-of-Project (2004-2006 cohort) survey

All information collected in this research will be treated with the strictest confidence and will be kept in a locked cabinet in my home for six years in accordance with Deakin University regulations, after which time it will be securely destroyed if it is
no longer in use. The school, cluster and teacher will not be identified by name and no details that may identify the school or participants will be used. Pseudonyms will be used in any reporting of the research, however, while I can assure anonymity in general, I cannot guarantee confidentiality from their colleagues within the school who may know they have participated in this research. The research data will only be seen by the individual teachers, my supervisors from Deakin University and myself. At the end of the project I intend to send CORE Education Ltd a report of some of the findings of my research.

You are under no obligation to agree to grant this request for this research. Apart from allowing me to access the raw data from the survey, if you wish, you will not be asked to carry out any additional tasks related to this project.

The findings of my research will be mainly documented in a doctoral thesis submitted to Deakin University as a requirement of the PhD, but may also be published in articles in education journals, or presented at conferences. The data collected for this research project will not be shared with CORE Education Ltd as part of the longitudinal ICTPD evaluation study or for the report to the Ministry of Education on the 2004-2006 cohort.

I am happy to answer any questions you may have about this research and can be contacted on the following:
e-mail: sleadley@xtra.co.nz
Mobile phone: (021) 336-378
Home phone: (03) 383-5452
Work phone: (03) 379-0715

For further information you may contact my principal supervisor, Dr Richard Johnson, at Deakin University, 221 Burwood Highways, Melbourne, Victoria 3125, Australia on rjj@deakin.edu.au

The Deakin University Human Research Ethics Committee has reviewed and approved this study.

Thank you for taking the time to read and consider this request. If you are happy to grant this request for this research project, please complete the attached consent letter and return it in the enclosed envelope.

Yours sincerely

Sandra Williamson-Leadley
Senior Research Officer
CORE Education Ltd
Phone: (03) 379-0715 (work)
Email: sandra.wl@core-ed.net

Should you have any concerns about the conduct of this research project, please contact the Secretary, Ethics Committee, Research Services Division, Deakin University, 221 Burwood Highway, BURWOOD VIC 3125. Tel (03) 9251 7123 (International +61 3 9251 7123) or email research-ethics@deakin.edu.au.
DEAKIN UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE
CONSENT FORM for CORE Education Ltd:

I, __________________________________________________________________________ of CORE Education Ltd

Hereby consent to Sandra Williamson-Leadley using End-of-Project (2004-2006 cohort) survey data, for those respondents who have consented, for a research study and I understand that the purpose of the research is to investigate the impact that taking part in Information and Communication Technologies-focused professional development has had on New Zealand primary school teachers' professional learning and the extent to which participation in the programme has caused them to change their classroom practices.

I acknowledge

1. That the aims, methods, and anticipated benefits, and possible risks/hazards of the research study, have been explained to me.

2. That I voluntarily and freely give my consent for the survey data to be released for those respondents who have given consent to have their names and survey responses passed on to Sandra Williamson-Leadley for the purpose of identifying potential participants.

3. I understand that aggregated results will be used for research purposes and may be reported in scientific and academic journals.

4. Individual results will not be released to any person except at my request and on my authorisation.

Signature: ____________________________________________________________________ Date: __________________________________________________________________________

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Appendix 3
Letter from CORE to Potential Study Participants

Dear ______________________________

Thank you for participating in the recent 2004 – 2006 ICTPD Cluster Schools Programme End of Project survey. Your response is greatly appreciated and will assist the Cluster Facilitator and Programme Director to identify the ‘next steps’ for your cluster and help identify national trends for the Ministry of Education to base future decisions regarding professional development in ICT on.

One of our senior researchers, Sandra Williamson-Leadley, is undertaking doctoral studies through Deakin University in Australia. Her research project is examining the professional development in ICT undertaken by Primary School teachers and the extent to which their classroom practices change as a result of taking part in the ICTPD programme.

An important part of her research project involves interviewing a small group of teachers with a range of education experiences within the cluster programme, from amongst those who have responded to the end-of-project survey, to find out about their experiences of taking part in the ICTPD programme and the extent to which participating in this programme changed their classroom practices. This letter is to invite you to register your willingness to have Sandra contact you regarding possible participation in her project and to permit CORE Education Ltd to pass on your responses to the End-of-Project survey to Sandra.

Your involvement in Sandra’s project would mean taking part in an interview of approximately one hour at the end of 2006/early 2007 and another interview of approximately one hour at the end of 2007/early 2008. The information you provide will be kept confidential to Sandra and her research supervisors. It will not be accessible by anyone at your school, anyone at CORE Education Ltd or anyone involved in the cluster programme. You will not be identified by name in any writing up of the project or presentations on this research.

If you are willing for us to pass on your details and survey responses to Sandra, you are invited to complete the slip below and mail it into CORE Education Ltd in the stamped, self-addressed envelope attached. You will be then be contacted by Sandra to arrange an interview at a mutually convenient time. In the meantime, if you have any questions, please do not hesitate to contact me at CORE Education Ltd or Sandra at (03) 383-5452 or sleadley@xtra.co.nz.

Thank you for your consideration of this matter.

Yours faithfully,

Dr Vince Ham
Director, Research
CORE Education Ltd
I am willing to have my name and End of Project survey responses passed on to Sandra Williamson-Leadley and agree to have her contact me about possibly participating in her research project.

Signed: _________________________________ Date: ______________________

Name: ______________________________________________________ (please print)

School: ________________________________ Cluster: ____________________

School phone no: ________________________ Home phone no: _____________

Best time to contact you:
Before school   After school   At home in evening   Weekend
Appendix 4  
ICTPD End-of-Project Survey for 2004-2006 cohort

ICTPD School Clusters Professional Development Programme  
2004 – 2006 Clusters  
END-OF-PROJECT EVALUATION

This questionnaire is being distributed to all teachers who have been involved in the ICT School Clusters Professional Development Programme, so that you may contribute to the end-of-project evaluation of the Programme. It is part of an ongoing, independent research project on the ICTPD School Clusters.

Individually attributable responses will be kept strictly confidential to the research team, though generalised results, quotations and statistics may be published in aggregated form.

Please seal your completed questionnaire in the envelope provided, write your name and school on the back of the envelope, and return the sealed envelope to your cluster facilitator before Wednesday 13 September 2006

DEMOGRAPHIC

Cluster Name or Lead School: ____________________________

Your Name: ____________________________

(Needed for comparison with the baseline survey done at the beginning of the project)

School: ____________________________

(Needed for comparison with baseline survey)

Gender: ☐ Female ☐ Male

School Sector: ☐ Primary ☐ Secondary ☐ Both

Length/Duration of your involvement in ICTPD Programme: Indicate the time span over which you received active ICTPD support (workshops, facilitator visits, conferences, seminars, etc) as part of the cluster programme.

☐ 0-6 mths ☐ 7-12 mths ☐ 13-18 mths
☐ 19-24 mths ☐ 25-30 mths ☐ 31-36 mths

Do you have a laptop under the TELA scheme? ☐ Yes ☐ No

If yes, how long have you had a laptop under the scheme? ☐ 0-6 mths ☐ 7-12 mths ☐ 13-18 mths
☐ 19-24 mths ☐ 25-30 mths ☐ ≥31 mths

THE ICTPD CLUSTER PROFESSIONAL DEVELOPMENT PROGRAMME

1. Please indicate your level (1-5 scale) of confidence in relation to personal and classroom use of ICTs with reference to BOTHT BEFORE and AFTER taking part in the ICTPD Programme. Enter a rating 1,2,3,4 or 5 in EACH column. (See example)

   1= Anxious  2= Not confident  3= Neutral  4= Confident  5= Very confident

<table>
<thead>
<tr>
<th>Confidence about using ICTs</th>
<th>Before PD</th>
<th>After PD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a How confident were/are you about using ICTs with your classes?</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>b How confident were/are you about using ICTs personally?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Please indicate your level (1-5 scale) of competence with each of the following ICTs BOTHT BEFORE and AFTER taking part in the ICTPD programme. Enter a rating 1,2,3,4 or 5 in EACH column

   1= Very low/None  2= Low  3= Moderate  4= High  5= Very high

<table>
<thead>
<tr>
<th>ICT</th>
<th>Before PD</th>
<th>After PD</th>
</tr>
</thead>
<tbody>
<tr>
<td>a Basic Computer Operation (running programmes, trouble shooting, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b File Management (manipulation of documents, folders, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c Word Processing (manipulation of text – programs such as Word)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d Spreadsheet (create charts/graphs, use for record keeping purposes – programs such as Excel)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e Database (use pre-made databases such as library catalogue database or create own databases)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f Graphics (manipulation of pictures and images – programs such as KidPix, Photoshop, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g Internet (searching and/or website design)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h Telecommunications (email, chat, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i Presentation / Multimedia (incorporating sound, movies, etc.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. Please indicate the frequency with which you used ICT BEFORE and AFTER the ICTPD programme for the two purposes below. Enter a rating 1,2,3,4 or 5 in EACH column.

1 = Never  2 = Rarely  3 = Sometimes  4 = Often  5 = Always

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Before PD</th>
<th>After PD</th>
</tr>
</thead>
<tbody>
<tr>
<td>a School administration e.g. reports, marks and grades, attendance etc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b Finding or producing resources for lessons</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. To what extent has ICT been integrated into your units of work? (Please answer with reference to both BEFORE and AFTER the ICTPD programme. Please enter a rating 1, 2, 3, 4, 5 in the relevant box in both columns).

1. No units  2. One or two units  3. Several units  4. Most units  5. All or almost all units

<table>
<thead>
<tr>
<th>Extent of ICT Integration</th>
<th>Before PD</th>
<th>After PD</th>
</tr>
</thead>
<tbody>
<tr>
<td>What proportion of your units of work contains ICT based earning activities?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. a) To what extent have your classroom practices changed as a result of your participation in the ICTPD programme? (Please tick ONE box only).

☐ Not at all  ☐ Very little  ☐ To some extent  ☐ To a large extent  ☐ Completely changed

b) Describe these changes (positive and/or negative) to your classroom practices.

Positive: 

Negative: 

6. a) To what extent has the ICTPD programme contributed to your understanding of teaching and learning generally? (Please tick ONE box only).

☐ Not at all  ☐ Confirmed current ideas/understandings about teaching and learning  ☐ Contributed some new ideas about teaching and learning  ☐ Provided a whole new approach to teaching and learning

b) Describe how the ICTPD programme has contributed to your understanding of teaching and learning in general.


d) To what extent has the ICTPD programme contributed to your understanding of teaching and learning generally? (Please tick ONE box only).

7. Describe up to 5 different ICT based activities that your students have engaged in during the last year?

Identify the subject or learning area (e.g. Health, Science, integrated curriculum), the type of ICT/software you used (e.g. internet, word processor, digital camera), and the learning outcomes for students.

<table>
<thead>
<tr>
<th>Essential Learning Area</th>
<th>Software / ICT</th>
<th>Learning Outcomes for Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.g. English/Languages</td>
<td>e.g. Word Processor, Digital camera</td>
<td>e.g. Presenting different points of view</td>
</tr>
<tr>
<td>e.g. Science</td>
<td>e.g. CD Rom tutorial, Spreadsheet</td>
<td>e.g. Work on Motion formulae problems</td>
</tr>
<tr>
<td>a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8. How often, on average, did your students use ICT based activities where the following constituted the main purpose of the activity? Please indicate a frequency of use for both the year BEFORE the ICTPD programme, and NOW in this last year. Use the 1-5 scale below

1 = Not at all   2 = Once or twice in the year   3 = Once or twice a term
4 = Once or twice a week   5 = Daily/almost daily

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Activity</th>
<th>Before PD</th>
<th>Now</th>
</tr>
</thead>
</table>
| a Communication | Text and picture presentation: eg. making posters, journals, written stories etc
Multimedia presentations: eg. making slideshow; presenting results of project using PowerPoint or Hyperstudio etc
Online interaction: eg. emailing or chatting with experts/other students on a current topic or a problem. Belonging to e-club or contributing to online communities | | |
| b Creativity | e.g. creative writing, designing and making websites, editing and composing music, video etc. creativity focus | | |
| c Information gathering/processing | e.g. accessing or searching for information on the internet, accessing school library electronic catalogue, or data logging using external devices connected to computers | | |
| d Problem solving | e.g. calculating/analysing data, working through concept simulations on computer, designing or developing their own spreadsheet or database to solve a problem; interactive fiction | | |
| e Curriculum practice | e.g. learning from tutoring software, reinforcing pre-taught knowledge or practicing skills; drill and practice | | |
| f Technical skills | e.g cut and paste, file management, importing digital photographs, key board skills, how to use Inspiration | | |
| g Collaborative learning and social interaction | e.g. working in groups to solve a problem using spreadsheets etc, collaborating on DTP projects etc | | |
| h Motivation/Reward/Engagement | e.g. working on a CD Rom or game as a reward | | |

9. To what extent do you think you have effectively integrated ICTs into your classroom teaching and learning? (Please tick ONE box only).
- Not at all
- Very little
- To some extent
- To a large extent
- Completely

10. What were the main three benefits you observed for students/learners in their use of ICTs?

a)

b)

c)

11 To what extent were your goals/expectations met by ICTPD programme? Please answer with regard to the 5 types of goals below, using the following five point scale:

1 = Not met   2 = Partially met   3 = Largely met   4 = Fully met   5 = Exceeded

<table>
<thead>
<tr>
<th>Type of goal</th>
<th>Extent to which goal met</th>
</tr>
</thead>
<tbody>
<tr>
<td>a Technical skill development</td>
<td></td>
</tr>
<tr>
<td>b Ideas for using ICTs with classes</td>
<td></td>
</tr>
<tr>
<td>c Quality teaching and learning enhancement in general</td>
<td></td>
</tr>
<tr>
<td>d Using ICTs for administration</td>
<td></td>
</tr>
<tr>
<td>e Gaining of Qualification</td>
<td></td>
</tr>
</tbody>
</table>
12. Which aspects of the last two terms of your ICTPD school cluster programme have you:

a) Most appreciated?

b) Least appreciated?

13. a) To what extent has any increase in your use of ICTs with classes over the last three years been attributable to the ICTPD Professional Development Programme? Please tick ONE box only

☐ Not at all attributable  ☐ Partly attributable  ☐ Largely attributable  ☐ Completely attributable

b) If other factors were involved, what were they?

14. What are your greatest current concerns about using ICTs in schools? Please rate each of the following as it applies to you, on a 1-3 scale

<table>
<thead>
<tr>
<th></th>
<th>1 = No concern</th>
<th>2 = Some concern</th>
<th>3 = Significant concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Access to equipment for my students’ use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>Insufficient technical support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>Making the links between ICTs and quality teaching and learning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d</td>
<td>Lack of ideas on how to use ICTs with classes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e</td>
<td>Lack of time to cope with it all</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f</td>
<td>Need for ongoing professional development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g</td>
<td>Keeping up-to-date with required skills and knowledge on ICT developments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h</td>
<td>Technical reliability/equipment breakdown</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i</td>
<td>Others: Please specify</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15. a) How significant has the ICTPD Cluster Programme been in your overall development as a teacher?

☐ Not significant  ☐ Slightly significant  ☐ Somewhat significant  ☐ Very significant

b) Comments:

Thank you for your participation in the ICTPD Cluster programme and for completing this evaluation.

Please seal your completed questionnaire in the envelope provided, write your name and school on the back of the envelope, and return the sealed envelope to your cluster facilitator before Wednesday 13 September 2006

Queries or comments regarding this questionnaire should be addressed to:
Hasan Toubst or Sandra Williamson-Leadley,
CORE Education Ltd,
Cnr Manchester & Armagh Sts,
P O Box 13678, Christchurch 8141
Tel (03) 379 0715
Email: hasan@core-ed.net or sandra.wl@ccoe-ed.net
Appendix 5
PLS Statement for Principals

DEAKIN UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE
PLAIN LANGUAGE STATEMENT for PRINCIPALS

Dear Principal

My name is Sandra Williamson-Leadley and I am a senior research officer at CORE Education Ltd. I am also currently enrolled in a PhD in Education at Deakin University in Melbourne, Australia under the supervision of Dr Richard Johnson (Principal Supervisor) and Dr Paul Nicholson (Associate Supervisor), both from the Faculty of Education at Deakin University. I am conducting a research project that investigates the impact information and communication technologies-focused professional development has on primary teachers' classroom practices. The aims of the research are to examine:

- The nature of the professional development undertaken by primary school teachers in the use of information and communication technologies;
- How this professional development impacts on New Zealand primary teachers' classroom practices; and,
- What this professional development means in terms of teachers' professional development journeys.

Teachers at your school have given permission to CORE Education Ltd to have their names and ICTPD End of Project survey data released to me. This is to allow me to contact them regarding potentially participating in this research. My intention is to interview primary school teachers’ (who represent a mix of length of teaching experience, year level currently teaching at and gender) who have participated in the information and communication technologies professional development programme about the nature of the professional development activities undertaken, their beliefs about the integration of information and communication technologies into their classroom programme and the extent to which their classroom practices have changed as a result of participating in this professional development. I would then interview these same teachers 12 months later on the same topics to see if there have been any changes and the reasons for these changes. Each of these interviews would take approximately 60 minutes and would be set up at a mutually convenient time and place. The interviews will be audio taped and transcribed for analysis. The transcripts will be returned to the teachers so they can ensure it is an accurate representation of what was said.

All information collected in this research will be treated with the strictest confidence and will be kept Deakin University for six years in accordance with Deakin University regulations, after which time it will be securely destroyed if it is no longer in use. The school, cluster and teacher will not be identified by name and no details that may identify the school or participants will be used. Pseudonyms will be used in any reporting of the research, however, while I can assure anonymity in general, I cannot guarantee confidentiality from their colleagues within the school who may know they have participated in this research. The research data will only be seen by the individual teachers, my supervisors from Deakin University and myself. At the end of the project I intend to send the participants a report of some of the findings of my research.

The teachers are under no obligation to agree to participate in this research. If they agree to participate, they are free to withdraw at any time and for any reason throughout the duration of the research and the information they have contributed will not be used. The teachers will not be disadvantaged by participating or not participating in this research. The data collected for this research project will not be shared with CORE Education Ltd as part of the longitudinal ICTPD evaluation study.
or for the report to the Ministry of Education on the 2004-2006 cohort. Apart from participating in the interviews and reading over the subsequent transcripts, if they wish, the teachers will not be asked to carry out any additional tasks related to this project.

The findings of my research will be mainly documented in a doctoral thesis submitted to Deakin University as a requirement of the PhD, but may also be published in articles in education journals, or presented at conferences.

I am happy to answer any questions you may have about this research and can be contacted on the following:
e-mail: sandra.wl@core-ed.net
Mobile phone: (021) 336-378
Home phone: (03) 383-5452
Work phone: (03) 379-0715

For further information you may contact my principal supervisor, Dr Richard Johnson, at Deakin University, 221 Burwood Highways, Melbourne, Victoria 3125, Australia on rjj@deakin.edu.au

The Deakin University Human Research Ethics Committee has reviewed and approved this study.

Thank you for taking the time to read about my research project and the potential involvement of members of your staff.

Yours sincerely

Sandra Williamson-Leadley
Senior Research Officer
CORE Education Ltd
Phone: (03) 379-0715 (work)
Email: sandra.wl@core-ed.net

Should you have any concerns about the conduct of this research project, please contact the Secretary, Ethics Committee, Research Services Division, Deakin University, 221 Burwood Highway, BURWOOD VIC 3125. Tel (03) 9251 7123 (International +61 3 9251 7123) or email research-ethics@deakin.edu.au and quote Project: EC 179-2006.
Appendix 6
PLS Statement and Consent Forms for Study Participants

DEAKIN UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE
PLAIN LANGUAGE STATEMENT for TEACHERS

Dear [Participant’s name]

My name is Sandra Williamson-Leadley and I am a senior research officer at CORE Education Ltd. I am currently enrolled in a PhD in Education at Deakin University in Melbourne, Australia under the supervision of Dr Richard Johnson (Principal Supervisor) and Dr Paul Nicholson (Associate Supervisor), both from the Faculty of Education at Deakin University. I am conducting a research project that investigates the impact Information and Communication Technologies-focused professional development has on primary teachers' classroom practices.

The aims of the research are to examine:

• The nature of the professional development undertaken by primary school teachers in the use of information and communication technologies;
• How this professional development impacts on New Zealand primary teachers' classroom practices; and,
• What this professional development means in terms of teachers' professional development journeys.

Thank you for allowing CORE Education Ltd to pass on your name and ICTPD End of Project survey response to me. I would like to invite you to consider participating in the abovementioned research. My intention is to interview primary school teachers (who represent a mix of length of teaching experience, year level currently teaching at and gender) who have participated in the information and communication technologies professional development programme about the nature of the professional development activities undertaken, your beliefs about the integration of information and communication technologies into your classroom programme and the extent to which your classroom practices have changed as a result of participating in this professional development. I would then interview these same teachers 12 months later on the same topics to see if there have been any changes and the reasons for these changes. Each of these interviews would take approximately 60 minutes and would be set up at a mutually convenient time and place. The interviews will be audio taped and transcribed for analysis. The transcripts will be returned to you so you can ensure it is an accurate representation of what was said.

If you decide to participate, you would need to be willing to:

• Be interviewed about your perspective of the ICT-focused professional development activities that you participated in, your beliefs about the integration of ICT into your classroom programme, and the changes, if any, you have made to your classroom programme. This interview would take approximately 60 minutes and would be set up for a mutually convenient time between December 2006 and February 2007.
• Be interviewed a second time (approximately 12 months after the first interview) about your perspective of the ICT-focused professional development activities that you participated in, your beliefs about the integration of ICT into your classroom programme, and the changes, if any, you have made to your classroom programme. This interview would take approximately 60 minutes and would be set up for a mutually convenient time between December 2007 and February 2008.

All information collected in this research will be treated with the strictest confidence and will be kept in at Deakin University in accordance with Deakin University regulations, after which time it will be securely destroyed if it is no longer in use. The school, cluster and you will not be identified by name and no details that may identify the school or participants will be used. Pseudonyms will be used in any reporting of the research, however, while I can assure anonymity in general, I cannot guarantee confidentiality from your colleagues within the school who may know you have participated in this research. The research data will only be seen by you, my supervisors from Deakin University and myself. At the end of the
I intend to send you a report of some of the findings of my research.

You are under no obligation to agree to participate in this research. If you agree to participate, you are free to withdraw at any time and for any reason throughout the duration of the research and the information you have contributed will not be used. You will not be disadvantaged by participating or not participating in this research. Apart from participating in the interviews and reading over the subsequent transcripts, if you wish, you will not be asked to carry out any additional tasks related to this project. The data collected for this research project will not be shared with CORE Education Ltd as part of the longitudinal ICTPD evaluation study or for the report to the Ministry of Education on the 2004-2006 cohort.

The findings of my research will be mainly documented in a doctoral thesis submitted to Deakin University as a requirement of the PhD, but may also be published in articles in education journals, or presented at conferences.

I am happy to answer any questions you may have about this research and can be contacted on the following:
e-mail: sleadley@xtra.co.nz
Mobile phone: (021) 336-378
Home phone: (03) 383-5452
Work phone: (03) 379-0715

For further information you may contact my principal supervisor, Dr Richard Johnson, at Deakin University, 221 Burwood Highways, Melbourne, Victoria 3125, Australia on rjj@deakin.edu.au

The Deakin University Human Research Ethics Committee has reviewed and approved this study.

Thank you for taking the time to read and consider this request. If you are happy to be part of this research project, please complete the attached consent letter and return it in the enclosed envelope.

Yours sincerely

Sandra Williamson-Leadley
Senior Research Officer
CORE Education Ltd
Phone: (03) 379-0715 (work)
Email: sandra.wl@core-ed.net

Should you have any concerns about the conduct of this research project, please contact the Secretary, Ethics Committee, Research Services Division, Deakin University, 221 Burwood Highway, BURWOOD VIC 3125. Tel (03) 9251 7123 (International +61 3 9251 7123) or email research-ethics@deakin.edu.au and quote Project: EC 179-2006.
I, ________________________________ of __________________________

Hereby consent to be a subject of a human research study to be undertaken by Sandra Williamson-Leadley

and I understand that the purpose of the research is to investigate the impact that taking part in information and communication technologies-focused professional development has had on New Zealand primary school teachers' professional learning and the extent to which participation in the programme has caused them to change their classroom practices.

I acknowledge

1. That the aims, methods, and anticipated benefits, and possible risks/hazards of the research study, have been explained to me.

2. That I voluntarily and freely give my consent to my participation in such research study and to participate in two 60-minute interviews (12 months apart) that will be audio taped for research purposes.

3. I understand that aggregated results will be used for research purposes and may be reported in scientific and academic journals.

4. Individual results will not be released to any person except at my request and on my authorisation.

5. That I am free to withdraw my consent at any time during the study, in which event my participation in the research study will immediately cease and any information obtained from me will not be used.

Signature:                                                                             Date:
Appendix 7
2006 Interview Questions

- How would you describe your level of confidence in using ICT personally?
- How would you describe your level of confidence in using ICT in your classroom programme?
- How would you describe your skills level in using ICT? What applications and/or equipment do you feel confident in using?
- What ICT activities have you undertaken in your classroom?
- Thinking about the ICTPD programme you have been through, tell me about the various professional development activities you participated in.
- What input did you have in setting up the professional development programme?
- Did you have a choice about taking part in the ICTPD programme?
- How did you feel about being required to undertake professional development in the use of ICT?
- In your survey you indicated that you felt that your classroom practices had changed completely / to a large extent / to some extent / very little. What changes have you made to your classroom practices that you had in place before participating in the ICTPD programme?
- What do you see as being the positive changes to your classroom practices?
- Have there been any negative effects on your classroom practices? If there has, please describe these.
- In your survey response, you indicated that you had effectively integrated ICT into your classroom teaching and learning (very little/to some extent/to a large extent/completely). I would like to ask you to elaborate on your answer and, in particular, what makes you feel that this is the extent of your integration of ICT?
- What aspects of the ICTPD programme that you have participated in have you appreciated the most and why?
- What aspects of the ICTPD programme that you have participated in have you appreciated the least and why?
- What do you see as the main benefits of integrating ICT into your classroom practices? If there any, please describe these.
- What do you see as the negative aspects of using ICT into your classroom practices? If there any, please describe these.
- What were your expectations of the ICTPD programme that was provided by your cluster? Developing technical skills; Generating ideas for using ICT within the classroom; Enhancing quality of teaching and learning in general; Using ICT for administration; and, Gaining a qualification.
- To what extent were your expectations of the ICTPD programme met?
• What barriers to or concerns about integrating ICT into your classroom practices? If there any, please describe these.

• To what extent has any increase in your use of ICT with classes been attributable to the ICTPD programme? Not at all, Partly attributable, Largely attributable, Completely attributable.

• To what extent has the ICTPD programme you participated in contributed to your understanding of learning and teaching? Not at all, Confirmed ideas/understandings, Contributed some new ideas, Whole new approach. Please describe the contributions that have been made, if any.

• What do you feel you still need to have addressed in your professional development to utilise ICT in your classroom, if anything?

• How do you see these needs being addressed and supported now that the ICTPD contract is finished?

• What do you see as the next steps of your professional learning journey?

• Is there anything else you wish to tell about your professional development experience or classroom practices that you haven’t had an opportunity to?
Appendix 8
2007 Interview Questions

A year after the completion of the ICT Professional Development programme:

- How would you describe your level of confidence in using ICT personally now?
- What types of programmes/functions do you use the computer for in regards to personal use/administration?
- How would you describe your level of confidence in using ICT in your classroom programme now?
- Would you say that your skill level in using ICT has increased/remained the same/decreased in the year since completing the ICTPD programme? Why do you think this way?
- What ICT activities have you undertaken in your classroom in the last year?
- Do you have adequate ICT equipment at your school to undertake the activities you want to with your class? If not, what other equipment would you like to have?
- How do you feel now about being required to undertake professional development in the use of ICT?
- In the previous interview you indicated that you felt that you classroom practices had changed completely / to a large extent / to some extent / very little. What changes have you made to your classroom practices in the year since taking part in the ICTPD programme?
- What do you see as being the positive changes to your classroom practices?
- Have there been any negative effects on your classroom practices? If there has, please describe these.
- To what extent (not at all/very little/to some extent/to a large extent/completely) do you now feel you have integrated ICT into your classroom practices. Why do you think this way?
- What aspects of the ICTPD programme that you have participated in have you appreciated the most and why?
- What aspects of the ICTPD programme that you have participated in have you appreciated the least and why?
- What do you now see as the main benefits of integrating ICT into your classroom practices? If there any, please describe these.
- What do you see as the negative aspects of integrating ICT into your classroom practices? If there any, please describe these.
- What were your expectations of the school in regards to continued support/PD in regards to using ICT in your classroom teaching and learning programme?
- To what extent were your expectations of continued support/PD by your school met?
APPENDICES

- What support, if any, has been provided by your school?
- What support would you like to see in place at your school?
- To what extent do you still have contact with other teachers who were involved in the ICTPD programme from other schools that were in your cluster (no contact/very little contact/some contact/regular contact)?
- What barriers to or concerns about integrating ICT into your classroom practices? If there any, please describe these.
- To what extent has any increase in your use of ICT with classes been attributable to the ICTPD programme? Not at all, Partly attributable, Largely attributable, Completely attributable.
- To what extent has the ICTPD programme you participated in contributed to your understanding of learning and teaching? Not at all, Confirmed ideas/understandings, Contributed some new ideas, Whole new approach. Please describe the contributions that have been made, if any.
- What do you feel you still need to have addressed in your professional development to utilise ICT in your classroom, if anything?
- How do you see these needs being addressed and supported in the future?
- Reflecting a year on from completing the ICTPD programme, how would you describe your PD experience for you?
- What do you see as the next steps of your professional learning journey?
- If you were able to give advice to teachers who were about to start on this PD programme, what would be the main points you would make?
- If you were able to give advice to the Ministry about the ICTPD programme, what would be the main points you would make?
- Is there anything else you wish to tell about your professional development experience or classroom practices that you haven’t had an opportunity to?
Appendix 9
2014 Deakin University Human Ethics Advisory Group Approval: HAE-14-067

Memorandum

To: Prof Terry Evans
   School of Education

From: Faculty of Arts & Education Human Ethics Advisory Group (HEAG)

Date: 25 July, 2014

Subject: HAE-14-067
   New Zealand Primary Teachers' ICT Professional Development and Classroom Practices

Please quote this project number in all future communications

The application for this project has been considered by the Faculty HEAG under the terms of Deakin University’s Human Research Ethics Committee (DUHREC).

Approval has been given for Mrs Sandra Lea Williamson-Leadley, under the supervision of Prof Terry Evans, School of Education, to undertake this project from 25/07/2014 to 25/07/2018.

The approval given by the Faculty HEAG is given only for the project and for the period as stated in the approval. It is your responsibility to contact the Faculty HEAG immediately should any of the following occur:

- Serious or unexpected adverse effects on the participants
- Any proposed changes in the protocol, including extensions of time.
- Any events which might affect the continuing ethical acceptability of the project.
- The project is discontinued before the expected date of completion.
- Modifications are requested by other HRECs.

In addition you will be required to report on the progress of your project at least once every year and at the conclusion of the project. Failure to report as required will result in suspension of your approval to proceed with the project.

The Faculty HEAG and/or DUHREC may need to audit this project as part of the requirements for monitoring set out in the National Statement on Ethical Conduct in Human Research (2007).

Kylie Kouikoudis
HEAG Secretariat
Faculty of Arts and Education
Appendix 10
2014 PLS Statement & Consent Form for Study Participants

PLAIN LANGUAGE STATEMENT AND CONSENT FORM

<table>
<thead>
<tr>
<th>Plain Language Statement</th>
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**Date:** 1 August 2014

**Full Project Title:** New Zealand Primary Teachers’ ICT Professional Development and Classroom Practices

**Student Researcher:** Sandra Williamson-Leadley

Dear [Participant’s name]

You may recall that in 2006 and 2007 that you participated in interviews for my PhD research project at Deakin University supervised by Professor Terry Evans entitled, “New Zealand Primary Teachers’ ICT Professional Development and Classroom Practices”.

I now wish to pursue how the ICTPD fitted with your subsequent teaching and career. To this end, I invite you to participate in a follow-up interview on the impact of your ICT professional development and on subsequent changes that have occurred in your classroom practices and in your professional lives.

These interviews will take place in person or via telephone or Skype (your choice) at a mutually convenient time. It is expected that these interviews will take about 30-40 minutes. A transcript of the interview will be sent to you electronically for verification. Should you wish, you may include additional information or provide clarification at that time.

Pseudonyms were used for the participants in the original project and these same pseudonyms will be used in these follow-up interviews. Participant confidentiality will be managed by using these pseudonyms, not identifying the schools or places of work at which you are currently or were previously employed.

Only the researcher, supervisor, and research assistants used to transcribe the audio recordings and research participants will have access to any of the research data. The transcript of your interview will be returned for checking. There will be no probing interviews of a personal and private nature, only relevant to professional development activities, classroom practices, and teaching/professional careers.
Identifiable consent forms will be stored separately to coded data, and pseudonyms will be used throughout the data transcription and analysis.

Data will be secured in accordance with Deakin University guidelines. Data will kept on researcher’s computer and password protected. Any hard copies of data will be kept in a locked filing cabinet. All data pertaining to the project will be kept for a period of six years and then securely disposed of.

**Intended use of research**

As a participant, you will be provided with a summary of the main findings and the implications from the research project. There will be publication of this research, primarily in the form of a thesis, but also in conference presentations and journal articles.

I would really appreciate your further assistance with this project, which I hope will help inform ICT professional development in New Zealand and more broadly. If you agree to do so, please complete the attached consent form and return via email. If you subsequently wish to withdraw you are free to do so. Should you have any queries, please do not hesitate to contact me.

**Complaints**

If you have any complaints about any aspect of the project, the way it is being conducted or any questions about your rights as a research participant, then you may contact:

The Manager, Research Integrity, Deakin University, 221 Burwood Highway, Burwood Victoria 3125, Telephone: 9251 7129, research-ethics@deakin.edu.au

Please quote project number **HAE-14-067**

Thank you for reading the above information and considering participating in this project.

Thank you in anticipation of your consideration of this invitation.

Sandra Williamson-Leadley
PLAIN LANGUAGE STATEMENT AND CONSENT FORM

TO: [Participant’s name]

Consent Form

**Date:** 1 August 2014

**Full Project Title:** New Zealand Primary Teachers’ ICT Professional Development and Classroom Practices

**Reference Number:** HAE-14-067

I have read and I understand the attached Plain Language Statement.

I freely agree to participate in this project according to the conditions in the Plain Language Statement and to participate in one 30-40 minute interview that will be recorded for research purposes.

I have been given a copy of the Plain Language Statement and Consent Form to keep.

The researcher has agreed not to reveal my identity and personal details, including where information about this project is published, or presented in any public form.

Participant’s Name (printed) ………………………………………………………………………

Signature ………………………………………………………………………………… Date …………..

Sandra Williamson-Leadley
PhD Candidate
Deakin University
221 Burwood Highway
BURWOOD VIC 3125
AUSTRALIA
slw@deakin.edu.au or sleadley@xtra.co.nz
Mobile: (021) 336-378
PLAIN LANGUAGE STATEMENT AND CONSENT FORM

TO: [Participant’s name]

Withdrawal of Consent Form

Date: 1 August 2014

Full Project Title: New Zealand Primary Teachers’ ICT Professional Development and Classroom Practices

Reference Number: HAE-14-067

I wish to withdraw my consent for participating and/or the data collected in this additional part of the above research project.

I understand that my participation in this additional part of the research project will immediately cease and any information obtained from me will not be used.

Participant’s Name (printed) ….................................................................

Signature ............................................................... Date ......................

Sandra Williamson-Leadley
PhD Candidate
Deakin University
221 Burwood Highway
BURWOOD VIC 3125
AUSTRALIA
slw@deakin.edu.au or sleadley@xtra.co.nz
Mobile: (021) 336-378
Appendix 11
2014 Interview Questions

• I would like to ask you to tell me about what you have been doing career-wise since I last spoke with you in 2007, e.g., changed schools, gained a position of responsibility, changed careers, retired, etc.

• What ICT do you use in your classroom programmes or as part of your educational leadership role?

• In general terms, how have you integrated ICT into your classroom programmes over the years? Please feel free to give an example.

• Over the years, has your participation in the ICTPD programme continued to influence your practices? In what ways?

• Have the concerns you raised in the original interviews, such as student access to equipment, lack of time, need for ongoing PD, lack of ideas on how to use ICT with classes, etc. changed over the years? What, if any, concerns do you have now with integrating ICT into classroom programmes?

• If you are in a position of responsibility, are you able to draw upon your experience of the ICTPD programme to support your staff to integrate the use of ICT into their classrooms? In what ways?

• What do you see now as the main benefits or negatives of using ICT in your classroom practices?

• In the school that you are still or now at, do you continue to have PD in the use of ICT? If so, can you please briefly describe the type of PD?

• What do you now see as the needs, if any, for PD for teachers to integrate ICT into their classroom practices?

• Do you participate in or use the Virtual Learning Network? If you do, please briefly describe how participation in this community of practice contributes to your understanding of teaching and learning and/or the integration of ICT into your classroom practices?

• Anything else you would like to tell me about your use of ICT not covered in the previous questions?