A CASE STUDY OF TEACHERS' EXPERIENCES PARTICIPATING IN A
MINISTRY OF EDUCATION TECHNOLOGY INITIATIVE

by

VIRGINIA CLARE DEAN

B. Ed., The University of British Columbia, 1984
M.A., The University of British Columbia, 1999

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

in

THE FACULTY OF GRADUATE STUDIES

Department of Curriculum Studies

We accept this thesis as conforming
to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA

July 2003

© Virginia Clare Dean, 2003
In presenting this thesis in partial fulfilment of the requirements for an advanced degree at the University of British Columbia, I agree that the Library shall make it freely available for reference and study. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by the head of my department or by his or her representatives. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

Department of Curriculum Studies

The University of British Columbia
Vancouver, Canada

Date August 22, 2003
Abstract

This case study was conducted in order to understand the challenges and experiences of teachers from the Westview School District (pseudonym) participating in the British Columbia Ministry of Education's Grades 6-9 Information and Communication Technology (ICT) Initiative. The four levels of teachers for this study included: 1. staff from the ministry responsible for either coordinating or managing the Initiative; 2. staff from the district responsible for implementing the Initiative in the district; 3. mentors who were the teachers responsible for supporting mentees as they implemented ICTs into their practice; 4. mentees who were the teachers implementing ICTs into their teaching practice.

The research questions that framed this study are: 1. By participating in the Initiative did teachers make any changes to their practice, confidence levels and attitudes towards information and communication technology? 2. How effective was the mentorship model for implementing information and communication technology? 3. What factors are necessary to support the adoption of information and communication technology in teaching practice?

Three methods of data collection were used including interviews, a personal journal and observation of mentors and mentees. Teachers were given a choice of being interviewed using either personal, email or mail interviews. From the analysis of the data, clusters of themes of experiences were identified including: teachers' motivations and feelings; difficulties with the mentoring relationship; technology issues; satisfaction and dissatisfaction with the Initiative.
In conclusion, outside forces that are beyond the control of educators can seriously affect the outcome of educational initiatives. In order to counteract these forces, other means of support including funding must be made available. Time is required to make substantial changes to teachers’ practice and students’ learning. Therefore, technology implementation must be supported over a period of more than one and a half years before noticeable changes can be made. Mentoring is not a relationship that can be created for or imposed on people and it requires time to develop. The complexities of the combination of needs, personalities and skills make mentoring a difficult relationship to create through a one time initiative.
Table of Contents

Abstract .......................................................................................................................... ii
Table of Contents ........................................................................................................ iv
List of Tables .............................................................................................................. vii
List of Figures ............................................................................................................. viii
Acknowledgments ..................................................................................................... ix

CHAPTER I      INTRODUCTION .............................................................................. 1

Background ............................................................................................................... 1
The Purpose of this Study ......................................................................................... 3
The Statement of the Research Questions ............................................................... 5
Definition of Terms .................................................................................................. 5
Overview of the Dissertation .................................................................................... 7

CHAPTER II     LITERATURE REVIEW ..................................................................... 9

An Analysis of Technology Implementation in Education ...................................... 9
Technology Implementation is Advocated in Educational Reforms ....................... 11
Teachers and Students are Critical to Technology Implementation ..................... 15
Technology is both Promoted and Criticized ......................................................... 25
Many Barriers Affect Technology Implementation .................................................. 27
Technology Conclusion ............................................................................................. 30

A Critique of the Mentorship Model for Implementing Change in Teaching
Practice ....................................................................................................................... 31
Difficulties Defining Mentoring .............................................................................. 32
Many Different Mentorship Models ......................................................................... 33
Selecting a Good Mentor is Critical to Success ....................................................... 37
Mentoring Requires Time and Compensation .......................................................... 39
Concerns about Mentoring and Technology Implementation ............................... 41
Mentorship Conclusion ............................................................................................. 44

CHAPTER III    METHODOLOGY ............................................................................... 46

The Context ............................................................................................................... 46
The Ministry's Grades 6-9 Information and Communication Technology Initiative ........................................................................................................ 46
Curriculum and Technology Planning Group: A District Initiative ....................... 50
The District's ICT Integration Mentorship Program ............................................... 53
# The University of British Columbia’s Ministry of Education Technology

## Proposal ................................................................. 57

## The Effects of Job Action ........................................... 61

## The Timeline of the Research .................................. 62

## Choosing a Case Study ........................................... 64

## Methods .................................................................. 67

### Interviews .............................................................. 67

### Personal Journal .................................................... 70

### Observation ............................................................ 72

## The Teachers .......................................................... 73

### Ministry Staff .......................................................... 77

### District Staff ........................................................... 78

### Mentors and Mentees ............................................... 79

## Analyzing the Data ................................................... 82

## Ethical Considerations ............................................. 83

## Trustworthiness ....................................................... 84

## CHAPTER IV  PRESENTATION OF THE DATA ......................... 87

### Clusters of Themes of Experiences ............................. 87

#### Teachers’ Motivations and Feelings .......................... 90

##### Fear of Being Left Behind .................................... 90

##### Intrinsic and Extrinsic Motivation .......................... 92

##### Anxieties Incorporating Technology ....................... 93

##### Goals often varied from Final Accomplishments ....... 94

#### Difficulties with the Mentoring Relationship ............ 98

##### Mentorship Roles Unclear .................................... 98

##### Disillusionment with Mentors or Mentees ............... 107

##### Different Perceptions of Success ............................ 111

#### Technology Issues .................................................. 114

##### Problems with Access and Technical Support .......... 114

##### Time is Necessary ............................................... 116

##### Funding is Questioned ......................................... 118

#### Satisfaction and Dissatisfaction with the Initiative .... 122

##### Exemplar Pressures .............................................. 123

##### Effects of Job Action ............................................ 126

##### Initiative Improvements Needed ............................ 128

##### Benefits for Students ......................................... 130

##### Sustained Support Necessary ............................... 132

#### Conclusion ......................................................... 134

## CHAPTER V  SUMMARY AND CONCLUSION .......................... 137

### Limitations of this Study ........................................ 137

### Reflections on the Research .................................... 138

### Summary .............................................................. 143
## List of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Four Technology Initiatives</td>
<td>60</td>
</tr>
<tr>
<td>2. The Timeline of the Research</td>
<td>63</td>
</tr>
<tr>
<td>3. Interview Dates and Methods of Response, Teaching Experience and</td>
<td>75</td>
</tr>
<tr>
<td>Assignments of Mentors and Mentees</td>
<td></td>
</tr>
<tr>
<td>4. Interview Dates and Methods of Response for District and Ministry</td>
<td>77</td>
</tr>
<tr>
<td>Staff</td>
<td></td>
</tr>
</tbody>
</table>
## List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Clusters of Themes of Experiences</td>
<td>89</td>
</tr>
</tbody>
</table>
Acknowledgements

My gratitude to all of the participants of this research project including the ministry and district staff, mentors and mentees who all took time out of their busy schedules to provide the data necessary for this study.

My appreciation to the British Columbia Ministry of Education, the Westview School District and the University of British Columbia, Faculty of Education who all provided support and permission for conducting this research.

My thankfulness to friends and family who supported me throughout the writing of my dissertation. Special thanks to Jo-Ann and Stephanie for their assistance, encouragement and empathy.

My indebtedness to my committee Gaalen and Cynthia for providing their expertise and constructive feedback and a special thank-you to Linda for her time, help and encouragement while seeing me through a second graduate program.
CHAPTER I
INTRODUCTION

Background

For over two decades, technology implementation has been a major goal in the education system. Technology implementation is often a component of educational reforms requiring large amounts of scarce educational dollars being spent on it while other programs are cut or under funded. In recent years, a body of literature is emerging that is critical of how technology is promoted and used in education (e.g., Armstrong & Casement, 1998; Cuban, 2001; Hargreaves, 1997; Haughey, 2002; McCain & Jukes, 2001; McKenzie, 1999; Stoll, 1999; Ungerleider & Burns, 2002). Research shows that past attempts at technology implementation have been minimally effective at changing teaching and learning. The problem is that although past technology implementations have not been proven to effectively transform teaching and learning, technology continues to be heavily promoted and implemented in the education system.

There are a number of gaps in the research previously conducted on technology implementation. Ungerleider and Burns (2002), two Canadian researchers who reviewed both Canadian and international research on technology implementation, failed to identify research that would inform policy decisions regarding the implementation of information and communication technology (ICT) in schools. As well, they found a lack of Canadian research on technology implementation. In her review of Canadian research on information and communication technology, Haughey (2002) found no documentation of large scale strategies sufficient to bring about
technology integration. She also identified the need for more research on technology implementation to be done on or by practitioners.

One of the problems with technology implementation is the assumption that technology alone is an agent for change. What is often missing is how technology should be implemented in order to transform teachers’ practice and students’ learning. There is no conclusive evidence from the research that technology substantially increases students’ academic achievement (e.g., Cuban, 2001; Reksten, 2000, Ungerleider & Burns, 2002). Before we can expect any changes to students’ learning, teachers need to be supported and empowered to use technology effectively in their practice. In their case study of Canadian teachers implementing technology in their practice, Granger, Morbey, Lotherington, Owston and Wideman (2002) found the most influential factors in respect to professional development and innovative practice are “supportive relationships among teachers, a commitment to pedagogically sound implementation of new technologies, and principals who encourage teachers to engage in their own learning” (p. 2).

However, achieving the factors outlined by Granger, et al (2002) is problematic. For example, mentorship is a model commonly advocated for technology implementation (e.g., Fullan & Hargreaves, 1999; McKenzie, 1999). Theoretically, mentoring should be a supportive relationship enabling teachers to learn new pedagogies and strategies for incorporating ICT in their practice. In reality, mentoring is often an ill-defined model in educational initiatives. An effective mentoring relationship is a complex combination of personalities, needs and skills that develops over time based on mutual trust and respect. When mentoring relationships are part of an
educational initiative, mentors and mentees are often placed together regardless of their suitability or compatibility with one another and for short time periods which are not conducive to establishing an effective relationship.

There are other factors that impede technology implementation. Teachers often resist technology. The likelihood of teachers embracing change through technology integration is dependent on how comfortable or anxious they feel. Therefore, how teachers feel about technology needs to be considered when technology is implemented. Other factors that impede implementation are barriers including funding, time, and access. Funding is necessary to purchase and maintain equipment and provide professional development for teachers. Time is necessary to develop the skills and strategies to incorporate technology into practice. Access is commonly cited as a reason why teachers and students do not use technology in teaching and learning.

It is still unclear how technology should be implemented in order to ensure it is done effectively and supports teachers and students transforming their teaching or learning. There is also no consensus of what constitutes successful technology implementation or how it can be measured.

The Purpose of this Study

Creswell (1998) explains: “The strongest and most scholarly rationale for a study...follows from a documented need in the literature for increased understanding and dialogue about an issue” (p. 94). I conducted a case study of the experiences of four levels of teachers (mentors, mentees, district and ministry staff) involved in the British Columbia Ministry of Education’s Grades 6-9 Information and Communication Technology Initiative as it unfolded in the Westview School District (pseudonym). The
Initiative used a mentorship model as a means for supporting teachers implementing technology.

The purpose of this study was to investigate an information and communication technology initiative as it unfolded in one district. The way I accomplished this was to focus on the experiences of the teachers involved in the Initiative, specifically any changes in their practices, confidence levels and attitudes towards ICT. The beliefs and roles of district and ministry staff were also important in determining how the mentors and mentees were supported throughout the Initiative.

By determining whether this initiative resulted in any changes to teachers' practice, confidence levels and attitudes towards using ICT in their practice and by ascertaining whether the mentorship model used was effective for supporting change, I will add to the body of literature needed to identify best practices for supporting teachers implementing change into their practice using technology. By discovering other factors necessary to support the adoption of ICT into teaching practice, I will identify ways to overcome some of the barriers to implementing technology outlined in the literature and contribute solutions to help resolve some of the barriers that have prohibited successful implementations in the past.

This study will inform future attempts at technology implementation in teachers' practice by identifying some of the factors necessary for effectively supporting teachers incorporating change. As a teacher investigating the practice of other teachers, I am helping to fill a gap in the research previously done on technology implementation caused by the lack of participatory research.
The Statement of the Research Questions

The questions that frame this research are:

1. *By participating in the Initiative did teachers make any changes to their practice, confidence levels and attitudes towards information and communication technology?*

2. *How effective was the mentorship model for implementing information and communication technology?*

3. *What factors are necessary to support the adoption of information and communication technology in teaching practice?*

The first question addresses the purpose of the Initiative which was to support teachers in incorporating information and communication technology into their practice and whether or not this was achieved. The second question addresses mentorship as the model used for the Initiative and whether how this model was used was effective for supporting the mentors and mentees in this study. The third question addresses the factors identified through this study, considered necessary to support the implementation of technology into teaching practice.

Definition of Terms

The following are definitions of terms that will facilitate clarification while reading this dissertation.

**Information and Communication Technology**

Information and communication technology (ICT) is the most commonly used term in Canadian research literature on technology (e.g., EALP, 2000; Granger, et al, 2002; Haughey, 2002; Ungerleider & Burns, 2002). Therefore, I use this term
extensively while describing the case study methodology, data analysis, summary and conclusion. ICT "refers to the processes, tools and techniques used for communicating ideas and information, inquiring, making decisions and solving problems. ICT supports locating, retrieving, sorting, analyzing, creating meaning and communicating information using computer technology" (British Columbia Ministry of Education, Education Technology Branch, 2000, p. 1).

Teachers

As identified in the title of the dissertation and for the purpose of this study, teachers refer to the four levels of teachers involved in the research. These four levels of teachers include: 1. staff from the BC Ministry of Education who were responsible for either coordinating or managing the Initiative; 2. the Director of Educational Programs and the District Technology Coordinator from the Westview School District who were responsible for implementing the Initiative in the district; 3. mentors who were the teachers from the Westview School District responsible for supporting mentees as they implemented ICTs into their practice; 4. mentees who were the teachers from the Westview School District implementing ICTs into their teaching practice. I chose to call all four levels teachers, because all either were or are teachers and therefore brought their experience as teachers to their respective roles in the Initiative. Also, although I collected research data from all four levels of teachers, the main focus of the research was on the mentees and mentors, all of whom are teachers.

Technology

Mainly in Chapter II for the literature review, I use technology as the term to describe new technologies which include computer hardware and software, wiring, and
other equipment such as digital cameras. I also include Cuban's (2001) definition of technology which adds "technical support for all of this equipment, including scheduled replacement and professional development of teachers and administrators" (p. 12). I chose to use the term technology because the literature mainly uses the term technology to encompass all of these items.

Overview of the Dissertation

Chapter II, the Literature Review, reviews technology implementation as a component of educational reform and mentoring as a model for supporting teachers implementing change in their practice. I outline how teachers and students are critical to implementing technology; how technology is both promoted and criticized; and the many barriers that affect technology implementation. I also critique mentoring as a model advocated for implementing change in teachers' practice including: difficulties defining mentoring; many different mentorship models; how selecting a mentor is critical to success; how mentoring requires time and compensation; and concerns about mentoring and technology implementation.

Chapter III, Methodology, begins with an overview of the context in which the research occurred. I explain the choice of using case study methodology and present the three methods of data collection: personal, email and mail interviews; a personal journal for recording my thoughts and observations; and observation of mentors and mentees as they participated in the Initiative. I explain the four levels of teachers involved in this study and how I interpreted and coded the data into clusters of themes of experiences. Finally, I outline the ethical considerations for the research and how I attempted to establish trustworthiness.
Chapter IV, Presentation of the Data, is comprised of a description of the clusters of themes that emerged from analyzing the data including: teachers’ motivations and feelings; difficulties with the mentoring relationship; technology issues; satisfaction and dissatisfaction with the Initiative.

Chapter V, Summary and Conclusion includes limitations of this study, reflections on the research, a summary, conclusions, and recommendations from the research findings.
CHAPTER II

LITERATURE REVIEW

In the literature review, I analyze the literature on technology implementation in order to identify the problems with past attempts and what is still unknown about technology in education. I also critique the mentorship model which is the model considered best practice for supporting change in teaching practice and often used in technology implementation.

An Analysis of Technology Implementation in Education

Past attempts at technology implementation have not met expectations for transforming teaching and learning. Yet, promoters and some educators continue to support it as a major component of educational reform. Many assume that technology in education is always good for teaching and learning. Apple (2000) cautions that this assumption needs to be critically addressed:

There are multiple and quite contradictory realities surrounding computers in schools. The danger is that we listen only to the master narrative, to the story that says computers in classrooms are always ‘good’ and always have liberating effects for all concerned. Nothing could be further from the truth. (Apple, 2000, p. xxvii)

With this premise in mind, I analyze the literature on technology implementation in education in order to determine what is already known or unknown about the effectiveness or problems with previous attempts in order to inform future endeavours.

As a Canadian trying to review the literature on technology implementation in education I met with an all too common obstacle—the lack of Canadian literature on my
topic. Therefore, most of the literature reviewed for this topic comes from American research studies. I am not alone in this problem. Two Canadian researchers, Ungerleider and Burns (2002) reviewed the literature published during the past ten years on technologies related to computers and their educational impact on student socialization and learning from kindergarten to grade twelve. Although they sought to limit their study to peer reviewed articles, they did include policy reviews and results of national and provincial testing. Since they found that Canadian material was scarce, they needed to augment their review with international research. In the Canadian literature, the term information and communication technology (ICT) is commonly used. Therefore, I use technology and ICT interchangeably throughout the literature review, with the understanding that they both encompass similar concepts (see CHAPTER I for the definition of terms).

While analyzing technology implementation in education, I was struck by the overwhelming agreement about the state of research studies previously conducted on this topic (e.g., Cuban, 2001; Haughey, 2002; Ungerleider & Burns, 2002). Ungerleider and Burns (2002) found few claims were well researched or evidenced to provide policy direction: “The majority of research reviewed is contradictory and/or seriously flawed” (p. 15). This claim is based on their review of research studies which they found had common methodological flaws. These flaws include: “the lack of a control group; nonrandomized designs, raters that are not blind to the experimental manipulation; and/or interpretations that are unwarranted by the data” (p. 5). They report there are too few studies of sufficiently rigorous design available in order for educators to make informed policy decisions. Their definition of flaws seems to come from a quantitative
research perspective. Nevertheless, there is considerable agreement by other critics who support the claim that previous research has been inadequate, inconclusive or flawed in some way.

Technology Implementation is Advocated in Educational Reforms

For over two decades there has been a strong push for technology implementation in education. While other educational programs have been stripped or cut as funding for education decreases, technology implementation continues to be supported and is often included in educational reforms. Educators are beginning to take a more critical look at why and how technology is implemented and the expectations of such programs on teaching and learning.

In her book aimed at providing administrators with practical direction for creating an environment conducive to technology implementation, Reksten (2000) explains technology implementation is often a component of educational reform advocated by policymakers at every level of government. Armstrong and Casement (1998) suggest the rationale for this stems from two beliefs. One is that computer technology increases productivity, relevancy and interest for students, and the other is that computer technology should be part of education since it is a part of everyday life. Creators of educational reforms that include technology have argued that it is an imperative component due to the influence of outside forces and the belief that technology is an agent for change.

One reason for the push behind including technology implementation in educational reforms is that current educational practices are criticized for being disconnected from the "outside world". Pressure from outside forces cause a perceived
need for education to keep up with changes in society. These outside forces are the ever changing milieu outside of the school system brought about by rapid changes in technology that are incorporated into both work and home. McCain and Jukes (2001) argue that although we are doing a good job of providing education, the type of education we provide is becoming increasingly irrelevant to our changing, high-tech world. Thus, it makes sense that what happens in education should reflect the changes occurring in society.

A problem with the education system responding to outside forces is that all institutions resist change. This problem is identified by Educator as Adult Learners Project (EALP, 2002), a working group of British Columbia educators, including superintendents, administrators, ministry staff and the BC Teachers’ Federation (the provincial union for BC teachers). Their discussion paper addresses four questions regarding the effects of ICTs in education on teachers’ work and professional development, students, and learning. EALP attributes ICTs with creating a radical change in student learning outside of schools. Thus, they recommend educators need to be supported in how to use ICTs in classrooms in order to respond to this changed context for learning.

McCain and Jukes (2001) identify another obstacle to the education system responding to outside forces. They consider public education to be quite disconnected from the rest of the world, resulting in little competition and a virtual monopoly. They believe many educators have been dulled to the need to respond to changes occurring in the outside world and instead respond from a very “educentric” point of view. As much as educators may be reluctant to make changes to their practice, it is impossible to
disregard what is happening all around them. Schools cannot ignore powerful
technological and social forces pressing for changes in schools (EALP, 2002). If
institutions resist change but schools cannot ignore change, this creates a dilemma and
illuminates the difficulty of the education system responding to outside forces. Outside
forces pressure the education system to keep up with changes in society. Although it is
impossible both financially and systemically for the education system to keep up with
these changes, educators cannot ignore societal change but should be critical and
incorporate change in meaningful and practical ways.

Another reason technology implementation is included with many educational
reforms is that it is seen as an agent for change. The dominant rationale for technology
as an agent for change supports an academic model of student achievement. However,
there are few case study examples that imbed the role of an agent for change within the
lived experience of the teachers. In other words, one needs to examine the pedagogical
and curricular shifts that occur from a teacher's perspective, rather than measured
through academic standards. Haughey (2002) states that the issue of information and
communication technologies in the classroom is an issue of change. She reviewed
Canadian research on ICTs in education since 1996. She found there is a move away
from focusing on technology itself towards focusing on the pedagogical possibilities. As
well, access, time and purpose influence how quickly technology is integrated in
education. In her directions for policy concerns, Haughey recommends more classroom-
based and longitudinal research. In her discussion of ICTs as part of large scale reform
she questions how technologies can be integrated to support an overall vision for
education in Canada.
Cuban (2001) explains that school boards and superintendents are pressured by coalition groups such as: public officials, corporate executives, vendors, policy makers and parents, to increase access to technology in the belief that it transforms schooling. He conducted his study of teachers and students in early childhood education, high school and university classrooms in the Silicon Valley of California. He chose this location because it is the heart of technological progress in the US and because technology use is greatly encouraged there in classrooms. His study was informed by three questions regarding how teachers and students use technologies, whether teaching and learning changes as a result of heavy promotion and if so in what ways and whether the investment in technologies has been worth the costs. In his observations of teachers and students he found technology use resulted in no fundamental changes to classroom practice.

According to Stoll (1999) a covert motivation for promoting technology as an agent for change is to use it as a vehicle for the promotion of other educational reforms. He explains how educators inform the public they are bringing in computers to improve schools while their real intent is to reform teaching using constructivist education, problem-based or collaborative learning. He exposes the need to question the reasons behind why technology is used as an agent for change. I do not see a problem with combining technology implementation with changes to pedagogy but recommend this is not done in a covert way. As well, the belief that technology itself will change pedagogy is problematic and is explained later in this chapter.

Cuban (2001) explains that promoters of technology implementation as an agent for change do not necessarily understand how to implement change in the education
system since "few have pursued deep and comprehensive changes in the existing system of schooling" (p. 195). Armstrong and Casement (1998) uncover another problem which is the concern that keeping up with technological changes in the school system creates rapid educational changes whose results are yet unknown. Computer technologies that drive industry and commerce are establishing themselves in our homes and schools transforming education in unimagined ways. "A generation of children have become the unwitting participants in what can only be described as a huge social experiment" (p. 2). If promoters do not understand how to incorporate change or how technology might transform education, this only exacerbates the problems with implementing technology in education.

Hargreaves (1994) describes how historically people often turn to the education system to create change in society, wanting teachers to change while "the compression of time and space is creating accelerated change, innovation overload and intensification in teachers' work" (p. 9). People view the school system as a place to make huge societal changes. It seems that promoters of technology in education believe technology transforms schooling. What is missing from this belief is any regard for how educators historically resist change, how decreased educational funding puts pressure on supporting technology and a critical understanding of how technology alone cannot create change in the educational system.

**Teachers and Students are Critical to Technology Implementation**

Central to any technology implementation or educational reform is the role of teachers and students. Unless teachers and students are considered in the change process, it is doubtful that change will occur. Hargreaves (1994) points out that
involving teachers in educational change is vital to its success. Teachers either desire to change or conserve their practice and when others seek to require teachers to change their practice there is an assumption that teachers themselves do not or will not change on their own. Teachers are seen as falling short and needing to get up to scratch. The issue for teachers is whether proposed changes are practical. In order for teachers to participate in change through technology implementation, they must either already be interested in changing their practice or they must somehow be convinced that technology implementation is practical for their work.

Since teachers are critical to the success of technology implementation and must be open and willing to change, it follows that students are also critical to its success and need to be willing to change. McKenzie (1999) is an American educator and advocate of the use of technologies in education. He drew on his experience as an educational leader and innovator with technology to write a book compiled from a collection of his essays and articles. The book is aimed at outlining best practices for supporting teachers learning to use technology in their practice. McKenzie (1999) believes it is the responsibility of teachers to inspire students in the preparation of change. One way to do this is for teachers to develop a change ethic involving a spirit of welcoming change and a toolkit of strategies for managing changes that they can pass along to their students. By creating a learning environment that embraces change, teachers help students to become flexible and comfortable with their rapidly changing environment.

The support of teachers and students in the change process is critical to the success of technology implementation and educational reforms. This section outlines
the considerations regarding teachers and students involved in technology implementation.

Teachers play a key role in technology implementation because how they embrace technology and use it in their practice ultimately affects the success of implementation. Fullan and Hargreaves (1998) reveal that if teachers are not critical, caring or well prepared for using technology in their practice, this can result in superficial and indiscriminately arranged information being passed on to students resulting in: “students designing cute covers for their work more than thinking deeply about the intellectual content and substance of it” (p. 77). Mellon (1999) explains that not all teachers embrace technology willingly or easily and vary in their enthusiasm and abilities with technology. This results in a continuum of technology zealots (who claim educational problems can be solved by technology) at one end and technology Luddites (who are afraid or baffled by technology) on the other. These two extremes add to the difficulties of implementing technology with teachers.

There is a popular ideal in the literature regarding the role of the teacher in a technology rich learning environment that assumes a shift in the boundaries between teachers and students. McKenzie (1999) calls this role the “guide on the side” where teachers act more like coaches by facilitating, circulating, monitoring, suggesting, clarifying and modeling while their students are engaged in learning. Many teachers find this a difficult transition and are more comfortable with a traditional “sage on the stage” approach whereby teachers are in complete charge and tell students exactly what to do. If teachers want to make a successful transition they need to build student autonomy and independence while they relinquish control.
According to Burniske and Monke (2001) good teachers are already using the “guide on the side” approach to teaching. “Good teachers stepped down from the podium and started mingling with their students long before the computer came along” (p. 206). One problem they do have with the “guide on the side” approach is that the teacher should not merely be a guide rather they should still be wise (sage). Perhaps a better title is “sage on the side”. McCain and Jukes (2001) explain there is a process teachers must go through from being all-knowing to accepting this new role that involves making “the transition from teaching their students to learning with their students and even to learning from their students” (p. 121).

According to Granger, et al (2002) the shift described above will only take place if teachers are sufficiently comfortable to allow it. Granger et al, analysed data from qualitative case studies of four Canadian schools, two in Toronto and one each in Prince Edward Island and Alberta. Although they conducted close to 100 audio-taped interviews with teachers, librarians, principals and technical support staff from twelve schools, they chose to concentrate on 31 interviews from only four schools which they selected based on overall discursive and conceptual richness of data. Two questions framed their inquiry: “What do teachers perceive as the factors that contribute to successful classroom implementation of ICT? (and) How do these contributing factors act, and interact, to make their contributions?” (p. 3). They found supportive relationships among teachers, a commitment to pedagogically sound implementation and principals who encourage teachers to engage in their own learning are all influential factors in facilitating professional development and innovative classroom practice with ICT.
Technology-Enhanced Secondary Science Instruction (TESSI) is an example of a successful Canadian technology implementation. TESSI is an example of a longitudinal research study which began in 1992 and involved a university researcher and two secondary science teachers with a mutual interest in exploring what could transpire through their collaboration in implementing technology in science classrooms. Mayer-Smith, Pedretti and Woodrow (1998b) report that at the end of the first year, teachers expressed dissatisfaction with technology as an add-on. The teachers realized they needed to "relinquish some control and move away from their central role as the deliverers of content" (p. 28). Over subsequent years, two more university researchers and more science teachers joined the project and teachers roles changed through the addition of student work stations and study guides. Thus, students became responsible for their own learning with teachers acting as facilitators and guides. TESSI is considered a successful example of technology implementation because enrolment increased in Physics 11 and 12 classes, more female students enrolled, and provincial exam results increased. In support of the findings of Granger, et al (2002), teachers involved in TESSI reported that strong backing by administrators was essential to their success.

Not all teachers embrace technology, rather they vary in interest and ability from resistors to zealots. Ideally, a teacher in a technology rich environment takes on a more facilitative role, that of a "guide on the side" whereby they become more facilitative and less directive. However, this role is not unique to technology, perhaps it is simply a model for best practice in any classroom.
The most common types of pedagogy associated or promoted with technology implementation are constructivism, problem-based learning, student-centred learning or project-based learning (e.g., Cuban, 2001; McCain, 1999; McKenzie, 1999). Haughey (2002) points out that in Canada, classroom research shows “the focus should be on using ICTs to enhance pedagogical strategies that are learner-centred, inquiry-based and involve collaborative learning” (2002, p. 15). Granger, et al (2002) explain that current research argues for a constructivist approach to learning as part of all teachers’ professional development.

In order to appreciate why constructivism and problem-based learning are popularly promoted with technology implementation, it is important to understand what each of these mean. Duffy and Savery (1995) describe constructivism as a “philosophical view on how we come to understand and know” (p. 31). Whereas constructivism is a theory of learning, problem-based learning is an instructional model that grows out of the framework of constructivism. With problem-based learning, students construct their own knowledge, think creatively and critically, and learning occurs out of consideration of the problem (Duffy & Savery, 1995). Student-centred and project-based learning also grow out of the framework of constructivism.

Cuban (2001) clarifies that one of the reasons constructivist practices are heavily promoted is because they are considered a transformative approach to teaching. McKenzie (1999) promotes problem-based learning as a means to transform teaching and learning away from a transmissive style to a more transformative approach. The problem is constructivist teaching methods are not always successfully employed unless teachers are properly trained. According to Ringstaff and Yocam (1994), movement
towards constructivist modes of teaching can be slow since professional development given to teachers is often inadequate. Cuban (2001) reveals that most teachers using technology sustain existing patterns of teaching with only a small percentage innovating or using constructivist practices. Cuban (2001) found that although teachers felt they changed their practice to more student-centered teaching, only a small percentage of teachers observed actually had, and it was not known if the change was a result of using technology or a gradual shift in their beliefs about teaching. Unless teachers are shown how to change their teaching style, their current method of teaching will likely prevail.

While constructivist teaching is popularly promoted along with technology implementation, there are those who do disagree with promoting a particular theory or pedagogy. EALP (2002) found many reports advocate constructivist teaching concerning ICTs. However, EALP supports “pedagogical diversity rather than advocacy for particular pedagogies” (p. 13). Haughey (2002) claims the teaching strategies used with technology enhance learning and that these strategies would not be possible without ICT. Although I do not agree that most strategies would be impossible without ICT, I do agree the teaching strategies used, rather than just the technologies themselves are important to successful implementation.

Constructivist teaching practices are commonly promoted with technology, although they are also generally being promoted in education. The move from a transmissive teaching style to a more transformative one is one reason for promoting these practices. However, it is apparent that the claim of technology being instrumental in changing teachers’ pedagogical practices has yet to be proven. Cuban (2001) predicts
that even with the current focus and push for technology integration, “...no fundamental change in teaching practices will occur” (p. 196).

When teachers are implementing technology, how they feel about it is often not addressed. McKenzie (1999) states that feelings and anxieties are often neglected in lieu of focusing on training for skills. He acknowledges for many techno-holdouts it is their emotions holding them back and they are concerned about looking foolish in front of colleagues or students. They cannot see any time for learning the technology while also trying to cover the curriculum. They want to feel like an expert and wonder how long it will take for them to feel that way. Reksten (2000) agrees some teachers feel threatened by technology, especially those who: “are resistant to change...fear failing at something new or...are overwhelmed by the responsibilities of teaching” (p. 9). Thus, a crucial component to a study addressing teachers’ beliefs and practices with respect to technology needs also to inquire into the role emotions play when participating in technology implementation.

There is no conclusive evidence that technology improves students’ academic achievement. “Canadian and American data indicate that academic achievement does not improve simply as a result of having access to computers in the classroom” (Ungerleider & Burns, 2002, p. 5). The presence or absence of computers was not purposely manipulated in the research they reviewed. Therefore, they recommend well-conducted and analytical research still needs to be done. The problem with the expectation that implementing technology will improve this is technology alone should not be considered a means for improving students’ academic achievement. Moreover, what needs further attention is how technology affects teachers’ pedagogical practices.
and whether this constructs a teaching practice that may or may not support increased student achievement.

Reksten (2000) exposes a major criticism of past practices of technology implementation which is the large amounts of money spent on technology with no guarantee of improved students’ academic achievement. Cuban and Kirkpatrick (1998) surveyed the best research available on technology’s impact on student academic achievement from the past 30 years. They found a range of effectiveness of classroom use of computers on academic performance of students from moderate to minimum or no effectiveness at all. McKenzie (1999) explains that teachers who resist technology want to know that if they put the effort into learning how to use technology, it will result in measurable gains in student academic performance. With accountability in the form of standardized tests a current educational issue, it is surprising that so much money continues to be used to support technology rather than directing that money to increasing students’ academic achievement by other means.

Although there is no evidence that technology increases students’ academic achievement, some promoters believe that it does improve students’ motivation. Teachers involved in a technology initiative called Apple Classrooms of Tomorrow (ACOT) claimed when they changed their practice by incorporating technology it “had a positive impact on their students, including increased engagement and motivation and improvements in students’ ability to work together” (Ringstaff, Yocam & Marsh, 1994, p. 14). ACOT was a research and development collaboration involving public schools, universities, research agencies and Apple Computer Inc., initiated in 1985 and completed in 1998. The study focused on learning, assessment, teaching, teacher
development, school design, social aspects and the use of new technologies in over 100 elementary and secondary schools in the US. A two year research project on ACOT done by Ringstaff, Yocam and Marsh (1996) is problematic since Ringstaff and Yocam were employees of Apple Computer Inc., and only Marsh was an independent researcher. As well there is a problem with the study’s claim that incorporating technology had a positive impact on students. The problem is that it is the teachers’ claim and whether the students agree is not known since the students were not interviewed for this study.

Ungerleider and Burns (2002) found the projects they studied that claimed technology increased student motivation, did not have a control group of students who did not use computers. Thus, they conclude that group work associated with computer use does not increase motivation. However, they acknowledge that collaboration and social facilitation may be responsible for increasing motivation. What they did find is that students’ attitudes towards computer technologies improved as a consequence of being exposed to them. These findings show although some educators believe technology increases student motivation, unless technology is singled out as a factor for increasing motivation using a control group, it is not proven if the claim is true.

The use of technology in schools has yet to be proven to increase students’ academic achievement or motivation. Before addressing this concern, educators first need to ask about teachers’ relationships with using technology in their practice and then we can attempt to ascertain how technology and student achievement may be connected.
Technology is both Promoted and Criticized

Since technology implementation is often a component of educational reforms even in times of restraint, it is no surprise there are both many promoters and critics of technology in education. "Powerful new technologies are available that can be used to improve the quality of education dramatically" (EALP, 2002, p. 12). If you believe this statement, you are probably a promoter of technology. Regardless of the questionable track record of success with technology implementation over the past few decades, promoters still support technology in schools. Stoll (1999) points out that even though the value of computers in schools remains dubious, promoters rationalize that since computers are everywhere, they need to be brought into the classroom. Recently, as previous attempts at technology implementation in schools have failed to create the transformations sought, a number of critics of technology have emerged.

Cuban (2001) lists a variety of agendas for promoting technology in education including profit, a solution to problems, an electronic revolution and ensuring social justice for poor or minority children who might be left behind in the rush for technological expertise. Stoll (1999) concurs that a common criticism of technology in education is the agenda of corporations who stand to gain from the promotion of computer literacy. Fullan and Hargreaves (1998) agree that if "left to its own device, the technology juggernaut serves only the needs of commerce and the market" (p. 77). It is easy to get caught up in the hard sell of corporations. Educators need to ensure they always take a step back to reflect on the usefulness of any hardware or software or service that is being promoted. EALP (2002) point out that when vendors promote technology for profit, they also promote other values such as: "consumerist values and
uncritical acceptance of problematic ideas and ideologies” (p. 11). Therefore, educators need to be critical of what else is being promoted along with the technologies they are purchasing for schools.

Cuban (2001) explains how promoters assume that when students and teachers use technology it will alleviate most of the problems in education. In reality, he explains the amount of time and money spent on technology implementation in the past has yet to yield even modest returns in terms of academic achievement or transformations in teaching and learning. Even though there is no proof that technology implementation can accomplish these outcomes, these assumptions are used as a means to continue to promote technology in education.

Armstrong and Casement (1998) caution there is a lack of critical questions being asked by technology promoters such as why should children be exposed to computer technology at an early age or are computers and software essential to children’s’ education? Although promoters may not ask these questions, if educators try to ask these important questions, they are met with criticism. “Try to oppose the juggernaut of computer literacy and you’re branded a Luddite, lunatic, or reactionary” (Stoll, 1999, p. 8). Asking critical questions about technology is essential to ensuring more realistic and appropriate goals for technology in education.

Teachers are often the most vocal critics of technology and those from all levels of experience have a variety of reasons for having a critical view of technology. Fullan and Hargreaves (1998) welcome the criticism and suggest:

...if we are serious about the moral purposes of empowering and learning from colleagues, then resistance to technology should be treated
with respect, as a source of insight and not a sign of awkwardness and deficiency. Ensuring that technological change will really benefit student learning depends on it being driven by the critics as much as its most ardent advocates. (p. 79)

Their point is very important since teachers are the ones who implement technology into teaching and learning. Research needs to focus more attention on how to empower teachers involved in technology implementation before expecting it to benefit students.

Many Barriers Affect Technology Implementation

There are a number of barriers that affect technology implementation including funding, time and access, all of which require money, something that is becoming increasingly scarce in the education system. As all types of educational programs vie for limited educational dollars it becomes more difficult to justify spending money to alleviate the problems posed by these barriers. Yet, in order to effectively implement technology in schools, these barriers need to be addressed.

Funding is a major barrier to implementing technology because it is very expensive to acquire and maintain hardware and software. McKenzie (1999) reports that computers have a thirty-six month lifespan while Stoll (1999) is slightly more generous giving computers a five-year life span. Stoll (1999) explains that it is not only computers that become outdated since software is constantly being updated and becomes outdated when curriculum or computers change. Armstrong and Casement (1998) reveal that an increasing trend is theft and security costs. It may not always be necessary to have the newest and the best equipment however, maintaining, upgrading,
and providing security all require initial and sustained funding, something which may not always be available in cash strapped schools.

Money must also be spent on preparing teachers to use technology effectively. McKenzie (1999) suggests districts should spend 25% or more of the technology budget on professional development and provide 15-60 hours per teacher per year for several years. By ensuring teachers and students learn to actually use the technology before rushing to increase the ratio of computers to students McKenzie believes improved use of technology in schools will occur. McKenzie (1999) talks of “screen saver disease” a phenomenon he encountered while visiting numerous school sites where computers sit unused due in part to a lack of knowledge by teachers about how to use technology in their practice.

Cuban (2001) argues that money spent on technology takes away from money that could be spent for other educational purposes. Stoll (1999) does not comprehend the rationale behind the purchase of computers when budgets for education are being slashed. Behind every budget decision should be a sound rationale for how spending money will contribute to the goals of education. Stoll (1999) questions the amount of money spent on technology when other programs are being cut. “Fanatic? I don’t think so. How come we so rarely debate whether it’s best to spend huge sums of money on computers in schools?” (p. xv).

Cuban (2001) explains that lack of time is a major reason given by teachers for the infrequent use of technology. Time is necessary to learn about technology, how to incorporate it into meaningful lessons, and to work with students while they use the technology. McKenzie (1999) points out that it is difficult to dedicate time to learning
about technology when there is pressure to cover curriculum and increase students’ performance on standardized tests. Hargreaves (1997) reveals that time is also needed for teachers to work with and support colleagues in order to create strong professional communities. Collegial support is often critical for helping teachers incorporate new instructional strategies which cannot occur if time is scarce for meeting with other teachers. Stoll (1999) has a different view and sees technology as a time waster:

Rather than augmenting the teacher, these machines steal limited class time and direct attention away from scholarship and toward pretty graphics...for the dirty secret of educational technology is that computers waste teachers’ time, both in and out of the classroom. (p. 32)

Although I do not completely agree with his view I do acknowledge that technology sometimes requires an enormous amount of time to learn and use which makes learning to use technology a big commitment. Research conducted on technology implementation should examine the best practices for creating the time and providing the support for teaching technology to teachers.

Access to technology is a common problem expressed by both teachers and students and increasing access is often a goal of technology implementation. Cuban (2001) explains that access to computers is measured by the ratio of students to computers and since the 1980’s, reducing the ratio has been the primary measure of a schools’ technological progress. A second measure is the number of schools and classrooms wired for the Internet and a third is “the variety and placement of computers among media centers, computer labs, and individual classrooms” (p. 82).
The ratio of students to computers has lowered over the past few decades. Yet lack of access is often quoted as a barrier to using technology. The problem is that available computers may be obsolete or available only at certain times. The other problem is the inequities regarding technology in schools with socio-economic factors determining which students have greater access than others. Many critics agree there are disparities amongst which schools and students have access to technology (e.g., Apple 2000; Caldwell, 1997; Cuban, 2001). The reality is that equal access for anything that requires large amounts of money in education is rare.

Another way to view access is to be creative about how we use technology with students. “We should continue to decrease the pupil-computer ratio but we also need to consider alternative strategies for technology-enhanced learning” (Haughey, 2002, p. 15). Although she does not state what these alternative strategies are she does recommend that identifying and gaining more information about these strategies are needed. I agree that finding creative and collaborative ways to use technology with students warrants some further consideration as a means of decreasing the obstacle of limited access to computers.

Technology Conclusion

Research shows that past attempts at technology implementation have not been proven to be effective. However, there is a lack of Canadian, longitudinal, rigorous and practitioner research on technology implementation. Many research studies done on technology implementation are considered contradictory or flawed. Many barriers such as funding, access and time create obstacles to using technology in teaching. Yet despite the problems with past research and the lack of evidence that technology
implementation has been effective, it continues to be funded and included in many educational reforms.

What still needs to be addressed regarding technology implementation in the educational system is how it can be used effectively in teaching and learning. Since technology implementation has not been proven to substantially increase students’ academic achievement or change teachers’ practice, how should the success of technology implementation be measured? As well, since past attempts have not been effective, how technology should be effectively implemented in teaching and learning remains to be answered.

One model advocated and commonly used for implementing technology is mentoring. Yet, this model is wrought with problems and misinterpretations. Although a mentoring relationship should work for supporting teachers’ changing their practice, how mentoring relationships are constructed for technology implementation creates problems. The following critique of the mentorship model elaborates on the problems inherent in how this model is used in education and the difficulties with ensuring an effective mentoring model is achieved in short term technology implementations.

A Critique of the Mentorship Model for Implementing Change in Teaching Practice

Mentorship is often considered the best method for supporting teachers in changing their practice and is the most commonly recommended model for technology implementation in education (e.g., Hargreaves & Fullan, 1999; McKenzie, 1999; McDaniel & Umekubo, 1997; Holohan, Jurkat & Friedman, 2000). However, since previous attempts at technology implementation have not proven to be as effective as
expected, the effectiveness of the mentorship model for supporting technology implementation needs to be examined. Hargreaves and Fullan (1999) identify some key issues that must be addressed when choosing to use mentorship to support educational change. These issues include: how the mentors are selected; how the mentors and their protégés are matched to one another; how formalized the relationship should be; how the mentors will be compensated for their work; how time will be allocated for the mentoring process. I address these key issues and the concerns regarding mentorship as a model for supporting technology implementation.

**Difficulties Defining Mentoring**

Young and Wright (2001) define a mentor as "a person who is skilled, knowledgeable, a visionary, dynamic, and committed to the process of improving individual’s skills" (p.1). Some of the behaviour a mentor exhibits includes nurturing, modelling and guiding in order to support the advancement of the protégé. Their definition is quite specific. The problem with defining mentorship in education is that mentorship is used to label many different types of relationships constructed for a variety of educational purposes.

Mentoring is used as an all encompassing term to describe a variety of relationships which may or may not actually constitute mentoring. Lucas (2001) cites several sources that suggest true mentorship involves multi-faceted relationships which last for many years and has great impact on the protégé. If one agrees with this definition, then a true mentorship can only be determined retrospectively. As Lucas states “you can only aspire to be referred to as someone’s mentor, years later, when you are probably not there to hear it” (p. 46). Her definition of mentorship omits any sort of
planned relationships, which are those commonly constructed when schools and districts provide funding and support for mentoring. According to her definition, the artificial relationships commonly created by educators to support teachers changing their practice are not true mentoring relationships. The historical root of mentoring places emphasis on the concept of a relationship based on mutual respect developed over time. Whereas, mentorship in education is broadly defined and a model that assigns the role of mentor/mentee to teachers over a short period of time is misleading.

What might be missing from an understanding of mentoring in education given this premise?

Mentoring is an ill-defined model in education that is used for a variety of purposes and in numerous ways. English (1994) states “mentorship remains a vague term for those who wonder how it can be used to improve our teaching practice. Like tofu, which assumes the taste of whatever it is cooked with, the definition of mentorship also changes with the context” (p. 262). Mentoring is used in education to define numerous relationships that may not constitute a true definition of mentoring. As a result, the effectiveness of the various relationships created to support change in teaching practice under the guise of mentoring is questionable.

Many Different Mentorship Models

Young and Wright (2001) reveal that although mentoring has been around for centuries it has not necessarily been a successful relationship for all people involved. The problem lies in determining an effective model for mentoring. There are many different ideas about what constitutes a mentoring model. In order to understand our current notion of mentorship it is important to trace the origin of mentorship’s roots in
Greek mythology. The tale begins when Odysseus leaves for the Trojan War, and entrusts his wise friend Mentes with the task of educating his son Telemachus on his personal learning and growth (Colwell, 1998; Wilson, 2001). In current practice, the old idea of a wise person mentoring a protégé has given way to a variety of models of mentorship. Hargreaves and Fullan (1999) point out that “mentors can gain as much from their protégés as their protégés do from them developing new insights into their own and others’ teaching, new relationships, and a renewal of commitment and enthusiasm to their craft and career” (p. 5). The problem is whether or not teachers of any level of experience who can learn from one another are willing and comfortable to actually do so.

Loucks-Horsley, Hewson, Love and Stiles (1998) use a very traditional approach to the model of mentoring where the mentor is an experienced adult who guides one who is less experienced. Although they see a distinction between a mentor (as defined above), and a coach (where peers work with peers), the underlying assumptions they give refer to both mentors and coaches. These assumptions include valuing other competent professional’s expertise, acknowledging that one’s own practice can benefit from another’s observations and that ongoing assistance can help with mastery of new practice. The problem with their model of mentorship is they seem to base their suggestions on the assumption that a more experienced teacher is helping a novice, rather than embracing a less traditional partnership where teachers of various levels of experience can mentor one another.

Colwell (1998) distinguishes between models of “classical” and “instrumental” mentoring. He explains the classical mentoring model involves two individuals who
join voluntarily for personal and professional growth taking on the role of a mentor and a protégé. He describes instrumental mentoring as an official relationship used for formal employment or training purposes with roles of a mentor/supervisor or mentee/trainee. There are problems with both of these models. In the classical model he suggests the mentor is an older, wiser, more experienced teacher passing on their knowledge to a younger, more inexperienced teacher. I disagree since mentors and mentees can be of various ages and experience levels and form a mutually rewarding learning situation. Instrumental mentoring seems imposed upon the two partners and since a mentoring relationship involves mutual respect and trust which may not exist between two people who have been artificially placed together I do not see this as an effective relationship. Colwell does cite other researchers who caution that mentors should be carefully chosen and paired. However, he does not suggest how this can be done or acknowledge that an artificially paired mentor group may have problems no matter how carefully each has been chosen.

English (1994) suggests integrating mentorship within teaching. She does not support the traditional pairing of an older, more experienced teacher, with a younger, inexperienced protégé. Instead, she suggests a more informal form of mentoring where teachers are “challenged to incorporate a mentoring dimension into all aspects of your teaching, including your classroom interaction, professional development sessions, student advisement sessions, and your responses to student assignments” (p. 262). This definition of mentoring becomes a more holistic relationship that is underscored by care, commitment and reciprocity. There are many opportunities for this type of mentoring in education such as pairing teacher-teacher, teacher-student or student-
student. English goes even further to suggest that mentoring relationships are identified by the parties involved based on needs and desires rather than formally imposed through educational structures. Before this might happen spontaneously, a culture of mentorship must be developed within a district or school slowly and over time.

Similarly, Mullen (2000) writes about collaborative mentoring. The key term here is collaborative. Her study involved an action research group comprised of school and university practitioners who came together in order to form a new culture of learning. She describes collaborative mentoring as a “kind of counter-culture that is opposed to prevailing institutional practices of separation and exploitation” (p. 3). Instead, “when practiced effectively, collaborative mentoring becomes a new form of participatory action research rooted in social equality” (p. 3). However, while philosophical paradigms of collaborative mentoring support a rationale of technology as an agent for change, what is not clear in the Mullen paper is what collaborative mentoring looks like or how one goes about adopting it.

The old model of an experienced teacher mentoring a novice does not take into account the benefits that experienced teachers can reap from the skills and knowledge of newer teachers who may be more competent with technical skills or new methods of pedagogy. One way to ensure a more natural pairing of people with similar goals is to follow English’s (1994) suggestion to develop a culture of mentoring whereby mentoring relationships occur between many different people (teachers, parents, students) as situations unfold that can benefit from mentoring while also embracing Mullen’s notion of collaborative mentoring that is rooted in social equality.
Selecting a Good Mentor is Critical to Success

When deciding how to select a mentor Feiman-Nemser (1996) sees a key issue as “whether something as personal as a mentoring relationship can be formalized in a program. Should mentors be chosen or assigned?” (p. 2). Since mentors are often assigned in educational programs that use mentorship as a model for implementation it is important to understand some of the considerations for selecting a mentor. These considerations include the core virtues of a good mentor, the purpose of the mentor and whether the mentor is actually a supervisor.

According to Wilson (2001) the core virtues that define a good mentor are integrity (a sense of trustworthiness), courage (versus fear and to meet new challenges) and care (genuine concern for the protégé). I agree these core virtues are necessary in order to build a caring, supportive and nurturing relationship. However, it is difficult to ensure them when mentors who may not posses these core virtues are often recruited or volunteer for programs. Compound this problem with how many mentors are artificially paired with their protégés without naturally choosing one another based on compatibility and needs and it is questionable whether the relationship can be successful.

In addition, Young and Wright (2001) suggest the protégé needs to determine the purpose of having a mentor. Two key questions the protégés should ask themselves are: “1) What do I expect from my mentor? 2) What characteristics will I bring to the relationship?” (p. 4). They suggest the next step is for the protégé to find a mentor who will fit their needs and then set ground rules for the relationship. They stress that although the relationship may be friendly, it is not meant to be a friendship. Their
suggestions are important, especially the initial reflection necessary by the protégé in order to clarify the purpose of the partnership. Also, this is a voluntary model for partnership and setting ground rules up front ensures that both parties understand the limitations and expectations of the relationship.

Portner (1998) distinguishes between the role of a mentor and a supervisor. He lists the types of support given to mentors in order to develop mentoring skills such as being provided with relevant reading materials and attending mentorship workshops. However, he explains this type of information is not enough since educators must also realize the subtle difference between a mentor and a supervisor. A mentor is not an evaluator whereas supervisors often are in a position of assessing their charges. Feiman-Nemser (1996) also sees assessment as an issue in mentoring relationships believing novices are more likely to open up and share problems with a mentor if they are not evaluating them. Caution should be used when evaluation is attached with mentoring. If a protégé feels threatened by their mentor, the feelings of trust and confidentiality necessary for an effective relationship may not develop. However, this does not mean that a mentoring relationship will not develop between a protégé and their supervisor. In a power relationship, what matters in order for a mentoring relationship to advance is the development of trust and reciprocity over a period of time.

Artificially placing two people together does not ensure a good mentoring relationship will develop. The core values necessary for good mentors including a sense of trust and genuine care for the protégé cannot be guaranteed if the mentors are not chosen carefully or people who do not possess these core values volunteer to be mentors. It is more effective if both the mentor and the mentee seek each other out based on
mutual needs and a relationship of collaboration created over time. Protégés need to reflect on why they should seek a mentor and set some attainable goals in order to ensure they will benefit from the relationship. If the mentor is a supervisor and is responsible for assessing the protégé, an open and trusting relationship must be developed over time.

**Mentoring Requires Time and Compensation**

How mentors are compensated and how mentors and protégés find time to participate in mentoring activities present problems to educators implementing these programs. Feiman-Nemser (1996) describes time as a key issue for mentoring since it is needed to both learn to mentor and be a mentor. She gives examples of programs where retired teachers are hired or mentor teachers are given release time as possible solutions for finding time for mentoring. However, she concedes that teachers are often expected to combine mentoring activities with a full teaching load. A problem I see with providing time is the funding necessary to create time in teachers’ schedules. If no release time is given to teachers for mentoring, their enthusiasm and commitment to the program may be low and expectations regarding their success may be too high.

English (1994) acknowledges that lack of time is a major challenge in implementing mentorship in schools. Busy educators are reluctant to add more responsibilities to their workload. She suggests that mentors consider the benefits of mentoring for improving their own practice in order to justify their time commitment. Also, respecting the time of others involved should be considered by all participants. What she does not suggest are concrete ways schools can support time for teacher-to-teacher mentoring such as release time or creating flexibility in their teaching schedules.
Portner (1998) gives a variety of suggestions for finding time for mentoring activities. These include: ten to fifteen minute time periods during lunch; free periods; or meetings used for brief discussions. He contends these short time periods are not enough and finding longer blocks of time can be difficult. However, if mentoring is a priority, he believes educators should provide funding to allow release time. Other suggestions Portner makes are to be creative about time. By videotaping classes the mentor can view the protégé’s teaching without having to arrange an actual class visit allowing discussions to occur outside of class time at the convenience of both the mentor and protégé. Portner offers other time saving ideas, but I found these ideas assume there is considerable funding of mentoring in the workplace, which may not necessarily be the case. Unless mentoring is given priority in schools’ budgets, finding time is a major problem.

Loucks-Horsely, et al (1998) suggest a long-term commitment to interaction between the mentor and protégé is a requirement for the implementation of mentoring. They see a need for time in order to develop trust and to build an understanding about their own abilities in order be able to share with others. What they do not make clear is how long a mentoring partnership should be in place in order to be effective or how to ensure the longevity of the relationship. For example, what happens when funding ends or teachers change schools? It is difficult for schools to ensure continual support for an effective mentoring program when budgets change from year to year.

What seems to be lacking in any of the research studies is a definitive example of how mentors are being compensated. Although some studies refer to release time and training or stipends, it seems the assumed compensation is intrinsic rather than extrinsic.
For example, reciprocal benefits include those that the protégé may get through support and guidance and the mentor may achieve from the knowledge they have contributed to another’s growth and development, possibly learning about and changing their own practice through their experience. But if mentorship becomes even more institutionalized, will mentors feel imposed upon and begin to resent their participation in structured programs?

Finding time for mentoring and ensuring some sort of compensation for participation are obstacles to developing mentoring programs. Creative solutions such as hiring retired teachers, providing release time, videotaping classes and using short breaks such as recess for brief discussions are all ways of trying to create time for mentoring. Realistically, many teachers have to find time for mentoring while maintaining full teaching loads and do not receive any sort of tangible compensation for their participation in programs. Therefore, teachers need to see benefits that are intrinsic such as personal satisfaction through helping others or learning new pedagogies in order to justify their time commitment to mentoring. When funding ends or teachers change schools, programs may flounder unless educators foresee these obstacles and find ways to ensure longevity of programs.

**Concerns about Mentoring and Technology Implementation**

Mentoring is often linked to technology implementation. Hargreaves and Fullan (1999) claim failure to integrate mentoring programs with other reforms will cause the programs to fall short of their potential. Mentoring programs that embrace the overall goals of a district or school will help to encourage transformations in the teaching profession and unless teachers can see the relevance of the mentoring program they
participate in to larger educational goals, the program becomes an isolated professional development experience that may or may not be continued, valued or supported in the long term.

McKenzie (1999) states “programs that emphasize coaching and mentor relationships encourage the growth of technology enthusiasts while also supporting and enlisting teachers who have previously been thought reluctant, resistant and technology challenged” (p. 111). He outlines the elements necessary for a successful mentoring program such as: planning, respect, time, clear expectations, and assessment. His strong advocacy of mentorship programs for technology integration is only briefly balanced with his acknowledgement of the problem of funding them. He suggests reserving twenty-five percent of the money targeted for hardware to put towards adult learning. The problem with his suggestion is funding in education continues to decrease which lessens the chance for mentorship programs to be properly supported or assessed. It is doubtful that quality mentorship programs can exist when these programs are crippled by lack of time and sustained funding.

Holahan, Jurkat & Friedman (2000) researched a partnership between the Center for Improved Engineering and Science Education (CIESE) and schools implementing a mathematics initiative using computers. CIESE realized that simply training individual teachers on new technology would be ineffective for ensuring systemic and lasting changes and a mentorship model would be more efficient for training larger numbers of teachers. CIESE’s experience in other projects showed that a 1:7 ratio of trainers to trainees was necessary for effective technology integration. Holahan, et al (2000) stress the need for all stakeholders to be actively involved and committed to providing the
necessary resources for implementation. By initially seeking sponsorship of the program at the district level, CIESE ensured a high level of support for the program. The problem with their recommendation is they assume a technology initiative has substantial financial backing. Getting the support of school districts is difficult and often outside funding is necessary to support programs and get all stakeholders on board.

Holahan, et al (2000) discovered three key findings regarding mentor teachers and technology implementation. These findings include: the need for the mentors to remain stable in their assignment for the duration of the program; for mentors to participate voluntarily to ensure motivation; and mentors should be teachers already highly regarded by peers and who possess excellent teaching skills. The difficulty is when you throw technology skills into the mix resulting in a limited pool of teachers from which to attain volunteers. Many teachers feel inadequate about their abilities using technology. It is important to minimize the need for technology skills which can be taught and instead stress interpersonal and pedagogical skills.

A case study by McDaniel and Umekubo (1997) outlines four vital steps for effective technology implementation. One vital step is staff development and in their study state mentor funds were used to train mentor teachers to use technology. One problem I found while reading about the types of in-service these teachers received was there appeared to be no in-service on how to mentor teachers. Instead the focus of their training was purely on how to use technology. Also, it seems the motivation for the teachers to become mentors was the compensation of attaining hardware, software and stipends. The nature of their motivation raises concerns about how effective their
relationships were with their protégés. In their conclusion, McDaniel and Umekubo state that “a school or district that provides its teachers with the necessary equipment, training and technical support will, in the end, see meaningful results through engaging, technology-rich classroom environments where teachers and students are focused on learning” (p.5). I question how effective this particular program was in the long run since the mentor teachers were motivated by their own personal gains and were not trained on how to be effective mentors.

Using mentorship as the model to implement technology poses some concerns. Unless the goals for technology implementation are clearly articulated to participants and linked to larger reform efforts, the program may not be effective. All stakeholders in a school district need to support the program in order to ensure sustained funding which is necessary for programs to remain stable over long periods of time.

Mentorship Conclusion

Mentoring is fraught with difficulties and yet it remains a model popularly promoted as best practice for change, especially for technology implementation. Many technology initiatives are funded for short periods of time and have yet to be proven to be effective in changing teachers' practice or students' learning. Since past technology implementations have not been as effective as hoped and mentoring is often the model chosen for these implementations, it follows that the mentoring models used in technology implementation must not be very effective. The question is why mentoring is still being promoted as the best model for supporting teachers implementing technology? Ideally, an effective mentoring relationship should support change.

However, the types of mentoring relationships established in short term technology
initiatives are not effective for supporting teachers implementing technology. More time is required and more information is needed on how to support, nurture, develop and create a collaborative environment that supports mentoring as a means of incorporating change in teachers' practice.
CHAPTER III

METHODOLOGY

In this chapter, I describe the context in which this research was situated. I clarify why I chose to do a case study. I outline my three methods of data collection: interviews, personal journal, and observation. I describe how I interpreted and coded the data in order to identify the themes. I outline ethical considerations and how I attempted to establish trustworthiness in the research.

The Context

The context in which research occurs is critical to defining a case study. Four concurrent initiatives shaped the context of this research. These initiatives include: The Ministry of Education’s Grades 6-9 Information and Communication Technology (ICT) Initiative; Westview’s Curriculum and Technology (CAT) Planning Group, the Westview ICT Integration Mentorship Program and the University of British Columbia (UBC) Ministry of Education Technology Proposal. By describing each of these initiatives, I detail who participated, why they were involved, what they did and where the research occurred. Also critical to understanding the context of this research is information about the political milieu which ultimately affected the teachers in this study. I include in this section information about job action that occurred at the same time as the research and a table outlining the timeline of the research.

The Ministry’s Grades 6-9 Information and Communication Technology Initiative

The BC Ministry of Education’s Grades 6-9 ICT Initiative grew out of recommendations from a report entitled Conditions for Success done by the Teaching, Learning and Education Technology Advisory Committee (TLETAC). TLETAC was
established in the fall of 1998 by the British Columbia Ministry of Education and the British Columbia Teachers' Federation (BCTF). The BCTF is the provincial union for teachers in the province of British Columbia. The purpose of the committee was “to provide advice to the Deputy Minister of Education on strategies, programs and policies relating to the use of technology in K-12 education” (TLETAC, 1999, p. 13).

As a whole group, the TLETAC met six times over a period of eight months during 1998-1999. The group was also divided into seven working groups which met on other occasions to discuss the areas of values, social impact, teacher issues, student issues, economics, research and communications, curriculum and learning resources and electronic delivery. A special session with academics was held to discuss the issue of gender equity in relation to technology. Also, a day was held for consultation with key constituent groups in the education system (government, post-secondary, etc.) to discuss the areas listed above.

The TLETAC consisted of representatives including elementary and secondary teachers, district technology coordinators, university professors, ministry staff, the British Columbia Teachers Federation and others. Through their work, the committee identified eight themes that set the context for their recommendations. Important to this study are the following themes: integration with curriculum is central to successful implementation, teacher support and commitment, and student learning; teachers require support for integration; if change is to be widespread, many teachers, not just enthusiasts, must be engaged in the decisions and the activities; research is an essential part of the process of effective change; and adequate funding is central to achieving the integration of ICT into the curriculum. In their review of the literature, TLETAC found
there was no solid information about technology and how it is used in BC schools. The report to the Minister from TLETAC recommended half of one percent of the overall provincial budget for technology should be set aside for research about the use of technology in education. As well, TLETAC recommended universities and education system organizations should be included in identifying areas for research and in carrying out the research.

In the Executive Summary, the TLETAC suggests technology integration in education should complement core educational values, thus emphasizing a focus on teaching and learning, not on technology. This new way of perceiving the adoption of ICT in teaching is important to the basic values incorporated into the Grades 6-9 ICT Initiative. The TLETAC recommended that Ministry funded research should generate BC based information useful for understanding and making decisions and be initiated and debated by a wide range of educators. Case studies with a teacher-centred approach to research were recommended as being critical to success. Four perspectives for a research strategy were recommended including curriculum, student learning, teacher decision-making and the context in which teaching and learning occur.

Other recommendations by the TLETAC included the involvement of faculties of education and other members of the education community in setting up an infrastructure for encouraging the dissemination and discussion of research findings and that there should be a sustained allocation of funds for research. The UBC Faculty of Education's participation in ICT research was supported by these recommendations. However, the funding received for the research was not sustained over time, but rather for a limited time period.
In answer to the recommendations outlined in the TLETAC report, the British Columbia Ministry of Education developed a $1.6 million teacher-training pilot project entitled the Grades 6-9 Information and Communication Technology Initiative targeted to reach over 150 mentors and 850 participating teachers across the province (Johnston, 2001). When the Initiative began in January 2001 with the intention to end in June 2002, the purpose was "to facilitate the application of information and communication technology in teaching practices, enhance existing approaches and foster innovation in teaching practices" (BC Ministry of Education, Education Technology Branch, 2000, p.1). Initially, a second cohort was proposed to follow the first group of mentors and mentees once their cohort ended in June of 2002. However, due to a change in the provincial government in May 2001, the second cohort was not directly supported or funded by the Ministry.

A mentorship model was chosen because peer-mentoring was considered by ministry staff coordinating the Initiative to be the "best practice" for implementing ICT. Ministry staff were influenced in their choice by their knowledge of two programs using the mentorship model as a means of professional development which already existed in BC. These two programs were the credit courses Teaching and Learning in an Information Technology Environment (TLITE) at Simon Fraser University and a Trainers Training Trainers course at the University of Victoria. Positive feedback from administrators and teacher participants regarding these programs helped to identify mentorship as a preferred model of ICT professional development (Coupal, 2002).

In order to participate in the Initiative, school districts were required to submit a plan outlining their proposed design and delivery of the Initiative. The Ministry based
funding on a mentor/mentee ratio of 1:4 or 1:7 with the ratio adjusted for smaller school districts. All BC school districts submitted a plan and participated in the Initiative. The funding covered release time for mentors and mentees to participate in the Initiative. Mentors received release time of eleven to fourteen days. These release days included a Train-the-Mentor session delivered by seconded teachers working for the Ministry in the Initiative. As well, mentors were given release time in order to provide in-service to mentees and also to meet with mentees on a one-to-one basis to facilitate the incorporation of ICT in their practice. Mentees received four days of release time in order to either attend professional development sessions, to meet with mentor teachers or other participating colleagues (BC Ministry of Education, Education Technology Branch, 2000). How each district and participating teacher used the release time was flexible within the above parameters given by the Ministry.

One of the requirements of mentor and mentee participation in the Initiative was the creation of activities, lesson plans, projects and units to be shared on the Ministry of Education website. Exemplar units were created and provided by the Ministry as samples of exemplary teaching units incorporating technology to develop research and critical thinking skills for students in the core curricular areas. The expectation was that mentors would assist mentees in creating similar teaching units, single lessons or simple projects with the target being one resource for each mentee teacher participating in the Initiative.

Curriculum and Technology Planning Group: A District Initiative

At the same time that the BC Ministry of Education was inquiring into changes in how to implement technology effectively into BC schools, the Westview School
District was also re-evaluating how to fund and support more effectively technology use by teachers and students in the District.

The Westview School District is a suburban district located near Vancouver, British Columbia. Compared to surrounding school districts, Westview is a medium sized district employing approximately 2,200 teaching and non-teaching staff. There are twenty-five elementary and seven secondary schools with a student population of approximately 18,000. Westview schools operate on a ten month year with summer school programs available in July and August. Westview is a fairly close-knit community founded on a heritage of farming and fishing. Westview is the location of two of BC’s largest industrial business parks with high-tech, manufacturing, film and horticultural industries contributing to the economy.

Educational Programs is the title given to the staff responsible for curriculum and instruction in the District. An overall dissatisfaction and disillusionment by all levels of staff with the large amount of money being spent on technology and questions about how effective technology ultimately was in improving student academic achievement lead to discussions at the District level about the need to ensure more effectiveness and accountability.

District staff in Educational Programs read *Conditions for Success*, attended seminars, and read books and articles by people such as Jamie McKenzie, an American educator who advocates technology in education when used effectively. Educational Programs decided to form an Educational Technology Planning Group consisting of various representatives of the District’s teaching population including elementary and secondary teachers, administration, librarians, district and special programs staff. They
invited people to participate in the group and specifically sought people with ICT skills ranging from low to high levels. The objective was to have a group that consisted of teachers with a range of ICT skills and a cross-section of teaching areas representing the overall teaching population in the District.

The purpose of the group was to review past and current practices of the District with implementing ICT in order to suggest changes in how the District should use ICT in the future. At the first meeting in mid November 2000, the group was given an overview of BC Ministry directions for technology (based on the TLETAC report) and the task to develop, based on these directions, a five year plan for implementing ICT in the District. The group met over the next few months with the final product being the development of a five year Curriculum and Technology (CAT) Plan document that was released in March 2001. The CAT Plan outlined strategies, timelines and costs for the five year period based on goals identified by the committee. These goals included providing staff with access and professional development for using ICT, providing students with opportunities to explore and develop skills for using ICT in all curricular areas, and developing a research community/culture that examines and applies teaching and learning with technology.

I was asked to join the group when it was formed because the Director of Educational Programs and the District Computer Coordinator knew I was doing graduate work with a focus on technology implementation in teaching. While working with the larger group I participated in two sub-committees. One sub-committee was responsible for developing a "Teacher Information and Communication Technology Skills Survey" that was administered to all Westview School District teaching staff in
February 2001 in order to provide some baseline data regarding staff use of ICT. The intent was to follow up with additional surveys periodically throughout the five year Plan to determine if teachers increased their use, skill and confidence levels using ICT.
The second sub-committee was responsible for compiling the ideas generated from the larger CAT Plan committee in order to write the final CAT Plan which was approved by the District.

The District’s ICT Integration Mentorship Program

At the same time the Westview School District was forming the CAT Plan Committee, applications for proposals and funding for the BC Ministry of Education’s Grades 6-9 Initiative were sent to BC school districts. The timing was perfect since Westview wanted to incorporate the recommendations of the TLETAC report into their new five year plan. Funding from the Ministry through the District’s participation in the ICT Initiative would help support the direction of the CAT Plan.

The Westview School District submitted their plan for the ICT Initiative to the Ministry and it was accepted. Westview was funded at a ratio of 1:7, meaning one mentor to seven mentees. The number of mentors funded by the government was calculated according to each District’s student population. Westview received funding for four mentors and twenty-eight mentees for a total of $45,000. The District supplemented the Ministry funding by using about $25,000 to purchase computers to ensure mentors and mentees had computers to use for the program. Some of the mentors and mentees received their own classroom computers but in other cases the computers needed to be shared. As well, each mentor received a laptop and one display projector was purchased and shared amongst the mentors.
A second set of funding of $45,000 was received from the Ministry for general purposes that could be used by the District to support a second cohort that would start in September 2002. A change in government in May 2001 meant a change in funding and the new government no longer targeted funds to specific projects, hence the general nature of this second set of funding. The $45,000 received from the Ministry was rolled into approximately $400,000 that was spent by the District to support the Curriculum and Technology Plan. Therefore, the money was not specifically targeted to a second cohort, but rather to ICT implementation in general.

A call was made to find four mentors—two elementary and two secondary—that would be responsible for mentoring up to seven mentees. Following the Ministry guidelines, Westview requested the mentors who volunteered must have strong curricular background in English or Language Arts, Social Studies, Mathematics or Science. Rather than volunteering on their own volition, all four mentors were personally asked to participate by District staff. One secondary mentor chose to withdraw from the program when he realized the mentees he would be working with mainly used Apple computers which he did not feel competent enough about using. Therefore, another secondary teacher who used Apple products regularly was approached to replace the first mentor.

After identifying four mentors, a second call was made for mentees in the same curriculum areas who wished to improve their ability to incorporate ICT in their practice. It was not necessary for mentees to have any experience or skills using ICT. Teachers responded to this call for various reasons, some out of their own interest in improving their ICT use and others were “volunteered” by their administrators. All
teachers who volunteered to be mentees for the Initiative were accepted into the program because the number of volunteers was fewer than the number allotted for mentees. At least two of the mentees ended up not participating in the program. One was promoted to an elementary principal position in September 2001 and another went on a long term medical leave for most of the 2001-2002 school year. Two mentees were brought in later in the school year to fill these positions. The number of mentees that actually committed to the Initiative was twenty-four.

Mentors began meeting as a group with the District Technology Coordinator in January 2001 and they attended the mandatory Ministry sponsored Mentorship training session where they learned about such things as the purpose of the Initiative, expectations of the mentors, and the mentorship process. I did not attend this meeting but was given a copy of the PowerPoint presentation used at the meeting. This presentation gave mentors a brief overview of the Initiative and their roles as mentors. My review of the presentation given to mentors suggested that the emphasis was more on technology integration than on mentor qualities and roles. From the 66 slides in the presentation, I found one slide regarding mentors’ role described as training and providing support to mentees over the eighteen month period and assisting mentees with developing technology rich resources for their classrooms. On another slide, mentors were also asked to create a metaphor, skit or poem to share with the larger group that answered the question “What is Mentoring?”. Two other slides outlined the mentors’ roles as a consultant, collaborator and coach. What I do not know is how much time was spent elaborating on each of these slides.
The overall professional development support given to mentors included: the Ministry sponsored Mentorship training session; professional development opportunities to attend the Horizon's conference (a computer users conference) and the Coast Metro sponsored colloquium for ICT implementation; and a number of district sponsored meetings. The district sponsored meetings were held throughout the Initiative with no set schedule. Once job action began in January 2002, district staff were not able to call meetings for the Initiative until the end of the school year.

A special introductory meeting put on by Educational Programs was held for mentors and mentees on March 27, 2001. The purpose of the meeting was to introduce mentors and mentees to one another. A number of ice breaker activities were done followed by refreshments in order to familiarize mentors and mentees with one another. Rather than being an informational meeting about the Initiative or the roles of the mentors and mentees, the meeting only permitted them to meet their respective mentorship groups. I was introduced at this meeting as a teacher researcher who would be conducting research on the Initiative in the Westview School District.

District staff determined which mentors the mentees would work with based solely on their grade levels (elementary or secondary) and geographic location in the school district which has a very distinct geographical divide between the north and south areas. One elementary and one secondary mentor were assigned to each of the north and south areas of the District. Mentors then began working with mentees and this work continued until the end of June 2002. An important note is the Grades 6-9 ICT Initiative was the first mentorship program undertaken in the District, therefore no previous experience with mentorship programs as a district initiative existed.
The research was conducted on this group of mentors/mentees from the Westview School District with the research commencing in February 2002 and finishing in June 2002. Although mentors and mentees initially met in spring 2001, their collaborative work together did not start until September 2002. I needed approval for the research proposal before conducting the research and received approval in November 2001. At this time job action was being considered by BC teachers and I required a waiting period in order to see if job action would be approved, thus affecting teachers’ participation (job action is explained in detail further on in this chapter). I also needed to check with the Westview teachers’ union to ensure the research would be allowed under the conditions set by job action. I received permission to conduct the research by the union in early January. By the time the letters of consent, interview questions, and information letters for the research were completed and approved for the research, it was February. Therefore, the research did not begin until February 2002. It is important to understand that the uncertainty regarding job action meant much of the participation in the Initiative was stalled or put on hold from fall 2001 to spring 2002, which is essentially the main time period designated for the mentoring activities between the mentors and mentees in the Initiative.

The University of British Columbia’s Ministry of Education Technology Proposal

The final technology initiative occurring during the research formulation and completion is the Ministry of Education Technology Proposal from the Technology Research Committee, Faculty of Education, UBC. As part of their support and funding for the ICT Initiative, the BC Ministry of Education set aside some monies to support post-secondary institutions to provide a role in the ICT Initiative. From the PowerPoint
presentation given by Ministry staff at the first Technology Research Committee meeting on January 16, 2001, the potential roles for universities included:
implementation of ICT into pre-service teacher training programs to complement the 6-9 program; work with districts in development and provision of ICT in-service/professional development; conduct research on teacher training programs effectiveness; share research with other education institutions.

The Technology Research Committee consisted of interested faculty and graduate students from the Faculty of Education, including the Dean of Education. The initial meetings of the committee were to determine projects to submit for a proposal to be accepted and funded by the Ministry of Education. The proposed projects included a primary project aimed at determining the current state of technology use in the Faculty of Education. A second project was to undertake a series of case studies in Faculty programs or projects that were already incorporating ICT. The third project consisted of two case studies of the Ministry of Education’s 6-9 ICT Technology Initiative as it played out in two local school districts (UBC Faculty of Education, proposal to Education Technology Branch, Ministry of Education, 2001). As a member of the Technology Research Committee, this study was part of the third project. Westview and Vancouver were identified as two districts where research would be done on the ICT Initiative. I was responsible for completing a case study on the implementation of the ICT Initiative in the Westview School District.

The Ministry accepted UBC’s proposal and these projects were implemented. It should be noted that the second school district project did not get completed due to job action by teacher members of the British Columbia Teacher’s Federation. This same job
action became a major obstacle in the Westview ICT Initiative and in the Initiative as a whole and will be discussed in further detail in this section. The funding for the UBC Technology Research Committee ended December 2002.

Table 1 shows a brief description and timelines of the Four Technology Initiatives occurring concurrently while I formulated and conducted this research.
Table 1. The Four Technology Initiatives

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Description</th>
<th>Timeline</th>
<th>Relationship to the other Initiatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Westview’s Curriculum and Technology (CAT) Planning Group</td>
<td>A working group of Westview educators who developed a five year plan for curriculum and technology integration.</td>
<td>November 2000 - April 2000</td>
<td>Concurrent with the Ministry's decision to fund a province wide technology initiative, Westview also felt the need to review how and why they funded technology in the school system.</td>
</tr>
<tr>
<td>The Westview ICT Integration Mentorship Program</td>
<td>The Westview School District cohort for the BC Ministry of Education Grades 6-9 ICT Initiative.</td>
<td>January 2000 - June 2001</td>
<td>While Westview was developing a five year technology plan, the Ministry provided an opportunity to participate in a province wide technology initiative.</td>
</tr>
<tr>
<td>University of British Columbia (UBC) Ministry of Education Technology Proposal</td>
<td>Technology Research Committee from the Faculty of Education, UBC who submitted a proposal to the BC Ministry of Education.</td>
<td>January 2000 - December 2002</td>
<td>As part of the Ministry Initiative, post-secondary institutions were funded to conduct research. As part of this research, UBC conducted a case study of the Westview ICT Initiative.</td>
</tr>
</tbody>
</table>
The Effects of Job Action

One of the major events that occurred during all of the above initiatives was job action by British Columbia teachers during collective bargaining for their collective agreement which had expired at the end of June 2001. As well, a change in the provincial government in May 2001 occurred during the course of the Initiative. This political milieu in which the research took place had a notable impact on all teachers in this study. This impact will be explained further in Chapter IV where I present the data.

During a large portion of the ICT Initiative, the British Columbia Teacher’s Federation (BCTF) which is the union representing teachers in BC and the British Columbia Public School Employers’ Association (BCPSEA) the teachers’ employers, were in the midst of collective bargaining. Collective bargaining began in March 2001. Pressure mounted when the BCPSEA applied for the designation of essential services whereby teaching would be considered an essential service and therefore teachers would not be able to go on strike. In response, the BCTF applied to the Labour Relations Board (LRB, which is responsible for ascertaining the legality of any job action taken during labour disputes) for the right to take job action in imposition to the essential services legislation. Permission was granted on November 2, 2001 by the LRB to the BCTF for the right to take job action (British Columbia Teachers’ Federation, 2001). This meant that teachers had legal permission to rightfully conduct job action in response to the application by the BCPSEA for the designation of essential services.

Important to the teachers in this research study were the following stipulations laid out in the job action as outlined by the BCTF: teachers will not attend any meeting
called by school district management; teachers will not participate in school district or ministry in-service; teachers will not participate in professional development that is not teacher directed. As a result of the job action, many teachers in this study were reluctant to continue with the Initiative. Although their participation could be deemed as teacher directed, the links of the Initiative to the Ministry and to the District confused teachers. As well, district and ministry staff were not able to call any meetings or in-service in support of the teachers in the Initiative during the period of job action.

The Timeline of the Research

The following table outlines the timeline of the research including the dates of the various initiatives and important dates regarding job action.
Table 2. The Timeline of the Research

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 16, 2000</td>
<td>First meeting of the Westview CAT Plan committee.</td>
</tr>
<tr>
<td>November 30, 2000</td>
<td>Westview made a call for mentors for the Initiative.</td>
</tr>
<tr>
<td>January 11, 2001</td>
<td>Westview made a call for mentees for the Initiative.</td>
</tr>
<tr>
<td>January 16, 2001</td>
<td>Ministry meeting at UBC requesting research on the Initiative.</td>
</tr>
<tr>
<td>March 27, 2001</td>
<td>First meeting of Westview mentors and mentees. I am invited to the meeting in the capacity of a researcher.</td>
</tr>
<tr>
<td>March 30, 2001</td>
<td>Coast Metro Field Services puts on a colloquium for mentors entitled: Leadership for Technology Integration: A Colloquium Supporting the ICT 6-9 Project. I am invited to attend this colloquium in the capacity of a researcher.</td>
</tr>
<tr>
<td>May 2001</td>
<td>New government elected in British Columbia.</td>
</tr>
<tr>
<td>June 27, 2001</td>
<td>Ethics approval received from the Westview School District for this research project.</td>
</tr>
<tr>
<td>June 29, 2001</td>
<td>UBC Technology Research Committee submits ethics review for approval, including this research project.</td>
</tr>
<tr>
<td>October 18, 2001</td>
<td>Announcement of strike mandate given by BC teachers to the BCTF.</td>
</tr>
<tr>
<td>November 2, 2001</td>
<td>Labour Relations Board affirms right of BC Teachers to take job action over the recent imposition of essential service legislation.</td>
</tr>
<tr>
<td>November 14, 2001</td>
<td>I meet with my dissertation committee to approve research proposal.</td>
</tr>
<tr>
<td>January 7, 2002</td>
<td>Withdrawal of voluntary activities by BC teachers (job action begins).</td>
</tr>
<tr>
<td>March 4, 2002</td>
<td>Research package including information letter, consent form and initial research questions sent via district mail to all mentees and mentors.</td>
</tr>
<tr>
<td>March 26, 2002</td>
<td>Reminder memo sent to mentees and mentors regarding research package.</td>
</tr>
<tr>
<td>April 11, 12, 17 &amp; 19, 2002</td>
<td>Personal interviews conducted with mentors.</td>
</tr>
<tr>
<td>May 14, 2002</td>
<td>Final interview questions sent to mentors and mentees. Included a letter with the incentive that responses received before June 15, 2002 would qualify respondent for a draw to win either $25 cash or a $25 gift certificate.</td>
</tr>
<tr>
<td>May 14, 2002</td>
<td>Research package including information letter, consent form and research questions sent to district and ministry staff.</td>
</tr>
<tr>
<td>May 24, 2002</td>
<td>Personal interviews of both district staff.</td>
</tr>
<tr>
<td>June 17, 2002</td>
<td>Westview Initiative wrap up party with mentors and mentees. I am invited to attend in my research capacity. Personal Interview of mentee.</td>
</tr>
</tbody>
</table>
Choosing a Case Study

As a high school business education teacher, I spend most of my time teaching in computer labs. I enjoy the challenge of learning new software and how to use equipment. I particularly enjoy discovering how students work with technology in terms of the types of projects they complete and also the way in which they work, either alone or collaboratively. I found that my teaching style changed in order to accommodate the new learning environment. It was not so critical for me to be the focus of the lessons; rather I have been able to take on a more facilitative role, allowing students to become more responsible for their own learning.

As a result of my own professional experience with technology, my research interest was to inquire into how other teachers integrate ICT in their teaching. Over the years, I witnessed teachers who ran the spectrum of either being technology enthusiasts and innovators, or those who felt technologically challenged or intimidated. I wondered why there is such a huge discrepancy in how teachers respond to technology. Although I knew my research should be about teachers and ICT, I did not know who or what I would research until I became involved in the Westview School District’s Curriculum and Technology Planning Committee and subsequently heard about the Ministry of Education’s Grades 6-9 Technology Initiative. Since the Westview School District planned to participate in the Initiative, I decided that I would research the experiences of the teachers in the district where I teach.

Having identified what I wanted to research, I had to identify the type of research that I would do. Since the research was confined to a group of teachers (mentors, mentees, district and ministry staff) and their experiences involving a
particular site (the Westview School District) I decided the most appropriate type of research was a case study.

Joppe (1999) explains that researchers choose a case study when they deem it desirable to learn from the experience of others. Case studies are rich sources of information about the experiences of the people involved. When a particular event is taking place that is unique and will not occur in the same way, with the same participants, a researcher may choose to do a case study of that event. Creswell (1998) states that a “researcher should focus on an event, process or program for which we have no in-depth perspective on this ‘case’” (p. 95). Therefore, the Initiative as it unfolded in the Westview School District lends itself to case study research.

Stake (2000) distinguishes between three types of case studies: intrinsic; instrumental; and collective. Intrinsic case studies are done when a researcher wants to focus on a case that is of itself a matter of interest. An instrumental case study is used to provide insight on a particular issue. A collective case study is one that studies several cases. Given Stake’s definitions of the three types of case studies, this case study is both intrinsic and instrumental. I am interested in both the particular case (the experiences of teachers in the Initiative) and the bigger issues (mentorship as a model for technology implementation).

Cresswell (1998) explains that a case study has a number of identifiable features. First, the identification of what the case is (e.g., teachers’ experiences participating in a technology Initiative in the Westview School District). Second, a case is a “bounded system”, bounded by time (January 2000 – June 2001) and place (the Westview School District). Third, extensive, multiple sources of information are used in
data collection (interviews—personal, mail, email of four levels of teachers; personal journal; observation; various source documents—news releases, ministry documents, etc.). Finally, considerable time is spent describing the context or setting for the case.

Stake (2000) cautions that although intrinsic case studies can be generalizable a researcher must be cautious not to commit to generalize or theorize thereby drawing away from the features that are important for understanding the actual case. The case study research is unique to the teachers involved in the Initiative in Westview. However, their experiences with mentoring and ICT implementation can inform future initiatives.

Contexts and situations are important to a case study. Stake (2000) identifies cases as having their own unique history that operates in many contexts including physical, economic, ethical and aesthetic. Joppe (1999) agrees, explaining that attention must be “paid to detail in order to understand and document the relationships among circumstances, events, individuals, processes, and decisions made” (p. 1). Therefore, the context in which the case study research I did is situated is critical to an understanding of the case.

Joppe (1999) suggests when doing a case study it is usually necessary to conduct a in-depth interview with all of the key individuals. She also recommends consulting internal documents, records, or researching press reports. Finally she sees observation as necessary to provide insights into such things as how decisions are made in an organization. In the research, I conducted interviews with four levels of teachers (mentees, mentors, district and ministry staff), consulted documents and press reports and attempted to observe mentors and mentees.
Methods

I made numerous attempts to encourage teachers to take part in this study. First, I sent out information letters and consent forms to all teachers involved in the Initiative from the school district via school mail and email. Ministry staff received information letters and consent forms including the research questions via email. All district and ministry staff and mentors agreed to participate (although one ministry staff member eventually did not respond to the interview questions).

Mentees responded much more slowly. Since I had frequent contact with mentors (I was invited to some of their meetings and was corresponding regularly by email with them) I made sure I asked them to encourage their mentees to respond to my request for participation in the research. I also gave mentors extra copies of the mentee information and consent letters. When I still had not received a large response from mentees, I sent out a reminder memo encouraging them to respond. Finally, I sent out one final reminder that included an incentive for choosing to participate; all mentees who responded prior to June 15, 2002 would be entered in a draw to win either $25 cash, or a $25 gift certificate from either a national coffee shop chain or a local aromatherapy store. This final offer resulted in a small flurry of responses at the end of the research study (see Table 2 and Appendices A – L).

Interviews

In the information package sent to teachers via school mail and email, they were given the choice of responding to the interview questions using personal, mail or email interviews. All ministry staff chose email interviews since they were regular email users and they lived in another city making email more convenient. All district staff and
mentors chose personal interviews. However, most of my other communication with them such as booking the personal interview, asking them to remind mentees about the research, etc., was via email. District staff and mentors all had more flexible schedules than mentees which helped to facilitate scheduling personal interviews. Mentees chose from all three interview methods since many of the mentees were not regular email users.

In order to conduct qualitative interviews, Fontana and Frey (2000) suggest the researcher consider how she will access participants and present herself. I achieved access because I work for the Westview School District and know the authorities who gave permission to do the research and know most of the teachers. I presented myself as a graduate student conducting research and a teacher. Through my background I gained trust and I established rapport by attending the initial meeting where mentors and mentees were introduced and I was introduced as a teacher researcher. I also established rapport while contacting individuals regarding the research through personal contact, telephone conversations, or email exchanges.

I asked respondents where they would like to conduct the interview and in each case, the interviewee chose either their own classroom or a designated meeting room in their school or worksite. I chose to audio-tape the personal interviews in order to obtain accurate data. An audio-taped interview of one of the mentees did not work. Fortunately, the same mentee had already mailed in his responses to the interview questions although these responses were not as detailed as those he gave in the personal interview.
Perschitte, Tharp and Young (1997) found that many of the obstacles found in personal interviews were overcome by using email such as researchers interrupting or giving nonverbal evaluative responses to interviewees. Data recording is simplified and both researchers and respondents can take time to carefully respond to questions. Disadvantages include participants who rarely check or respond to messages. Heflich (1997) found that non-verbal cues associated with email pose challenges for interviewers. Whereas in the personal interviews I was able to see and hear the cues of respondents, I did not have this ability with the email responses. Emoticons are symbols representing emotions that can be typed into email messages. These were used somewhat by me and the teachers mainly in the form of happy or sad faces, or capitalization indicating major points or strong feelings.

The main advantages for using email in this study were having the data instantly transcribed and being able to take time to read responses and in turn respond with well thought out probing questions. For the teachers, the advantages were being able to respond to the interview questions on their own time, when it was convenient for them and they also could take time to think about their responses before typing their answers. Thus, they may have felt more confident in their responses than those who chose personal interviews and were put on the spot to answer each question immediately.

A few of the respondents in this study chose to answer the interview questions by pen and paper, mailing the interview back to me via school board mail. This method was more of a survey than an interview since I did not ask additional questions to clarify responses. This method was chosen by people who did not want to or did not
have the time to book a taped interview, or who were not yet competent with using email.

Gray and Guppy (1999) identify a number of advantages and disadvantages to using open-ended questions. I chose open-ended interview questions based on the advantages such as providing full expression, tapping unanticipated answers and providing rich vignettes. Relevant disadvantages include comparability and difficulty in coding or summarizing. Demographic data was not pertinent and my only interest was in knowing the length of teaching experience of teachers and their current teaching load. Therefore, I only asked these questions at the end of the interview, explaining that I needed to have some demographic information about mentors and mentees.

The types of questions I asked the mentors and mentees in this study pertained to their comfort levels with ICT, their motivations for volunteering, their understanding of the roles of the mentors and mentees and what they accomplished by participating in the Initiative. I also asked whether their practice changed or if there was an impact on their students. Finally, I asked for recommendations for changes to the Initiative that would improve the integration of ICT. For ministry and district staff, the questions pertained to their role in the Initiative, the role of the mentors and mentees, whether or not any outside forces affected the Initiative, and recommendations for changes to the Initiative that would improve the integration of ICT (see Appendices F, H-L).

**Personal Journal**

In order to keep track of my thoughts and reflections, I kept a journal chronologically detailing information such as meeting dates and deadlines. The meeting dates included district meetings I was invited to with mentors and mentees or district
staff responsible for the Initiative (See Table 2). Attending these meetings helped me to become more familiar to the mentors and mentees. I was able to personally communicate my request for participation in this study. I was also kept informed of the Initiative. The meetings also provided a means to observe participants and begin the process of recording my impressions about the motivations of individual participants, their reasons for participating, their concerns and anxieties and personalities. Prior to beginning the interviews, I met with one of the ministry staff to discuss the research since I was responsible for conducting a case study as part of the Ministry grant to the university. She eventually became one of the research participants. However, the information I recorded from this initial meeting provided me with some very important background about the Initiative which helped me to determine the types of research and interview questions I asked.

The journal was used to record my thoughts, questions and observations from my interactions with the various teachers (mentors, mentees, district and ministry staff) as I conducted the research. I had a variety of contact with the research participants including the interviews and informal communication such as email messages to set up interview dates. I also saw a number of the research participants either at conferences or the district resource centre where many teachers go for professional development. These informal “meetings” provided an opportunity to ask questions about how the Initiative was going. In my journal I kept copies of all email communication and recorded any informal contact with participants including what was observed or said about the Initiative.
Basically, the journal provided a means to record all of the communication that occurred before, during and after the research process, that was relevant to writing this final paper. A journal is an excellent way to keep track of thoughts, interventions and queries that may otherwise be forgotten. Therefore, the journal was a tool for keeping together pertinent information involving details about this study and to keep track of my revelations and reflections regarding the research as it unfolded.

Observation

Although I observed mentees and mentors at their initial meeting in March 2001, I was unable to observe them while they participated in their mentoring activities that followed. The activities I hoped to observe included planning, collaborating and implementing ICT. I invited mentors and mentees to have me present to video tape their activities or to video tape their activities themselves without my physical presence. The purpose of the observations would be to identify the changes the teachers experienced while engaging in the program. Videotape would allow for recording both verbal and non-verbal cues. I planned to play back the video to mentors and mentees at critical points in order to facilitate reflection and to prompt teachers’ response on how they were feeling, coping and learning.

Unfortunately, I was unsuccessful in my attempts to observe the activities of mentors and mentees. I communicated my request to video tape mentors and mentees in the letter of consent that I sent out to all mentors and mentees prior to beginning the research and re-communicated the request at various meetings or through email communication with mentors and mentees (see Appendices B & D). Although a few of the mentors and mentees expressed interest, none actually followed through for a
variety of reasons. There were a number of reasons why I was unable to observe the
mentors and mentees. First, job action meant the degree of collaboration and
implementation that should have occurred during the Initiative did not actually happen
thus resulting in limited opportunities to observe the mentors and mentees. Second, I
began the research in early March 2002 which only allowed a few months to conduct
observations. The last few months of the school year are a busy time and many mentors
and mentees had little time to spend on the ICT Initiative. Also, when I received
responses from the interview questions it was clear that most mentors and mentees did
not participate in the Initiative to the degree they had initially hoped, meaning there
were not a lot of changes to classroom practice.

The Teachers

All four levels of teachers, mentees, mentors, district and ministry staff, have
teaching experience and either were or are currently teachers. This common experience
helped to shape the type of support and expectations of the Initiative. District and
ministry staff were familiar with the challenges teachers face when trying to incorporate
new tools and methodologies into their practice. Therefore, how they approached their
roles as managers and coordinators of the Initiative reflected their knowledge of these
challenges. However, the relationship between mentors and mentees as it unfolded in
the Initiative, showed that even though both shared a common profession, this
commonality did not guarantee mutual support or understanding.

The following two tables outline the four levels of teachers and identify each
with a code used throughout this chapter to indicate whose response I quoted. I use
letters of the alphabet to identify each mentor/mentee group and also to differentiate
between each of the district and ministry staff. For mentors and mentees I indicate secondary with an “S” and elementary with an “E”. The tables also show the methods used by each of the research subjects to respond to the questions and the dates of their responses. Table 3 shows how many mentees worked with each mentor, and which mentees actually participated in the research. Although not all mentees participated in the research, I listed them all with a code in order to show which mentor each was designated to work with in the Initiative and put N/A in the response column. For some of the mentees who did not participate, I indicate a reason for non-participation where known. I also include information regarding number of years of teaching experience and the current teaching position of those mentees and mentors who responded to the demographic questions. Although mentor BS was only allocated one mentee because of the lack of response for secondary mentees in her area, she was given the position and time in order to augment her other assignment as a half-time Learning Support Team member for technology in the District.
Table 3. Interview Dates and Methods of Response, Teaching Experience and Assignments of Mentors and Mentees

<table>
<thead>
<tr>
<th>Mentors</th>
<th>Mentees</th>
<th>Dates and Methods of Response</th>
<th>Number of Years of Teaching Experience</th>
<th>Current Teaching Assignment (at the time of the research study)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mentor AS</td>
<td>Mentee AS1</td>
<td>Mail, June 20, 2002</td>
<td>22</td>
<td>Science 20 (half-time)</td>
</tr>
<tr>
<td>Mentor AS</td>
<td>Mentee AS2</td>
<td>Mail, April 2, 2002, Personal interview April 17, 2002, Email June 4, 2002</td>
<td>15</td>
<td>Humanities 8 and 9, English 8</td>
</tr>
<tr>
<td>Mentor BS</td>
<td>Mentee BS1</td>
<td>N/A</td>
<td>No response.</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Mentor CE</td>
<td>Mentee CE1</td>
<td>Personal interview, April 19, 2002</td>
<td>No response.</td>
<td>No response</td>
</tr>
<tr>
<td>Mentor CE</td>
<td>Mentee CE2</td>
<td>Promoted to Principal and therefore did not participate in the Initiative.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mentor CE</td>
<td>Mentee CE2</td>
<td>Went on extended medical leave during the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mentors</td>
<td>Mentees</td>
<td>Dates and Methods of Response</td>
<td>Number of Years of Teaching Experience</td>
<td>Current Teaching Assignment (at the time of the research study)</td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
<td>------------------------------</td>
<td>----------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Mentee CE3</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mentee CE4</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mentee CE5</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mentee CE6</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mentee CE7</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mentee CE8</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mentor DE</td>
<td>Personal interview, April 17, 2002 Email, July 18, 2002</td>
<td>5</td>
<td>Grades 6 and 7 French Immersion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mentee DE1</td>
<td>Email, June 4, 2002 Email, June 17, 2002</td>
<td>No response.</td>
<td>No response.</td>
</tr>
<tr>
<td></td>
<td>Mentee DE2</td>
<td>Mail, May 29, 2002 (Personal interview was not properly recorded)</td>
<td>5</td>
<td>Grades 5 and 6</td>
</tr>
<tr>
<td></td>
<td>Mentee DE3</td>
<td>Mail, May 20, 2002</td>
<td>22</td>
<td>Part-time in two different schools. Library, computer, gym, music and Learning Assistance</td>
</tr>
<tr>
<td></td>
<td>Mentee DE4</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mentee DE5</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mentee DE6</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mentee DE7</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mentee DE8</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4. Interview Dates and Methods of Response for District and Ministry Staff

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Interview Dates and Methods of Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>District staff A</td>
<td>Personal interview, May 24, 2002</td>
</tr>
<tr>
<td>District staff B</td>
<td>Personal interview, May 24, 2002</td>
</tr>
<tr>
<td>Ministry staff A</td>
<td>Email, June 16, 2002</td>
</tr>
<tr>
<td></td>
<td>Email, June 17, 2002</td>
</tr>
<tr>
<td>Ministry staff B</td>
<td>Email, June 6, 2002</td>
</tr>
<tr>
<td>Ministry staff C</td>
<td>N/A</td>
</tr>
</tbody>
</table>

What follows is a brief description of the teachers outlining their background and roles in the Initiative.

**Ministry Staff**

I sent research questions to three ministry staff who were directly involved in the Initiative. Although all three agreed to respond, only two eventually answered the questions. All three ministry staff were female teachers seconded for the Initiative. A change in government in May 2001 resulted in uncertainty about funding for the Initiative. Therefore, when one of the ministry staff received a more stable job offer towards the end of the Initiative, she left her ministry position for a more secure job.

In May 2000, the Ministry made a call to second two teachers who would lead the Initiative. The two teachers who were chosen each had a background in ICT. One
taught grade seven and was a mentor in the TLITE program, a technology mentorship program on which the Initiative was loosely modelled. The other had extensive experience with electronic delivery of Kindergarten to Grade Twelve curriculum in Northern British Columbia. Both were considered early adopters of ICT in teaching and learning and had experience with mentoring (Johnston, 2001). One of the questions I asked the ministry staff was to describe their roles. One of the respondents seconded to act as one of the two ICT Coordinators described her role as: developing resources such as exemplars to support teachers; supporting districts through communication and assisting with the development of plans; designing and providing training to mentors; and providing workshops and professional development activities.

The other ministry staff member in the research study was the project manager who was in charge of the two secondees who were the ICT Integration Coordinators. The project manager was responsible for: communicating the needs of the Ministry to the secondees; coordinating with field services people; following up with district contacts when the secondees were on the road; supporting the secondees in their delivery of the program; and responsible for research into the program’s effectiveness.

District Staff

The two district staff involved in the Initiative were the District Technology Coordinator and the Director of Educational Programs. The Director received the initial information from the Ministry regarding participation in the Initiative and in consultation with the Coordinator agreed to write a proposal in order to receive funding for the Initiative. Once the District received approval from the Ministry, the Director’s role was to support the Coordinator. He occasionally attended meetings between
mentors and the Coordinator, but basically described his role as more of a "facilitator and supporter of the direction and (was) very pleased with the direction it’s (the Initiative) taken." (district staff A, personal interview, May 24, 2002)

The Coordinator acted as the contact person for the school district and he was responsible for organizing the mentors and the mentees. He sent out the call to teachers in the District for volunteers for the Initiative. He then ensured the mentors attended the Ministry mentor training workshop and organized an initial group meeting between mentors and mentees. He also arranged informal meetings with the mentors and mentees in order to keep track of their progress. In this way, he was more directly involved with the mentors and mentees than was the Director.

Since they had similar roles as supervisors, both district and ministry staff were asked a similar set of five interview questions towards the end of the Initiative (see Appendices F and H).

Mentors and Mentees

Mentors and mentees were all teachers in the District who either volunteered of their own volition or were encouraged to volunteer for the Initiative. In some cases mentees were "volunteered" by their administration. Mentors were all approached by colleagues or district staff who saw them as good candidates for the mentorship role based on their ICT experience or other factors such as the type of platform they were familiar with. For example, one school had a number of teachers who use Mac computers and the person who originally volunteered to be a mentor was not comfortable with this platform, so he withdrew from his position and another mentor was approached based on his experience with Macs.
Not all district teachers were eligible for the program. As outlined by the Ministry guidelines, only teachers who taught in the core subject areas of science, math, English or social studies were eligible to volunteer. Mentees were not required to have any experience with ICT and as a result, most mentees who participated had minimal experience using technology in their teaching. All mentees who volunteered for the Initiative were accepted into the program since those who applied fit the criteria and the number of overall respondents was below the 7:1 ratio for which the Initiative was funded. Since the school district is geographically divided into a north and south end, mentors were sought from the two geographical areas in order to balance out their location. Therefore, an elementary and secondary mentor were selected for both the north and the south ends for a total of four mentors. Mentees were dispersed between both geographic locations with fewer secondary mentees volunteering resulting in only one secondary mentee in one of the geographic locations.

Mentors received one block of release time to devote to the Initiative. Mentees were able to draw from a pool of release time in order to book Teachers on Call to cover their classes while they met with their mentor groups. Each mentor was given a laptop computer and mentees received a computer by participating in the Initiative. One school that used Apple products received three iBooks for mentee use and the other mentees received either new or refurbished computers. In some cases, mentees were given their own computers although some mentees were given “computers on wheels” (a computer on a cart) which required them to share with another mentee at their school.

How the mentors and mentees structured their time together was left to the mentors and mentees to determine. In some cases, mentors booked meetings with their
groups of mentees, although none of the mentor/mentee groups held a regular schedule of meetings. The release time given to mentors and mentees was for creating their own schedules, based on their individual needs and schedules. Unfortunately, the lack of structured meeting and collaboration times became a serious problem in the Initiative, which is elaborated on later in this chapter.

At the end of the second set of interview questions, mentees and mentors were asked their number of years of teaching experience and their current teaching position (subject/grade/specialty/other). For mentees, the number of years of experience ranged from five to twenty-two. Mentees' current teaching assignment ranged from elementary to secondary, humanities, science, learning assistance, library, computers, gym, music, or all subject areas (elementary teachers). Mentors ranged in experience from five years to near retirement. Mentors had either elementary or secondary experience. Two elementary and two secondary mentors were required when seeking volunteers in order to ensure there were even numbers of mentors to work with the elementary and secondary mentees. The specialties of the secondary mentors were humanities and math and the elementary mentors taught all subject areas, one with a specialty in French and another a long time expert with computers. Note that only one of the mentors actually answered the demographic questions. However, since I knew the mentors I also knew their approximate length of teaching experience and the subject areas they teach since mentors were required to have curricular knowledge in the four core curricular areas targeted for the Initiative.

The purpose of asking the demographic questions was to see if there was a difference between the responses from teachers of various degrees of teaching
experience and subject areas. Where I did find differences, I noted these within the themes presented below. The mentees from this research study volunteered based on a minimal level of ICT experience. Since their skill levels were similar, the difference was the number of years of teaching experience and their subject areas.

Since mentees and mentors were the volunteers who would be incorporating ICT into their practice, they were asked a similar set of ten interview questions. Seven initial questions were asked during the Initiative and four final questions were asked at the end of the Initiative (see Appendices I to L).

Analyzing the Data

According to Fontana and Frey (2000), the researcher's interpretation of the data includes her biases and filters. It is the task of the researcher to try to represent the data as objectively as possible while acknowledging the limitations of her personal interpretations. Therefore, I caution that my interpretation of the interviews is only as unbiased as I can attempt to achieve. Patton (1990) explains that in order to interpret the interviews, qualitative researchers look for common themes in the data. I interpreted the interviews by breaking the data down into a series of themes common to many of the responses. In order to ensure my interpretation of the data can stand up to the scrutiny of those who read it, I attempted to use actual quotations from the data wherever possible. This way, others can make their own judgments about the data and how it can be interpreted.

Smith (1995) suggests that people new to qualitative analysis should look at one transcript in detail before moving on to the others, list emerging themes and then produce a master list of themes that are ordered coherently. I followed a similar process.
to determine the themes from the research data. First, I read over one of the transcripts carefully and identified themes. I then went onto the next transcript and checked that I had identified important themes by determining if the second transcript contained similar themes. The first themes I identified were obvious but by revisiting each transcript several times I was able to achieve more depth in my interpretation of the emerging themes. After reading through all of the transcripts and identifying the similar themes, I then grouped examples of each of the themes together. I came up with four themes, each having a number of sub-categories. Coding is a way of organizing data into themes. As I read through the data, I used different coloured highlighters to distinguish between the various themes. In order to help identify the themes, I looked for a keyword such as feelings or anxiety.

Ethical Considerations

I was granted ethical approval for the research as part of a larger application for ethics approval through the Technology Research Committee from the Faculty of Education at UBC and our Ministry of Education Technology Proposal. Since the teachers were adults, there was no perceived problem in obtaining informed consent and due to the nature of the research there were no known risks to the teachers. I created my consent letters for mentors and mentees (see Appendices B & D). I followed the Westview School District’s guidelines for achieving ethical approval for this research, was granted approval and given permission to identify the Westview School District in my dissertation. However, I chose to use a pseudonym in order to protect the anonymity of the teachers involved in the research.
Although teachers were given the option to withdraw from the research at any time, none exercised this right. Some teachers expressed concern over any negative feedback they gave of the Initiative, especially as it pertained to other teachers they were working with who might be offended by their comments. Others were concerned about potential backlash regarding their careers based on some of their negative responses about the Initiative. Hence, teachers' anonymity is critical in order to avoid any hard feelings or repercussions once the research is published.

Trustworthiness

When conducting research, there is always the question of whether the research is valid, reliable or trustworthy. This study is qualitative and descriptive. Therefore the intent was not to answer the questions specifically for measurement, but rather to discover themes regarding the experiences of teachers. Therefore, validity for this study is based on how truthful the research results are in terms of representing the experiences of the teachers as outlined in the interview questions.

Krefting (1990) explains that whereas validity and reliability are commonly used ways to recognize and document the worth of quantitative research, trustworthiness is most often used to assess the rigor of qualitative research. Lincoln and Guba (1986) offer a number of techniques that can be used to increase the probability of meeting criteria for trustworthiness. Of these techniques, I identified at least two that I used in this study. One technique is triangulation which I will elaborate on below. The other is the use of thick, descriptive data which allows others to make their own judgements about the data and apply all or part of the findings elsewhere. I address this in Chapter IV where I include excerpts of the data which may be interpreted by others.
Krefting (1990) states the most common method of triangulation is triangulation of data methods. Here, data is collected using a variety of methods and is then compared. The purpose is to ensure that all methods support the same themes or findings, thus ensuring the researcher has achieved the same type of information from respondents, regardless of the research methods used. The data collected is truly reflective of what the respondents believe. I attempted to achieve triangulation by using a variety of interview methods, my journal and observations of mentors and mentees during collaboration and implementation of ICTs. However, I was unsuccessful in obtaining video-taped observations of the mentors and mentees meeting, collaborating or implementing ICT.

Krefting (1990) explains another method of achieving triangulation which is called triangulation of data sources. This method attempts to maximize the range of data collected by including sources from different seasons, days, settings, or groupings of people. In this study, I collected data from four different groups of teachers (mentees, mentors, district and ministry staff), at different times and in different settings. Therefore, I was able to achieve triangulation of data sources in this study.

The research was affected by job action. I felt reluctant to contact the mentors and mentees since job action created an environment where teachers were hesitant to participate in any activity outside of their regular assigned teaching duties. As a result, I was grateful to collect the data that I was able to collect for the research. I chose not to have teachers review the interviews since this would create another imposition on the research subjects. In hindsight, having teachers review their interviews would help to
ensure trustworthiness. However, each group of teachers did give similar responses within their respective groups.
CHAPTER IV
PRESENTATION OF DATA

The purpose of this study was to discover and describe the experiences of teachers involved in a technology initiative using a mentorship model and developed to improve the implementation of Information and Communication Technology in teaching practice. I chose to study teachers from four levels of the Initiative: mentees, mentors, district and ministry staff. By investigating the experiences of all of these teachers, I hoped to ascertain what was both common and uncommon in terms of teachers' experiences, expectations, perceptions and final outcomes. By attaining data from four different levels of teachers, I was able to attain a multi-perspective account appropriate to case study research.

In this chapter I describe the themes that emerged as I analyzed the interview data.

Clusters of Themes of Experiences

I used themes to characterize the various experiences of the teachers in this study. Experiences portray feelings, observations and what is undergone or lived through during an event. The clusters of themes of experiences that follow emerged from the responses of all levels of teachers. The interview questions probed the teachers' range of experiences. I describe themes common to all teachers or themes that were specific to particular groups such as mentors or mentees. It is difficult to ensure that all themes present in the data were identified. Therefore I encourage the reader to be critical of my interpretation and to look at actual quotes from the data to seek their own interpretations.
I arranged the themes into four different clusters based on common threads.

These four clusters include: Teachers' Motivations and Feelings; Difficulties with the Mentoring Relationship; Technology Issues; Satisfaction and Dissatisfaction with the Initiative (see Figure 1).
Figure 1. Clusters of Themes of Experiences

[Diagram showing clusters of themes related to experiences and motivations, including topics like satisfaction and dissatisfaction with initiative, technology issues, and teachers' motivations and feelings.]
Teachers’ Motivations and Feelings

Mentors and mentees had a variety of reasons for participating in the Initiative. Some of these reasons stemmed from personal beliefs and others were more practical, based on attaining hardware. As well, how teachers felt about using technology influenced their decision to participate and their experiences while participating in the Initiative. Although most teachers did not achieve the goals they initially set out to accomplish, in the end there was some sense of accomplishment for all mentors and mentees. The following themes explain teachers’ motivations and feelings.

Fear of Being Left Behind

With all of the media hype and pressure to know how to use technology, it is no surprise that some of the mentees felt a sense of being left behind. This sense of fear was most notable in the older, female teachers that responded. Note however, that I did not have any older male mentees who chose to participate in this study, thus I cannot distinguish this as a trend. However, younger respondents were less hard on themselves as they probably were exposed to computer technology during their own schooling and thus may be more comfortable using it and less critical of themselves. Responses from mature mentees included:

- I am techno-challenged (mature participant- less experience with technology). (mentee DE1, email, June 4, 2002)
- I need a push to get with the times. (mentee DE1, email, June 4, 2002)
• I see computers everywhere; most students and lots of other teachers seem to be using them with success. I'm feeling left behind. *(mentee AS1, mail, June 20, 2002)*

• I wanted to be more confident on the computer. Felt a bit like a dinosaur when it came to technology. *(mentee DE3, mail, May 20, 2002)*

One respondent attributed her desire to be professional as a reason for wanting to ensure she kept up with technology:

> I hate to get behind and enjoy recognition from colleagues, family and friends that I am up-to-date, dedicated to the profession, etc. I also have to look at myself in the mirror, so of course I am motivated to do the best I can do for our students, since technology has the potential to be, and inevitably will be, a huge part of educational reform. (Whether we choose to embrace it or not) I watch some of my colleagues dragging their feet, kicking and screaming in resistance to technological change, and I realize their intolerance is not only hopeless, but harmful. *(mentee DE1, email, June 17, 2002)*

Age is often cited as a reason why people do not embrace technology, although one of the mentors who is nearing retirement is a technology innovator. In the case of the mentees's responses above, age was a factor in their responses, but these women also were mentees because they had minimal technology experience. This common characteristic coupled with their ages influenced their belief that they were feeling like a
“dinosaur” or “left behind”. These mentees’ perceived fear that they were being left behind was clearly a motivation for their participation in the Initiative.

Intrinsic and Extrinsic Motivation

Most mentors and mentees had both extrinsic and intrinsic motivations for participation. Some of the perks offered to mentors and mentees included a classroom computer with software, release time and participation in workshops. Problems arose when people joined purely for the perks and without having the intent or understanding to achieve the goals or the expectations outlined in the Initiative (such as the development of lessons or units based on the exemplars). These people benefited personally by gaining the perks but let others down when they did not follow through in the program as expected. A positive aspect of the perks was that it initially attracted some teachers to find out more about joining the Initiative and the computers ultimately provided the means for some of the teachers who did not otherwise have computer access in their classroom. An example where one participant was motivated extrinsically was:

Well, my initial reaction was, really mercenary. I was told if you sign up you’ll have access to equipment that I currently didn’t have and really wanted. (mentee AS2, personal interview, April 17, 2002)

In another example, a participant was quite clear on why he was motivated to participate: “…the benefits to me were probably the equipment that came with the program.” (mentor AS, personal interview, April 11, 2002)

Finally, two of the teachers cited only intrinsic motivation for participation:
• I’ve always mentored people in the district in technology...I’ve always thought that technology was a wonderful tool and I’ve always believed that you give back to the profession and it’s just a way of continuing to contribute. *(mentor CE, personal interview, April 19, 2002)*

• I also value the intrinsic reward of knowing that I care, and that my caring makes a difference to children. I also hope that modifying that attitude may result in others doing the same. *(mentee DEI, email, June 17, 2002)*

*Anxieties Incorporating Technology*

Most of the mentors were fairly comfortable using technology. This was one of the reasons they were encouraged to become mentors for the Initiative. Many of the mentees identified that they had a sense of anxiety about incorporating ICT into their teaching and became involved in the Initiative in order to give themselves a push to learn:

I always feel anxious when trying something new in teaching, as I’m a control freak and need to be sure of myself...however, practice is making a huge difference. I now use e-mail regularly, have used the digital camera with my students, and have 3 computers in my LAC (Learning Assistance Centre) which the students use regularly. I have purchased a fair amount of software to complement my program. By being a mentee, I felt a great deal of pressure to incorporate technology so the ICT initiative would be a success. Without this pressure, I would
have done less! Change can be stressful. *(mentee DEI, email, June 4, 2002)*

For the mentors who already were quite experienced using technology, the anxiety came from trying to keep up with continual changes:

I do experience anxiety... for me it's all the programs, all the software, all the changes, all the upgrades, all the hardware the equipment it's a lot to navigate through. I don't think I feel as much anxiety as other people because I have already had a ten year learning curve. *(mentor BS, personal interview, April 12, 2002)*

*Goals often varied from Final Accomplishments*

When mentors and mentees compared what they thought they would achieve through participation in the Initiative with what they actually accomplished, most did not meet their original goals. In some cases, mentees expected much more learning to occur with their mentors and found that most of what they learned was through their own initiative. Others expected to use most of what they learned with students in their classroom since this was a goal of the Initiative, only to end up creating technology based projects for work outside of their classrooms. The following series of comments from mentees explain what they did or did not learn:

- I am happy with what I’ve learned, and thrilled with the acquisition of new equipment and software of my LAC. Much of what I accomplished was not the result of the mentor/mentee contact, rather the result of my guilt and self-pressure to participate. *(mentee DEI, email, June 4, 2002)*
...the intent was to use them with students and for students, and what's interesting is...today at this workshop as we're showing each other kind of what we've done, the big thing that I did, was a PowerPoint presentation I developed for a workshop I give to parents. Somebody else developed a PowerPoint presentation for a workshop that she gave at a university. Somebody else learned how to make an iMovie for his football team. None of it, none of it was connected to curriculum. *(mentee AS2, personal interview, April 17, 2002)*

- I would have liked to be able to create an entire lesson plan that used technology for the presentation, and that students could use as well. Time was the main factor. Because we did not have any release time and because our mentor did not approach us – it was easy to let things slide. *(mentee AS2, email, June 4, 2002)*

Note: all mentees had access to release time, however the fact that this mentee was unaware of this, indicates a communication problem either with the district staff or her mentor. Some of the other mentees mentioned they were aware of the release time although I do not know if all of them were made aware of the release time dedicated to them.

The following comments from a mentee exemplify the problems that many felt regarding their final accomplishments (or lack thereof):

Joining gave me the impetus to get going i.e. "making the time". This was a self-imposed goal. As time went on without meetings I found my
eagerness was shelved. I knew that I would not get on with it unless I gave myself a specific goal. I decided to "grip" (sic) a presentation using PowerPoint. I set a date. Then I had to do it. I learned by myself. There were vague offers of help from the mentor but nothing structured—so I worked alone. I was somewhat "miffed" at the end. The year (end) meeting when I saw what other people had been working on...I had no idea that these types of options were even out there. (mentee AS1, mail, June 20, 2002)

Mentors also felt that they had not achieved the goals they had initially set for themselves and their mentees, although they did feel somewhat satisfied with what they were able to achieve. As the following mentor explained:

...my major goals were to develop my own knowledge of technology and working with it in the classroom... and also to help my mentees...to be more comfortable with technology, and implementing through working with the curriculum. I had...hoped...to have each group do...a major personal project. And it hasn't worked out, and I know the case is time... I was certainly able to develop my own knowledge of computer applications in teaching, both with hardware and software. I was able to help several of my mentees with their own goals, but I did not work with them all equally. I had hoped that each participant would complete a fairly substantial project, but this didn't really work out. I was able to develop my knowledge of the technology "scene" on the district and provincial levels.
One bonus was the work that I did with my own staff in workshops and informal work. *(mentor DE, personal interview, April 17, 2002)*

In some cases, the mentors were still satisfied with their accomplishments, even though they acknowledged they had not reached all of their initial goals. Two mentors commented:

- I don’t think I accomplished all that I would have liked but I think that that’s normal...I think that we set high goals...and should not be disappointed if we don’t reach them. *(mentor CE, personal interview, April 19, 2002)*

- I already feel the teachers...are much more comfortable with technology. They feel comfortable working with the equipment. They come to me independently, borrow various pieces of equipment, they’re not dependent on me...They regularly use the internet, they regularly use PowerPoint they don’t bat an eye with using scanners or zip disks...to me it’s already successful. I’m a little concerned that the district and the ministry might have different expectations...I think those expectations were a little bit unreasonable and I think they even understood that they were unreasonable. *(mentor AS, personal interview, April 11, 2002)*

From the Ministry perspective, there was disappointment over the support of the program. Cutbacks to funding and the government decision not to sustain the program meant all of the initial work would only be supported if districts and participating
teachers continued the work through their own impetus. As one ministry staff member commented:

I wanted to develop a critical mass of teachers with ICT skills so that teachers would not perceive obstacles in using ICT in the classroom. I think that this goal was not met because the program was cut by the incoming government and districts will not receive ongoing support for programs like this. (ministry staff A, email, June 16, 2002)

Difficulties with the Mentoring Relationship

Probably the biggest disappointment for both the mentees and the mentors was how the mentoring partnership unfolded. Most seemed to have very different views of their roles. Mentors expected to facilitate while mentees had hoped for more direction. Although mentors and mentees were critical of the mentoring partnership in this Initiative, district and ministry staff felt the mentorship model had worked well. Yet, neither the district nor the ministry staff provided any concrete evidence for this claim, rather they simply believed mentorship to be a good model to use for technology implementation. The following themes indicate some problems with the mentorship model.

Mentorship Roles Unclear

As outlined in the Literature Review in Chapter II, mentorship is often ill-defined and the roles of the mentors and mentees in the Initiative were no exception to this problem. When asked during the interview if he thought it was made clear to mentors and mentees what their roles were, one district staff member responded: “I tried to make that clear at the very beginning.” (district staff B, personal interview, May 24,
2002) Unfortunately, neither the workshop held by the Ministry for mentors where the mentor and mentee roles were somewhat explained nor the attempt by district staff to outline roles, clarified these roles to mentors and mentees.

This lack of role clarification is supported by the comments made by two of the mentors:

- ...the drawbacks to... being a mentor was that I didn’t know what a mentor was. I’d been told I was a mentor, but I wasn’t really sure what that was, and the training involved was minimal if not non-existent at least for this directive. (mentor AS, personal interview, April 11, 2002)

- Well I didn’t know...Now I’ve read some research and been involved in mentorship types of things, nothing hugely formal...like what they have now. So I thought that it was probably going to be collaborative work. And I was hoping that it would be collaborative...But I wasn’t really sure there seemed to be a whole bunch of rules of process, and product, and that was a sort of maze... (mentor BS, personal interview, April 12, 2002)

Below, mentor BS further elaborates how she interpreted what her role as a mentor was:

I didn’t really have any clear picture after the Initiative about what that should look like and I just went with...making it a collaborative...approach, not directing people. I mean the one thing that did come up (is) you can’t come across as the expert and...pontificate
about what somebody should be doing in that class if you were there as a facilitator. So that came loud and clear and that fit with what I thought the job was...beyond that I had no idea. (mentor BS, personal interview, April 12, 2002)

Another mentor who saw himself as less of a technology expert than the other mentors saw his role as that of a semi-expert who would support the goals and projects of the mentees:

...at the beginning I heard about the program and...I was interested...I was contacted and I applied...but didn’t really have the whole (picture)...I took the training... and (got) a better sense of what the program was all about...I saw the mentor role as...being a chance as a semi-expert...I’m not a total computer nut like some of the other people. I didn’t really see it as...me, having (to) set goals for the people...more...helping them along (with) what they wanted to accomplish. (mentor DE, personal interview, April 17, 2002)

One of the models of implementation that the ministry staff was quite proud of occurred in the districts that developed cohort groups of mentors and mentees within individual schools. There was only one secondary school in Westview where there was a mentor and a group of mentees. This configuration should have been successful according to the Ministry, when in fact in this group the mentor and mentees were quite unclear about their roles. The following outlines the frustrations of this mentor regarding roles:
I initially thought that I would probably act primarily as a facilitator to...provide the opportunities for them to do things in their classes, find them experts, if they required training, and to encourage them as best I could...most teachers feel pretty comfortable with what they’re doing and they’re not huge risk takers...especially with technology, my feeling was...to just...cajole them more or offer to do things with them, provide opportunities for them so that I could...disarm their inhibitions about using technology even at a very low level, in their classroom.

It is intriguing though that I’m seen by most of them as the leader, as the person who will set up all the meetings, set up all the opportunities, come and see them about technology as opposed to them coming to me, which was my understanding of my role. Even to the point where I start feeling guilty, because I don’t do things and go around to them. Whereas, my belief now in terms of mentees and mentoring is that its absolutely essential that the mentees have the empowerment to establish their own things, that I’m more monitoring and facilitating it, which seems to be working much better with (another technology cohort program he was involved in). Because they set up the monthly meetings, they bring the coffee, they have the agendas, and I come as part of the group...Whereas here it seems that most of the onus is on me. To do everything, which I don’t think I would have selected. (mentor AS, personal interview, April 11, 2002)
These comments show that he changed his idea of the roles by the end of the Initiative because he found the expectations of the mentees were for the mentor to take the lead, whereas he preferred a facilitative role. It was not made clear by the district or the ministry whether the mentors or the mentees were responsible for initiating any of their contacts with one another.

The mentees also were not clear on their respective roles. Most wanted the mentor to take more of a leadership role. The comments from the following mentee shows she had hoped for a more assertive mentor. This particular mentee was also critical of herself, feeling that perhaps she had not contributed enough to the success of the relationship:

I understand that as a mentee, I am the “learner”, and was hopeful that the mentor would be somewhat of an expert, able to teach me, encourage me and make suggestions. In our mentor/mentee relationship, it would have been beneficial if my mentor was more assertive. I...don’t blame him for our lack of connection, but I feel I could have used stronger direction. Perhaps the other mentees were better self-starters.... And came up with elaborate projects and plans? (mentee DEI, email, June 4, 2002)

One mentee described herself as a student and the mentor as a teacher. This is the classic mentorship model as outlined in the literature. The mentee did acknowledge her need to show some initiative around what she would do, however, she pointed out that it was difficult to ask about things she did not know. The problem of mentees not
knowing enough about technology in order to ask what to learn about is another theme expounded on later.

I saw myself as a student. That a mentor would undertake the role to teach me specifically how to do specific tasks or how to use specific equipment, or whatever it is...I wanted somebody to say “On Wednesday afternoon I’m going to show you how to use...” I thought that I needed to have a certain level of initiative to see what it was I wanted to learn...I want to use PowerPoint, I want to find out what a web quest is...My problem is I was naïve enough to not have the vocabulary. I didn’t know what to ask for. (mentee AS2, personal interview, April 17, 2002)

Another mentee gave a response that was not specific to her mentor, but rather an ideal of what a mentor should be: “Most important to me, the mentor needed to suit the personality of the mentee. Not judgmental, moves to the pace of understanding, enthusiastic, committed.” (mentee DE3, mail, May 20, 2002) This mentee alludes to the need for the personalities of the mentee and mentor to be well suited, something I do not believe would necessarily happen unless the mentee sought out their own mentor. Unfortunately, the mentees did not have a choice as to who their mentor would be. Therefore, a personality match would only happen in spite of how the mentors and mentees were paired up. By not providing choices to mentors and mentees regarding who they would work with the likelihood of creating a good match was very low for the Initiative.
I have shown examples of how the mentors and mentees perceived their roles and how the mentors tended to believe their role was less directive and more facilitative, while mentees were disappointed that the mentors did not show more leadership. Outlined below is the response from one of the ministry staff regarding the roles of mentees and mentors according to what the Ministry expected their roles to be:

Mentees or participating teachers were simply teachers selected by their districts or who applied to take part, who had some interest in learning more about how to make better use of technology to support teaching and learning in their classrooms. Mentors were the people who provided the support for them during this learning and implementation process. Sometimes the mentor would act as a consultant – providing information to the mentee or helping them learn specific technology skills or connecting them with others who could fulfill this function, at other times the mentor and mentee would be working collaboratively planning jointly or perhaps even working together in the classroom, and at other times the mentor would assume the role of a “coach” providing advice, or feedback. Mentors in many ways were to be like the grease that keeps things moving smoothly – removing obstacles, reducing friction. Their job was to leave the learning in the hands of the learner and under the learners’ control. Mentors did not tell mentees what to do and what to learn, but followed the lead of the mentee in helping them identify what skills might be necessary to accomplish the learning goal set by the mentee. Mentees were thus able to follow their own technology interests
and were able to connect their learning directly to their classroom context and the needs of their students. (ministry staff B, email, June 6, 2002)

According to this ministry staff member, the mentors and mentees in this study did in fact follow the proper roles. However, given the frustrations of both mentees and mentors regarding roles I think the model as described by this ministry staff member, was not an effective mentorship model for the teachers in this study.

Another ministry staff member gave a more open definition of the roles of mentors and mentees. This ministry person acknowledged that each district had their own philosophy regarding skill level and criteria, meaning the teams of mentors and mentees varied in their make up from district to district.

The mentor was supposed to be someone with excellent interpersonal skills first, good ICT skills second and third, a positive attitude towards the use of ICT in the classroom. They were to act as support for teachers who wanted to use ICT in teaching and learning. They were not supposed to be “techies.” The mentee was supposed to be a person who was motivated to learn and use ICT in their classrooms with students. They should have had some ICT skills so that the role of the mentor was not to teach them ICT skills, but rather how to use ICT effectively in teaching and learning.

I know that the selection methodology for mentors and mentees varied widely in each district. Some were selected and some volunteered. Also the skill level and criteria varied widely with the philosophy of the
district contact program coordinator. (*ministry staff A, email, June 16, 2002*)

In the case of the Westview School District, mentees did not necessarily have ICT skills, therefore part of the expectation was the mentors would help the mentees learn skills and how to implement ICTs into their teaching.

The district staff member who commented on roles, was most concerned with mentors being seen as curriculum support rather than technical support. Although none of the mentors mentioned being seen as technical support as part of their experience participating in the Initiative, those who were already seen as technology experts in their schools did state this as being an annoying problem in their own schools. Here is the response of the district staff person:

> I think...the mentees...wanted to know how you do this stuff, and the role of the mentor was to provide them with the support, sometimes it was training sometimes it was hand-holding, sometimes it was just being in the classroom to fix glitches if it went wrong at the time... even when they were trying to do something with their kids...So the mentees, I tried to emphasize that the mentors were there to provide curriculum support. They were not there to provide hardware technical support. (*district staff B, personal interview, May 24, 2002*)

One of the biggest frustrations of the mentees was the lack of guidance by the mentors. Most mentees joined the Initiative through their desire to learn about technology. Most did not have a lot of experience with technology and thought their participation would expose them to the various possibilities available using ICTs in
their practice. The frustration was that they could not ask to learn about things they did not know existed. Most mentors believed it was the responsibility of the mentees to tell them what they wanted to learn. Mentors did not want to be prescriptive. Unfortunately, mentees could not articulate what they wanted to learn. Hence, both parties felt let down. As one mentee emphatically stated: "I don't know what I don't know. In other words, I wish they (mentors) had presented me with a list of options and examples."

(mentee AS1, mail, June 20, 2002) The same mentee continued by giving an example of a software program she had heard about and wanted to learn more of: “For example I have heard of "Inspiration"—what is it?—how can I use it? What other programs/applications/ tools would suit my classroom?" (mentee AS1, mail, June 20, 2002)

Disillusionment with Mentors or Mentees

As one mentee quite strongly put it: “My mentor has not taken any initiative to help plan anything.” (mentee AS2, mail, April 2, 2002) If mentors and mentees were unclear about their roles, it follows there would be some level of dissatisfaction with how their work with each other unfolded. Many had high hopes about what they would do and how they would help or be helped. However, in many cases, expectations about one another were not met. As one mentee elaborates:

When we initially met with...our mentor, he told us this would be an individual process, although the group wanted a “discover together” approach. (He) made an appointment to come see us individually at our schools, and asked us what we were going to do...I threw out some ideas that I wasn’t really keen on...and asked him for some. (He didn’t seem
to have any...) When we explored my idea of creating a school year-end video with music, etc. he appeared less than keen. I think he was worried that it would involve too much of his time at the end of the year, when everyone is already overloaded. After that meeting, where I told him I'd do my best to come up with something, I never heard from him again. (Except for an e-mail asking if we had any questions or needed anything)

I requested a group get together, but it never materialized. We still have not had contact. (mentee DE1, email, June 17, 2002)

The same mentee continued with her description of the lack of support from her mentor:

"I have had no direction, instruction or meetings with my mentor. It would have been helpful to meet regularly as a group to plan, learn and figure out the bugs.” (mentee DE1, email, June 17, 2002)

Another mentee felt her mentor did not give the kind of help she expected from him:

...when we met the very first time, this whole group, we had a list of things that we wanted to learn how to do. One of them was PowerPoint, one of them was webquests, there were other things I didn’t even know what they were...I would have liked to have been shown specifically in a group situation how to do that and then gone ahead. I did learn how to do it...but I didn’t have a great deal of direction on it until I asked specifically and my concern was that I didn’t know the right questions to ask. So I was thinking of my mentor as more of an instructor and I’m not
sure if that was really a part of his goal. *(mentor AS2, personal interview, April 17, 2002)*

When I asked this mentee if her mentor was not very forthcoming with ideas, the mentee responded:

... he was non-existent. He...was given a spare block in which to do this and one of the things that we had discussed initially is that we would meet as a group...and start a school based website...we had some wonderful ideas...I could have my own homework site...I found out three days ago that there is a website in the works but its being developed by two or three students. *(mentor AS2, personal interview, April 17, 2002)*

I then asked if the mentor had failed to let the mentees know what was happening. The mentee responded:

...we were completely unaware that it was even happening and I’m sure the students are doing a very good job and maybe they should be involved, that’s not even an issue. It’s the fact that this is something we had discussed, and it never happened with us, and I’ve not seen this website, I don’t know how it connects to me, I don’t want to be the one to build it, but...the time given was not used effectively. *(mentor AS2, personal interview, April 17, 2002)*

One mentor was especially disillusioned by the expectations the mentees had of him. The mentor explains:
Hold their hand... find them time off... get them cookies. I mean one of the biggest deals the first meeting was... "are you going to provide coffee and cookies, and can we get time off?" ... it absolutely blew me away. (mentor AS, personal interview, April 11, 2002)

The mentor continued with his dissatisfaction over some of the mentees:

... there are probably two or three people in this mentee group, who essentially have done nothing. Despite all the after school things... all the encouragement... the district initiative with the new computers... They really, to this point, haven't used the opportunity. (mentor AS, personal interview, April 11, 2002)

The same mentor had more to say about this problem. The mentor became so frustrated with the mentees that he eventually gave up on them and started to work with other interested teachers in the school. It should be noted here that the mentees in this particular school also were not happy with how things unfolded. Here is the mentor's comment:

(I) did a number of workshops and meetings at the end of last year... to get some sort of clue as to where people are, what their comfort level is... and... what sort of goals do they have... most of the people came to that, but in September when we came back... regular meetings became less and less... so... I tried doing stuff during Pro days... (and got) two or three people out... these two people were working part-time, this person was sick... that whole group meeting... deteriorated very very quickly... I started to focus on individual teachers... providing them access to the
computers to take home and try programs and set up various initiatives for themselves, which turned out much much better. So I also took some teachers that weren’t involved in the mentorship program, and they… seemed much much more interested in what I was doing than a lot of the mentees. So I actually kind of moved off away from the mentees.

(mentor AS, personal interview, April 11, 2002)

When I asked a ministry staff member if she saw the problems encountered with mentors and mentees that were not well matched as a major problem with the Initiative, she responded:

We were trying not to be too prescriptive. We wanted to provide guidelines for districts, not rules. So, it was up to the district contact to make the best decisions about pairing people. We didn’t feel that we could go in and tell a district how to select someone. Even (an established technology mentorship program at a local university) has these problems and they have been at it for years.

(ministry staff A, email, June 16, 2002)

As shown by her response, when people are artificially paired in mentorship programs the problem of different expectations is all too common.

Different Perceptions of Success

For this section, I focused on the perceptions of district and ministry staff who oversaw the Initiative and were accountable for the success of the program. The previous mentorship themes showed that most mentees and mentors were somewhat dissatisfied with the mentorship process. Therefore, their perception is that this
mentorship model was not successful and could have been better. The perception of
success by ministry and district staff varied. Interestingly, one ministry staff member
made the following observation:

We learned that districts who created school based teams of a mentor
working with colleagues were very successful...the use of school based
teams helped them overcome problems that they encountered with the
high cost of travel and getting people together in big districts. Creating
school based teams allowed teachers to take advantage of informal
opportunities to little pockets of action which often sent big ripples
through the whole school. Making this a requirement would have
reduced what districts saw as a real benefit of the project...the flexibility
that made it possible for them to select focus grades, subjects or
determine their own selection processes for mentors and mentees...it
was something that districts learned through experience and are
beginning to incorporate into their own projects. A much more
compelling reason for change than having the Ministry make this a
requirement! (ministry staff B, email, June 6, 2002)

These comments are not supported by the mentor and mentee experiences in this study.
While the ministry staff suggests school based teams be required in such projects, the
only school based team in this study encountered problems with the mentoring
relationship.

From the perspective of district staff, mentorship was a success. One
district staff member stated: “I think the mentors did a good job.” (district staff
Another district staff member gave a lengthy explanation of how the mentors and mentees were selected in order to ensure success for the program:

We were...careful... who we asked to be mentors, we wanted a range of teaching backgrounds in...grades...six to nine for this particular project so the four people we contracted...were people in both secondary and elementary, and had complimentary but different teaching backgrounds...when we asked for mentees...we asked for expressions of interest and really tried to congregate teachers in cohort groups at the school level... that enabled us to create groups of teachers within a school for example, who could really work together, and then be supported by someone who had some knowledge of teaching and learning with computers. People we hired were not necessarily computer coordinators or experts with computers...they were...very good at...integrating computers in teaching and learning. And that was a key part to it...the mentors, they had to get into the classrooms and work with the mentees without being experts...the mentors met as a team and developed how they would work with teachers, and then they met with their mentees in the schools and developed ways of working with them.

(district staff A, personal interview, May 24, 2002)

As described above, the district staff did what they thought would create a good working relationship with people who were suited to their respective roles.
Unfortunately, the mentors and mentees did not have as positive an experience as they had hoped to have.

**Technology Issues**

Mentors and mentees identified a number of problems regarding technology. The problems included lack of access, inadequate technical support and the need for sustained funding in order to maintain equipment and programs. All teachers agreed that funding for technology does involve trade offs and affects other educational programs. However, their participation in the Initiative showed they still see ICT as an important part of their teaching practice and acknowledged that technology is just one of many tools they may choose to use in their classrooms. The following themes indicate the issues teachers identified and the role they see technology playing in education.

*Problems with Access and Technical Support*

Access to technology and insufficient technical support were both unanimously agreed upon problems according to mentees and mentors. These problems are commonly cited in the literature. As stated previously, the incentive to attain a computer and some software was a main reason why mentors and mentees chose to be part of the Initiative. Having their own classroom computer created a bit more access for many of the teachers.

The following comments from mentees describe the problem of access:

- While the idea of using ICT in the classroom is not a problem, the availability of technology (is).  *(mentee DE2, mail, May 27, 2002)*
• I think that computer labs should be open in the morning, lunch and after school. The technology is there but the kids aren't getting to it often enough. *(mentee DE3, mail, May 20, 2002)*

Mentees also commented on the unreliability of equipment and the lack of technical support in general. In the Westview School District, there are technicians specifically hired to fix problems but a work order must be submitted first and the work gets done whenever the technician has time to get to the school. This process can take days or weeks. Here are a series of comments made by one of the mentees:

• Computers often fail or are too slow in my school.

• We rely on two teachers to troubleshoot. They are either unavailable, give conflicting solutions, or are not knowledgeable enough to help.

• The server is often down.

• It is difficult to find enough workable computers for student use. *(mentee AS2, mail, April 2, 2002)*

The other problem highlighted by these comments is how computers are often too outdated for what teachers and students need. Keeping current with technology costs money. The following dialogue with a mentor elaborates these problems:

The whole “is it going to work?” question comes up with me...it certainly is tough when five of the computers in your lab are down...we’re a big school and our equipment is not really...sufficient to our needs right now. So, time getting into the lab if you’re trying to work on something big.

*(Dean) So access is a problem?*
Access...twenty computers with thirty one kids...if you split them up you might get at most twenty minutes on and switch over.

*(Dean) And is that a lab that you have to take your kids to?*

We're assigned two blocks a week. And there are a few blocks open for extra time but... not always easy to get them. *(mentor DE, personal interview, April 17, 2002)*

One of the mentors who uses technology quite regularly in his practice talks of having to accumulate workable equipment over time in order to be able to use technology with his students:

*I'm very comfortable using it in my classroom. I've used it for years; the frustration was around the lack of resources and equipment for me. But...as I gathered more equipment that works properly, which is another issue which we probably won't talk about, I just found that absolutely everything I do now involves technology. (mentor AS, personal interview, April 11, 2002)*

*Time is Necessary*

The need for time in order to learn technology is a common concern throughout the literature. Mentors were given release time to help mentees and mentees were promised some time for collaborating and learning to use ICT. For mentors, the time was built into their workload and they were given one-eighth of their workload as release time. Whether the mentees actually received any time varied, depending on whether or not they made arrangements for this time with their mentors. Also, job
action meant that some mentees did not continue to work on the program and thus did not take any release time.

Even though release time was built into the program, most mentors and mentees saw lack of time as a major hurdle for learning technology and became involved in the Initiative in order to make or be given the time to learn. As one mentee stated: "...teach me how and then give me some time to practice with it." (mentee AS2, personal interview, April 17, 2002) Another mentee lamented that throughout the Initiative time was not made to have the mentor help him to learn a new skill: "I did not find the time to have a mentor demonstrating the use of PowerPoint to use for class." (mentee DE2, mail, May 27, 2002) Another mentee reflected that she had not made a point of creating her own time to learn during the Initiative: "I would have liked to spend more of my own time using the technology but didn't make it a priority." (mentee AS2, email, June 4, 2002)

One of the mentors spoke of her own experience, spending great amounts of her own time learning new technologies over the years. The mentor acknowledged that time was absolutely necessary for learning and that she had done this out of her own desire and commitment to learn. The mentor explained that if there was an expectation for teachers to learn new technologies, teachers must be supported with the time needed to do so:

...I would like to see all induction whether it be with technology or anything else I would like to see people...(given) time within their instructional day...these people are going to spend hours and hours...you’re going to give them three hours off of a class but learning
how to incorporate technology in a classroom...takes hours. *(mentor BS, personal interview, April 12, 2002)*

In support of learning technology through the Initiative, one of the ministry staff members commented on the lack of time for the mentorship model to become common practice. Ministry staff believed mentoring to be the best model for supporting teachers incorporating ICT in their teaching practice and were discouraged that the Initiative did not receive sustained support after a new government was elected provincially, and priorities changed. As one ministry staff member explained:

> The problem is that there was not enough time for mentoring to become engrained as the most useful way to support teachers through this change process...thus some districts will continue to move forward, others will stay where they are until interest fizzles as support dwindles, and others will slide back into seeing one day workshops focused on skills as the way to proceed! *(ministry staff B, email, June 6, 2002)*

**Funding is Questioned**

In a school year when collective bargaining for a contract was taking place between teachers and their employers in the province, money and cutbacks were a big issue. When teachers were asked if they felt that money spent on technology might be better spent elsewhere, many were conflicted over their answers. On one hand, the mentors and mentees by the nature of their participation in the Initiative all had an interest in acquiring and using ICT. On the other hand, many questioned whether it was wise to spend scarce educational funds on technology, especially given the political climate at the time of the Initiative. One mentee explains:
I do believe that we are spending an inordinate amount of money on technology. These funds, especially in this time of fiscal restraint, could definitely serve a better purpose elsewhere. All the research...says that the single most important factor in student achievement is the teacher. Funding needs to be spent on providing the best teachers in the best circumstances. An announcement is about to be made at the District level about the $6 million shortfall and therefore which programs will be cut. Our money is better spent right now maintaining or revamping programs than on technology...To answer the initial question: right now, we need those funds for emergent situations. Later, we need to go back to funding technology IF IT IS FOR STUDENT USE BEYOND WORD-PROCESSING AND E-MAIL! (mentee AS2, mail, April 2, 2002)

One of the mentors alluded to a common reason for promoting technology, that technology skills are required for the work force. In this way, he felt it was imperative to ensure schools provide some form of technology training for students:

Well first of all I do think it is important. It’s not going to go away. That’s very clear if you look at any of the new jobs coming up. I think it’s the 87 job categories; there are only three that don’t require technology skills. So it’s going to be with us but it can be an economic drain to keep up with what’s current. I think that’s perhaps a bad use of the budget. (mentor CE, personal interview, April 19, 2002)

One mentor compared the computer to an expensive pencil:
It's a question I really struggle with...over the last couple of years I've done lots of Pro-D on technology and implementation and you see some great examples of things that are some great uses of technology. But I was just thinking at the last one, that I was going to play with a $2000 pencil...it looks great but...is it really an effective use of a $2000 resource?...sometimes it'd be better to have more textbooks too or other resources, rather than all the money go to computers. (mentor DE, personal interview, April 17, 2002)

One of the district staff alluded to another problem regarding technology that is common in the literature; the inconclusive research that all of the money being spent on technology over the past two decades has made any difference to students' academic achievement. The district staff member explained:

...to get at this notion of trying to be more accountable with the way that we’re...spending our technology dollars...if it’s not happening in the classroom where it’s supposed to be helping teaching and learning, then you’ve got to ask yourself why are we spending the money? And then there’s also the question of...how do we know that it’s making a difference...all we’ve been able to do is to collect anecdotal evidence. So one of the things that I’ve asked the mentors to do is to go out and collect stories of the way either practice has changed or even just how our teachers are now using the technology. (district staff B, personal interview, May 24, 2002)
In further personal communication with the district staff member, he explained that collecting stories was done on an informal basis only and was not formalized in any way in terms of reporting back to the district.

Another district staff member explained how the money from the Ministry for the Initiative was helpful to the District’s own technology funding, but that the District was going to be continuing the support mainly on their own and expounded on some of the issues around funding:

It’s unfortunate if we maybe lose some support (from the Ministry)...but we’ll keep going...the direction that this group has been involved in will continue, and it’s one of the priorities that we somehow managed to maintain throughout the budget cuts and in fact the expansion to our learning support team where we’ve hired five 0.5 people...as well a full-time coordinator for all of this, that is still maintained this year in spite of horrendous cuts. Which shows the commitment of the board and the senior management to the plan. I can’t guarantee that, and it’s always a battle... against cuts to custodians and cuts to other areas, that we’ll face, but still, this part of it is going ahead. (district staff A, personal interview, May 24, 2002)

In the following dialogue, the district staff member explains the role of parents in providing funding for technology:

...actually it’s waning. The support for technology has come from various sources, Ministry grants, not just this ICT grant but we used to have implementation training grants...The overall technology grant that
we get...and the other big source is parent funding at the school level, huge amounts of money going into computers.

(Dean) So not just the funding but also do you think the parent's attitude is such that they see it as something that they... Yes. Actually, that's changing...they're tiring of putting computers into schools, and I think with the trustees too, not sure that they're...seeing any kind of improvement or knowing that it's making a difference. And it's a treadmill in terms of putting hardware into schools because we know that so many years down the road those are obsolete...there's some waning of support for technology...next year we're facing more cuts...I think society and probably parents in general do see the need for the use of computers in all walks of life. It's just a matter of course these days, and so even though it's expensive and maybe they're not seeing the immediate benefits, they realize that they can't not participate in supporting technology. (district staff A, personal interview, May 24, 2002)

Satisfaction and Dissatisfaction with the Initiative

Both internal and external pressures affected the success of the Initiative. The requirement for teachers to create lessons or units based on the exemplars was a means of ensuring accountability. Unfortunately, this goal was too lofty given the mentees' levels of experience and thus created a certain amount of anxiety. The educational environment in which the Initiative occurred affected its success. Job action was a dominant factor that impeded the success of the program. As a result, most teachers
offered suggestions for ways to improve any future technology initiatives. Finally, unless an educational initiative ultimately benefits students in some way, it is questionable whether the initiative should be undertaken in the first place. In the case of this initiative, some mentors and mentees felt their students had benefited. The themes elaborated below outline the successes and failures of the Initiative.

Exemplar Pressures

Initially, the Ministry required mentors and mentees to create lessons or units based on the exemplars. The lessons or units would be created for the teachers' subject area and time would be spent throughout the Initiative for mentors and mentees to collaborate to create these products. The ultimate goal was to post these products on a ministry website in order to make them available to all teachers in the province. As time progressed, it became apparent to teachers from all levels that the goal to create these products was a bit steep given that most mentees were relatively new users of technology and most of their time was spent learning some very basic skills. As a result, the Ministry relaxed this expectation so that it became optional for mentors and mentees from all of the school districts in the province. As one mentor elaborated:

...there were little specificities about the products that had to be happening at the end...although...it's always nice to hold people accountable for what they are doing and the time and equipment they get....you can not...force format this type of activity...if this is something people are comfortable with and it is...a decade into using technology, then you expect people to create really powerful lessons and units...I'm not suggesting other people aren't there, because I know
myself I have been playing around for over a decade, and I'm probably at that point so how can I use it more effectively in my instructional practice? But if the Initiative was exactly that, to get people introduced and more comfortable I think that the end result was really worrisome for a lot of people for a long time. (*mentor BS, personal interview, April 12, 2002*)

The mentor clearly states the problem of unrealistic expectations given the scope of the Initiative and the skill levels of mentees. The same mentor saw the accountability measure of the lessons or units based on the exemplars as one of the low points of the Initiative. The mentor expressed how these products created a lot of stress for teachers: “… low points I think was again this continual focus on the product… I agree and subscribe to… a method of accountability I think it really paralyzed a lot of people at the beginning.” (*mentor BS, personal interview, April 12, 2002*)

As time progressed in the Initiative, the requirement to create the lessons or units waned. One mentee explained: “At the very beginning, that (products) was mentioned. It never came up again. It was mentioned again today. And our mentor basically told us; I doubt that that will even happen, don’t even worry about it.” (*mentee AS2, personal interview, April 17, 2002*) One of the district staff explained the goals of the mentees did not match the Ministry requirement for a finished product:

…if I look at it from the mentee point of view the people that we had coming into the program really varied. Some of them felt that they had been sitting on the ICT sidelines for so long it was just time to jump in… one of the provincial goals was to have some kind of lesson plan, unit
plan, visible product at the end of it, we’re not going to achieve that
because that wasn’t necessarily the goals of the mentees. (*district staff B,*
personal interview, May 24, 2002)

An interesting observation was made by another district staff member who was
critical of the actual concept of creating units if there was not going to be any follow up
by the Ministry for supporting teachers to learn to incorporate the units. The following
dialogue between the district staff member and me exemplifies this problem:

I think the idea was good but we haven’t really seen much of it. And
maybe that’s a function of all those hurdles I mentioned and not so sure
that we really did do a lot in unit development, and I know there was
some talk around perhaps linking this project with other projects such as
the social studies network project that the Ministry also funded, and there
didn’t seem to be an interest from either parties to link the two... The
concept was great, and we do need to do some more work in that area.
There’s something about developing units that I’m not so sure always
transfers to other teachers. The off-the-shelf unit...

(Dean) I’m not so sure that it ever works because people will take that
for ideas, but they’re not going to use it verbatim.

...somehow teachers then have to be in-serviced on that unit...to see the
benefits of it and see the ideas of how they could take it further for their
own contexts... (*district staff A, personal interview, May 24, 2002*)
Effects of Job Action

Job action had a major impact on teacher participation in the Initiative. For a good part of the Initiative, teacher job action required them to refrain from participating in any ministry or district sponsored meetings. In-service could only be teacher directed. Therefore, district staff could no longer call group meetings. The extent to which job action affected mentor and mentee collaboration is not known. Also, whether or not job action affected teachers’ willingness to participate in the research study is not known. The union for Westview teachers approved the research during job action since the research was teacher initiated and I communicated this to all mentors and mentees in order to ensure they understand the union supported their participation in the research. However, it is difficult to know how each of the teachers interpreted job action and how it affected their overall participation. Since conducting the research I have spoken with numerous teachers from other school districts who say that job action effectively ended the program in their school districts with little to no mentoring taking place. Which is why I suspect but cannot prove (since many mentees did not participate in this research) that many mentees participated minimally if at all in the Initiative.

The following comments explain teachers’ views on job action:

- …a low point was job action that's for sure... *(mentee AS2, personal interview, April 17, 2002)*

- …job action really did hinder...the collaboration part...because much of it was happening out of school time and so that was a big factor. *(mentor CE, personal interview, April 19, 2002)*
• Job action this year has had a big impact on the project and will certainly reduce
the number of resources shared on a provincial level. (*ministry staff B, email,
June 6, 2002*)

From the Ministry perspective, the effects of job action are explained below:

JOB ACTION – had a huge impact also and although this varied from
district to district it certainly reduced momentum, put teachers and
district people on opposing teams making it more difficult for them to
work together towards a common goal. The job action itself made it
difficult for Anne (pseudonym) and me to continue to visit districts and
see what was happening since we would have needed to be in
classrooms. District contacts were not able to continue formal
communications with participants and in some cases were very careful
about how informal contacts are made. Some districts tried to avoid any
problems by suggesting that mentees and mentors not meet or even work
informally – other districts left these decisions up to individuals in
consultation with their union officials. The net result in any case is that
work on the project slowed or ground to a dead stop. Resuming work on
the project was difficult as well because of how the job action had been
concluded. I think that this has reduced the number of resources that
have been developed for sharing and for use. In some districts, teachers
saw this as personal professional development of which they were in
control (not districts or the ministry), so the work continued and interest
and enthusiasm remained strong. In others, teachers saw this as ministry
or continuing through the job action – as a result – enthusiasm flagged, momentum was lost, time was lost and it has been very very difficult to get the project underway again. *(ministry staff B, email, June 6, 2002)*

District staff also felt the affects of job action:

...job action kind of threw a wrinkle into all this. The mentors still had the release time but, we didn’t feel comfortable meeting outside of that time and so a number of the things we thought were going to happen just didn’t happen during the course of the year. So it was...stepping back and how do we make the best use of this time? And trying to ensure that the mentors had an opportunity to meet with the mentees on a regular basis. *(district staff B, personal interview, May 24, 2002)*

Another district staff member felt teachers’ motivation was affected by the job action:

...teachers were interested in working with other teachers. This was not, kind of a laid on initiative, they had volunteered to be a part of this...for the most part they were quite accepting of continuing. There are still some remnant issues for teachers around job action. And it’s perhaps affecting motivation... *(district staff A, personal interview, May 24, 2002)*

*Initiative Improvements Needed*

Many teachers expressed a need for improvement in how the Initiative was implemented. These improvements are suggestions that could be used for future initiatives to help ensure more successful experiences by teachers. The following dialogue expressed one mentor’s suggestion for improvement:
(Dean) And have pretty much all of them (mentees) participated with you in some way?

In some way, yeah. But certainly I’ve spent more time with some than others.

(Dean) And do you find that they’re coming to you or are you trying to go to them, or how does that work?

It’s worked both ways, and that’s one area...that probably could’ve worked out better than it did. Some people have been pretty up front and emailed or called, and some I...tried to...talk to...and had a few meetings with. But I think in retrospect I probably would’ve liked to set up some regular meeting times. (mentor DE, personal interview, April 17, 2002)

One mentee expressed a number of things she felt would improve the experience:

Supervision of mentors. There needs to be some accountability here, especially if these mentors are being remunerated. The idea was to work with teachers, as opposed to developing their own plans, etc. Release time so that we can use the skills we have learned, to share our information, and to actually learn the skills to begin with! A timetable for completion of activities, a showcase of lessons, etc. that can be shared. (mentee AS2, email, June 4, 2002)

Other mentees also suggested the need for a structured schedule for meetings and to share what others have learned. The following series of comments express their ideas:
• At meetings, perhaps have mini-workshops. Participating teachers show their work programs using technology. *(mentee DE2, mail, May 29, 2002)*

• Scheduled visits throughout the year. You tend to get busy and put off setting aside a time. 4 1/2 days set in September would be best. *(mentee DE3, mail, May 20, 2002)*

• Offer these initiatives to the students. They can integrate new learning into school work and the teachers will be exposed to incline to get involved with ICT…Have presenters (mentors) demonstrate various ICT’s, including specific application examples. *(mentee AS1, mail, June 20, 2002)*

Surprisingly, one mentor suggested the following:

More clearly defined outcomes and end products would probably help. It might also be useful to have more opportunities for check-ups at various stages with the programme. *(mentor DE, email, July 18, 2002)*

His suggestions seem appropriate, yet the lessons or units based on the exemplar were end products that caused stress for mentors and mentees and eventually became optional as districts and the Ministry realized this outcome was too demanding for mentors and mentees.

**Benefits for Students**

Some of the mentors and mentees felt the Initiative benefited their students. However, given the short time frame and the need for teachers to initially learn to use the technology, the trickle down effect to students was not major. As one mentor lamented:
...maybe that’s where I find my greatest disappointment was not seeing a greater impact in the kids. (mentor CE, personal interview, April 19, 2002)

One mentee who created a website for her classes that included information about homework assignments felt this benefited both students and parents:

My students have a higher sense of responsibility with respect to homework I have effectively eliminated the “I didn’t know” excuse for homework not being done. It also really helps those students who are concerned with their learning and want to know more. The parents are very appreciative as I’ve given them a way to be really proactive in their child’s learning. I’ve not really used it a lot in my classroom (technology that is), but rather, in workshops that I put on for parents. IT has increased my ability to help students with their research assignments. (mentee AS2, email, June 4, 2002)

Another mentee felt his students increased their comfort level with technology but was still not completely satisfied with his students’ overall skill set:

I made the students more comfortable with the technology. It became almost second nature to them. But they still need typing skills. (mentee DE2, mail, May 29, 2002)

Another mentee who did not see a big transfer to her students for this year saw potential for the following school year:

In terms of instruction, there was little immediate transfer beyond opening my mind to other options of presenting work (i.e. PowerPoint, Hypostatic) and
encouraging students to use the Internet as a research tool. I have now (after observing other teachers in action) undertaken an initiative to challenge my very capable students next year—offering research in lieu of seatwork... (mentee ASI, mail, June 20, 2002)

One of the mentors reported his students became caught up in the excitement of the mentor’s work in the Initiative:

I think they see me more as an expert, or at least someone with a strong interest in technology. They were already a pretty technology literate group, but they have benefited from ideas that I have acquired during the programme. They’ve actually been enthusiastic and motivated to participate in activities when I’ve told them that I’m trying something for my mentor group. (mentor DE, email, July 18, 2002)

Sustained Support Necessary

There was a clear message from both district and ministry staff that in order for the program to be successful, it needed to be funded over a sustained period of time. One year was inadequate to create the changes needed to ensure mentees would develop the attitudes and skills to utilize technology effectively in their teaching practice. Both mentors and mentees expressed disappointment in how much they achieved. Therefore, if all had the opportunity to make the changes necessary to improve the program and continue the program in the following school year, teachers may have incorporated technology more effectively.

One district staff member was quite critical of the one year timeline:
It can’t be a one year program... this whole ICT program, got kneecapped by the change in government... what started off as being a real honest attempt to make a difference in getting teachers using ICT was blown away by... politics essentially... I think my comment about the way the government stopped it, without really any analysis of whether it was being effective or not, it was really unfortunate... when they had an opportunity to show some leadership they did... it was an exciting program that they put forward... The first cohort ends now, and yet... your interview, these questions, is the first attempt to analyze whether the program is successful. And yet the program has been cancelled. This might have been the best thing... since sliced bread but it’s not going to continue... or it may have been the worst thing since the black plague, and... the government... did not bother to look or ask those questions... there’s a certain amount of cynicism on (the) teachers’ part... “Okay well this is flash in the pan, they change it every year.” (district staff B, personal interview, May 24, 2002)

Perhaps one of the ministry staff members best sums up the problem:

I believe the most important thing that school districts, teachers and students need is both a consistent message and continued support from the ministry. This program was developed after a lot of consultation and support from many different groups. I think it was a great idea. The ministry received a lot of support from school districts that felt that the ministry was moving in the right direction at the right time. However many people who had been in the field for a while were somewhat skeptical
about the program’s continuance after one year. Thus, the major change that I would make to this program would be that it should have been consistently supported by the ministry over the course of at least four years, rather than one and a half years so that districts could fully buy into it and that research could be done to support its effectiveness. (ministry staff A, email, June 16, 2002)

These final comments from the ministry staff member sums up the problem with any government initiative that is developed in good faith and with sound reasoning and then is not funded over a sustained time period. When educators choose to put the time and energy into making changes in their practice, they want to know they will be supported. This is one of the main reasons for teacher cynicism over educational reform. Why should they buy into a new program that may be cut in a year or two? Often, teachers will take a wait and see attitude before participating in new programs in order to make sure it will truly be worth their while. In the case of this Initiative, participating teachers will only continue to work with ICT through their own willingness to carry on.

Conclusion

Based on the literature regarding technology implementation and mentorship, the data collected from the teachers held few surprises. Teachers did not achieve the goals they initially set for themselves although some benefits were achieved by their participation in the Initiative. Lack of time in busy schedules and job action affected the level of participation of mentors and mentees. The new provincial government’s decision not to specifically fund the Initiative for a second cohort group subsequently
eliminated further collaboration by teachers involved in this program. The convenient and logistical way mentors and mentees were paired, rather than a relationship developed over time based on trust and respect, resulted in an ineffective working relationship between some mentors and mentees.

My favourite interview moment occurred when I asked one of the mentees whether or not technology funding is better spent elsewhere. She responded:

Right now the money is better spent somewhere else. We’ve got…huge budget problems and class size issues and lay offs and …at this particular moment in time, I don’t think technology should be paramount. And, in a perfect world, it’s a great tool. My concern is I have yet to see any solid research that says that (it) actually improves student achievement. Initially, I’ve heard that it does simply because kids are more focused, it’s a little bit more fun, so they’re a little bit more involved with that particular assignment, project, lesson, whatever it might be. But in the end…the way the kids look at using all this technology in the classroom right now is the same way that we looked at “oh yeah, we’re going to get a slide show in class.” Like at the time, it was fun, you know it was fun and exciting, and we paid attention and it was kind of cool, and then it wasn’t. And then there were movies and now there’s videos…I don’t know what that does with achievement until the curriculum changes to reflect it. (mentee AS2, personal interview, April 17, 2002)
(Dean) I like that analogy, that's something no one's ever sort of brought up but I like that thing about what the old technology was and how we felt as kids. Being in a classroom, it was sort of novel and, yeah, we get a movie and it's not because it was boring and we didn't have to listen to the teacher, it's like, we could show a movie in the classroom!

Imagine that! And now, just, it's nothing.

I think this dialogue hit at the heart of technology hype and promotion for me. There is a danger of misuse when teachers and students view technology as novel and exciting regardless of what they actually do with it. It is important to see beyond the novelty of new technologies and be critical of how ICT can be effectively used in teaching and learning.
CHAPTER V
SUMMARY AND CONCLUSION

In this chapter I include limitations of this study, reflections on the research, a summary, conclusions and recommendations from the research findings.

Limitations of this Study

This case study is of a particular event (the BC Ministry of Education’s Grades 6-9 Information and Communication Technology Initiative), involving a group of teachers (ministry and district staff, mentors and mentees), in a specific place (the Westview School District) and during a set time period (January 2001 to June 2002). Since these conditions cannot be replicated again in the same way, the findings are specific to this particular case study and are therefore not necessarily generalizable to a larger population. However, the experiences of these teachers from the case study may inform future attempts at technology implementation using a mentorship model because their experiences may be common to teachers involved in a similar set of circumstances.

The research is limited by the questions I chose to use and how I worded each question. It would be much easier now to re-write the questions based on the types of responses given for each question and the types of information I found more revealing or informative. For example, knowing that many teachers felt the mentoring relationship was problematic, I would now choose to focus at least one more question on this relationship, such as “What suggestions do you have for making the mentoring relationship better?” or “What model, other than mentorship, do you think would have been more effective to use for the Initiative?”.
Since a number of the mentees chose not to participate in the research, I do not know if the responses for those who did participate are representative of the entire group. Whether the data would be much different if all mentees responded to the research questions or the reasons why many of the mentees chose not to respond are not known. I can only speculate why they chose not to participate. No time? Was it that job action resulted in little to nothing being accomplished therefore mentees in particular felt they had nothing to report? Regardless of the reasons, the research is limited by the number of mentees who chose to respond versus those who did not.

Reflections on the Research

As part of the process of reflection, Smith (1995) suggests two questions be used to conduct the researcher's own informal query into how the project was conducted. The first question deals with the interview as interaction. Here, the researcher should question whether or not she followed good interview practice and style and whether or not her own gender, age or ethnic group may have affected the responses. The second question is about the investigator's own conceptions and preconceptions. Here, the investigator should reflect on how her background and interests may have affected the research project at the various stages. Would someone else have done the research differently or interpreted the data in another way? Asking these two questions may accomplish one of two things. Either the investigator may use it as a form of quality control or she may wish to modify her writings as a result.

In response to the first question, I used three interview methods; personal, email and mail. Each had their own unique attributes. Personal interviews allowed me to respond to interviewees' non-verbal and verbal cues when asking probing questions.
Richer descriptions were attained using personal interviews than by email or mail interviews. I was able to ask probing questions immediately during the interviews in order to attain clarification or further details from interviewees' responses. Interviewees seemed to be at ease with me during the interviews. This is partly due to the fact that I work in the school district and many of the people being interviewed ranged from knowing me somewhat (I had been introduced to everyone at the initial mentor/mentee meeting) to knowing me very well (from working previously with people on committees and one of the mentees is a former colleague and friend). I also made a point of trying to increase their comfort level by conducting the interview in a place familiar to the interviewee. I anticipated that the main drawback to the personal interview might be booking a convenient time and the time that the interviewee needed to set aside for the interview. However, I was able to schedule the interviews quite easily and quickly with people and everyone kept the original appointment.

Email and mail interviews had similar qualities. First, they were quite convenient for the interviewees who could respond at their own leisure. With the email interviews, I was also able to respond with probing questions at my own convenience. I chose not to ask further questions of those interviewees who responded by mail as I thought this would keep true to the format of this medium. Therefore, the email interviews were more of an interview than the mail interviews, which took the form of a survey. In this way the personal interviews were really the only true interview format used in this study. I would argue though that email interviews are possible but differ from personal interviews since the interviewer cannot read body language nor ask probing questions as directly or quickly during the interview (although one could
contend that using synchronous electronic communication like what is used in chat rooms could allow for using probing questions in a timelier manner).

Email and mail surveys are also somewhat “detached” even though the interviewees in this study were identified by their email address or their name on the mailed survey. Here I use the term “detached” since the interviewee is not in direct visual contact with the interviewer and thus may feel more anonymous than if they were communicating face-to-face. I could have ensured they were anonymous by asking them not to put their names on the mailed survey or by setting up pseudonym email addresses through the district email accounts. However, since there was a third option to have a personal interview it was not consistent to have anonymous email or mail interviews as well. In retrospect, anonymous interviews may have increased the response rate slightly for those people who might be reluctant to reveal their experiences, but it seemed overall that respondents were fairly open with their comments and criticisms of the Initiative.

By offering three different modes of response, interviewees were able to choose the method most convenient for them. Personal interviews provided the most descriptive responses and allowed for immediate probes, thus ensuring clarification and further explanation of responses. Email provided the second most descriptive responses and also allowed for probes at the convenience of both the interviewees and the interviewer. Mail provided the least descriptive response, possibly because the question sheet had limited space for responses (although interviewees could choose to respond on the back of the question sheet or on a separate sheet of paper). Those respondents who use email regularly were most likely to choose this medium of response, although
even some of the teachers who use email regularly chose personal interviews. All ministry staff chose to respond via email which was convenient due to their geographical location in a different city.

Given the nature of this study, my own gender, age and ethnic group was not an influential factor in my interaction with the research subjects. The group consisted of both males and females ranging in age from their 20's to 50's. All work in the public school system in some capacity. The gender, age and ethnicity of the teachers were also not an influential factor in this particular research study. What may have been influential was the fact that I work in the same district as the mentors, mentees and district staff. In one way this could have influenced people to be more comfortable interacting with me; or it could mean people were less likely to open up as they would with somebody more anonymous to them. Or vice versa; this probably affected my interaction with them in some way as well, perhaps because I was somewhat familiar with each of them.

However, my comfort level and breadth of experience with technology did have an impact on how I did this study. I made some assumptions, including initially thinking I would be able to conduct all of the interviews via email. This was not the case, as many mentees did not have any experience using email. I was also very enthusiastic about video-taping the interviews rather than using audio-tape. My enthusiasm for using video was based on a number of workshops I had attended using digital video-tape. However, my dissertation committee pointed out that video-tape is more obtrusive than audio-tape and may make respondents uncomfortable. So, I chose not to use this method for recording the interviews.
The second question deals with my own conceptions and preconceptions. My background and interests may have affected the research project. I cannot assume that anyone else would interpret the data in the same manner that I did. I am an experienced teacher with technology because I have worked with technology as a major part of my teaching practice for my entire career, starting with typewriters and moving onto computer labs when they were first introduced into business education classrooms in the late 1980's. This is an anomaly compared to most teachers in public schools who teach in regular classrooms or have limited access to computer labs. I enjoy teaching in computer labs and welcome the challenge to keep fairly current with technology and learn meaningful ways to incorporate technology into my teaching. I was required to learn to incorporate technology into my practice regardless of whether I was comfortable with it or not. I embraced this requirement since I like to innovate and enjoy making changes to my practice, albeit with keeping a critical perspective.

Although I am enthusiastic about using technology in my own practice, I am critical of how and why it is used. The key to effective use of technology by both teachers and students is knowing how it is best used for teaching and learning. After discovering that the mentees were only able to accomplish small changes to their practice, it is clear to me that enabling teachers to effectively use technology requires more time and support. Teachers need to first learn how to use the technology before they can incorporate it in their classrooms for student learning.

Finally, although I tried to remain unbiased in my interpretation of the data there is no guarantee that I could truly accomplish this. I tried to look at the data from an objective point of view. However, because I read the literature on technology
implementation and mentorship prior to conducting the research, I already had preconceived ideas of what I might expect would happen. Thus, while analyzing the data it was difficult to separate what was there from what I expected I would find. However, since I knew about the previous research in these areas, it would be naïve to expect that I would find any outcomes overly different from what others have already found or experienced.

**Summary**

The summary is grouped according to the four clusters of themes of experiences identified in Chapter IV. Where possible, I relate the data presented in Chapter IV to the literature on technology implementation and the mentorship model as a means of connecting my summary to what has or has not been found in previous research studies.

**Teachers’ Motivations and Feelings**

What motivated teachers to participate and how they felt about technology affected their participation. In their study, Granger, et al (2002) found teachers’ goals for participating in technology initiatives were often practical and related to their desire to improve their own ICT skills. They also found that teachers’ level of comfort and confidence is one of many characteristics that contribute to the successful implementation of ICT. In this study, mentors and mentees had both intrinsic and extrinsic reasons for initially volunteering for the Initiative. Foremost was their desire to attain new technology but many were either fearful of being left behind or had anxieties about using technology and felt their participation in the Initiative would increase their comfort, confidence and skill levels with using ICT.
Granger, et al (2002) found that both experienced and novice teachers ranged in ICT skill levels from little to substantial experience. They concluded that “success in the implementation of ICT does not stand in a one-to-one relationship with the experience, the skills, or the education of the teacher engaged in the work of implementation” (p. 12). Similarly, the mentors and mentees in this study ranged in age and teaching experience and none of these were major factors determining whether they were more or less competent with technology or with their ability to implement ICT in their practice.

Often, the mentors’ and mentees’ initial goals they hoped to achieve differed from what they actually accomplished. For most, lack of time to participate in the Initiative meant they did not accomplish all they had initially set out to do. Most mentees were able to learn or use some type of technology or software for personal use but for the most part were unable to get to the next level of using what they learned with students. The critical mass of teachers using technology that both ministry and district staff envisioned did not materialize, in part due to the short timeline of the Initiative, approximately one and one-half years, which was far too brief to guarantee any major or lasting change.

However, both mentees and mentors all felt they benefited from their participation in some way. Many of the mentors and mentees received a computer for their own use or to share as a result of participating in the Initiative. Some learned how to use one or two software applications such as PowerPoint and were able to create a presentation that they used with parents or peers. For some, their initial attempts at using technology went a long way to helping them feel more comfortable with ICT.
Many expressed their desire to continue in some way with technology into the following school year, even though the Initiative had come to an end. So, although initial expectations were not met, there were some positive results for teachers.

What I cannot confirm is whether or not some of the mentees did not accomplish anything through the Initiative. Job action, the logistics of trying to find time to work with a mentor, the lack of structured schedules requiring participation, the facilitative rather than directive approach of the mentors, may mean that some mentees participated minimally or not at all. However, I do not know the level to which all mentees were able to accomplish anything through their participation in the Initiative since not all mentees chose to participate in this study.

**Difficulties with the Mentoring Relationship**

One of the biggest problems with the Initiative was the relationship between mentors and mentees. In many cases, mentors and mentees were disappointed with one another. Some mentors wanted to be facilitative, while some mentees wanted their mentors to be more directive. Some mentors saw their role as ensuring they were available for mentees, who could ask them for help as they needed. They did not want to be directive by telling mentees what they could learn. Some set up meetings, others did not. Some mentees did not know what they could learn about and expected the mentors to explain to them what they could do. By not having regularly scheduled meetings, some mentees felt disconnected from the mentor, feeling the mentors were not adequately supporting them.

These conflicting expectations resulted in less being accomplished than was initially hoped for by both mentors and mentees. Even though many mentors and
mentees perceived problems with their relationships, district and ministry staff overall felt the mentorship model was a success. However, they did not provide any evidence for this claim. District staff received informal feedback from mentors but did not conduct any formal evaluation of the Initiative. The response by ministry staff was based on regular personal communications between the ICT Coordinators and teachers involved in the Initiative from various school districts throughout the entire province. From this informal feedback to the Ministry, Coupal (2002) reports “No complaints were expressed to the ICT Coordinators about the usefulness of the mentorship model, or about the process of mentoring” (p. 12). Ministry staff saw the mentoring relationship as effective but conceded that mentoring relationships worked more effectively when mentors were in the same school as mentees and that mentoring requires sustained support. In this study, the most complaints about the mentoring relationship were from the school where the mentor and the mentees were in the same building, thus contradicting the Ministry’s view of the mentoring relationship. However, the Ministry’s suggestion that mentoring requires sustained support was a finding in this study.

Ringstaff and Yocam (1994) report barriers to technology implementation include communication problems and difficulties defining roles and responsibilities of participants including team building. Relationship problems are a common reason for stalled or failed technology implementation and these barriers were problems in this study. Mentors and mentees were unclear about their roles and responsibilities and there were communication problems regarding who was responsible for what. As a result, the
level of mentoring hoped for was not achieved and effective team building did not
occur.

One problem with mentorship stemmed from the way mentors and mentees were
chosen for the Initiative. Hargreaves (1994) states that when higher authorities control
mentorship and set up artificial relationships the situation results in bureaucratic control,
mentor systems and contrived collegiality in place of mentor opportunities and
collaborative cultures. It appears this was the case in this study. Mentors were
encouraged to volunteer by district staff or other colleagues based on their expertise
with technology and curriculum in the core subject areas of the Initiative (math, science,
English and social studies). Mentees either volunteered or were “volunteered” by their
administration. Neither sought each other out, rather district staff created the mentorship
groups according to their teaching level (elementary or secondary) and their geographic
location in the district (north or south). What did not happen was a mutual selection,
over time, based on a relationship of trust and respect, which is considered a more
effective way of developing a mentoring relationship (e.g., Lucas, 2001).

McKenzie (1999) suggests that mentorship programs must ensure a pool of
mentors so that teachers can select a mentor best suited to them. In order for people to
make a mutually preferable match when seeking a mentoring relationship, there must be
a chance to select someone who fits each person’s own needs and personality. The
problem with creating a broad pool of mentors for the Initiative was funding. Mentors
were given one block of release time throughout the school year in order to carry out
their duties. Time was necessary to ensure mentors would be able to work with mentees.
If they were not given any release time, the mentorship collaboration would have to
take place outside of regular working hours. This would have created an unrealistic burden on the mentors. The cost for giving mentors the release time prohibited having more than four people as mentors. Thus, there was no choice given to mentees or mentors regarding who they were paired with for the mentoring relationship.

Reksten (2000) found that collaboration in terms of planning together and peer coaching that is continuous and consistent leads to collegial working relationships. A collaborative school context supports and maintains technological change making it safe for teachers to try out new ideas. However, developing this school culture requires time to allow people a chance to collaborate and funding to create time for collaboration and to provide professional development for teachers to learn about mentorship. Although ministry staff hoped to create a critical mass of teachers who would become the catalyst for further technology implementation, a single initiative was not sufficient for changing existing school cultures.

McKenzie (1999) recommends that for a good mentor the qualities of support and encouragement are more important than skill. The mentors in the Initiative were encouraged to participate based on their competency with technology but more importantly on their curriculum knowledge. Whether their interpersonal skills were also considered is not clear. Choosing mentors based on technology and curricular skills rather than interpersonal skills may have contributed to the mentoring relationship problems in this study. Since mentors and mentees had no choice in selecting their partners, problems arose around their compatibility levels working with one another. Creating a pool of mentors to choose from may have alleviated this problem somewhat. However, since mentorship is best established over time with the development of
mutual trust and respect, the very nature of how the mentoring relationship was established in the Initiative was not conducive to creating good mentoring relationships. A longer time period is necessary and the way in which mentors and mentees were paired was ineffective for establishing effective, collaborative relationships.

**Technology Issues**

Granger, et al (2002) identified adequate time and sufficient, functional equipment as necessary to successful technology implementation. Access, technical support, and time were also identified as barriers to implementing technology in this study. Even so, many teachers in this study were conflicted over the amount of funding targeted specifically for technology while other programs continue to be cut or underfunded. District and ministry staff stated that sustained funding, over a long period of time (usually seen as a five year plan) was deemed essential for effective technology implementation. Therefore, the short time period of the Initiative, one and one-half years, was seen as too short to create any major change in teachers’ use of technology in their classrooms.

Ringstaff, Yocam and Marsh (1994) found that the participants in their study who had access to computer technology and somebody to turn to for trouble shooting were more likely to integrate technology into their practice than those teachers who did not. In this study, when asked about prior problems with implementing technology, access to technology and technical support were identified as major problems by mentors and mentees. Mentors and mentees reported problems with getting class time in their schools’ computer labs and were also frustrated over the lack of technical support. For teachers who were not very comfortable or familiar with computer technology,
technical problems sometimes thwarted their ability to use technology with their students. Most felt they would benefit from having some sort of support person readily available to help when problems occur. In reality, schools cannot afford this level of technical support.

Obtaining new technology equipment was a perk for participating in the Initiative and one of the main reasons for participation. Teachers in this study were able to increase their access to technology through their participation in the Initiative by acquiring a single computer for their classroom or to share with another mentee. The problem is that acquiring one computer to use or share does not greatly increase access and over time, the equipment obtained through participation in the Initiative will become outdated and need to be upgraded.

Hargreaves (1994) identifies time as a chief problem in technology implementation and time was also an issue for teachers involved in the Initiative. Mentors and mentees received time for implementation through the Initiative in order to collaborate, plan and implement technology in their classrooms. Mentors were given one block of time and mentees were able to book release time from a pool of time allocated to all mentees to draw from. However, not all mentors and mentees took advantage of the time given to them or were aware that release time was available. As well, job action meant many chose not to spend any more of their time on this project.

All teachers saw sustained support as necessary for effective technology implementation. Unfortunately, the change in government meant the Initiative was not specifically targeted for funding for a second cohort group. Whether or not mentors and mentees from this study continue to work on implementing technology into their
practice will depend on other means of funding and their own choice to continue to implement ICTs.

Satisfaction and Dissatisfaction with the Initiative

Teachers expressed both satisfaction and dissatisfaction with the Initiative. All teachers felt pressure over the requirement to create lessons or units based on the exemplars. Job action due to collective bargaining for the teachers' collective agreement hindered collaboration during the Initiative. All teachers suggested improvements for future initiatives include increased accountability and more structured scheduling of the mentoring process. Finally, some benefits to students were perceived by the mentors and mentees.

The requirement that mentees produce lessons or units based on the exemplars was a critical source of initial stress for mentees and mentors. As time went on in the Initiative, all levels of teachers (ministry and district staff, mentors and mentees) realized the expectation to create a product was not achievable. The lessons or units based on the exemplars were a measure of accountability created by the Ministry. However, the realization that teachers would not be able to accomplish this meant the Ministry relaxed this expectation. The expectation to create an entire unit during the time frame of the Initiative was unrealistic since mentees were not yet proficient with using ICT.

Reksten (2000) advises that technology plans should foremost address student outcomes. However, findings from this study indicate that teachers must first develop their comfort level, knowledge and skills in order to know how to use ICT in their classrooms. Although mentors and mentees identified some benefits for their students,
most mentees were at a beginner's level with using technology and needed to first learn a few skills in order to become comfortable teaching their students using ICT. The Initiative's purpose was to create a critical mass of teachers, comfortable with using technology in their practice. The time allocated to the Initiative was not long enough to enable teachers to become comfortable with using technology before incorporating it with their students.

Conclusions

This case study shows there are many variables that effect whether or not technology makes any difference to student learning or teachers' practice. A year and a half program was not effective in making any major changes in these areas. Barriers and problems such as job action, funding cuts resulting from a change in the provincial government, and the mentoring relationships of teachers all affected the outcomes of the Initiative in the Westview School District. Yet, all teachers perceived some level of success for the program. What follows are the answers to the research questions.

1. By participating in the Initiative did teachers make any changes to their practice, confidence levels and attitudes towards information and communication technology? Some teachers reported that by participating in the Initiative, they made a start towards implementing ICT and changing their attitudes towards using technology in their classrooms. Many of the teachers expressed some fears and anxieties around using ICT and some felt antiquated and wanted to keep up with technological change. Teachers reported taking small steps towards learning ICT and feeling more comfortable about using it. What is clear is that the one and one-half year timeline was too short to accomplish any real changes to practice. Most mentees reported that they
planned to continue working with ICT in the future, through their own initiative, but it remains to be seen how successful they will be if they are not supported in some way.

2. How effective was the mentorship model for implementing information and communication technology? The mentors and mentees in this study were critical of the mentoring relationship. The way the mentors and mentees were paired with each other, the lack of a pool of mentors to choose from, personality clashes and a lack of clearly defined roles all contributed to problems with this relationship. For the most part, mentors and mentees felt let down in terms of what transpired. Many wanted a more structured type of collaboration. Some mentees wanted more direction but some mentors wanted to facilitate. Although some mentors and mentees were able to work together to support ICT implementation, an overall collaborative environment did not develop.

3. What factors are necessary to support the adoption of information and communication technology in teaching practice? All teachers agreed the Initiative needed to be sustained over time, perhaps three to five years, in order to support the implementation of ICT. An environment of change did not develop due in part to the one and one-half year time frame and job action. Teachers identified time, access and technical support as necessary for people to implement technology. Effective and supportive collaborative relationships were also considered important to technology implementation.

Overall, teachers made little change to their practice, confidence levels and attitudes towards ICT. The time period was too short to create change or develop an effective mentoring relationship and only supported a minimal level of adoption of ICT
by the teachers. The expectation that teachers would learn the technology, incorporate it into their teaching and create a lesson or unit was unrealistic given the time frame of the Initiative and the skill levels of the mentees. The mentorship model used by the District was ineffective in supporting teachers implementing ICT. Mentors and mentees were not able to choose one another and not enough time was given to develop, nurture, and support a collaborative relationship. This resulted in some of the mentors and mentees being disillusioned or disappointed with the relationship. Outside forces brought on by a change in the provincial government resulted in changes to the funding of the Initiative for a second year and job action seriously affected teachers' participation.

In conclusion, outside forces that are beyond the control of educators can seriously affect the outcomes of educational initiatives. In order to counteract these forces, other means of support including funding must be made available. As well, if teachers are committed and believe in the goals and benefits of the initiative, they are more likely to continue in spite of the obstacles created by outside forces. Time is required in order to make substantial changes to teachers' practice and students' learning. Therefore, technology implementation must be supported over a period of more than one and a half years before noticeable changes can be made. Mentoring is not a relationship that can be created for or imposed on people and it requires time to develop. The complexities of the combination of needs, personalities and skills make mentoring a difficult relationship to create through a one time initiative with a small group of people during a short time period. Although effective mentoring relationships are very supportive for teachers changing their practice, perhaps the expectation that effective mentoring relationships can be established for one time initiatives is
misguided. Rather than considering these relationships to be mentoring, a different approach to creating a supportive and effective relationship may be more realistic and attainable under these circumstances.

Recommendations from the Research Findings

The following recommendations for future research and curriculum policy for implementation of technology are based on the research findings.

After reviewing the literature on previous research studies of technology it is clear that more Canadian, longitudinal, and practitioners' research need to be conducted on ICT implementation (e.g., Haughey, 2002; Ungerleider & Burns, 2002). The short timeline of the Initiative meant this study was limited to a brief period of time. In order to truly determine the long term effects of technology implementation in any school or district, long term research needs to be conducted that specifically measures the effects of technology implementation on teaching and learning. This requires long term goals and support of technology implementation in a school or district coupled with realistic and achievable learning outcomes attached to the implementation of ICT. When large amounts of educational dollars are targeted to technology implementation, educators must ensure research occurs in order to evaluate whether or not the money spent on technology actually accomplishes the goals behind the funding.

There are a number of questions about ICT implementation that still need to be addressed. We do not yet know what we need technology for and how it can be used effectively in teaching and learning. There is not any clear direction on how technology should effectively be implemented into teaching and learning. As well, it is unclear how the success of technology implementation should be measured.
Although it is the nature of an evaluative type of case study, one of the disappointments I found in doing this research was my lack of control or participation in the Initiative. The research was an evaluative inquiry making my role that of an observer who could not initiate or make any changes. All I could do was observe how the case study unfolded. This type of research was much different than the action research I did for an MA program. In this previous study I was able to incorporate change into the program I was researching and to my own practice which I found much more rewarding and beneficial than my experience with this study. Although I was interested in the feelings of teachers and whether or not they made any change to their practice as a result of their participation in the Initiative, all I can do is report back my findings and hope those who can make changes consider my feedback for future technology initiatives.

When a ministry, district or school decides to incorporate any major changes or funding of technology there should be some level of accountability and some sort of research done to ensure the implementation achieved the goals intended. My recommendation for future research of technology implementation is that those who can make changes as a result of the research be the ones conducting or initiating the research. This could mean either the policy makers (ministry, district) or the teachers themselves. Ministry and district staff could conduct long term and rigorous research coupled with informed technology initiatives in order to determine if the initiatives meet the goals intended for teaching and learning. Teachers could conduct research on their own practice, perhaps action research, in order to inform their own practice and
implement changes that specifically improve their own teaching and their students’
learning. By involving the people who are initiating or participating in technology
implementation, the people who have a vested interest can determine whether or not it
unfolded as intended, learn from any mistakes and then make the necessary changes to
ensure future success.

The mentoring model used in this study did not support a culture of
collaboration. Other models of collaboration may be more effective for technology
implementation. For example, TESSI involved the initial collaboration of two science
teachers and a university researcher with mutual interests in implementing technology
in science classrooms. Their model of collaboration was a partnership involving
continuous negotiation, joint decision making and shared problem solving without
hidden agendas, self-serving motives or power struggles (Mayer-Smith, Pedretti &
Woodrow, 1998a). The longitudinal nature of the implementation over a period of at
least five years allowed for the development of a culture of collaboration that gradually
developed and grew to involve more university researchers and science teachers. The
collaboration was fully supported by parents, administration and district personnel.
Other factors that contributed to collaboration were the recognition of the important and
complementary contributions of each other and the shared personal history of the
original participants who had already worked together successfully. Mayer-Smith, et al
(1998a) conclude that “a project like TESSI requires fostering a special kind of
partnership, where participants establish a common vision, and view their roles and
responsibilities as completely interwoven, interdependent, complimentary and essential
to the project” (p. 133).
Based on the findings from this study I suggest the following directions for implementing technology into curriculum:

1. **Sustained time and support for a period of approximately five years.** This study shows that shorter periods of time do not support effective technology implementation or allow for any long term changes to teaching practice.

2. **Development of an environment of collaboration, collegiality and mentoring.** A mentoring relationship is a complex combination of personalities, skills, attitudes and beliefs. The way mentors and mentees in this study were paired with one another was ineffective for developing relationships based on mutual trust and respect. Developing an environment of collaboration and mentoring over time would have provided an environment more conducive to developing mutually beneficial relationships. In order to develop this environment, districts and schools must have an informed understanding of mentorship and provide the funding, time and professional development necessary to allow this environment to exist.

3. **Ensuring access, time (flexibility of schedules) and technical support.** All of these were identified in this study as barriers to using technology. Teachers and students cannot use technology if they do not have sufficient access to appropriate, current and well maintained hardware and software. In order for teachers to learn to incorporate ICTs into their practice, they need time to become comfortable with technology and professional development to show them how to use ICTs for teaching and learning. Time and flexibility in teachers' schedules is necessary for them to collaborate and support one another.
for learning new technologies. Technical support is critical to ensuring equipment is working and usable.

4. Consideration of outside influences (job action, change in government). EALP (2002) report that one cause of technology implementation failure is having educators forced to implement changes suited to fit a legislative schedule or political agenda. In this study, the imposed timeline of the Initiative and subsequent change in funding when a new government was elected all affected the support of the Initiative. As well, the participation level in the Initiative was critically affected by job action. When a technology initiative is created that is affected by legislative or political agendas, these influences have a huge impact on the success or failure of the initiative.

5. Accountability (scheduled meetings, feedback, a reasonable product or outcomes). In this study, the lessons or units based on the exemplars that were initially required eventually became optional once ministry staff realized this outcome was too difficult to achieve in the short timeframe of the Initiative. Mentees complained there was not enough structured or scheduled communication with their mentor and some suggested regularly scheduled meetings would have increased communication. Regularly scheduled meetings would at least increase the likelihood of better communication between teachers. If no accountability exists, teachers may take advantage of the perks, such as the computers received for participation in the Initiative without actually participating in or contributing to the program.
6. *Goals should support teaching and learning.* The teachers in this study needed to become somewhat comfortable and competent using technology before they could feel effective using ICT with their students. Goals for technology implementation should support teaching first through professional development aimed at informing and supporting teachers to use ICT in their practice. Once teachers understand how to use ICT in their teaching, they can then incorporate ICT into the learning activities with their students. When developing plans for technology implementation, educators need to ensure the goals are specific to supporting teaching and learning.

Apple (2000) states time, access, flexible scheduling and computer-knowledgeable teachers are likely wishes rather than reality in most school districts. Although the directions outlined above may be difficult to achieve, if educators try to incorporate the suggestions into future technology implementation initiatives, they may be more successful in their attempts to incorporate ICTs into teachers’ practice.
References


Dear

I am interested in studying the Information and Communication Technology Initiative in the School District. The working title of my dissertation is: "A Case Study of Teachers' Experiences Participating in a Ministry Technology Initiative". I am conducting this research as part of the requirement for completion of a Doctor of Philosophy in the Faculty of Education, Department of Curriculum Studies at UBC. I have been teaching Business Education and Career Programs in the School District for seventeen years and am currently on an educational leave in order to immerse myself in the doctoral program. I am interested in researching teacher's experiences with technology because of my own experiences working in computer labs for most of my teaching career.

Enclosed is a consent form and a set of research questions. Please read the information and respond accordingly. You can contact me at my home phone number , email address or via school district mail c/o Resource Centre. If you agree to participate, there will be a second set of research questions sent to you in June, prior to the end of your participation in the Initiative.

If you choose to participate, you have the option of emailing the research questions to me or sending them on paper c/o Rick Paterson at the Resource Centre. I am also looking for four elementary and four secondary participants who are willing to answer the questions during an audio taped interview to be conducted at a mutually convenient time. I would like to book these interviews in March or early April. A follow up set of questions will be mailed to you in June in order to determine your final feedback regarding your participation in the Initiative. I am also looking for one elementary and one secondary mentorship group that is willing to videotape themselves as they progress through the mentorship process from learning to collaborating to applying the technology into the curriculum.

The research will be shared with the School District, UBC and the Ministry of Education. Pseudonyms will be used to ensure anonymity. It is my hope to provide honest and useful feedback regarding your experience in the Initiative and with technology in general. However, the main purpose of the research is to write my dissertation, not just to share the information with the above interested parties.

Although I received approval for my research in early December, I was hesitant to get started until I checked with the Teacher’s Association. On January 11, 2002, I received approval from for the research. I am hoping that the timing of the research in March and June is appropriate and convenient given the turbulent year that everyone is experiencing due to job action and so much uncertainty.

Thank-you so much in advance for your help with this research. I look forward to hearing from you soon.

Sincerely,

Virginia Dean
Teacher and PhD Student
Appendix C

Information for Mentors

March 2002

Dear

I am interested in studying the Information and Communication Technology Initiative in the School District. I am conducting this research as part of the requirement for completion of a Doctor of Philosophy in the Faculty of Education, Department of Curriculum Studies at UBC. The working title of my dissertation is: “A Case Study of Teachers’ Experiences Participating in a Ministry Technology Initiative”. I have been teaching Business Education and Career Programs in the School District for seventeen years and am currently on an educational leave in order to immerse myself in the doctoral program. I am interested in researching teacher’s experiences with technology because of my own experiences working in computer labs for most of my teaching career.

Enclosed is a consent form and a set of research questions. Please read the information and respond accordingly. You can contact me at my home phone number, email address, or via school district mail c/o Resource Centre. If you agree to participate, there will be a second set of research questions sent to you in June, prior to the end of your participation in the Initiative.

If you choose to participate, please contact me to arrange for an audio taped interview to be conducted at a mutually convenient time. I would like to book the interviews in March or early April. A follow up set of questions will be mailed to you in June in order to determine your final feedback regarding your participation in the Initiative. I am also looking for one elementary and one secondary mentorship group that is willing to videotape themselves as they progress through the mentorship process from learning to collaborating to applying the technology into the curriculum. I will supply the tapes for your use.

The research will be shared with the School District, UBC and the Ministry of Education. Pseudonyms will be used to ensure anonymity. It is my hope to provide honest and useful feedback regarding your experience in the Initiative and with technology in general. However, the main purpose of the research is to write my dissertation, not just to share the information with the above interested parties.

Although I received approval for my research in early December, I was hesitant to get started until I checked with the Teacher’s Association. On January 11, 2002, I received approval from for the research. I am hoping that the timing of the research in March and June is appropriate and convenient given the turbulent year that everyone is experiencing due to job action and so much uncertainty.

Thank-you so much in advance for your help with this research. I look forward to hearing from you soon.

Sincerely,

Virginia Dean
Teacher and PhD Student
Appendix E

Information for District Staff

THE UNIVERSITY OF BRITISH COLUMBIA

May 2002

Dear

The study I am completing falls under the grant that the Ministry awarded to the University of British Columbia in order to conduct research on the Grades 6-9 Information and Communication Technology Initiative.

The main focus of my research is the experiences of the participating teachers from the School District. However, I am also interested in getting your feedback about the Initiative as this will give a “bigger picture” to determine the context in which the participants carried out their role in the Initiative.

Attached are six interview questions regarding the Grades 6-9 Information and Communication Technology Initiative. If you are willing to participate in this study, please respond to the questions via email (preferably within one week of receiving this request—however if you cannot respond immediately but plan to participate, please send me an email indicating that you will respond at a later date). If you need further clarification before responding to any of the questions, please send me an email with your queries. In turn, once you have responded to the questions, I may respond with further questions for clarification or to probe deeper into your response.

Dr. Gaalen Erickson at UBC is the Principal Investigator for this study. He has indicated to me that it is not necessary to have signed consent forms from District Staff. Therefore, I have indicated above the questions your rights regarding participation in this study.

Thank-you for your time and input into this study.

Sincerely,

Virginia

Secondary Teacher, School District, PhD Student, UBC
Appendix F

District Consent and Research Questions

“A Case Study of Teachers’ Experiences Participating in a Ministry Technology Initiative”

Purpose: The overall purpose of this project is to discover and describe the experiences of teacher participants involved in mentoring and implementing technological change in the School District. The objective is to understand the changes to teachers’ practice, confidence and attitudes as a result of their participation in the project.

Procedures: District Staff participants will be asked a brief series of questions via email.

Participation and Confidentiality: All of the data collected will be kept confidential. Pseudonyms will be used to ensure the anonymity of participants. All data will be destroyed at the completion of the research project. You may refuse to participate or you may omit answers to any or all of the questions.

Questions for District Staff Participants

Directions: Please respond via email to the following questions. vdean@sd.bc.ca

1. Describe your role in the Grades 6-9 Information and Communication Technology (ICT) Initiative.
2. What is your interpretation/perception of the Ministry/District goals for the Grades 6-9 Initiative? What were your personal goals for the Initiative? Do you think that these (Ministry/District/personal) goals were met? Why or why not?
3. What is your definition/understanding of the role of the mentor and mentee in this Initiative?
4. Were there any events or occurrences during the time period of the Initiative (January 2001 – June 2002) that significantly affected the implementation of the program? If yes, what were they and how did they affect the program?
5. Reflecting back on how the program unfolded, what changes to the program (if any) would you recommend to ensure improved integration of ICT?

Thank-you for your participation in this research study. ☺
Appendix G

Information for Ministry Staff

THE UNIVERSITY OF BRITISH COLUMBIA

May 2002

Dear

The study I am completing falls under the grant that the Ministry awarded to the University of British Columbia in order to conduct research on the Grades 6-9 Information and Communication Technology Initiative.

The main focus of my research is the experiences of the participating teachers from the School District. However, I am also interested in getting your feedback about the Initiative as this will give a “bigger picture” to determine the context in which the participants carried out their role in the Initiative.

Attached are six interview questions regarding the Grades 6-9 Information and Communication Technology Initiative. If you are willing to participate in this study, please respond to the questions via email (preferably within one week of receiving this request—however if you cannot respond immediately but plan to participate, please send me an email indicating that you will respond at a later date). If you need further clarification before responding to any of the questions, please send me an email with your queries. In turn, once you have responded to the questions, I may respond with further questions for clarification or to probe deeper into your response.

Dr. Gaalen Erickson at UBC is the Principal Investigator for this study. He has indicated to me that it is not necessary to have signed consent forms from Ministry Staff. Therefore, I have indicated above the questions your rights regarding participation in this study.

Thank-you for your time and input into this study.

Sincerely,

Virginia

Secondary Teacher, School District, PhD Student, UBC
Appendix H

Ministry Consent and Research Questions

"A Case Study of Teachers' Experiences Participating in a Ministry Technology Initiative"

Purpose: The overall purpose of this project is to discover and describe the experiences of teacher participants involved in mentoring and implementing technological change in the School District. The objective is to understand the changes to teachers' practice, confidence and attitudes as a result of their participation in the project.

Procedures: Ministry participants will be asked a brief series of questions via email.

Participation and Confidentiality: All of the data collected will be kept confidential. Pseudonyms will be used to ensure the anonymity of participants. All data will be destroyed at the completion of the research project. You may refuse to participate or you may omit answers to any or all of the questions.

Questions for Ministry Participants

Directions: Please respond via email to the following questions. vdean@sd.bc.ca

1. Describe your role in the Grades 6-9 Information and Communication Technology (ICT) Initiative.
2. What is your interpretation/perception of the Ministry goals for the Grades 6-9 Initiative? What were your personal goals for the Initiative? Do you think that these (Ministry/personal) goals were met? Why or why not?
3. Why was a mentorship model chosen for this Initiative? What is your definition/understanding of the role of the mentor and mentee in this Initiative?
4. Were there any events or occurrences during the time period of the Initiative (January 2001 – June 2002) that significantly affected the implementation of the program? If yes, what were they and how did they affect the program?
5. Reflecting back on how the program unfolded, what changes to the program (if any) would you recommend to ensure improved integration of ICT?

Thank-you for your participation in this research study. ☺
Appendix I

Initial Interview Questions for Mentees

The following questions involve your participation in the Grades 6-9 Information and Communication Technology (ICT) Initiative during the 2001-2002 school year. Please elaborate when answering each question and include positive or negative comments. Be reflective in your answers.

You may choose to answer these questions via electronic mail (send to vdean@sd.bc.ca) or on paper via school district mail (send to Virginia Dean, c/o Rick Paterson, Resource Centre). If you elected to participate in personal interviews, please contact me to arrange an interview time.

1. Why did you volunteer to be a mentee in the Initiative? (Comment on any benefits or drawbacks you anticipate).

2. How comfortable are you with using ICT in your teaching? (Describe any anxieties or pressures you feel or comment on your current use of ICT, giving specific examples).

3. What is your definition/understanding of what a mentee is in relation to what you expect your role and the role of the mentor to be while participating in the Initiative?

4. What is your personal philosophy on the use of technology in teaching practice? (E.g., Is technology simply a tool? Should technology funding be “better” used elsewhere in the education system?).

5. List and comment on the activities that you have done to date while participating in the Initiative. Include comments on any highlights or low points.

6. In June 2002, when the Initiative is completed, what do you hope to have accomplished? (Comment on any questions, concerns or expectations that you have regarding your participation in the Initiative).
Appendix J

Final Interview Questions for Mentees

The following questions involve your participation in the Grades 6-9 Information and Communication Technology (ICT) Initiative during the 2001-2002 school year and are a continuation of the Initial Interview Questions. Please elaborate when answering each question and include positive or negative comments. Be reflective in your answers.

You may choose to answer these questions via electronic mail (send to vdean@sd.bc.ca) or on paper via school district mail (send to Virginia Dean, c/o Rick Paterson, Resource Centre).

7. Looking back on your personal goals/reasons for participating in the Initiative, what were you able to accomplish? Is there anything you thought you would accomplish that you were unable to do? Why or why not?

8. Has your teaching practice changed as a result of your participation in the Initiative? If yes, in what way(s)?

9. What affect, if any, do you think your participation in the Initiative had on the students that you teach or work with?

10. Reflecting back on how the program unfolded, what changes to the program (if any) would you recommend to ensure improved integration of ICT?

In order to have some demographic information about teacher participants, please indicate:
   a. Number of years of teaching experience:
   b. Current teaching position (subject/grade/specialty/other):
Appendix K

Initial Interview Questions for Mentors

The following questions involve your participation in the Grades 6-9 Information and Communication Technology (ICT) Initiative during the 2001-2002 school year. Please contact me to arrange a personal interview in order for you to respond to these questions. I would like to book the interviews in March or early April. You will be sent a second set of interview questions in June when the Initiative is completed.

1. Why did you volunteer to be a mentor in the Initiative? (Comment on any benefits or drawbacks you anticipate).

2. What is your definition/understanding of what a mentor is in relation to what you expect your role and the role of the mentee to be while participating in the Initiative?

3. How comfortable are you with using ICT in your teaching? (Describe any anxieties or pressures you feel or comment on your current use of ICT, giving specific examples).

4. What is your personal philosophy on the use of technology in teaching practice? (E.g., Is technology simply a tool? Should technology funding be “better” used elsewhere in the education system?).

5. List and comment on the activities that you have done to date while participating in the Initiative. Include comments on any highlights or low points.

6. In June 2002, when the Initiative is completed, what do you hope to have accomplished? (Comment on any questions, concerns or expectations that you have regarding your participation in the Initiative).
Final Interview Questions for Mentors

The following questions involve your participation in the Grades 6-9 Information and Communication Technology (ICT) Initiative during the 2001-2002 school year and are a continuation of the Initial Interview Questions. Please respond to these questions via email (preferably within one week of receiving this request—however if you cannot respond immediately but plan to participate, please send me an email indicating that you will respond at a later date). If you need further clarification before responding to any of the questions, please send me an email with your queries. In turn, once you have responded to the questions, I may respond with further questions for clarification or to probe deeper into your response. vdean@sd.bc.ca

7. Looking back on your personal goals/reasons for participating in the Initiative, what were you able to accomplish? Is there anything you thought you would accomplish that you were unable to do? Why or why not?

8. Has your teaching practice changed as a result of your participation in the Initiative? If yes, in what way(s)?

9. What affect, if any, do you think your participation in the Initiative had on the students that you teach or work with?

10. Reflecting back on how the program unfolded, what changes to the program (if any) would you recommend to ensure improved integration of ICT?

In order to have some demographic information about teacher participants, please indicate:

c. Number of years of teaching experience:

d. Current teaching position (subject/grade/specialty/other):