

MENTORING AND INFORMATION AND COMMUNICATION TECHNOLOGIES
(ICT) IN TEACHER EDUCATION: SYNTHESIZING RESEARCH LITERATURE
AND RESEARCH PRACTICE

by

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Abstract

Concerns persist regarding the use of information and communication technologies (ICT) in education. How are teacher education programs providing for mentoring teacher candidates to use ICT? A review of literature shows that both instructors and teacher candidates need multiple forms of support to build ICT literacy. ICT literacy makes it possible for participants to build ICT fluency, which in turn makes ICT integration possible. It is possible mentoring could be part of a support strategy to make the transition from ICT under-use to ICT literacy. Mentoring is not easy to define. My purpose of engaging in this research was to investigate the phenomena of mentoring. I wanted to learn what needed to be considered when constructing a definition of mentoring. Through the process of this research I have developed a proposal for a mentoring program to support the acquisition of ICT literacy, toward building fluency and integration in teacher education. I used a dialogic process to systematically synthesize mentoring research literature data and experiential mentoring data to construct this proposal. The experiential data reported in this qualitative study was collected over two academic years 2005 - 2007 from a two-year elementary teacher education program. In the process of doing the research I developed theoretical perspectives to help me understand my experience. I learned that: 1) a universal definition of mentoring is not useful; 2) mentoring is a highly adaptable social learning phenomenon; 3) mentoring can support ICT use in educational contexts; and 4) there are specific institutional policies, programs, and curricula that can positively affect the success of a mentoring program. In the conclusion, I propose that an operational definition of mentoring should be based on foundational principles and values, well supported by the organization or institution. I further propose that an operational definition should be designed in response to situated, emergent, and authentic conditions.

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Chapter 1 - Introduction

1.1 Thesis Overview

This qualitative research paper reports my experience looking into Information and Communication Technologies (ICT) in education. I have observed problems using ICT in classrooms from kindergarten through graduate studies. Research supports my observations that ICT is not being integrated adequately in the field of education (Cuban, 2001). Education has a responsibility to integrate ICT: it is already prevalent in our everyday lives, our professions require it, and it is becoming integral to the social fabric of a democratic society. Research indicates mentoring shows promise to support use of ICT in education.

The purpose of this thesis is to construct an operational definition of mentoring. Specifically, I am working to construct a definition of mentoring that will work to support the use of ICT in teacher education. I synthesized research literature on mentoring, and experiential mentoring data to construct a definition. Research literature on mentoring has been compiled from academic sources. Experiential mentoring data has been collected from the Seeds Project at the University of British Columbia.

The Seeds Project was a pilot study conducted in the Teacher Education Program in the Faculty of Education at the University of British Columbia. The purpose of the Seeds Project was to investigate ways to build ICT literacy in a teacher education program. Seeds Project investigations took place in the Two Year Elementary Teacher Education Program. The Seeds Project looked into the use of mentoring, critical inquiry, collaboration, and communities of practice to build participant ICT literacy. For this thesis, I extracted experiential mentoring data from my experience working on the Seeds project over two academic years.

1.1.1 Guiding Research Questions

The following questions guided the research for this study:

1. How have researchers broadly conceived mentoring?
2. How has mentoring been conceived to support ICT integration in teacher

education?

3. How has mentoring, to support ICT integration, been practiced in elementary teacher education?
4. What institutional policies, programs, and curricula have hindered or supported the use of mentoring to integrate ICT in teacher education?

1.1.2 Research Methodology Introduction

This thesis reports a qualitative research process using an interpretivist epistemology. I collected data through two research streams. Mentoring research literature data was collected through the University of British Columbia library system, accessing online search engines and journal repositories. Experiential mentoring data was collected and compiled by me within a larger research project, the Seeds Project. I collected data over two academic program years from 2005 - 2007. A more detailed description of the research methodology is available in Chapter Two Research Methodology.

1.1.3 The Intention of This Study

I hope these findings will influence institutional policy to support the use of ICT in teacher education. These data were compiled to provide a rationale for implementing a mentoring program. Instructors and teacher candidates in teacher education need support to integrate ICT in their program. I believe a mentoring program could be part of the solution.

1.2 Researcher Interest

My interest in mentoring to integrate ICT in education was inspired by my experience teaching art. I was teaching art in a literacy program for at risk youth. I noticed the youth, who were highly reluctant learners, became excited, and engaged in learning when I used digital technologies in the art lessons. I also noticed the art lessons were much more difficult to teach, sometimes ending in a complete train wreck, when I

used ICT. I wished I had someone to help me figure out how to integrate ICT.

I was an experienced, confident user of ICT in my personal and professional life. I was interested in the possibilities of enabling learning by combining constructivist pedagogy, art activities, and literacy acquisition. I wanted to understand the difficulties I was experiencing when I tried to integrate ICT in the classroom. My prior learning, skill and confidence were not sufficient to solve the problems I was encountering and I did not have anyone to turn to for advice.

I participated in the Seeds Project because I wanted to understand the difficulty of using ICT in the classroom. The Seeds Project provided an opportunity for me to observe, first-hand, many different educators using ICT. Working as a mentor, I was able to provide the support that I had wanted when I was teaching. Mentoring allowed me to understand the variety of challenges that can impede the use of ICT in learning environments. My mentoring experience in the Seeds Project gave me insight into the magnitude of change underway in education: that all educators are challenged to make sense of the presence of ICT socially, culturally, and pedagogically.

Why a definition of mentoring? In the Seeds Project we used mentoring guidelines from the British Columbia Ministry of Education (*Working with colleagues: A guide for ICT mentors*, 2002). These guidelines proved to be useful, but not sufficient. In the Seeds Project, a key part of the mentoring program was a weekly process of discussing the purpose, roles, responsibilities and activities of the mentors. We had an ongoing challenge determining appropriate levels of support. I became interested in undertaking research toward understanding this problem.

1.3 The Problem

Education is out of step with the use of ICT taking place in people's personal and professional lives. The presence of ICT in our society demands a literate producer and consumer of digital content. Infrastructure is needed to the acquisition of ICT literacy in education. What I have observed was a lack of educational vision in regards to ICT. In one meeting, an administrative leader indicated the faculty approach to ICT use was to let

each department handle it individually. I believe this attitude fostered a fragmented, uncoordinated atmosphere. There was no cohesive policy or process to encourage ICT use in the teacher education program.

1.3.1 Defining Mentoring

As part of the Seeds Project, graduate student mentors and the project director met once a week to discuss project activities. Graduate student mentors reported significant observations for discussion. We explored emergent issues and opportunities to determine our best courses of action. A recurring issue required our ongoing attention, "What was the appropriate mentor response in [any given situation]?" As we formulated policy to answer this question, we identified guiding principles, even as individual cases needed a variety of solutions and/or responses.

1.3.2 Context and Conditions

The Seeds mentors needed to be able to improvise in a variety of situations. The instructors we worked with came from a wide range of education backgrounds. Instructors had unique, idiosyncratic ICT knowledge¹ and attitudes toward ICT in education. Instructors also had different relationships with the institution: tenured, tenure track, associate, sessional, and teaching assistants.

The teacher candidate groups tended to develop unique personalities as learning groups. This was particularly noticeable in the development of their attitudes toward using ICT.

The classrooms had different kinds of ICT resources available. The ICT resources from the computing and media services centre were generally, but not always, reliable. ICT network infrastructure and wireless bandwidth, while available, were not always working properly.

The mentors worked in different teaching situations, including large classrooms,

¹ In this thesis, ICT knowledge refers to a composite of knowledges: philosophical, pedagogical, curricular, instrumental, mechanical, and political understandings of the role of ICT in education.

one-to-one consultations, workshop instruction, digital learning environments, computer labs, and computer laptop carts in classrooms. The mentors attended methodologies courses, professional development courses, or special events. The mentors worked without publicized support from the institution.

In this study, I understood mentoring as a construct. Mentoring relationships could, and needed to be viewed in many ways (Monaghan & Lunt, 1992). I believe there would have been a problem imposing an abstract definition of mentoring onto the Seeds Project mentoring relationships. I experienced each mentoring as taking place in complex contexts and conditions. No one mentoring model could predict the mentoring phenomena that would unfold. Mentoring, mentoring relationships, and mentoring functions appeared to be opposed to a universal model (Monaghan & Lunt).

Mentoring is difficult to define. There was no clear consensus in the research literature for a universal definition of mentoring (Roberts, 2000). Although there are advantages associated with mentoring, there are numerous issues that need to be addressed (Benishek, Bieschke, Park, & Slattery, 2004). Phillip, (as cited in Colley, 2003) said mentoring has been poorly conceptualized and weakly theorized in the past. Researchers must clearly articulate their operational definition of mentoring so meaningful comparisons can be made between studies (Benishek et al., 2004).

1.3.3 Literature Findings

There were many articles from teacher education on mentoring in new teacher induction. There were articles on using mentoring to support in-service teachers and teacher education faculty to use ICT. Most of the literature that looked at ICT integration in new teacher induction did not mention using mentoring as part of a support strategy.

I collected ten research articles that discussed mentoring in new teacher induction programs. One of these articles was a detailed manual for mentoring special education teachers in their first year of teaching (White & Mason, 2001). None of these articles included ICT integration as part of the induction program.

Four research articles reported findings from integrating ICT in teacher education

and mentioned mentoring in their reports. Of these reports, Margerum-Leys & Marx (2004) and Leh (2005) provided detailed descriptions of mentoring relationships.

I did not find any research literature specifically reporting findings from using mentoring to integrate ICT in an elementary teacher education program. None of the 20 articles discussing research on integrating ICT in teacher education programs mentioned mentoring. In a recent literature review of 68 refereed journal articles that focused on introducing ICT to pre-service teachers, mentoring was not listed as a strategy (Kay, 2006).

Eight research articles were selected for their discussion of mentoring in relation to institutional curricula, programs and policies. One article discussed the need for institutional change aligned with technology training (Leh, 2005)

1.3.4 Gaps Found in the Research

The following gaps in the research were found. Four reports specified the use of mentoring to integrate ICT in teacher education: Brzycki and Dudt (2005), Jacobsen and Lock (2004), Leh (2005), and Margerum-Leys and Marx (2004). Two of these reports gave a detailed description of the mentoring relationship. The other two reports only mentioned the use of mentoring without a description of what that relationship entailed.

Research reporting the use of mentoring to integrate ICT in *elementary* teacher education was not found. Detailed definitions of mentoring relationships designed for integrating ICT in elementary teacher education were not found. Theoretical frameworks to support the use of mentoring to integrate ICT in teacher education were not found. Empirical data showing the efficacy or issues of using mentoring to support integration of ICT in teacher education were not found.

1.4 Theoretical Framework

1.4.1 Theoretical Overview

When I started working as a mentor in the Seeds Project, I did not have a well-developed theoretical framework in place. The Seeds Project had already been in

operation for one semester and had a well-articulated research proposal to guide it. I was just beginning my work in graduate studies and had very little theoretical background. I was able to understand and operationalize the theory underlying the Seeds Project on an intuitive level. I did not begin to develop my own theoretical framework until late in my research process.

Since then my theory of mentoring, which continues to evolve, has been informed by complexity in educational research, the sociology of knowledge, and dialogic theory. My understanding of complexity in educational research has been informed by the writing of Davis and Sumara (2005). I have looked to Berger and Luckman (1966) to build my understanding of the sociology of knowledge. McDonald and Castleton (2001)'s writing on dialogic mentoring led to my interest in dialogic theory.

I had great difficulty developing a conceptual framework for this research. Later I learned this might be because I was in the middle of three spheres of complex phenomena. As I read the literature, I formed the opinion that traditional mentoring was a socio-cultural phenomenon associated with power, knowledge and meaning making. From a contemporary perspective, mentoring could be a highly interactive social learning experience that could be adapted and adaptable to persons, purposes, and places (Benishek et al., 2004; Bierema & Merriam, 2002; Roberts, 2000).

ICT appeared to be a complex socio-cultural and mechanical phenomenon in a constant state of evolution (Brzycki & Dudt, 2005). I had observed the strong emotions ICT elicited when used in educational contexts. These strong emotions included anxiety, panic, frustration, anger, elation and excitement.

As a result of observing many teacher education courses and reading literature about teacher education, I came to understand teacher education as a complex, transformative learning system (Clarke & Collins, 2007). I was able to understand a teacher education program as a *lived organization* within which participant's interpretations and understandings are situated (Cobb, McClain, Lamberg, & Dean, 2003).

1.4.1.1 Thinking About Complexity

Complexity, as conceptualized for educational research (Davis & Sumara, 2006), contributed to my development of an operational definition of mentoring. Over time, I adopted a trans-disciplinary attitude in my research. Mentoring, ICT and teacher education are three different fields that each have their own research agendas. In my research these three fields came together to create a composite whole. The sum of these three fields gave rise to phenomena that I needed to understand within the conditions of its emergence. I was attempting to understand mentoring in relation to ICT use and teacher education. At the same time, I needed to understand ICT use in relation to mentoring and teacher education. Finally, I needed to understand teacher education in relation to ICT use and mentoring. I then needed to understand mentoring, ICT use and teacher education as phenomenon with their own particular coherences and rules of behaviour.

1.4.1.2 Social Constructions of Knowledge

The sociology of knowledge suggests that reality is socially constructed (Berger & Luckman, 1966). Participation in a 'social stock of knowledge' (Berger & Luckman, 1966) allows individuals to locate themselves within a familiar context with little effort. As I understand Berger and Luckman, the affect ICT is having on education is to disrupt everyday education practice and its routine problems. According to this theory, educators have taken an existing stock of philosophical, pedagogical and curricular knowledge for-granted and considered this knowledge 'normal'. I believe the problem with using ICT is that it brings new problems that cannot be solved by the existing stock of educational knowledge. What educators 'know' as 'reality' in their everyday teaching practice must be re-formulated in light of new 'realities' associated with ICT integration (Cuban, 2001).

When mentoring educators to use ICT, I believe three spheres of knowledge contribute important conceptual understandings: pedagogical knowledge, content knowledge, and ICT knowledge (Mishra & Koehler, 2006). Using ICT also involves three domains of knowledge: ICT literacy, ICT fluency, and ICT integration (Krug,

2005). 'Mentoring knowledge' could be added to these knowledge spheres (e.g. Clark et al., 2006; Hargreaves & Fullan, 2000; Semeniuk & Worrall, 2000) to understand the roles and responsibilities for participants in a mentoring relationship. It would also be helpful to understand 'teacher identity knowledge', what it means to be a good teacher, to support formation of a 'new' teacher identity in relation to ICT use (e.g. Nelson & Harper, 2006).

1.4.1.3 Dialogic Theory

Dialogic theory helped me understand the transformational experience of participating in a mentoring relationship. Koschmann (1999) suggested dialogic theory provided a theoretical framework for understanding learning as a socially grounded phenomenon. This theory is based on the writings of Russian philologist, M. M. Bakhtin. Koschmann (1999) provided a definition of dialogue (the Greek *dia* for through and *logos* for word) that showed the relational nature of all texts.

I learned the concept of dialogic theory is concerned with the way in which dialogue occurs within and across particular 'utterances'. Wertsch (as cited in Koschmann, 1999) suggested the reciprocal relationship of dialogue leads to a form of tension between *intersubjectivity* (i.e., the need to develop shared understanding of others) and *alterity* (i.e., the opposing need to distinguish oneself from the other). Hicks (as cited in Koschmann, 1999), wrote, "Learning occurs as the co-construction (or reconstruction) of social meanings from within the parameters of emergent, socially negotiated, and discursive activity" (p. 136).

1.4.2 Researcher Reflexivity

I understand my own social constructions of knowledge and understanding are informed by my constructions of identity, position, and purpose. I am female, 51 years old, heterosexual, and my artistic training. I am sensitive to unacknowledged assumptions of 'normal' as perpetrated in hegemonic, patriarchal, capitalist systems.

I am interested in issues of social justice and educational equity. I understand that

race, class, gender and sexuality do not represent a mere variety of differences in our society (Zack, 1998). These differences influence how people are treated in the most serious aspects of life. I believe these categories have *moral* importance (Zack, 1998).

I have come to my education career relatively late in life, as many women do. Often the combination of my cropped, grey hair, my colourful cowboy boots, and my laptop cart had a positive effect on my research participants. My willingness to engage with ICT, modeling my 'just-in-time' learning strategy, was helpful for participants concerned that they had to 'know it all' before they could 'teach with it'. My life experience was useful for building rapport with participants. I brought a pragmatist perspective rooted in notions of efficiency. I also brought a healthy dose of skepticism and critical inquiry to the use of ICT. Participants could see I was not out to sell them the 'next best thing'.

My training and education as an artist brought a well-developed phenomenological analysis to ICT activities. This helped me work with participants to ensure there was a solid conceptual purpose in place before looking to see if ICT might play a role in the learning process. My phenomenological perspective also helped to critically engage with the participant about learning styles, constructivism, and lesson planning. I was constantly on the lookout for congruence between what participants *said* and what they *did*.

1.4.3 Limitations

I acknowledge my role in constructing the social realities described in this thesis. In my role as mentor, I became personally involved with research participants. I understand social reality was continuously constructed within local contexts and conditions. I understand readers will form their own constructions from what is reported.

The quantity of published research literature on mentoring has been increasing at an exponential rate (Colley, 2003). The number of publications on mentoring more than doubled in each five-year period over the last twenty years, from an average of twelve articles per year in 1979 - 84, to an average of 150 articles per year in the late 1990s

(Colley, 2001). The number of articles I selected for this study was limited by the amount of time I had for research, and the size of this thesis.

1.5 Significance

Through this study, I hoped to increase my understanding of mentoring. I wanted to place my experiences of mentoring in relation to the research literature and discover what associations could be found. By the end of the process, I wanted to discover an operational definition of mentoring that could serve educators struggling to use ICT in their teaching practice. I hope my efforts to construct an operational definition of mentoring will provide a rationale to influence institutional curricula, programs and policy and support change in education.

The research literature data provided many findings that reported on the under use of ICT resources in kindergarten - grade 12 educational settings (e.g. Bauer & Kenton, 2005; Bitner & Bitner, 2002; Borg, 2001; ChanLin, 2007; Cuban, 2001; Hu, 2007; Schrum, Bull, Knezek, Roblyer, & Thompson, 2005).

Research literature produced many findings indicating a positive relationship between the use of ICT in teacher education and subsequent use of ICT by new teachers (Banister & Vannatta, 2006; Bell, 2001; Bird & Rosaen, 2005; Bradshaw, 2002; Brinkerhoff, 2006; Brown & Warschauer, 2006; Carroll & Eifler, 2002; Collier, Weinburgh, & Rivera, 2004; Cooper & Bull, 1997; Kara Dawson, 2006; K. Dawson, Swain, Johnson, & Ring, 2004; Kariuki & Duran, 2004; Kay, 2006, 2007; Milman, 2005; Mishra & Koehler, 2006; Murphy, Richards, & Lewis, 2005; Pierson & Cozart, 2004; Watts-Taffe, Gwinn, Johnson, & Horn, 2003; Williams, 2005).

Research literature had many examples of the importance of mentoring in new teacher induction programs (Arends & Rigazio-DiGilio, 2000; Cornell, 2003; Garvey, 2003; Glassford & Salinitri, 2007; Hargreaves & Fullan, 2000; Monaghan & Lunt, 1992; Semeniuk & Worrall, 2000; Siebert, Clark, Kilbridge, & Peterson, 2006; "Support program for new teachers watershed in Ontario's public education system [New teacher induction: growing into the profession]," 2003; White & Mason, 2001).

A key factor limiting effective use of ICT in schools was instructors' limited expertise in the professional use of ICT (Brown & Warschauer, 2006). Brown and Warschauer said teacher education programs will likely be required to better prepare future teachers to use ICT to enable, enhance and enrich learning. Brown and Warschauer concluded the best teacher preparation occurred through collaborative apprenticeship and modeling of effective classroom technology practices. Traditional teacher education programs have not adequately prepared teacher candidates because they have not prepared instructors to be effective models of ICT use (Brown & Warschauer, 2006).

I will use the following scenario to illustrate the effect one instructor could have on ICT use in education. This projection is based on statistics drawn from the Seeds Project. Let's say one instructor teaching one methodology course had an impact on 34 teacher candidates (Brown & Warschauer, 2006; Finley & Hartman, 2004). It is possible these 34 teacher candidates, in turn, could have an impact on their 34 in-service sponsor teachers use of ICT (Margerum-Leys & Marx, 2004). Further, it is possible each sponsor teacher affected two teaching colleagues (Hopkins-Thompson, 2000; McDonald & Castleton, 2001). According to this projection, one instructor affected 34 teacher candidates + 34 sponsor teachers + 68 teaching colleagues for a total of 136 teachers. If each of these teachers taught 20 elementary students each, that would mean 2,720 elementary students would have experienced ICT at the elementary level.

I'm curious to know what would happen if the previous scenario were multiplied by all the instructors integrating ICT in a coordinated effort across subject disciplines and cohort groups? I believe the possible effect on elementary education would be transformative. I wonder what the effect would be if one entire elementary school graduating class left the university with this experience? I believe this is the significance of this research.

I wonder what it would mean to secondary education if their first year students arrived from elementary school fluent in the use of ICT? These students could be entering their secondary education with the ability to collaborate and form their own communities of practice in face-to-face, hybrid and online digital environments. These students would

be able to acquire and represent knowledge using multiple modes of representation. What would that mean for the student who struggled to learn to read and write and was at risk of falling behind because he/she was not developmentally ready to extract meaning or represent ideas using text?

An unanticipated significance from this study might be the possibility that mentoring could facilitate ICT related change in education. It would be surprising if the impact of ICT in education were not similar to impacts seen in other professional fields and in our personal lives. I have seen education undergoing significant change, in terms of equipping schools with ICT resources. Education needs professional communities capable of responding to the ongoing learning associated with ICT. It is possible a new conception of mentoring could play a role in this transition.

1.6 Thesis Preview

In Chapter 2 Research Methodology, I describe an overview of the research process, including case study description, data collection, and data analysis processes. I collected two data sets of research for this thesis: 1) a literature review to discover what research on definitions of mentoring had been published; and 2) experiential mentoring data collected from the Seeds Project. I used the research literature data for two purposes: 1) to report an overview of the findings of literature reviews on the phenomena of mentoring; and 2) to provide a detailed analysis of mentoring phenomena as reported from specific mentoring projects.

Chapter 3 Literature Overview is a report of the findings from the literature that articulate: 1) an overview of mentoring issues; 2) factors to consider in the formation of mentoring relationships; and 3) common aspects of mentoring program design. The articles selected for this section provided the broadest presentation of conceptions of mentoring as I was able to compile within the time constraints of producing this thesis.

Chapter 4 Research Findings is a report of data from the research literature and my experiences from mentoring in the Seeds Project. These data have been collated under topic headings identified from reading the literature. Research literature included in this

chapter was selected because it 'jumped out at me' in my reading. In hindsight, I believe the selection of these texts was inspired by a connect / dis-connect between the literature and my experience in the Seeds Project. The literature points gave me an association to draw experiential data out of the Seeds Project collection.

Chapter 5 Recommendations / Implications reports my synthesis of the research from both Chapter 3 and Chapter 4. The first part of Chapter 5 includes a detailed discussion of mentoring issues. These issues look at traditional mentoring and institutional change. This chapter also discusses issues specific to using ICT, and instructor resistance to integrating ICT. These issues are important to understand because the context and conditions within which a mentoring program operates need to inform the construction of the definition. Chapter 5 also includes a short discussion on the issues specific to mentoring research.

The second part of Chapter 5 is a proposal for constructing a mentoring program to support the development of ICT literacy in a teacher education program. When teacher candidates leave the university to enter their profession, they need to adapt university ICT culture to school ICT culture. This proposal includes an ICT mentoring link between the university and the school.

Chapter 2 - Research Methodology

2.1 Research Methodology Overview

As mentioned earlier, this is a qualitative research project using an interpretivist epistemology. Data was collected from research literature and research experience. These two data sets were synthesized toward constructing an operational definition of mentoring that would be suitable for supporting the integration of ICT in an elementary teacher education program.

The research literature is comprised of two streams. The first collection provides a mentoring literature overview and highlights specific aspects of mentoring programs. These articles focus on understanding the phenomena of mentoring as it was conceived by researchers. The second collection reports findings from mentoring projects that took place in the field of education. These data provided detailed conceptual frameworks from a number of mentoring projects that took place within education. The first collection of research literature findings is reported in Chapter 3 Literature Overview. The second collection is reported in Chapter 4 Research Findings.

This is a descriptive case study. My purpose was to improve practice through systematic inquiry. I used an inductive approach to organize data. I did not identify important variables ahead of time.

I compiled research literature data by developing categories for parsing research findings into sensible relationships to each other. The experiential mentoring data was interspersed with the research literature data, to provide examples to support analysis and comment. The juxtaposition of research literature data and experiential mentoring data provided a rich confluence of data to support the construction of an operational definition for mentoring.

Hard copies of research articles were collected and indexed by categories constructed during the research process. Articles were colour coded according to these categories; relevant text was highlighted for audit purposes. In reporting the experiential mentoring data, every effort was made to ensure anonymity of research participants. In some cases, where this was not possible, the text was reviewed and written approval

secured before publication.

Data analysis occurred as an ongoing process throughout compiling the research literature data. Examples, anecdotes, and experiences extracted from the experiential mentoring data were used to discover associations and relationships with the research literature data. Meanings were derived and constructed in response to research literature data in relation to experiential mentoring data.

Complexity thinking, the social construction of knowledge, and dialogic theory provided a theoretical framework for data analysis. I used cross case analysis to look for relationships in the research literature data, and subsequently, to understand connections and disconnections between the research literature data and experiential mentoring practice.

Experiential mentoring data collection for this study ended with the 2007 academic year. Research literature data collection ended due to thesis deadline pressure (July 2007). The literature included in this study is representative of data that was discovered within the study period and does not purport to be a comprehensive representation of all data pertinent to this study.

2.2 Mentoring Literature Data

The purpose of this case study of research literature pertaining to mentoring was to compile a 'thick description' of mentoring, as conceived in the research literature. The goal of this thick description was to construct a comprehensive portrait of mentoring, an attempt to capture a broad representation of mentoring phenomenon as reported in the research literature. The purpose of this study was not to comment on 'other' representations of mentoring. I realize that this approach is a departure from the conventional literature review.

2.2.1 Characteristics of Literature Study

My focus of this study was to learn how mentoring was conceived in the research, what constructions researchers were using to describe mentoring, and what had been

learned about mentoring. I hoped this information would be useful for developing an operational definition of mentoring to integrate ICT in education.

This was a case study; the unit of analysis was one research literature article on mentoring. Thirty-nine articles pertaining to mentoring were read for this study. Twenty-two articles were from research in the United States, eight articles reported research done in the United Kingdom, seven articles reported research from Canada, one article was from Australia, and one article was co-authored by American and Canadian researchers. Twenty-nine of these 39 articles were from the field of education. Data selected for inclusion in this study gave diverse perspectives of mentoring rather than showing frequency of similar perspectives.

I used purposeful sampling to select research articles likely to be 'information-rich' with regard to mentoring phenomenon. Through a systematic sampling strategy I searched for and selected articles based on key terms and article abstracts. Key terms for the literature search were: mentoring, teacher education, technology, ICT, and new teacher induction. Emergent search strategies were incorporated; in particular a snowball or chain strategy was used when one article citation led to other relevant articles for inclusion.

2.2.2 Literature Data Collection

I used document analysis to collect data from research literature on mentoring. Data collection involved a simple process of reading hard copies of articles, highlighting relevant text and categorizing highlighted text as citations under emergent topic headings.

A construct of categories emerged during the research process. I used this to bring order to the descriptive data collected from the research literature in Chapter 4 Research Findings. These categories were: 1) Definitional Statements; 2) Institutional Characteristics; 3) Mentoring Program Characteristics; 4) Mentor Characteristics; 5) Mentor Preparation; 6) Mentee Characteristics; 7) Mentee Preparation; 8) Feedback, Assessment, Evaluation; 9) Challenges and Obstacles; and 10) Summary.

2.2.3 Literature Data Analysis

I analyzed mentoring research literature using reflective analysis. My research experience and personal judgment were used to construct categories for compiling relevant research literature data. This made it possible to understand conceptualizations of mentoring across the literature collection and across discipline perspectives. A system of topic headings emerged through the process of reading the literature, augmented by my experience. A systematic procedure for the literature review took shape during the process of reading the articles. I did not have an explicit category system or proscribed set of procedures at the outset of this process.

I did not intend for this process to be evaluative. I compiled a broad array of research and writing on mentoring, with interest in educational contexts. I did not comment on the validity of the research being reported, the content of the research, nor the conclusions of the research.

2.3 Experiential Mentoring Data

My purpose in bringing experiential mentoring data into this thesis was to see what associations might exist between my experiences of mentoring and the findings in the research literature. I extracted mentoring data from experiences I had while working on the Seeds Project.

2.3.1 Characteristics of Experiential Study

I conducted this qualitative study to shed light on the phenomenon of mentoring as it was enacted in the Seeds Project. My mentoring services were offered to instructors in the Two Year Elementary Teacher Education Program for the duration of one academic term. Instructor's participation was voluntary. The instructors were selected for the study because they were teaching courses that were in the Seeds Project.

Each instructor/course was the unit of analysis. In one case, I mentored one instructor, who taught the same course, two-years in a row. My direct experience with 25 courses taught by 24 instructors over two academic years provided an ample collection of

qualitative data. Courses included: Language and Literacy; Music; Art; Social Studies; Science; Physical Education; Math; Educational Studies; Special Education; and Educational Psychology. My experiences attending department meetings and discussions pertinent to ICT integration in the teacher education program also contributed to the experiential data pool. My notes from the weekly Seeds mentor meeting discussions also contributed to this report.

2.3.2 Experiential Data Collection

I collected data through observation, field notes, interviews, documents, and digital media analysis. Field notes were collected in classrooms while instructors were engaged in their instructional activities. I took notes on ICT use, instructional strategies, lesson content, classroom discussion, and in some cases, student responses to teaching methods. As a rule, I did not engage in class activities. There were a few instances where participation in class activities helped me understand contextual conditions.

Some instructors participated in a recorded exit interview and data from these interviews has been excerpted for this study. Course syllabi also provided data.

2.3.3 Experiential Data Analysis

I used a dialogic process to analyze experiential mentoring data in relation to mentoring research literature. No explicit category system or proscribed set of procedures was used. I selected data in relationship to research literature findings seeking to identify relationships between the two data sets.

2.3.4 Experiential Research Context and Conditions

2.3.4.1 Seeds Pilot Project

The Seeds Project started as a pilot research project conducted during the winter (Term 2) of the 2004 - 2005 academic year. It took place within the Two Year Elementary Teacher Education Program in the Faculty of Education at the University of British Columbia. During that term, 120 teacher candidates, seven faculty advisors, and a

mentorship group comprised of five graduate students a faculty member participated in the Seeds Project. The pilot research project examined how ICT literacy and fluency could be systemically integrated into the teacher candidates' program of study.

A central element of this pilot study was the slow formation of strong social relationships amongst a majority of the participants. To achieve this 'community of practice', mentorship activities focused on nurturing and supporting participants to develop ICT literacy and fluency. The mentors adopted a systemic, flexible, collaborative, and caring approach with all participants. An important aspect of the design of the Seeds Project was working within existing curriculum of the Two Year Elementary Teacher Education Program. The intention was to have mentors support for using technology to enhance learning (e.g. Brown & Warschauer, 2006). Meaningful adaptations could be seen as pedagogically useful (Finley & Hartman, 2004) for both instructors and teacher candidates.

The Dean of Education's Technology Learning Fund funded the pilot Seeds Project was funded to continue, one year at a time, through the 2005 - 2006, and then the 2006 - 2007 academic years. I started working as a paid graduate research associate in September of 2005.

2.3.4.2 Approach

The Seeds Project used a holistic approach that was sensitive to evolving conditions of how ICT is used in schools and society. The pace of change in the field of ICT has been increasing exponentially and appears to be in a state of continuous evolution. Teacher education programs are facing a condition of "incessant innovation" (Brzycki & Dudt, 2005 p. 637) that can be bewildering and exhausting. The Seeds Project was designed to maintain mentor support so instructors could have ongoing professional development (Finley & Hartman, 2004) for integrating ICT in their courses. One of the goals of the Seeds Project was to support faculty advisors and instructors to become self-directed in learning to use ICT in their courses.

The Seeds Project adopted a qualitative paradigm that focused on understanding the

perspectives of participants. This method was used to build ICT literacy and ICT fluency. Data collection instruments were selected to reveal the underlying meanings, conditions, opportunities, and challenges experienced by participants.

Mentors collected data as part of their graduate research assistantships. We were in a unique position to observe evolving conditions and emergent concerns from a variety of perspectives. We worked across course subjects, instructor pedagogy, and teacher candidate experiences.

2.3.4.3 Seeds Project Purpose

The Seeds Project had three main purposes: 1) create sustainable, learning focused, communicative, critical, collaborative and accountable ICT infused learning environments; 2) support instructors, teacher candidates, faculty advisors, practicum supervisors, graduate research associates, and sponsor teachers in their learning to use ICT and to enhance ICT pedagogical knowledge; 3) integrate ICT slowly and systemically within existing Two Year Elementary Teacher Education Program curriculum to build confidence and competence in participants within their own specific teaching and learning situations.

2.3.4.4 ICT Literacy, Fluency and Integration

Conceptually the Seeds Project was organized around three domains of ICT knowledge: ICT literacy, ICT fluency, and ICT integration (Krug 2006a, 2006b). These ICT knowledge domains were not mutually exclusive or linear. These domains partially articulate the complex and contextually situated interplay of perspectives and practices while learning to use ICT for teaching and learning (Krug, 2007). One participant's ICT knowledge could change significantly depending on their confidence and competence in different situations. ICT knowledge was understood as a combination of philosophical, pedagogic, curricular, instrumental, mechanical, and political understandings.

ICT literacy is defined as an ability to use appropriate technology to communicate; solve problems; access, manage, integrate, evaluate and create information; use ICT

across subject areas; and acquire lifelong knowledge and skills for success in an information economy. ICT literacy referred to a instructor's use of learning technologies. This was defined as the skills and knowledge one needed to use ICT. The use of ICT should improve learning, productivity, and performance. Research has shown instructors' ICT literacy as a key factor in effectively integrating ICT. ICT literacy can be acquired through self-directed learning, teacher education programs, professional development education, and daily interaction within local cultural conditions (Krug, Echols, Winston, Craig & Yamamoto, 2005).

ICT fluency is defined as an understanding of the dynamics of educational settings and the recognition of continuous need for professional growth. The instructor is not seduced by the 'power of technology' nor is it assumed to be effective for teaching and learning. ICT fluency means questioning and looking for necessary pedagogical practices that lead to acquiring, sustaining, and generating technological fluency. The ICT fluent educator examines what enriches and enhances learning in ICT environments.

Research has shown that the effects of learning with ICT need to be understood within the context of the instructors' use of ICT. One indicator of ICT fluency is instructor use of ICT across the curriculum. Another characteristic of ICT fluency is instructor ease of use of ICT, not only with students face-to-face, but also in hybrid and online digital environments.

ICT integration is subject to socio-cultural conditions that interact across a continuum, from entry to adaptation, and from adaptation to transformative pedagogical practices. Gauging the effectiveness of ICT integration in an educational setting encompasses the changing dynamics of at least seven contextual dimensions: learners, learning environments, professional competencies, system capacities, community connections, technology capacities, and accountability.

2.3.4.5 Learning Goals

The Seeds Project had five key learning goals: 1) integrate learning technologies to prepare teacher candidates to critically and effectively use ICT in face-to-face, hybrid and

online digital environments; 2) facilitate critical inquiry of ICT pedagogical knowledge, emphasizing learning in areas of administration, assessment, communication, curriculum, and research; 3) support the development and implementation of a teacher candidate e-portfolio program to assess learning and achievement within the “Standards for Education, Competence and Professional Conduct of Educators in British Columbia (ASR)”; 4) establish mentoring partnerships amongst graduate student mentors, instructors, teacher candidates, faculty advisors, tech-coaches, and sponsor teachers; 5) develop a digital learning environment to serve as a virtual professional community space for participants in the Seeds Project. (Krug 2005, 2006b)

2.3.4.6 Seeds Project Detail

Experiential mentoring data was collected in 52 elementary teacher education courses taught by 36 instructors to 173 teacher candidates over two academic years. Ten graduate student mentors (six in the first year, four in the second year of the study) observed classes on a weekly schedule for one-hour observation periods. During the second year of the project, five teacher candidates were mentored during their long practicum placement.

The Seeds Project had a project director who provided project leadership and mentor support. The project director acted as a liaison between the graduate research associate mentors and various levels of administration. The project director was an associate professor at the university.

All instructors in the Two Year Elementary Teacher Education Program were invited to participate in the study. Several communications were made to inform instructors of the Seeds Project: 1) an explanatory email was sent to all department heads; 2) the project director met all the department coordinators at semester start up orientations; 3) presentations were made at semester start up orientations. Out of 57 instructors, 52 instructors agreed to participate. Graduate student mentors were assigned to work with an instructor for the duration of the term.

Instructor engagement with the mentor to use ICT for teaching and learning was

located within a framework of levels, but was understood as being unfixed and impermanent. Some instructor engagement levels changed as the term progressed. Benchmark activities that helped understand instructor engagement were: 1) declining to participate in the Seeds Project; 2) agreeing to participate in the Seeds Project and allowing the mentor to conduct observation sessions on a weekly basis; 3) as a result of the observations, consulting with the mentor to identify and develop ideas for ICT use within the existing course schedule; 4) as a result of observations, consultations and development activities using ICT during classroom time; 5) as a result of 2, 3, and 4, consulting and developing strategies toward integration by modifying course objectives to include an ICT component.

Instructors who participated in the Seeds Project could be any of the following: tenured university professors; tenure track associate professors; sessional instructors ranging from newly graduated PhDs to retired elementary instructors with advanced degrees; seconded elementary instructors from neighbouring school districts; PhD candidates; and MA students with extensive elementary education experience. No financial compensation or institutional incentives were available for the instructors for participating in the Seeds Project.

Teacher candidates were divided into Section groups - for example, Section A and Section B. Each section group had between 15 and 19 teacher candidates. A faculty advisor was assigned to each section group. Section A and Section B were then combined into Cohort AB. The methodologies instructor's classes were made up of one cohort. Cohort class sized ranged from 32 - 36 teacher candidates. Four section groups were combined to make two cohort groups in the 2005 - 2006 academic year. Six section groups were combined to make three cohort groups in the 2006 - 2007 academic year.

In a sample section of 17 teacher candidates, 8 students had undergraduate degrees and were completing an additional BEd, 3 students had 4 years of undergraduate studies (no degree) and were completing their BEd, 3 students were completing their BEd without additional undergraduate studies, and the education history of 3 students was not available. I assume the other sections had a similar composition of education histories.

The majority of the courses for the two-year teacher education program took place in classrooms in the main teacher education building. Some physical education classes took place in a gymnasium complex that was a 15-minute walk from the main education building. A third building housed some of the language and literacy courses, a 10-minute walk from the main education building. The Language Education Resource Centre was adjacent to the building housing the language and literacy courses.

ICT resources were available through computer media services (CMS) housed in the main education building. Digital and A/V equipment, laptop carts and computer labs, were booked through this CMS. Scanning and printing equipment were also located CMS. Three large computer labs with data projectors permanently installed were available for full class bookings. Laptop carts were available for in-class instruction; many classrooms in the main education building had data projectors permanently installed. The classrooms in the main teacher education building had dedicated A/V carts.

The classrooms in the building that housed some of the language and literacy courses had dedicated A/V carts but did not have a data projector installed. Any computing or digital resources for these classrooms had to be booked and transported from the main education building computer media services centre. It was a similar situation for the gym classes.

Once the instructor agreed to participate in the Seeds Project, the mentor arranged to observe their class one hour a week throughout the duration of the academic term. This observation period provided data on teaching philosophy, instructor pedagogy, course content and learning outcomes, curriculum design, instructor ICT comfort and confidence, classroom environment, and available ICT resources. Field notes were recorded in an email with a coded subject line and submitted to the Seeds Project mentor listserv. In this way, communication of developments with one instructor could be shared amongst the mentors to coordinate efforts and collaborate on developments. Our conversations with instructors and teacher candidates were similarly recorded, coded, and submitted, providing a growing data bank of mentoring experiences and emerging challenges and opportunities.

Additional research data were collected through instructor syllabi, teacher candidate e-portfolios, weekly mentor debrief/planning meetings, and instructor exit interviews.

2.3.4.7 Seeds Mentor Description

ICT mentors were paid as graduate research assistants for their work on the Seeds Project. Mentors were MEd, MA, and PhD students who came from a variety of programs within the Faculty of Education - art education, librarianship, cross faculty inquiry, and technology studies education. Mentors worked with instructors on a one to one basis. They also provided support for weekly computer lab sessions with faculty advisors and their sections that were taught by the project director. The graduate student mentors also provided open lab tutoring, and professional development workshop sessions. Mentors were required to attend a weekly Seeds Project meeting for debriefing, problem solving, collaborating, planning and coordinating across the methodology courses, teacher candidate cohorts, and instructors.

Graduate research associates had an opportunity to take credit courses as part of their preparation to mentor in the Seeds Project. These courses provided an opportunity to take an in-depth look at the theoretical and practical aspects of integrating ICT in education.

Chapter 3 - Literature Overview

3.1 Introduction to Literature Overview

This chapter reports findings from a literature search to find out how mentoring has been broadly conceived by researchers. The first section, 3.1.1 Mentoring Issues, reports issues in mentoring identified in the research. These include: 1) lack of definitional consensus; 2) problems arising from simplistic notions of mentoring; 3) transference of informal mentoring into formal settings; 4) identifying the elements and processes of mentoring; 5) the problem of power; 6) feminist issues arising in mentoring; 7) diversity issues arising in mentoring; 8) the effect of homophily in mentoring; and 9) issues arising from using business models of mentoring in education; the issue of innate conservatism in role modeling.

The second section, 3.1.2 Formation of Mentoring Relationships reports findings on the different perspectives to consider when forming mentoring relationships. These findings include: 1) looking at linguistic origins; 2) assumptions about universal definitions; 3) informal and formal mentoring; 4) making transitions in informal mentoring relationships; 5) issues arising in formal mentoring relationships; 6) finding a suitable mentor; 7) the affect of ICT on the formation of mentoring relationships; and 8) alternatives to traditional mentoring.

The third section, 3.1.3 Mentoring Aspects, reports findings from eight articles commenting on various aspects of mentoring pertinent to the formation of a definition.

The purpose of this chapter is to set the stage for the detailed reading of research literature and research practice described in Chapter 4 Research Findings. I hope this literature overview will reframe what can be accomplished through the formation of mentoring relationships. It is through these social formations that I believe a sustainable, pragmatic, and evolving integration of ICT can be accomplished.

3.1.1 Mentoring Issues

The term ‘mentoring’ has a ‘feel good’ reputation. Despite this, important issues with mentoring were reported in the literature. The negative outcomes of mentoring are

less well documented than the positive outcomes (Roberts, 2000). Having the mentoring relationship stalling and not moving forward was identified as a concern (Roberts, 2000). Another area of concern was revealed when the mentor also had to act as assessor or evaluator (Batt & Katz, 2004; Clark et al., 2006; Roberts, 2000). Cross-gender mentoring relationships becoming the subject of gossip was also a concern (Benishek et al., 2004; Hansman et al., 2002; Roberts, 2000). There was a tendency to cling to an idealized image of mentoring relationships as productive and conflict-free (Benishek et al., 2004). At the same time, a substantial portion of the literature base suggested mentoring was not always a positive experience (Benishek et al., 2004; Colley, 2003; Hansman et al., 2002).

As mentioned earlier, one common issue was presented in the mentoring literature - the absence of universal consensus of a definition of mentoring for research purposes. This issue was reported in 1990 (Healy & Welchert, 1990), in 2000 (Roberts, 2000) and again in 2006 (Clark et al., 2006). Even those who had been researching mentoring for several years found it difficult to achieve consensus in describing and sharing descriptions of mentoring (Jacobi, 1991; Roberts, 2000).

The lack of a consistent definition of mentoring has perpetuated a conventional, simplistic notion of mentoring relationships when they were, in fact, complex (Benishek et al., 2004). Elmore (1989), as cited in Roberts (2000), warned of a 'manic optimism' that seemed to prevail amongst mentoring proponents. Many people entered into mentor-mentee relationships with simplistic, even glorified conceptions of mentoring expecting the relationship to be mutually rewarding and conflict free (Benishek et al., 2004).

In the United Kingdom, there has been a proliferation of mentoring programs. This trend indicates a transference of informal mentoring ideals into formal settings. This has been done even though there was little evidence to support mentoring; it has been poorly conceptualized and weakly theorized (Colley, 2003). There has been confusion in both policy and practice (Colley, 2003). The biggest problem with this situation was that the validity of research findings has to be questioned (Benishek et al., 2004).

The absence of a definition of mentoring made it difficult to conceptualize the process of mentoring and the elements that affected that process (Benishek et al., 2004).

The literature tended to conflate the person, the process, and the activities of mentoring (Haggerty, 1986, cited in Roberts, 2000). There needed to be a differentiation between the professional and the personal aspects of mentoring relationships (Crosby, 1999, cited in Mertz, 2001). It was useful to have a distinction between intent and involvement. Intent refers to the aim or purpose for which the activities were undertaken, the outcomes or ends sought. Involvement refers to how much was required of each party emotionally and psychologically, the intensity of the relationship (Mertz, 2001). Definitions of mentoring should not be limited by the context of disciplines (Mertz, 2001). Mentoring could be viewed as having dual functions: career advancement, and psychosocial support (Kram, 1985, cited in Mertz, 2001). Mentoring phenomena supported by empirical research data would provide needed information for designing a mentoring program.

Traditional mentoring has been conventionally understood as a relationship between an expert and a novice; a mentor and a protégé; or a master and apprentice, to name a few. These relationships are all characterized by elements of power and prestige (Mullen, Whatley, & Kealy, 1999). Value is placed on a higher authority or expert knowledge (Mullen et al., 1999). This model risks putting the needs of the student and the strengths of the advisor in opposition when they were not well matched (Selke & Wong, 1993, cited in Mullen et al., 1999).

Fleming (as cited in Mullen et al., 1999) reported that women were often excluded from traditional mentoring relationships. Fleming suggested three possibilities that might explain this situation: 1) 'fit' - mentors were likely to choose protégés that were similar to themselves; 2) risk - a sexual connotation could easily be attached to a male-female relationship; 3) predictability - women were viewed as 'unknown quantities' and mentoring them might be perceived as disrupting 'business as usual'. Webster (1989), as cited by (Mullen et al., 1999), added a fourth possibility: 4) 'pay-off' - mentors traditionally expected to produce a successful protégé and women were generally perceived as a poor investment because they were thought to be conflicted between their professional and personal lives.

The issue exclusion arising from diversity was reported in a study of Asian-

American, male, junior faculty in a public university in the Midwest. This study showed that a larger proportion of European-American male faculty were involved in mentoring relationships than their Asian-American male faculty peers (Sands, Parson & Duane, 1992, as cited by Hansman et al., 2002). The Asian-American study participants, who were involved in a mentoring relationship, expressed unhappiness about the power inequities and the possibilities of exploitation that could occur in the relationship. Sands, Parson & Duane reported that over half the Asian-American study participants indicated they had negative mentoring experiences.

Research from social psychology, network theory, and diversity theory has provided solid evidence that 'birds of a feather flock together', which is usually described by the term *homophily* (McPherson, Smith-Lovin & Cook, 2001, cited in Hildreth & Kimble, 2004). Traditional mentoring models do not consider this phenomenon. People from marginalized groups tend to be excluded from informal, self-selecting mentoring relationships (Hansman et al., 2002).

Commonly, business models of mentoring have been brought into educational contexts. There is a problem using mentoring concepts from other fields, such as business, to bolster mentoring in education. Both mentoring and education are complex (Semeniuk & Worrall, 2000). Little (1990), as cited by (Semeniuk & Worrall, 2000), cautioned against creating too close an alliance on models of mentoring from business. These models do not seamlessly transport into educational settings because mentoring in business is a form of sponsorship, a means for management to groom future managers. Business mentoring models do not seamlessly superimpose themselves onto the complexities and idiosyncrasies of teachers' experiences (Semeniuk & Worrall, 2000).

Role modeling carries with it the risk of re-inscribing unquestioned conservatism (Monaghan & Lunt, 1992). There can be a problem of theoretical deficit when teachers provide role models for teachers. This lack of discussion of theories regarding class, gender, and race risks the perpetuation of inequities (Miles & Furlong, 1988, cited in Monaghan & Lunt, 1992). A reflective practitioner needs a more open and analytical way of working than role modeling or apprenticeship provide (Monaghan & Lunt, 1992).

3.1.2 Formation of Mentoring Relationships

Despite my own conventional notions of mentoring relationships as being comprised of two people engaged in a one-way transmission of knowledge, I learned there are a wide variety of conceptions for mentoring relationships. I also learned there were important factors to consider in forming mentoring relationships. In a large mentoring literature review in 1991, a list of 15 different definitions was compiled from the fields of education, management, and psychology (Jacobi, 1991). Each discipline field had its own meanings of mentoring (Merriam, 1983, cited in Jacobi, 1991).

When investigating meanings associated with ‘mentor’, I found it helpful to look at the multiple linguistic origins of the term. I used the same approach to understand the origins of the words ‘apprentice’ and ‘protégé’. Most frequently, meaning in the literature was derived from the Homeric character, Mentor, from Greek mythology. In this usage, the name ‘Mentor’ appeared to be an agent noun of *mentos* “intent, purpose, spirit, passion”, from Sanskrit “one who thinks,” and Latin “one who admonishes” (Harper, 2001a). The word apprentice is derived from ‘*apprentiz*’, meaning someone learning, derived from French, ‘*apprendre*’ - to learn, to teach. The meaning of the term protégé is derived from the French verb “*protéger*” to protect, which in turn was derived from Latin “*protégere*”. A protégé was one who was protected (Harper, 2001b).

I was less familiar with the meaning of the term ‘mentor’ as found in the causative form of Latin base *men* - “to think” (Harper, 2001a) and the Latin suffix *tor* – which denotes the person “doing something” (“Frequently occurring suffixes & infixes,”). I found this definition appealing because I was able to understand it as a more interactive conception, mentoring as doing something about our thinking.

The lack of definitional consensus does not necessarily indicate a deficit on the part of researchers. The problem may be located in the assumption that a universal definition can be formed. Riley & Wrench (as cited in Benishek et al., 2004) conducted a study that illustrated how differences in perceptions of the definition of mentoring and mentoring roles affected research results. They reported that female lawyers whose mentoring relationships met a more stringent definition were found to report higher levels of career

satisfaction than those women lawyers whose mentoring relationships met less stringent criteria. I noted that it may not be necessary to have a universal definition of mentoring, but it may be necessary to have a situated definition of mentoring.

One important characteristic of mentoring relationships discussed in the literature was whether the mentoring relationship was the result of an 'informal' or 'formal' engagement. Informal mentoring relationships are generally sought out and constructed to meet the needs of the mentee. Formal mentoring relationships are used to meet institutional policies and objectives (Colley, 2001). It has been found that mentoring relationships cannot be forced, putting people in pairs without adequate guidelines rarely leads to a productive mentoring relationship (Bierema & Merriam, 2002). Formal mentoring relationships do not work as an afterthought, successful formal mentoring relationships need to be sanctioned and supported by the institution (Pfleeger & Mertz, 1995, as cited in Bierema & Merriam, 2002).

Problems reported from informal mentoring relationships seemed to occur during transitions (Benishek et al., 2004). Examples of transition problems included: when the mentor and mentee began to redefine their roles; acknowledging that certain professional needs could not be met; when shifts of power and perceived expertise emerged; and a mentor becoming jealous of a mentee, which could result in a failure to promote a mentee to their fullest capabilities (Benishek et al., 2004).

There can also be problems arising amongst peers of the mentee. They may become jealous of their colleague, particularly if they see themselves as less gifted than their mentored peers (Benishek et al., 2004). As mentioned earlier, in cross gender mentor/mentee pairs there can be problems with perceptions of sexual or romantic involvement (Hansman et al., 2002).

A different set of problems arose when the mentoring relationship was institutionally constructed and not a matter of mentor/mentee choice. Viator (as cited in Hansman et al., 2002) reported recent research that indicated mentees who had input into the matching process viewed their mentorship experience differently than those who did not, indicating greater satisfaction in the informal mentoring relationship. Orpen (as cited

in Hansman et al., 2002) confirmed the importance of the quality of the mentorship relationship in a formal mentoring program, where the mentee perceived they had a good relationship with their mentor.

People from under-represented populations had difficulty establishing mentoring relationships (Benishek et al., 2004). Several studies showed that mentoring relationships were frequently not as available to women as they were to men, or, if they were available, they were not as meaningful or helpful as they could be (Hansman et al., 2002). Although female, and persons of a visible minority, may have a heightened need for mentoring, they typically experience difficulty forming a mentoring relationship (Jacobi, 1991). Erkut & Mokros (as cited in Jacobi, 1991) explained that a basic tenet of the psychological theory of identification was that people emulate models who are perceived to be similar to themselves in terms of personality characteristics, background, race and sex. Similarly, Ugbah & Williams (1989) as cited by (Jacobi, 1991), suggested faculty mentors are most likely to seek student protégés of their same sex or ethnicity.

The need for ICT literacy is changing the formation of mentoring relationships. The rapid pace of technology change has required employees to be technologically knowledgeable. A new core competency is the ability to remain competitive by engaging in continuous learning. (Darwin & Dymock, 2000, cited in Hansman et al., 2002). Mentoring is becoming an important workplace strategy for individuals, who are assuming more responsibility for their own professional development (Darwin & Dymock). The expert/novice relationship did not work for this purpose. Mentoring that used a flexible, interactive process was more appropriate (Mullen et al., 1999).

Co-mentoring was reported as one alternate conception of mentoring. A salient feature of the formation of co-mentoring groups was that members assumed interrelated roles of mentor and mentee. Each participant engaged in giving and receiving knowledge and support. The relationship was a mutual, reciprocal learning and caring arrangement (Mullen et al., 1999). Co-mentoring could also apply to co-inquirers invested in researching their own practices (Mullen et al., 1999). A co-mentoring arrangement did not have to be a one to one relationship. Co-mentors could be peers from different stages

of career advancement but that did not mean the relationship was that of expert / novice (Mullen et al., 1999). More alternate conceptions of mentoring relationships, including service mentoring, reverse mentoring, and classroom mentoring are elaborated in Chapter 4 Research Findings.

3.1.3 Mentoring Aspects

Eight research studies are described in this section. Aspects looked at in this section included: 1) the functions of mentoring; 2) mentoring from a multicultural feminist perspective; 3) the myth of Mentor; 4) e-mentoring possibilities; 5) formal mentoring driven by policy; 6) evaluation in mentoring; 7) confidentiality in mentoring relationships; 8) methodological approaches to implementing mentoring.

These elements inform the experience of mentoring and could be considered for inclusion, or not, in the construction of a definition.

3.1.3.1 Looking at the Functions of Mentoring

The purpose of Roberts (2000)'s study was to conduct a mentoring literature survey to discover if there were universal attributes of mentoring. He used a phenomenological approach to analyze literature from the period 1978 to 1999. Roberts decided there were two groups of attributes and divided them into 'essential' and 'contingent' categories. He identified essential attributes as being necessary for a mentoring phenomena to take place. Roberts deemed contingent attributes non-essential, but found to occur in mentoring relationships. I have included Roberts study because it was the most detailed description of mentoring functions for a traditional model of mentoring.

The distinguishing characteristic of an essential mentoring attribute was that it could not be removed without removing the very nature of mentoring (Roberts, 2000). Roberts found the following essential attributes constituted the essence of the mentoring phenomenon: 1) a process form - rather than a single event, suggests something that is ongoing; 2) an active relationship - persons connected through shared social or circumstantial positions; 3) a helping process - all attributes, characteristics or functions

are based on the help the mentor gives the mentee; 4) a teaching / learning process - knowledge transmission takes place from the mentor to the mentee; 5) reflective practice - the mentor aides the mentee to examine practice and then take action-oriented inquiry to understand, evaluate, and reformulate; 6) a career and personal development process - a mentor contributes to career mobility (Fagenson, 1989, cited in Roberts, 2000); 7) a formalized process - whether they form informally or are mandated, mentoring relationships take place within the context of organizations or institutions and as such are subject to formalized structures; and 8) a role constructed by or for a mentor - the mentoring role has associated characteristics and behaviours essential to a mentoring relationship.

Roberts proposed contingent attributes were not necessary for a mentoring phenomena to take place, but could be found occurring in a mentoring relationship: 1) role modeling - as a means of replicating organizational culture or professional practice; 2) sponsoring - as a way for individuals and/or groups find an appropriate network or position; and 3) coaching - the act of being directly concerned with the immediate improvement of performance by the development of a skill.

Positive consequences of mentoring were varied and intangible. The following positive consequences of mentoring were extracted from the literature: 1) latent abilities discovered; 2) performance improved; 3) retention of staff; 4) growth of mentee confidence; 5) personal growth of mentor and mentee; 6) increased awareness of role in the organization; 7) increased effectiveness in the organization; 8) self actualization; and 9) a resonating phenomenon - protégés become mentors themselves (Roberts, 2000).

Mentoring was seen as a complex, social, and psychological activity (Roberts, 2000). People participated in the relationship to encourage learning and reflection in each other. The purpose of this learning and reflection was to facilitate professional and personal development. Roberts suggested different schemas would prompt different descriptions of mentoring relationships.

3.1.3.2 Multicultural Feminist Model for Mentoring

A multicultural, feminist mentoring model was proposed to address the issues of disenfranchisement found in traditional, conventional mentoring models (Benishek et al., 2004). Benishek et al. believed professionals perpetuate misperceptions about mentoring when engaging in traditional methods of mentoring. Benishek et al. expanded Fassinger's feminist model of mentoring with the incorporation of multicultural aspects.

Benishek et al. (2004) said, from a historical perspective, professionals have tended to implement a Procrustean (i.e. one size fits all) model of mentoring. This approach assumed that traditional models of mentoring could be used to facilitate the growth of all people (Benishek et al.). This conceptualization of mentoring failed to acknowledge that the different life histories and contexts of both the mentor and the mentee would impact the mentoring relationship (Benishek).

Benishek et al. (2004) believed the term 'mentoring' should only be applied to professional relationships that included both career development and psychosocial elements. The mentor and mentee had to have a personal and professional investment in the relationship. Klabfleish & Ketyon (cited in Benishek et al., 2004) advocated a mentoring model sensitive to a variety of individual career paths. This model would acknowledge the impact of the work environment on individuals who were viewed as minorities in their specific professional context. This mentoring relationship would value the interpersonal aspect of the mentoring relationship.

Fassinger (cited in Benishek et al., 2004), proposed a feminist mentoring model that placed emphasis on the relationship aspect of mentoring. This model emphasized issues of power and empowerment. In Fassinger's model, the mentor recognized the existence of power differences between the mentor and the mentee. These differences were acknowledged and used to empower the mentee. The purpose of this model was to stop perpetuating socially defined power dynamics. Fassinger's model was unique in that it explicitly identified diversity as an aspect of the mentoring relationship. Fassinger believed diversity deserved attention within the mentoring relationship.

The multicultural feminist model integrated multiculturalism with feminist theory.

Multicultural feminist mentoring was conceptualized as an interactive process in which differences were: 1) clearly identified; 2) explored where appropriate; and 3) resulted in a relational exchange that was respectful of differences. Mentoring relationships and mentors needed to be able to understand and address issues arising from both feminist and multicultural perspectives. They would then find ways to work through these tensions to foster more satisfying and useful mentoring relationships. Fassinger's model was designed to create a relationship built on sharing power, mutuality, equality, and trust. Power dynamics were not denied, but fully examined. This included looking at evaluative elements in the relationship.

Revising Fassinger's model required an explicit examination of power and privilege that came from unearned assets of socio-cultural capital, gender, race/ethnicity, and sexual orientation (McIntosh, 1988). This approach valued and explored differences rather than denying, minimizing and containing them. The respect the mentor showed for these differences supported the development of the mentee. The mentee was freed from having to struggle with divided loyalties and able to focus on professional development. The mentor's values and culture were not dominating the relationship. There was a sense of mutuality: the mentor gained a colleague and the mentee developed confidence and competence professionally and personally.

The multicultural feminist model did not presume to create an environment of equal power between the mentor and the mentee (Benishek et al., 2004). Such a presumption would be counter-productive because relative power was a reality. Benishek said having a goal of power equity would undermine the process of recognizing and acknowledging power dynamics. A goal of power equity would induce an atmosphere of denial, and oppression would prevail.

A relational approach to mentoring meant the mentor and the mentee were allowed to be honest with their thoughts and feelings. The relationship allowed them to express a full range of professional and personal experiences (Benishek et al., 2004). This openness would mean there was instrumental and psychosocial congruence in the relationship. Aspects of the mentees' needs that could not be met by the mentor would be revealed.

The mentor would encourage the mentee to seek out supports with other role models, advisors, mentors, and colleagues.

In the multicultural feminist mentoring model, the mentor was responsible for opening up discussion, when appropriate for the mentee, about multicultural/diversity issues. Even in situations where the mentee appeared to be quite similar to the mentor, these discussions were important. These discussions would acknowledge hidden, or within-group differences. Mentors were expected to recognize and examine their own assumptions in relationship with their mentee, including knowing when it was appropriate to discuss issues relating to diversity, or not.

Collaboration was a central value of the multicultural feminist mentoring model because mentee contributions were considered as important as those of the mentor. Fassinger's model emphasized the understanding the knowledge was constructed within contextual experiences and boundaries of the knower. Benishek's revised model encouraged integration of self knowledge.

The multicultural feminist mentoring model incorporated political analysis. It acknowledged that education was not value free. Aspects of the institution that assumed mainstream values were highlighted and confronted. Social justice and social advocacy were valued and encouraged within the mentoring relationship. These activities would only be encouraged when they were in alignment with the needs of the mentee.

In summary, the multicultural feminist mentoring model included the following dimensions: re-thinking power, emphasis on relationship, valuing collaboration, integration of dichotomies, and incorporation of political analysis. Infusing these dimensions with attention to multicultural issues embodied a commitment to diversity within the model (Benishek et al., 2004).

3.1.3.3 Looking at the Myth of Mentor

Colley (2001) discussed issues arising from the use of the Homeric myth of Mentor as a linguistic source for defining mentoring relationships. The myth of Mentor is used as a linguistic source in many accounts of mentoring. The use of Homeric myth is a device

that conveys a sense of legitimacy to the concept of mentoring. Feminist and socio-economic analysis of the use of the Mentor myth brought political economy into question when it was used to proclaim the origin of a contemporary phenomenon (Colley).

Mentoring has become a fashionable government intervention in education, promoted with an overwhelmingly positive image that captures a 'contemporary feel' (Colley, 2001). Literature on mentoring tends to be descriptive, rather than analytical, with a bias toward a positive view of mentoring (Colley). Given the trend of a widening gap between have / have not populations, Colley needed to look at the political economy of mentoring. Colley did not accept the conventional notion that mentoring initiatives took place in an apolitical world.

Colley (2001) suggested one way of understanding the character of different mentoring programs was to situate mentor roles and activities on a spectrum that ranged from hierarchical to reciprocal, from directive to non-directive, from controlling to empowering (Gay & Stephenson, 1998, cited in Colley), and from controlling to nurturing (Standing, 1999, cited in Colley). A formal mentoring program designed to achieve institutional goals and outcomes tended to locate mentoring at the more controlling end of the spectrum (Gay & Stephenson, 1998, cited in Colley). Colley believed the operation of power within the mentoring relationship would not be adequately addressed when the roles of mentor and mentee were 'mythologized'.

As of 1995, more than a dozen authors referred to the Ancient Greek myth of Homer's *Odyssey* as the original source for the concept of mentoring (Cohran-Smith & Paris, 1995 cited in Colley, 2001). This reference to Mentor in Homer's *Odyssey* defined the role of mentor in a highly rhetorical manner. These contemporary representations of the myth of Mentor, when compared to the original text, provided a way to look at power relations in the design of mentor / mentee relationships. The use of the myth of Mentor in formal designs of mentor / mentee relationships were particularly interesting because of the associations of mythical perspectives and mentoring roles and functions (Colley, 2001).

The myth of Mentor was actually comprised of two characters - the male human

Mentor who was appointed by Odysseus as guardian of Telemachus (Odysseus' son) and the royal household, and Athene, the female goddess who interceded (by taking the form of Mentor) to ensure Odysseus' safe return. Colley (2001) found references to both Mentor and Athene showed up in the literature as personifying ideal mentoring attributes. In these personifications, Mentor's role was described variously as nurturing, supporting, protecting, role modeling, and possessing a visionary perception of his ward's true potential. Mentor's role demanded integrity, personal investment, and development of a relationship with a young man based on a deep mutual affection and respect. The focus on Athene, the deity, was on her specialness and her inspirational character. This division between masculine and feminine attributes could be revealing a division in the perception of mentoring roles between career development and psychosocial roles (Kram, 1985, as cited in Colley, 2001), or instrumental and expressive traits (Roberts, 1998, as cited in Colley, 2001).

Colley (2001) found the concept of human growth as linear combined with a singular view of human transitions, in association with mentoring, was problematic. New understandings of the fragmented nature of transitions and the role of post-modern mentors required a more sophisticated approach to mentoring (Colley, 2001). Mentoring definitions that ignored these new understandings led to over-expectations of outcomes. The modern version of the Homeric myth represented mentors in powerful images of being both saintly and self sacrificing on the one hand and on the other hand almost super-human in their power to transform their mentees. This rhetoric contributed to a sense of frustration on the part of mentors in relation to their mentees development. In some cases, this extended to a sense of failure within themselves when mentees did not progress as expected (Colley, 2001).

In re-examining the myth of Mentor and Telemachus, Colley (2001) found the qualities of Mentor were incidental to the major role Athene played in Telemachus' transition. Athene undertook her mentoring of Telemachus to bring order to the kingdom as part of her sponsorship of Odysseus, to see him restored to the throne after his long absence. Mentoring in the *Odyssey* is a tale of the powerful mentoring the powerful to

preserve a particular social order (Colley, 2001). When the myth of Mentor is used as a reference in current accounts of mentoring Colley believes there are socio-economic and social justice implications for mentoring practice.

When myths are used to explain modern phenomena, the purpose is usually to lend credibility by association to history, tradition, and conventional understanding (Colley, 2001). Samuel (cited in Colley, 2001) warned against the 'idolatry of origins'. Conkey (cited in Colley, 2001) said the desire to narrate mentorship as an essential feature of our culture, was a 'homogenizing gaze' that constructed society as an indivisible whole. This construction served to dissolve inequalities and render social relations invisible. Standing (cited in Colley, 2001) discussed issues of social control cloaked in a myth evoking nature, and acted out within a hierarchical mentoring relationship. In these situations mentors were exhorted to 'go the extra mile', 'beyond the call of duty' without recognition or compensation. This mythical construction positioned mentees as objects of the mentoring relationship. Colley said this trend in mentoring was moving toward the weak mentoring the weak, within the context of prescriptive government policy and outcomes.

Colley (2001) suggested that questioning the validity of mentoring opens up the possibility of discovering definitions of mentoring roles that can both serve institutional purposes and the needs of mentors and mentees. Individualized and formal mentoring interventions might also contribute to building communities' capacity to become 'mentor rich', where mentors could be accessed on mentees' terms.

3.1.3.4 E-mentoring Possibilities

Bierema (2002) investigated the possibilities of e-mentoring. E-mentoring holds promise for redefining mentoring relationships and changing the conditions within which mentoring occurs. Bierema found little thought had been given to how computer mediated communication, such as e-mail, listservs, chat groups, and computer conference, might be incorporated into a mentoring process.

Although there was little agreement in the literature as to what was considered

mentoring, factors have been identified that improve the likelihood of successful mentoring experiences (Bierema & Merriam, 2002). Bierema found results from formal mentoring programs mixed. Bierema suggested e-mentoring could play a role in increasing the success of these kinds of mentor relationships.

Pfleege & Mertz (cited in Bierema & Merriam, 2002) reported less than promising results from a formal mentoring study. Fifteen mentor-mentee pairs in three universities and three commercial organizations participated in a day-and-a-half workshop on mentoring and then were followed over 18 months. At the end of the study period, 3 of the 15 pairs met the researchers' criteria for success; two other pairs were partially successful and two pairs were clearly unsuccessful. Pfleege & Mertz (1995) concluded mentoring was very difficult and that certain factors at both the organizational and the personal level needed to be in place to foster successful mentoring experiences.

Pfleege & Mertz (cited in Bierema & Merriam, 2002) found mutual respect, trust, and comfort were components of a mentoring relationship. They concluded these feelings must be allowed to evolve. Pfleege & Mertz (1995) also found both parties needed to be committed to the mentoring relationship, with clearly articulated expectations. They added the commitment and involvement of the organization or institution was central to success of formal mentoring programs. Pfleege & Mertz found that frequent and regular interaction played an important role in building a successful mentoring relationship. A study of on-line mentoring between students, teachers, and subject-matter specialists showed frequency of interaction and turnaround time were factors in the program's success (Harris, O'Bryan & Rotenberg, 1996, as cited in Bierema & Merriam, 2002).

Telementoring was defined as the use of e-mail or computer conferencing systems to support a mentoring relationship when a face-to-face relationship was impractical (O'Neill, Wagner & Gomez, 1996, as cited in Bierema & Merriam, 2002). Bierema proposed the following definition for e-mentoring: a computer mediated, mutually beneficial relationship between a mentor and a mentee which provides learning, advising, encouraging, promoting, and modeling; that is often boundaryless, egalitarian, and qualitatively different from face-to-face mentoring.

Research on e-mentoring and its role in enhancing the mentoring process was not widely reported and it was difficult, when combined with the lack of definition in the research literature, to know what aspects of computer enhanced communication might limit or enhance mentoring relationships (Bierema & Merriam, 2002). E-mentoring was available in a number of business and social service settings, as well as K-12 and higher education contexts. A number of e-mentoring initiatives were available that crossed boundaries of race, class, ability and gender by targeting marginalized groups in society such as minorities, low income students, young girls, and women.

Telementoring, virtual mentoring, and e-mentoring were all terms used for computer mediated mentoring relationships. These relationships could take place between peers, one to one, one mentor could work with a team of mentees, or students could provide mentoring to their mentors. Electronic mediated environments were not only a conduit for information, but also a context for learning through community supported collaboration (Bruckman, 1998, as cited in Bierema & Merriam, 2002).

Bierema (2002) reported e-mentoring relationships were qualitatively different from face-to-face mentoring relationships because the digital environment enabled a context and exchange that could not be replicated in face-to-face encounters. An e-mentoring relationship is set apart from mere knowledge exchange and knowledge acquisition because the element of personal interest and caring is specific to mentoring relationships. E-mentoring allowed relationships to occur outside the conventional face-to-face model of mentoring. Bierema reported interactions were not limited by time, geography, and culture.

Formal and informal online exchanges were possible between all ages of students and working professionals in an e-mentoring environment. These communications might have been impossible or impractical to replicate face-to-face. Diverse parties could establish relationships in a safe context free of the traditional power dynamics of structured mentoring relationships (Bierema & Merriam, 2002). Markers of social status were less visible within digital environments, rendering them less important to the overall exchange (Sproul & Kiesler, 1993, as cited in Bierema & Merriam, 2002).

Bierema (2002) found it was possible that ICT could enhance a broad range of mentoring relationships, although it was not without its challenges. A few issues were identified that would need attention to build successful e-mentoring relationships: 1) access to hardware, software and Internet infrastructure; 2) the difficulty of building intimacy when the parties have not met in person; 3) miscommunications and misunderstandings arising from the limitations of trying to express complex experiences in text; and 4) the lack of commitment that can result from the ease of initializing or ending online relationships (Bierema & Merriam, 2002).

3.1.3.5 An Example of Formal Mentoring

Colley (2003) reported findings from a new mentoring initiative in the United Kingdom called 'engagement mentoring'. The purpose of this program was to re-engage dis-affected youth into the labour market. Engagement mentoring was meant to shape youths' dispositions for social inclusion toward making them employable.

Colley (2003) identified three broad types of youth mentoring in Britain. Industrial mentoring took place in schools through business-education partnerships that focused on students in Year 11 on the borderline of achieving a grade C pass mark. More disadvantaged or disaffected youth were excluded from this program. Community mentoring supported young people from ethnic minorities by presenting positive community role models. These programs also offered support and advocacy for those who faced institutional discrimination and structural inequities. Engagement mentoring identified targeted groups of young people 'at risk' of disengaging, or already disengaged from formal systems of education, training and employment. This program sought to re-engage these youth with those systems for entry to the labour market (Colley, 2003).

The specific role of mentoring in the 'engagement mentoring' model was to facilitate disaffected youth re-engagement by altering young people's values, attitudes, beliefs, and behaviour. It was expected these changes would create the capacity in the youth to make a personal commitment to becoming employable. The role of the mentors was to act as a vehicle for the policy makers and employers to transform disaffected

youth (Colley, 2003).

Disaffected youth aged 16 to 17 years old were recruited for the program (Colley, 2003). They were provided with a program of pre-vocational basic skills training and work experience placements. The goal was to have the youth progress to work based youth training or employment. As part of the program, the young people were offered the option of being allocated a mentor for one hour a week. The mentors were volunteers from the local university undergraduate program, recruited, and trained by the university (Colley, 2003).

Colley (2003) found one of the key findings from the research interviews with the mentors was the confusion and conflict they expressed with regard to the mentoring role expected of them. It turned out the mentees vigorously resisted attempts to focus the relationship on the employment-related goals promoted by the scheme. Another unexpected finding was from one of the mentees. This youth did manage to build a constructive relationship with their adult mentor and experienced a dramatic turning point in his/her life. Unfortunately, the very transformation that changed the mentee disposition toward employability, also removed the mentee from the policy-driven program. The mentee was no longer eligible to participate in the program and consequently was excluded from the education and training system (Colley, 2003).

The findings from this research showed the rules for the mentoring relationship, as prescribed by policy, resulted in a breakdown or rupture in the mentoring relationship (Colley, 2003). This rupture affected both the mentor and the mentee. The mentee expressed distress from the failure of meeting his/her own aspirations, and feeling excluded from the program. The mentor expressed a loss of confidence, and experienced guilt, stress and fear. Colley believed critical analysis, carried out in in-depth qualitative investigations was needed to reveal the limitations and strengths of mentoring programs.

3.1.3.6 When Evaluation is Part of the Relationship

This section reports the findings of Batt & Katz (2004), who collaborated with externship and clinic supervisors to look at professional development goals for law

students. Batt & Katz were interested in finding out what teaching methods were used to mentor professional development. They wanted to understand the difficulties associated with mentoring, and evaluating professional development of mentees. Batt & Katz were looking for common principles and methods for effective pedagogy that could be understood and implemented by faculty, supervisors, and students. In this study, Batt & Katz made a distinction between feedback and evaluation, considering feedback as part of a larger evaluative process.

Specific qualities that represented professional development had to be identified to understand how evaluation affected mentoring relationships (Batt & Katz, 2004). In addition, methods needed to be described for teaching professional development.

Batt & Katz (2004) found time and personality conflicts emerged as two major challenges when mentoring professional development. Time issues included: 1) student schedule overload and conflicts; 2) inadequate time to diagnose students' professional development issues; and 3) time to develop an effective mentoring relationship. Personality conflicts came up in several contexts: 1) supervisors felt uncomfortable confronting students, especially around personal issues; 2) supervisors admitted having personal likes and dislikes of individual students; and 3) personal likes and dislikes of individual students made it difficult to properly address professional development issues the student might be having. An issue supervisors struggled with was the relationship between the students' psychology and issues of professional development, for example, high anxiety, appropriate apparel, poor people skills, inadequate communication and listening skills (Batt & Katz, 2004).

A proposed model for mentoring, and evaluating professional development arising from this study included the following items: 1) the law school, clinical supervisors, and students, must share a clear understanding that professional development was a substantive part of clinical curriculum and each student would be mentored and evaluated in this area; 2) students and supervisors should engage in setting professional development goals early in the clinical or externship experience; 3) a pedagogy should be developed to teach professional development issues that incorporated the strategies and

techniques already successfully employed by supervisors that would mitigate some of their major concerns; 4) performance specific feedback was an appropriate vehicle for on-going assessment of professional development issues; and 5) periodic evaluation of student progress with regard to professional development issues was a vital component of the clinical process (Batt & Katz, 2004).

3.1.3.7 Aspects of the Mentor's Role

Clark et al. (2006) proposed a systematic and consistent set of definitions for the terms supervisor, mentor, and coach for use in primary care. Clark et al. found mentorship was widely understood to be a confidential process, usually offered by a senior, more experienced colleague. Problems arose when contradictory notions of mentoring became problematic, for example, when funding bodies were asking for 'results' from a mentoring relationship while concurrently assigning the same mentor in a confidential role. This situation could occur when a mentor was supporting a doctor caught up in a complex practice situation.

Another problem was that common understandings of the meanings of the terms 'mentor' and 'clinical supervisor' varied from committee to committee and from case to case (Clark et al., 2006). The use of the term 'mentor' in one sense meant 'trusted and experienced counselor', in another sense; it meant 'educational supervisor and assessor'. Usage of terms needed to be clarified because the field of primary care was developing multidisciplinary teams and the different professions working together needed a shared understanding of the terms they were using. There was a big difference in conceptions of roles that were designed to police activities to detect a minority of clinicians whose performance was causing concern, and roles designed to support and encourage the majority of clinicians to perform well (Clark et al., 2006).

Clark et al. (2006) proposed the definition for mentoring in this context should be: the activity of regular guidance and support offered by a more experienced colleague. Mentoring activity within this definition was not limited to clinical work, it could include professional relationships and career plans. This definition was not conceived as

counseling, but life cycle issues such as marriage, parenthood, and relocation would be expected to be discussed (Clark et al., 2006). Clark et al. stipulated that this was a confidential relationship, where no content of the communication could be shared without mutual agreement. Within this mentoring model, the terms 'mentor' or 'mentoring' would not be associated with any programs that had prescribed policy or program outcomes or targets (Clark et al., 2006).

Clark et al. (2006) designed a set of questions to help clarify the purpose and function of a request, to determine what role would be appropriate. These questions were: 1) Who was asking for this to be done? 2) What did they want and why? 3) Did they know who we were and what we did and didn't offer? 4) Had they followed the right procedures to this point? 5) Would the client be attending voluntarily? 6) Was anyone expecting specific outcomes, should they be, and if so, what? 7) Who was paying whom, and did all the parties know this? 8) Who was reporting to whom, about what, exactly when, and did all the parties know this? And 9) Was everyone agreed on the terms being used, and on his or her meaning (Clark et al., 2006)?

Clark et al. (2006) argued that the process of building consensus on the meaning of terms, including 'mentoring' and 'supervision', would build a heightened awareness of why these definitional activities were needed. This activity would contribute toward developing and sustaining a motivated workforce (Clark et al.).

3.1.3.8 Experiments with Mentoring

Law (2001) investigated mentoring as a possible solution to address the problem of building new librarians' knowledge of the larger library context and their role within it. This learning process did not have right or wrong answers, so training itself was not answer. Law wanted to find out if mentoring could help. A series of mentoring 'experiments' were studied, to see what programmatic designs were most successful. Participation in these mentoring experiments was voluntary (Law).

To understand the differences between the terms: training, coaching, and mentoring, Law (2001) conceived definitions to help clarify the purpose and process of

the experiments. 'Training' was defined as a targeted activity designed to acquire and develop specific skills. 'Coaching' was used for activities that were designed to build on and improve existing skills. 'Mentoring' was defined as activities that were focused on broadening a person's perspective (Law).

Law (2001) found personal connection was found to be very important for a successful mentoring relationship. A formalized approach, with a specific schedule for mentoring time, allowed relationships to develop that would not have happened otherwise (Law). Law debated what to call the partner in the mentoring relationship who was not the mentor: mentee, protégé, mentoree? She decided to call both participants 'partners' in recognition of the reciprocal aspect of the learning that was taking place in the relationship.

In one mentoring experiment, the mentoring partners set up a mentoring framework in writing at the beginning of the relationship. At the end of the experiment, both participants reported that the formal mentoring agreement helped them maintain a productive mentoring relationship. In another experiment, a group mentoring arrangement was attempted. Monthly meetings were scheduled and experienced librarians were invited to sit in with a group of five new interns. The results from this experiment were not particularly successful because relationships did not develop in the same way, the group setting meant that the kind of interaction that would result in an exploration of attitudes did not occur. One outcome of the mentoring experiments was the formation of a professional issues discussion group in the Health Sciences Library. This group of librarians had participated in the initial mentoring experiment and wanted to continue to explore professional issues after the study ended (Law, 2001).

Law (2001) found the willingness of the institution to contribute work time to the discussion of professional issues helped staff members to see how important the institution considered these issues. The partner process brought experienced staff into discussion with new staff. This provided an opportunity for recognition and a sense of the value the organization placed on the experience of its senior staff. Engaging in conversation with new staff provided renewal for experienced staff. They were

challenged to discuss and explore perceptions with their new colleagues (Law).

3.2 Summary of Literature Overview

The findings reported in this section were not intended to be a critique of research, discussion, or conclusions. The purpose of this section was to open up conceptions of mentoring, to learn what were the broad conceptions of mentoring found by these particular authors. This was not an exhaustive sampling of the literature. Articles selected for this chapter were chosen because they provided a perspective that helped me understand mentoring. My hope was that this chapter would serve as a preparatory seminar toward understanding Chapter 4 Research Findings.

There have been issues with traditional conceptions of mentoring, which were exacerbated when they are brought into educational contexts. Social justice, power relationships, and theoretical vigor need to be addressed in the construction of a mentoring definition and the design of a mentoring program. These issues are surmountable. In fact, addressing these issues in a mentoring program development process would contribute to building and sustaining an invigorated workforce (Clark et al., 2006).

Assuming the good effects of informal, traditional mentoring relationships can be imported into formal, policy driven mentoring relationships does not work. Mentoring program design to support formal institutional purposes does not mean the needs of participants are unrecognized. Careful collaborative, cooperative design processes can ensure mentoring serves diverse people, for many purposes, in different places.

Mentoring is a social phenomenon. A definition of mentoring needs to take into account different aspects of the phenomenon and decide which aspects are appropriate to the purposes of the relationship. These aspects could be broadly identified as functional, socio-cultural, linguistic, digital, institutional, evaluative, and research intensive. Understanding the significant aspects of a mentoring relationship, given situated contexts and conditions, would be an important activity when constructing an operational definition of mentoring.

Chapter 4 - Research Findings

This chapter reports research findings from research literature and experiential data from the Seeds Project. Sixty-five references from the literature are gathered under nine headings. The nine headings were constructed using an emergent, reflective, dialogic process between the research literature and my research experience. The nine headings are: 1) The Practice of Mentoring; 2) Mentoring Program Characteristics; 3) Mentor Characteristics 4) Mentor Preparation; 5) Mentee Characteristics; 6) Mentee Preparation 7) Feedback, Assessment, and Evaluation; 8) Institutional Characteristics; and 9) Challenges and Obstacles. Each literature reference is reported under its own subheading. Each literature reference has a corresponding anecdote from my mentoring experience data. These anecdotes are extracted from my journal notes, observation field notes and exit interviews collected during my Seeds Project research.

4.1 The Practice of Mentoring

4.1.1 Using a Mentoring Manual

White (2001) wrote a mentoring manual, "Mentoring Induction Principles and Guidelines," for use in school districts interested in establishing or strengthening mentoring programs for new special education teachers. This was a formal mentoring program with required participation. The manual contains detailed expectations for all aspects of the mentoring program (White & Mason, 2001).

In the Seeds Project a deliberate choice was made not to codify mentoring activities in a manual. Mentoring needed to be able to respond to contextual complexity (Krug, 2007). For example, I was mentoring an instructor who was using a laptop cart for an in-class research activity. The wireless network was overloaded; students were not able to get online. Situations like this occurred frequently, where an improvised response was needed.

4.1.2 Traditional Types of Mentoring

Three traditional models for mentoring were described as follows: 1) apprenticeship model - the protégé observed and learned from the mentor; 2) competency model - the mentor gave systematic feedback to the protégé about their skills and expertise; and 3) reflective model - the mentor supported the protégé to become a reflective practitioner (Maynard & Furlong, 1995, as cited in Hansman et al., 2002).

In the Seeds Project, my role as a mentor was not predicated on a traditional expert/novice relationship with the instructor. Most of the instructors expected me to be an ICT expert, and part of my work was dispelling this notion. I noticed the construct of an expert/novice relationship perpetuated instructor anxiety and self-perceptions of disempowerment when it came to ICT literacy.

4.1.3 The Role of Experience in the Mentoring Relationship

In one article, which was a proposal for preparation of school principals, mentoring was defined as a senior person overseeing the career and psychological development of a less experienced person. In this construct the mentor imparted wisdom about the norms, values, and mores specific to the organization (Douglas, 1997; Craig, 1996, as cited in Hopkins-Thompson, 2000).

In the Seeds Project, each participant in the mentoring relationship contributed his or her own knowledge and experience. I found that, no matter what stage they were at in their careers, most of instructors did not have sufficient knowledge to use ICT in their teaching. At the same time, I was early in my education career, but I had well-developed confidence with ICT literacy. By collaborating with an instructor a synthesis took place that would not have been possible in an expert/novice relationship.

4.1.4 The Role of Dialogue in Learning

McDonald & Castleton (2001) described the use of dialogic mentoring in adult learning. In dialogic mentoring, learning takes place through social interactions between two people. The voices of the participants are considered equally valid (McDonald &

Castleton, 2001). Dialogue was seen as a collaborative, mutually constructive, critically reflective, participatory, and emergent engagement (Bokeno & Bokeno, 1998, as cited in McDonald & Castleton, 2001).

In the Seeds Project the mentoring relationship was considered an equal partnership. Instructor participation was voluntary. As a mentor in the Seeds Project, I used a collaborative, dialogic approach to address instructor anxiety about using ICT. One of the biggest changes was a shift in instructor attitude from 'teacher/expert' to 'facilitator/life-long learner'. One instructor talked to me about the excitement they felt when they realized that the teacher candidates were able to see him/her, not only as a teacher, but as a learner, as well.

4.1.5 Combining Service Learning and Reverse Mentoring

Leh (2005) reported lessons learned from combining service learning and reverse mentoring. The purpose of her project was to support education faculty to integrate ICT. (Service learning is a for-credit experience-based course designed to meet an identified community need.) Reverse mentoring is often used in technology training. Mentor pairs are made up of a senior person at an advanced stage of their career with low ICT literacy, and a younger person, less established in their career, with considerable technology skills. Leh created mentor pairs by matching education faculty (mentees) with IT graduate students (mentors). The IT graduate students earned credits through a service learning course (Leh, 2005).

The Seeds Project mentoring activity was similar to a service learning approach. Seeds mentors worked with instructors with low ICT use in their courses. For example, in terms of low ICT use, none of the instructors I worked with demonstrated a basic understanding of the intersection of pedagogic knowledge, pedagogic content knowledge, and ICT knowledge as discussed in Mishra (2006). As a Seeds mentor, I took courses for credit on the theory and practice of integrating ICT in teaching contexts. Another similarity with Leh (2005)'s research was that my mentoring with the instructors was very close to a form of reverse mentoring.

4.1.6 Knowledge Sharing

Teacher knowledge and ICT knowledge can be shared in a student teacher/mentor teacher pair (Margerum-Leys & Marx, 2004). In this mentoring relationship the mentor teacher benefited from the ICT knowledge the student teacher brought to the relationship. The student teacher benefited from the pedagogical content and teaching knowledge brought to the relationship by the mentor teacher. Each participant fulfilled the role of mentor for the other depending on the knowledge to be acquired and the abilities of the participants. In this mentoring approach, the student teacher placement was an opportunity for knowledge exchange and a site for exploring mentoring relationships (Easdown, 1994, as cited in Margerum-Leys & Marx, 2004).

In the Seeds Project, my mentoring activity provided an opportunity for knowledge exchange with some of the instructors. For example, in one case I had an opportunity to co-develop, co-design, and co-teach with an instructor. The instructor had a pedagogic purpose to accomplish, and I provided an ICT integration component that enriched the learning activity. The results of our collaboration far exceeded our expectations when we learned a teacher candidate from our project had used their learning for an ICT activity in their short practicum placement.

4.1.7 Sharing Decision Making

Mentoring can provide a sustaining framework for mutual growth (Kochan & Trimble, 2000). Kochan and Trimble said these relationships can support the development of attitudes and skills both professionally and personally. Collaboration, shared decision-making, and systems thinking are elements of a co-mentoring interaction (Kochan & Trimble).

My focus as a Seeds mentor was on professional rather than personal development. Instructors seemed to welcome the opportunity to discuss their teaching with me. I was able to share some degree of collaborative, shared-decisions through systemic thinking processes with most of the instructors I worked with. For example, one instructor had strong ICT knowledge and was using ICT in their course. We worked together to develop

an email assignment submission protocol so that students could submit finished projects as email attachments.

4.1.8 Co-Mentoring Support Group

A co-mentoring support group can organize inquiry as an alternate form of non-authoritarian pedagogical practice (Mullen et al., 1999). This kind of group can provide an important source of support within evolving professional needs and institutional change. An important facet of the co-mentoring support group was the involvement of diverse members from different levels of career advancement. This type of collegial network challenged notions of hierarchy and privilege (Mullen et al., 1999).

In the Seeds Project the graduate student mentors met with the project director for a weekly debrief and planning session. These meetings were part of the Seeds Project strategy to maintain flexibility in response to emergent contexts and conditions. For example, one instructor asked a mentor to produce a compilation cd of music for the teacher candidates. We discussed this request and decided it did not fit with our mentoring function. The mentor was able to respond to the instructor confident that the right course of action was being taken. The supportive learning relationships that formed amongst the Seeds mentors and the project director were could be described as evolving into co-mentoring relationships, although they were not conceived that way.

4.1.9 Integrating ICT into Mentoring Practice

An Early Career Mentoring Network could be used to facilitate professional development (Bull et al., 2006). The purpose of the network would be to identify key issues and then use a variety of face-to-face, hybrid and on-line activities to provide a locus for interactions (Bull et al., 2006). The key here was the use of ICT, especially the capabilities of Web 2.0, to enable communication between discrete disciplines, geographic locations, and different schedules.

The Seeds Project had its own web site. We used it for multiple purposes. One purpose was to put teaching resources online and use the website as a teaching portal.

Another purpose was to use it as a repository for instructor teaching materials and teacher candidate e-portfolios. The site also had class schedules and email links for the instructors participating in the Seeds Project to facilitate planning and logistics. Seeds mentors also used an email listserv indexing system to compile observation notes and keep each other informed of mentoring developments.

4.2 Mentoring Program Designs

4.2.1 Defining a Quality Mentoring Experience

Morrow (1999) defined the result of a quality mentoring experience was the mentee having gained a set of behaviours, attitudes and skills necessary to perform effectively in a work setting. The mentee learned these new behaviours, attitudes and skills by observing their mentor, asking questions, and listening. The mentor provided an overview of the business and showed the mentee how to do hands-on activities.

In the Seeds Project the mentoring relationship was taking place amongst three spheres of complexity - mentoring, ICT, and teacher education. These spheres had elements in common: socio-cultural relationships, teaching and learning activities, and dynamic contexts and conditions. These phenomena did not lend themselves to reductive systems or concrete frameworks. They were, however, particularly suited to uncertainty, emergent design, and inquiry. For example, one instructor decided to use the laptop cart for an in-class on-line activity. When the laptops were distributed to the teacher candidates it was discovered that some of them would not log onto the Internet properly. It was then discovered that a different browser would allow the user to log in. Luckily, I had another mentor from the Seeds Project with me in the class that day. My mentor colleague had experienced this problem before and knew what to do to solve it. After this incident, everyone in the class knew about the alternate log in strategy.

4.2.2 Formal, Informal and Marginal Mentoring

McDonald (2001) examined traditional discourses of informal, formal and 'marginal' mentoring. Mentoring could be undertaken by self-selection (voluntary,

informal) or mandated by the organization, as part of an employee's job description (involuntary, formal). Marginal mentoring fell somewhere between formal mentoring (highly structured, extrinsically motivated) and informal mentoring (unstructured, intrinsically motivated), where the experience of mentoring was perceived to be of some benefit to all parties - mentor, mentee, and the organization.

In the Seeds Project the mentoring took place within a 'marginal' mentoring relationship comprised of formal and informal aspects. Formally, instructors were invited to participate because they were teaching in the two-year teacher education program. Graduate student assistants were assigned to mentor instructors, the instructors did not choose their own mentor. The mechanism of invitation had an informal aspect - the instructor could decide whether s/he wanted to participate or not. The marginal aspect of the mentoring relationship was that many instructors welcomed the opportunity to have me help them develop their use of ICT, even if they were not comfortable with the prospect of doing that.

4.2.3 Mentor Matching

Formal mentoring programs need flexibility to enable changing matches that are not working (Hopkins-Thompson, 2000). In some programs personality profile instruments are used to ensure a good match (Hopkins-Thompson, 2000).

In the Seeds Project graduate student assistants were assigned instructors to mentor. Personality was not formally factored into the assignment. Graduate student mentor schedules and availability determined what instructors were matched with what mentor.

Building trust and rapport with a wide variety of instructors in a short period of time was my biggest mentoring challenge.

4.2.4 Mentor Motivation

Formal mentoring programs have tried to emulate informal mentoring relationships, but this has been difficult to achieve in practice (Hansman et al., 2002). With this in mind, formal mentoring program design cannot compensate for marginal mentors

(Ragins, 2000, cited in Hansman et al., 2002). Mentoring relationships progress through four predictable, but not distinct, phases: initiation, cultivation, separation, and redefinition (Kram, 1983, cited in Hansman et al., 2002). Selecting mentors by identifying their motivation can prove more important than mentor program design features (Hansman et al., 2002).

In the Seeds Project, mentors were selected from a pool of PhD, MA, and MEd students studying in the faculty of education. My extrinsic mentor motivation was the opportunity to earn money and add the mentoring experience to my curriculum vitae. My intrinsic motivation came from a passion for education, educational processes, working with instructors, a passion for educational research, and a perception of being able to 'make a difference' in an area where I had struggled and needed support.

4.2.5 Collaborating with Student Teachers

Ideally, student teachers and their mentor teachers could serve as sources of knowledge for each other (Margerum-Leys & Marx, 2004). From this perspective, new teacher induction became a mechanism for mutual professional development and professional renewal (Margerum-Leys & Marx, 2004).

In the Seeds Project, most of the instructors collaborated with me to some degree. These collaborations included designing and teaching ICT infused learning activities; designing and teaching ICT infused course management activities; discussing the philosophical and pedagogical implications for using ICT in teacher education; providing support for teacher candidates during class time in the computer lab; and providing support to learn new online teaching environments in partnership with the instructor. Four instructors did not collaborate with me for a couple of reasons: 1) they were already using course management software and considered that enough ICT; 2) they were not using any ICT resources and were not inclined to try.

My experience mentoring in the Seeds Project had a significant affect on my understanding of instructional skills and approaches. The opportunity to observe a wide variety of subject areas and a wide variety of instructors helped me learn about ICT

literacy, fluency, and integration across disciplines and there were many ways to imagine enabling, enhancing and enriching learning experiences. At the same time I learned it is important to be critical of using ICT in educational settings and ensure its use is congruent with philosophical and pedagogical purposes.

4.2.7 Effective Mentoring in Education

Knight and Trowler (1999) reported five elements for effective mentoring in education, based on empirical findings: 1) mentoring worked well, if not better, between strangers and members of different departments; 2) the earlier mentoring started, the better; 3) it may not be advisable to have a friend as a mentor because mentors often had to make judgments that could be inhibited by friendship; 4) mentoring should be programmed to continue over several months of regular interaction to give the mentoring relationship time to bond enough to be self sustaining; and 5) mentoring programs appeared to require the services of a program coordinator.

In the Seeds Project, mentors had a choice of working with instructors who worked in their discipline or not. Coming from an art background, I found it difficult to work with art teachers because I wanted to teach the class. I found the earlier the mentoring relationship started, the better. The relationship was only meant to last for one term, which gave me eight to ten weeks to build a relationship with the instructor. In the exit interviews more than two thirds of the instructors indicated more time, especially before courses started, was needed to take full advantage of the mentoring service.

4.2.8 Co-mentoring Through Turmoil

Co-mentoring groups can break up worlds of professional isolation (Mullen et al., 1999). Co-mentoring group members were loosely divided into two main interests. One focus of group members was in research and having a resource for collaborative discussion and productivity. The other focus was having an emotional vehicle for personal sharing and support. Having both foci in the group ensured both personal and professional developmental needs were met (Mullen et al., 1999). The purpose of the

group was shaped over time. The participants had to keep asking themselves what they were trying to do and cope with feelings of frustration as their mentoring perspective formed (Mullen et al., 1999).

In the Seeds Project I found myself working in a continuous state of uncertainty. The weekly Seeds Project meetings gave me an opportunity to discuss, from professional and personal perspectives, the experience of mentoring in the Seeds Project. The mentoring group was diverse, each mentor brought a unique perspective of ICT, mentoring, and teacher education. The mentoring relationships of the Seeds Project were not fully formed at the outset of the Project. In fact, I found the definition of the mentoring relationships to be situated, social, and inquiry based.

4.2.9 Mentoring in the Classroom

Classroom mentoring was found to be a successful support in a study of teacher education program ICT interventions in three US universities (Brzycki & Dudt, 2005). The structure of the classroom mentoring project was designed to encourage faculty members to learn to teach technology infused units themselves. Three stages of classroom mentoring were used: 1) the mentor taught and the faculty member observed or assisted; 2) the faculty member taught and the mentor assisted or coached; and 3) the faculty member taught independently.

Mentoring in the Seeds Project could not be reduced to simple stages. Each instructor had a different combination of anxiety and interest in using ICT. Each instructor had his/her own understanding of ICT and its place in educational contexts. My biggest challenge was engaging in discussions with the instructor, on the theory and practice of ICT in education, in the five to ten minute window that occurred before the class, during the break, or after the class. Through this process, I was able to work with the instructor to consult how ICT might enable, enhance or enrich their course.

4.2.10 Accepting the Mentoring Option

Leh (2005) explored the use of three strategies to improve teacher education faculty ICT integration in combination: 1) participants attended application specific workshops (PowerPoint, Webpage development, Blackboard, iMovie, Inspiration, etc; 2) participants attended small group meetings to discuss integrating technology in specific subject areas; and 3) participants were offered the option of having a classroom mentor provide individual training to use ICT in their classroom. The mentoring option was offered because faculty members had a wide range of technology skills and needs (Leh, 2005).

In the Seeds Project the majority of the instructors accepted the mentoring option offered by the Seeds Project. This willingness to participate might indicate an unassessed need in the instructor community for support in learning to use ICT.

4.2.11 Social Reconstructionist View

Cobb et al. (2006) found mentoring programs that supported more mutually satisfying forms of mentoring encouraged what was already known about how individuals learn: the socially constructed nature of learning. It was important to create opportunities for experiential, situated learning where all participants could assume the role of mentor or mentee (Cobb et al., 2006). Effective mentoring was grounded in constructivist understandings of learning and embraced a social reconstructionist view: 1) each person had a unique reality; 2) reflection and examination of personal beliefs were essential; 3) involvement in cross-cultural experiences enhanced understanding of self and others; 4) individual cultural histories must be examined to gain insight into personal realities; 5) institutions such as schools were guided by explicit and implicit beliefs that needed to be examined (Cobb et al., 2006).

In the Seeds Project I found each instructor had their own unique perspective in terms of their relationship with ICT and teaching practice. I needed to be sensitive to this diversity of knowledge. I needed to be especially careful to maintain equality in the relationship. The instructor tended to see me as 'expert' which would shift them into a disempowered, dependent position. For example, one instructor had received support

services from a teacher assistant 'technology expert' before participating in the Seeds Project. This instructor could see the value of using ICT, but had a strong belief that s/he did not have time to 'do it him/herself'. Mentoring this instructor involved a thoughtful, disciplined approach to urge him/her to take responsibility for his/her own ICT knowledge building.

4.3 Mentor Characteristics

4.3.1 Thinking About the Mentor Role

Traditional conceptions of mentoring named the mentor by that term alone. Functions associated with the term included: facilitators, sponsors, counseling, advising, social support, advocacy, emotional investment, and in-depth understanding of the mentee (McDonald & Castleton, 2001). Activities associated with traditional mentoring included 'learning leaders' and "hosting a new world" (Burke & McKeen, 1990, cited in McDonald & Castleton, 2001).

My role as a mentor in the Seeds Project was to act as a participant in a learning relationship with the instructor. My activities were associated with 'learning together' and 'exploring new worlds' with the instructor. In the Seeds Project, my role as mentor, in relation to the instructor, was not a collection of separate functions and activities.

4.3.2 Those More Suited to Mentoring

Hopkins-Thompson (2000) said mentors must be highly skilled in communicating, listening, analyzing, providing feedback, and negotiating. They must be respected in their field, committed to the mentoring process, and trustworthy to be able to establish the level of candor needed for the mentoring relationship to succeed (Hopkins-Thompson, 2000).

As a mentor in the Seeds Project, I needed to be gregarious, trustworthy, punctual, persistent, flexible, adaptable, resourceful, well aware of the faculty, the department and the program, curious, reliable, well organized, ICT aware, comfortable in a classroom, comfortable teaching, empathetic, kind, positive, honest, confident, research oriented,

politically aware, emotionally intelligent, generous, comfortable with change, good at thinking on my feet, capable of responding to unpredictable conditions, encouraging, and accepting of difference.

4.3.3 Traditional Mentor Functions 1977 - 1989

A list of mentor functions gleaned from research literature from the period 1977 - 1989 illustrates a traditional perspective of a mentoring relationship: 1) acceptance, support, encouragement; 2) advice, guidance; 3) bypass bureaucracy, access to resources; 4) provide challenge, opportunity, and "plum assignments"; 5) clarify values, clarify goals; 6) coaching; 7) information; 8) protection; 9) role model; 10) social status, reflected credit; 11) socialization, "host and guide"; 12) sponsorship, advocacy; 13) stimulate acquisition of knowledge; 14) training, instruction; and 15) visibility, exposure (Jacobi, 1991).

In the Seeds Project mentor functions were informed by a more egalitarian attitude: 1) mutual acceptance, support, encouragement; 2) facilitate access to resources; 3) participate in challenging activities; 6) share discovery learning; 7) share information; 8) model possible attitudes and approaches; 9) research resource; 10) mutual knowledge building; 11) explore teaching methods; 12) collaborate; 13) build community of practice; and 14) critical inquiry. The single biggest difference between traditional mentor functions and mentoring in the Seeds Project was my relationship with the instructor was a partnership of equals.

4.3.4 Mentor Behavioural Functions

Hobbs (as cited in Hansman et al., 2002) identified four mentor behavioural functions, including: 1) relationship building and information sharing; 2) a facilitative and then confrontative focus that encouraged reflection and alternative thinking; 3) modeling; and 4) promotion of a vision so the protégé began to take initiative for independent growth and learning.

In the Seeds Project, my mentor behavioural functions included: 1) building

rapport; 2) information and resource sharing; 3) consulting and proposing; and 4) discussing ICT integration possibilities. For example, I observed one instructor was teaching a section on the Six Thinking Hats. While the instructor taught, I did a quick search on my laptop computer using the wireless network, for online resources and found some interesting sites. I sent the links to the instructor and we collaborated on designing and teaching a lesson in the computer lab on webquest design, using the Six Thinking Hats as a topic.

4.3.5 Analysis of Mentoring Styles

Mentoring styles are informed by the nature of the mentoring program. Formal, required mentoring programs are going to call for a different mentoring style than an informal, voluntary program (Woodd, 2001). Mentoring style was associated with a cluster of mentoring functions that were identified with different mentoring program purpose (Woodd, 2001).

Mentoring in the Seeds Project was a combination of formal, and informal aspects. The mentoring was taking place as part of a research project, and data was being collected throughout the process. The instructor was selected for inclusion as part of the research methodology, a formal process, but the instructor could decline to participate, an informal factor. I identified the following elements of my mentoring style: showing how things are done, brainstorming, advising, sharing histories, checking understanding, identifying issues, needs informed, problem solving, networking, information giving, joins in problem solving, identifying gaps in knowledge, coaching, linking, supportive examples from own experience, supportive statements, encouraging, critical friend, action planning, giving feedback, asking questions, partner, clarifying, discussing performance, motivates, thought provoking, catalytic agent, facilitating learning, challenging assumptions, encouraging action, caring, empathy, developer of talent, asking about feelings, and non-directive.

4.3.6 Professional Mentoring Plans

New Teacher Induction Program: Induction Elements Manual published by the Ontario Ministry of Education ("Workplace mentoring guide for education, business and industry partners of Connecticut's school-to-career initiative: Connecticut learns," 2000), required the mentor to provide ongoing support to enable the new teacher to improve his or her skills and confidence through participation in an effective professional, confidential relationship. Together, the mentor and the new teacher would determine the new teacher's professional development challenges and fill these into a 'Strategy' form.

In the Seeds Project I didn't have an opportunity to formally work with instructors to develop professional development plans. The Seeds Project had a goal of having instructors modify a course objective to use ICT. In the exit interviews, two thirds of the instructors indicated they would like to meet and work with a mentor on course development at a department level. They wanted an opportunity to use ICT in their course objectives and write these objectives into their syllabus. Several instructors wanted to undertake this process at a program level to ensure ICT activities were synchronized for the cohort learning group.

4.3.7 The Patient Mentor

According to Morrow and Fredin (1999) desired traditional mentor characteristics were: communication skills; patience; desire to share knowledge; personal and professional interest in the development of the mentee; supportive; encouraging; sincere personality style; enthusiasm for learning; respect for mentees; saw mentees as peers; good attendance; punctuality; and good performance reviews.

In the Seeds Project, mentor characteristics were similar to the list above, with one important shift: my interest was in mutual learning and mutual benefit. I was not approaching the relationship with a benevolent attitude toward the instructor. I came to the relationship with a purpose: to learn if, and how, ICT literacy, fluency, and integration would be useful to learning. I approached my relationship with the instructor as two professionals engaged in a learning process.

4.3.8 Mentor As Collaborator

Mentor teachers saw themselves as teacher educators in their relationship with their pre-service teachers (Siebert et al., 2006). Mentor teachers ‘talked out’ their thinking and decision making with their interns, co-planned and co-taught with interns, observed and commented on intern planning and teaching, and participated as equal partners with the university field instructor in evaluation of the intern’s progress.

In the Seeds Project I did not see myself as an instructor educator. I saw myself as a collaborator with the instructor, building a relationship on shared interest in learning. In the best situations, we were able to devise new methods for teaching subject content using ICT. This was a voluntary relationship, the instructor was not compelled to participate. There was no evaluation of the instructor’s participation. I have to admit, though, as a mentor, I felt ‘successful’ when I was able to show instructor participation and engagement with ICT as a result of my efforts.

4.3.9 The Multiple Roles of the Mentor

The following approaches are recommended for a feminist mentoring praxis: recognize multiple roles and responsibilities; be aware of possible tension; respect the other person’s autonomy at all times; be attuned to another’s needs; and guard your energy (Moss et al., 1999).

In the Seeds Project I had multiple roles and responsibilities as a mentor. My primary formal responsibility was to collect data for the research. My primary informal responsibility was to support individual instructors and teacher candidates to use ICT into their teaching practice. I needed to be aware of multiple sources of tension: instructor anxiety toward ICT; instructor attitude toward me as a mentor, thinking of my presence as an increase in workload; new instructor nervousness; teacher candidate concerns for privacy, anxiety about being ‘observed’ in the classroom; fragmentation in the teacher education program; unpredictable ICT resources; fear of making changes from the familiar; and anxiety about evaluations that do not allow for instructors to ‘learn from failure’.

4.3.10 Mentor Willingness to Learn

A different understanding of the mentor teacher / student teacher relationship was to see the student teacher as a renewable resource of contemporary theory, pedagogy and ICT knowledge (Margerum-Leys & Marx, 2004). From this perspective, the mentor teacher has access to an annual 'refresher' course of knowledge from the university, through the student teacher. The student teacher has access to understanding the intersection of theory and practice through the mentor teacher's pedagogic and pedagogic content knowledge (Margerum-Leys & Marx, 2004).

In the Seeds Project, my understanding of ICT integration was informed by attending credit courses to broaden my theoretical and practical knowledge of ICT. When I worked with an instructor, I had an opportunity to 'teach' the instructor what I had learned, which deepened my understanding of the subject. At the same time, I was able to experience the reality of classroom teaching, learners, and instructors. The instructor 'taught' me his/her pedagogic and content knowledge. Our relationship was a synthesis of these knowledges, within which we conceived ideas for ICT literacy, pedagogy and content instruction.

4.3.11 Mentor Transformed

In a contextual-development model of mentoring, mentoring is a developmental process that transforms both participants, and in turn, the contexts within which they are situated (Healy & Welchert, 1990).

I experienced transformation through the process of mentoring and participation in the Seeds Project. My thinking was transformed by the combination of coursework, small group discussion, and mentoring with instructors. I developed new understandings of: teacher education; theoretical discourse about ICT; practical applications of ICT in education; instructor ICT knowledge; teacher candidate ICT knowledge; instructional strategies; philosophical approaches; pedagogical congruence; curricular design; levels of instrumental ICT skill and confidence; hardware, software and infrastructure resources;

use of peripherals; institutional supports for the use of ICT; key ICT support personnel; and ICT resources in the field.

4.3.12 Mentor ICT Experience

Graduate students in technology studies can provide a pool of mentors for supporting integration of ICT into teacher education (Leh, 2005). Most of these students have ICT proficiency and some may have had experience with ICT in K - 12 settings.

I came from a literacy program for at risk youth. This was a 'technology rich' program and I had used the technology extensively in my teaching. As part of my work in the Seeds Project, I had opportunities to visit and work in elementary settings, and to work with secondary technology instructors. These experiences expanded my understanding of the issues associated with ICT integration and enhanced the support I was able to offer instructors.

4.3.13 One Mentor: Many Instructors

In a traditional mentoring model mentors were focused on their mentee's career advancement, and the relationship required relatively high involvement (Mertz, 2001). For this reason, mentors could only maintain relationships with a relatively small number of mentees.

In the Seeds Project I worked with 25 instructor cases over two academic years. The main focus my mentoring activities were on professional development in relation to ICT integration. My involvement with individual instructors fluxuated over time, depending on the level of ICT integration the instructor was interested in pursuing. A significant aspect of my mentoring activity was the slow formation of relationships to build trust and ICT learning networks. Ultimately, my role as mentor would become redundant, because instructors would be engaging with each other to maintain and develop their ICT integration activities.

4.3.14 Reciprocal Mentoring

Glassford & Salinitri (2007) reported that recent thinking about mentoring is looking at the reciprocal benefits of an equal mentoring relationship. The mentoring participants are encouraged to learn together, and from each other. When mentoring is seen as a two-way teaching and learning process, it becomes a relationship of mutual benefit (Salinitri, 2005, cited in Glassford & Salinitri, 2007).

In the Seeds Project I learned as much from the instructors as I taught. For example, in one class the instructor was teaching a series of lessons on puppet-making. He/she wanted the puppet faces to show intense emotion. We brainstormed to discover what resources students could access. I suggested using digital photography to capture students making faces that showed intense emotion. The students used prints of the photos as a data source to sculpt the face of their puppet with more detailed facial expression. I learned an effective way to bring emotional intensity to a puppet-making process, the instructor learned how students can use digital photography to collect reference materials.

4.3.15 Co-learning Processes

In a co-mentoring relationship the construction of 'expert/novice' did not fit (Kochan & Trimble, 2000). In this relationship mentoring was about co-learning within a process of discovery. The reciprocity and mutuality of the co-mentoring model meant neither of the participants in the relationship were 'experts', neither would presume to know the developmental needs of the other (Kochan & Trimble, 2000).

In the Seeds Project the mentor and instructor were involved in a co-learning process regardless of the level of ICT integration that took place during the term of the mentoring relationship. Co-learning took place within a dialogic process of experimentation and discovery. For example, one instructor talked about his/her new understanding of the need to practice with ICT, to develop and maintain ICT skill. This instructor designed a series of reflective questions for the teacher candidates to complete after our computer lab sessions. One of the questions was, "What ways can you continue

your use of the software so you will not lose your skills". This question demonstrated the instructor's developing understanding of the instrumental aspect of ICT integration.

4.4 Mentor Preparation

4.4.1 Mentoring Through Resistance

According to White (2001) mentor teachers need to be prepared to assume the responsibilities of mentoring.

In the Seeds Project I needed to be prepared to work with the tension arising from instructor resistance to integrating ICT. I understood this resistance as an indication of beliefs, values and experiences that formed a barrier to integrating ICT. My task was to learn the nature of each instructor's resistance, and work with the instructor to build new perspectives and experiences.

4.4.2 Topics for Mentor Preparation

There is evidence of a strong correlation between mentor preparation and quality mentoring (Morrow & Fredin, 1999).

The Seeds Project provided an extensive preparation program for the mentors. Two graduate level courses were designed and taught by Dr. D. H. Krug. The first course provided a theoretical context for the Seeds Program: "Review of Research and Theory: Critical Issues of Education, Learning, and Information and Communication Technologies." The second course was a seminar for practical preparation to integrate ICT in education: "Integrating Technologies within Teacher Education Practices".

When the mentoring activities got underway the mentors were paired up in a buddy system. My buddy and I worked together through the start up phase of the program: meeting instructors, taking observation notes, and debriefing. This helped us make sense of our experience within a wider context. It also helped us plan what mentoring interventions would be advisable.

The weekly meeting of the mentors for the Seeds Project served as an ongoing preparation activity. We met and discussed our experiences and made plans for the

following week. The opportunity to share notes and experiences helped me figure out what my next steps should be with any given instructor.

4.4.3 Mentor Skills

Mentors need to have skills in communication, needs analysis, and feedback at a highly functional level (Hopkins-Thompson, 2000). Mentors should be prepared to use evaluation instruments, developmental analysis strategies, growth plans, and reflection (Hopkins-Thompson, 2000).

In the Seeds Project we needed to have well developed communication skills. When I first met instructors, the encounter was like a 'cold call'. Despite preparatory activities that took place before I met the instructor (emails, orientations, etc.), often the instructor had only a vague understanding of what the Seeds Project was. This moment of introduction seemed like a key to instructor participation.

Needs analysis took place through the observation process. My observations included notes on: 1) course identification; 2) instructor identification; 3) ICT inventory; 4) lesson subject; 5) instructional strategy; 5) ICT used; 6) student response; 7) other notes. These observation notes provided information for understanding the instructor's relationship to ICT. Needs analysis also occurred when I talked to the instructor about integrating ICT into their course. Some instructors welcomed the opportunity to try something new, others did not care to discuss my ideas. This moment was usually a central cue as to the direction the instructor was going to take for the rest of the term.

Mentors in the Seeds Project also needed advanced writing skills to prepare reports and articles for writing up the research from the Seeds Project. These reports and articles included processes of evaluation, developmental analysis and reflection.

4.4.4 Preparing to Co-Mentor

Building a co-mentoring relationship involved four developmental stages: 1) groundwork; 2) warm-up; 3) working; and 4) long term status (Kochan & Trimble, 2000). A co-mentoring relationship could be initiated, maintained, escalated or de-

escalated, by either of the participants in the relationship (Kochan & Trimble, 2000).

In the Seeds Project the mentor needed to be prepared to take responsibility for initiating and maintaining a mentoring relationship with the instructor. The relationship was time limited and had a specific purpose. I made myself available to meet with the instructor at their convenience, I needed to be alert to 'teachable' moments with the instructor.

4.5 Mentee Characteristics

4.5.1 Mentee Needs for Achievement

Studies have suggested protégés tend to have higher needs for achievement and power than non-protégés (Hansman et al., 2002).

There were characteristics in the instructors that made them amenable to being mentored in the Seeds Project. I found there were two defining moments in the development of the mentoring relationship that revealed these instructor characteristics. The first moment occurred when the instructor accepted or declined my invitation to participate in the Seeds Project and allow me to observe in their classes. Instructor willingness to participate indicated a certain amount of confidence in their teaching. The second defining moment occurred when I first approached the instructor with ideas for ICT integration. Instructors that were willing to entertain ideas for ICT integration showed openness to risk-taking in their teaching practice.

4.5.2 Mentee Success Drive

Mentee success might not be as simple as a cause and effect relationship to being mentored. When ideal mentee characteristics were considered, for example, intelligence, ambition, desire, and ability to accept power and risk, these attributes might be successful for attracting mentors, and also might lead to success, regardless of being mentored (Jacobi, 1991).

In the Seeds Project ideal instructor characteristics could be identified as: 1) confidence in their teaching ability; 2) willingness to take risks; 3) identity as learner; and

4) an inquiring attitude toward ICT. It is hard to say whether there is a cause and effect relationship between these characteristics and subsequent integration of ICT into teaching practice. The instructors that responded most actively to the Seeds Project invitation were not using ICT in their teaching. In the exit interviews two thirds of the instructors indicated the presence of the mentor was a significant factor in their willingness to try developing, designing and teaching an ICT infused lesson.

4.5.3 Selecting Instructors

Commitment to professional and personal growth on the part of the student teacher was an important characteristic for pre-service teacher placement in a mentoring relationship (Margerum-Leys & Marx, 2004). The student teacher needed to be willing to integrate his or her own ICT knowledge with the content knowledge of his/her mentor teacher. This integration would necessitate discussions of pedagogy and purpose between the student teacher and the mentor teacher. Through these discussions the student teacher would increase his/her pedagogy and content knowledge (Margerum-Leys & Marx, 2004).

In the Seeds Project the instructors were not screened for ideal characteristics to be invited to participate. The only criterion for inclusion was that the instructor was teaching a course in the Two Year Elementary Teacher Education Program.

4.5.4 Encouraging Participation

Faculty members can be encouraged to participate in developing their ICT integration by being paid a stipend (Leh, 2005). In one study faculty members received a stipend for completing the following documents: 1) during the initial stage, they needed to write a plan describing what they wanted to learn, to do, and to produce; 2) during the middle stage, they wrote a progress report to document activities, such as attending workshops, and working with a mentor; and 3) they submitted their products, which included CDs, websites, online course materials, and Power Point presentations at the end of the study.

In the Seeds Project the instructors did not receive any extrinsic motivation to participate. This appeared to be both beneficial, and problematic. For instructors who were interested in ICT and welcomed the opportunity to explore and discover ICT with a mentor, their intrinsic motivation gave them the resilience to work through the anxiety and frustration of learning and teaching at the same time. For instructors who did not have an interest in ICT and could not see the value of it in their teaching practice, the absence of extrinsic motivation meant the teacher candidates in their courses did not have the benefit of experiencing the use of ICT - both from a critical and pedagogical perspective - for that subject.

4.6 Mentee Preparation

4.6.1 Research Participant Expectations

The Mentoring Induction Principles and Guidelines manual outlined specific expectations for the mentee. The mentee was expected to play an active role in the mentoring relationship, which included: 1) attending all training sessions relevant to mentoring; 2) requesting assistance proactively; 3) scheduling and attending sessions with the mentor teacher; 4) remaining open and responsive to feedback; 5) observing other experienced teachers, including the mentor teacher; 6) conducting self-assessments and using reflective skills to enhance teaching skills; 7) participation in the evaluation of the mentoring program (White & Mason, 2001).

In the Seeds Project the instructors were participating in a research project, and as such, were not expected to play any particular role in the mentoring relationship. The purpose of the research was focused on understanding the instructor their integration of ICT. Instructor activities, such as requesting assistance, asking questions of a professional nature, discussing ICT integration issues, and using any ICT in the classroom, were collected in the observation field notes.

4.6.2 Orientation and Strategies

Preparation of protégés should centre on orientation to program expectations (Hopkins-Thompson, 2000). This should include specific strategies for needs analysis, self-development using an individual growth plan, and reflection should be included (Hopkins-Thompson, 2000).

In the Seeds Project there was no formal instructor preparation to participate in a mentoring relationship. The Seeds Project was presented at orientations before the term began, in addition, correspondence and discussions took place with department heads and department coordinators. These activities did not guarantee that every instructor had a good awareness of the Seeds Project when I approached them at the first class of the term. In one case, an instructor had been introduced to the Seeds Project and had taken the initiative to prepare for the mentoring relationship. This instructor had a high level of intrinsic motivation and interest in the use of ICT for teaching and learning within his/her subject discipline.

4.6.3 Preparing to Co-Mentee

As mentioned earlier, in a co-mentoring relationship, either participant can take the initiative to form a mentoring relationship. The person taking the initiative can facilitate the process of forming a relationship by assessing their needs and strengths, determining their goals, and identifying potential mentors (Kochan & Trimble, 2000).

In the Seeds Project the instructors did not take the initiative to participate in the mentoring relationship. I noticed participation in the Seeds Project mentoring relationship could be seen across a range, from declining to participate, resistant to engage with ICT, open to trying a basic ICT intervention, welcoming the chance to try using ICT with support, actively pursuing the opportunity to use ICT.

4.7 Feedback, Assessment, and Evaluation

4.7.1 Setting Goals and Objectives

New Teacher Induction Program: Induction Elements Manual published by the Ontario Ministry of Education ("Workplace mentoring guide for education, business and industry partners of Connecticut's school-to-career initiative: Connecticut learns," 2000), outlined how the new teacher would complete the requirements for the NTIP. The new teacher developed his or her own 'Individual NTIP Strategy' form in collaboration with the new teacher's mentor. The mentor and the new teacher determined what methods would be used to complete the required elements of the 'Individual NTIP Strategy' form.

In the Seeds Project the instructors did not set out goals or objectives for their learning to use ICT in their teaching practice. The Seeds Project had goals and objectives that guided my work as a mentor.

4.7.2 Baseline Data

The key components to a successful mentoring program are cyclical, not linear, it is an iterative process where subsequent steps are informed by previous steps (Hopkins-Thompson, 2000). That said, putting formal evaluation processes in place before implementing a mentoring program ensures baseline data will be available for benchmarking the process. This would include attitudinal and behavioural evaluation (Hopkins-Thompson, 2000).

In the Seeds Project my observation field notes created a repository of observations that tracked instructor changes over time. At the end of each term, a report was written for each instructor. This report included: materials collected and what format they were in - hard copy/digital; whether the instructor allowed their digital picture to be taken and posted on their Seeds website; the exact course objectives as listed in the syllabus; the actual use of ICT that took place in the course; mentor recommendations for integrating ICT in the course; list of digital artifacts produced and stored in teacher candidate e-portfolios; and any other information the mentor thought was pertinent.

4.7.3 Giving Feedback

Five conditions must be present for feedback to mentees to be effective: 1) the mentor must be credible and qualified to comment on performance; 2) the feedback must have meaning to the protégé; 3) the feedback must address the potential for change by addressing that which the protégé can control and change; 4) the feedback must be confidential; and 5) the feedback must be timely (Dalton & Hollenbeck, 1996, cited in Hopkins-Thompson, 2000).

The Seeds Project did not have a formal system for providing feedback to the instructors. The instructors were free to ask for feedback and I often had an informal debrief session with the instructor after we tried an ICT intervention or innovation.

4.7.4 Effective Reflection

Effective reflection requires many data sources, perspectives from others, and purpose and context. Protégés needed developmental plans to focus their learning, so they could learn how to learn from their experiences (Fullan & Hargreaves, 1996, cited in Hopkins-Thompson, 2000).

Instructor reflection was not built into the mentoring relationship in the Seeds Project.

4.7.5 Mentor Tensions with Evaluation

Mentor teachers constantly walk a narrow line between 'teaching' or 'guiding' pre-service teachers and 'evaluating'. Mentor teachers feel tension between their role to encourage the pre-service teacher and to comment on the pre-service teacher performance (Siebert et al., 2006).

In the Seeds Project the instructors were not formally evaluated and there were no professional consequences, whether they participated in the Seeds Project or not. I did not feel any tension arising between supporting the instructor to try new things and performance evaluation.

4.7.6 Formative Evaluations

Leh (2005) conducted formative evaluations throughout the course of the mentorship period, to provide better training to the faculty member mentees. These included phone interviews, surveys, informal interviews, and IT graduate student mentor presentation evaluation.

In the Seeds Project contact with the instructors was limited to immediate logistics and development of possible ICT interventions in their courses.

4.8 Institutional Aspects

4.8.1 The Responsive Institution

Healy (1990) advanced a definition of mentoring derived from developmental-contextual theory. This definition incorporated ideas that context both influenced and was influenced by an individual's development. An individual's transformation depended as much on the dynamic potential of their context as upon their own changing capacities (Levinson, 1978, cited in Healy & Welchert, 1990).

I did not see that the mentoring work of the Seeds Project had an immediate affect on the teacher education program. As of June, 2007, in a discussion document presented at a department meeting, there was no strategic plan or proposal for developing a comprehensive strategy for the integration of ICT. I wondered if this lack of attention to the issue of ICT use contributed to instructor resistance to address ICT in their individual teaching practice.

4.8.2 Institutional Leadership

Administrative leadership is critical to the success of a mentoring program (Hopkins-Thompson, 2000). The purpose of the program should state what behaviours are to be developed. Feedback can be used as a baseline for development. Organizations should foster a mentoring network to support learning (Hopkins-Thompson, 2000).

In the Seeds Project administrative leadership at the faculty level perplexed me. On the one hand, the Seeds Project was funded to carry out action research on mentoring and

ICT integration. On the other hand, I did not see evidence of leadership with instructors in regards to a vision for ICT use. My experience was that every instructor had their own, unique perspective on the use of ICT and no two instructors shared the same vision.

For example, I mentored two instructors who were teaching the same subject, in the same building, in side by side classrooms at the same time of day. They had both been given the same syllabus developed by the course coordinator, which did not specify any use of ICT in the course objectives. In one case, the instructor did not use any ICT in the course, and the teacher candidates did not have a chance to develop ICT literacy in relation to that subject. In the classroom next door, the instructor had decided to develop an ICT infused activity and the teacher candidates had an opportunity to explore concept, design, teaching strategies, and teaching resources that related to the subject and the grade level they anticipated teaching.

4.8.3 Learning as Practice

Institutions can foster and encourage an environment for learning activities and other generative activities (McDonald & Castleton, 2001). Falk (in press 2001), as cited by (McDonald & Castleton, 2001), highlighted the importance of social skills for effective interaction. These skills can contribute to proactive community development and growth of a learning culture. When institutions support settings that condone learning as practice, rather than rhetoric, they contribute to the success of both interactions and outcomes (McDonald & Castleton, 2001).

In the Seeds Project more than half of the instructors were willing to experiment with me to use ICT. This willingness appeared to be a result of instructor interest, rather than institutional encouragement. For example, one instructor welcomed my mentoring support. Although they did not have any ICT outcomes in the course syllabus from the department, they decided to take advantage of the opportunity provided by the Seeds Project. The instructor included a blog activity in the course even though they had never used a blog before. The blog activity was then combined with having the teacher candidates teach each other to use a software application specific to the course subject.

The instructor had never used the software application before, either. Finally, the instructor gave the teacher candidates an opportunity to complete an assignment using concept mapping software that was new to both the instructor and the teacher candidates. I never saw any recognition, on the part of the institution, for this instructor's innovations or the new learning that took place because of their efforts.

4.8.4 Institutional Support

Institutional support for learning and development through mentoring is critical (Hansman et al., 2002). Evidence of this support would be guidance about the roles, functions, expectations, and benefits of participating in mentoring relationships. One way for institutions to foster mentoring cultures is to include mentoring activities in appraisal (Hansman et al., 2002).

I did not see institutional support for instructors who participated in the Seeds Project. The institution did not play a significant role in mediating my relationships with the instructors I worked with. For example, in my first year as a mentor, one instructor wanted to convert an extensive collection of hard copy handouts and worksheets to a digital format so they could be available online. There was an expense involved, in terms of time and energy, not to mention learning how to convert the materials. For these reasons, the instructor was reluctant to undertake the conversion project. In my second year on the Seeds Project I worked with this instructor again. I sensed tension on the part of the instructor, who was still using the hard copy materials. He/she asked me, if my role as mentor included converting these materials. The instructor expressed desire for institutional support to make the kinds of curricular transitions necessary to shift his/her teaching practice and materials to digital environments. I was unable to respond with either institutional support or institutional guidance to resolve the instructor's dilemma. I indicated I was willing, as per Seeds goals, to help him/her learn how to convert the materials, but I would not do the task for him/her.

4.8.5 Institutional Checklist

Morrow (1999) provided a checklist for measuring institutional support for a mentoring program. Indicators of support were: 1) leadership personnel helped employees see how mentoring contributed to institutional goals; 2) leadership personnel also mentored and participated in learning, 3) the mentoring program had a budget; 4) a qualified lead mentor or program manager had been given implementation responsibility; 5) positive reinforcements for those who were in the program were visible; 6) mentoring activities were well communicated throughout the organization; and 7) mentors were given training and support (Morrow & Fredin, 1999).

I did not observe administrative leadership to help instructors see how participating in a Seeds Project mentoring relationship contributed to institutional goals. This might have been related to a lack of visibly articulated faculty, department, or program, goals for ICT integration. I think, if the institution did not have a vision for ICT integration, it would be unlikely to encourage instructors to take advantage of opportunities to learn to use ICT in their teaching practice.

4.8.6 Institutional Change Aligned with Technology

Institutions will need organizational change aligned with ICT integration if they are going to properly prepare teacher candidates to teach using ICT (Leh, 2005). Leh found deans, department heads and program directors play a crucial role in the process of organizational change. Without their support and involvement, faculty development will only make superficial changes that will not have any real impact on teacher candidate learning (Carroll, 2000, cited in Leh, 2005).

My observations gave me some sense of the institutional ICT culture the Seeds Project was operating within: 1) absence of discussion, at the faculty, department or teacher education program level, of a need for organizational change aligned with ICT integration; 2) absence of a cohesive ICT integration strategy at the faculty level; 3) absence of critical ICT integration discourse at the department level; 4) absence of substantive reference to ICT integration in the teacher education program strategy document; 5) instructor resistance to engage in proactive professional development to

learn to integrate ICT; 6) lack of ICT inquiry in instructor practice; 7) wide range of instructor understandings of ICT integration; and 8) use of ICT to continue transmissive instructional approaches. These findings are not supported by data, they are my opinion formed by experience. I believe these indicators show a lack of vision or sense of responsibility at the faculty, department and program level. If the institution does not recognize the need for institutional change aligned with ICT, instructors are not going to have the extrinsic support they need to invest in their own transformation.

4.8.7 Institutional Touchstones

Siebert (2006) reported findings that showed mentor teachers in a pre-service education program needed support from the university when their teacher candidates struggled or failed in their practicum placement. The mentor teachers needed a chance to debrief with university field instructors and team liaisons. These debriefing sessions gave the mentor teacher a chance to understand issues they may not have been aware of, and confirm that their judgments and actions were on target (Siebert et al., 2006).

As a mentor in the Seeds Project, the project director liaised with all levels of the administration. For example, when I had difficulty with an instructor, I consulted with the project director to determine my next course of action. The project director discussed the situation with administrative and program personnel and then advised me on how to respond to the situation.

4.8.8 Institutional Mandates

The New Teacher Induction Program (NTIP) is a formal mentoring program enacted in legislation called "The Student Performance Act" on June 1, 2006 by the Ontario government. The Act described the requirement that, as of the beginning of the 2006-07 school year, all publicly funded school boards had to offer the NTIP to their new teachers and to teachers new to Ontario's publicly funded schools. The NTIP included mentoring as one of three key induction elements: 1) orientation for all new teachers to the school and school board; 2) new teacher participation in a compulsory mentoring

relationship with an experienced teacher; 3) professional development and training for new teachers.

Instructors were not mandated to participate with me in the Seeds Project. When I met the instructor for the first time, and introduced myself, the majority of the instructors agreed to participate in the Seeds Project with me as their mentor to support using ICT.

4.9 Challenges and Obstacles

4.9.1 Time Demands

Time demands were a major barrier to a successful mentoring process (Hopkins-Thompson, 2000). The following strategies could be used to alleviate this problem: 1) assign a mentor to a group of protégés; 2) meet less often and augment the dialogue with reflection logs; 3) use technology to enhance and augment the mentoring process; 4) use pre-existing meeting days to 'piggyback' mentoring meetings; 5) expand the pool of mentors (Hopkins-Thompson, 2000).

In the Seeds Project instructor schedules made it difficult to meet face-to-face. The most reliable strategy for a first face-to-face meeting was for me to show up at the first class before it started and make introductions. I learned from experience that email was not a reliable method for setting up the first face-to-face meeting because the instructor was likely to ignore the email or immediately decline the invitation to participate. Often instructors believed participating in the Seeds Project would 'make more work' for them

4.9.2 Mentor Beliefs and Doubts

Mentor teachers view pre-service teachers as students of teaching and learning (Siebert et al., 2006). The mentor teachers have an inherent belief that all students can learn, thus, all pre-service teachers can learn to be good teachers. Mentor teachers sometimes struggled to help pre-service teachers overcome problems they themselves didn't experience in their journey to learn to teach (Siebert et al., 2006).

In the Seeds Project it was a struggle sometimes to provide appropriate support to the instructors. Many instructors assumed I was there as a de facto tech support person

and were perfectly willing to have me do ICT activities as long as they didn't have to put any time into it. My challenge was getting the instructor to engage in the work of learning to integrate ICT. My problem was that I needed to decide whether my 'help' was building ICT knowledge or building dependence on a 'tech' person.

4.9.3 Mentoring Objectives Specific to Context and Conditions

The mentor is not out there awaiting discovery (Monaghan & Lunt, 1992). The role of mentor is open to negotiation, there is no right or wrong approach to mentoring (Monaghan & Lunt, 1992). The only way to determine whether a mentoring program has been a success is to clearly state objectives that are designed specifically for the context and conditions the mentoring activity will take place in (Monaghan & Lunt, 1992).

In the Seeds Project, my role as mentor evolved within the contexts and conditions of the people, places and purposes I found myself located. My mentoring activity maintained a core of values committed to the use of ICT as it was informed by a theoretical and practical rationale. We used collaboration as an empowering practice through which ICT knowledge could be developed and acquired.

4.10 Summary

Based on my observations of classes in the Two Year Teacher Education Program instructors are not integrating ICT in their teaching. The teacher candidates are not being well prepared to use ICT in their teaching after they leave the university. Instructors do not appear to have a well founded understanding of the theoretical and practical aspects of integrating ICT in education.

The instructors were hard to reach by telephone or email prior to classes starting up at the beginning of the term. Experience had shown that anything less than an initial face-to-face introduction with an instructor could mean the instructor would decline to participate in the Seeds Project. Despite these factors, instructors accepted the invitation to participate at a surprisingly high rate, when I arrived unannounced at their classes. I do not know what motivated instructors to participate. This data was not collected as part of

the study.

There was little evidence of institutional support to integrate ICT at any administrative level: faculty, department or program. There was also little evidence of institutional support for instructors to improve their practice of integrating ICT in their courses. It seems possible that this lack of extrinsic motivation could partially explain the low rates of ICT use by instructors.

It was surprising to discover the relatively high rate of engagement instructors showed to integrate ICT with my support as a mentor. It seemed that my presence as a mentor created the right conditions for the instructors to act on an intrinsic desire to integrate ICT. This positive affect occurred despite the relatively low actual contact time I had with each instructor.

Instructor good intentions and my efforts to support them were not enough to yield more than modest gains. My working relationship with each instructor was limited to one term and only began with the first day of classes. There wasn't enough time to modify the syllabus to include ICT integrated course objectives. This was especially true for instructors who felt particularly uncomfortable with ICT use. In these cases, there was very little forward momentum.

It appeared that the design of the Seeds Project mentor program played a role in the modest success we were able to show for our efforts. Instructors seemed to appreciate the flexibility, respect, and concern I showed for their situations. They also seemed to welcome the opportunity to discuss, however briefly, the theoretical and practical aspects of integrating ICT. The education I received through the credit courses, was an important factor in being able to build rapport with the instructors.

Most of the instructors could imagine integrating ICT in their courses. They showed a willingness to engage in critical discourse about ICT use. They could also see how ICT use could enable, enhance or enrich their teaching. A number of instructors expressed regret at the ending of our mentoring relationship and commented on how they felt like we were 'just getting started'. Based on the findings from this research, it appears that mentoring can play a significant role in supporting instructors and teacher

candidates to build ICT knowledge toward integrating ICT in their teaching practice.

These findings have shown me that there are many possibilities for constructing a definition of mentoring to support institutional, professional, and personal goals. They have also shown me how important it is to be thoughtful and deliberate in formulating a definition of mentoring before implementing a program. I was surprised to learn that mentoring can be used as an instrument for homogenization and oppression. Mentoring is a form of relationship, and as such, demands respect for the real possibilities for harm or good that can arise from its implementation.

Chapter 5 - Implications / Recommendations

How can an educational institution encourage the formation of intentional learning relationships amongst colleagues (M. Cobb et al., 2006)? These relationships, based on mutual benefit, could provide a sustainable resource for professional development (Bokeno & Gantt, 2000). A central focus of this professional development could be the ongoing improvement of ICT knowledge. A distinguishing feature of these relationships could be a commitment to building learning communities in an atmosphere of caring and respect (Bierema & Merriam, 2002). These relationships could be designed to adapt to different persons, purposes, and places. Based on the findings from this research, it appears mentoring could play a role in such a project (Hargreaves & Fullan, 2000).

5.1 Issues Identified in the Research

There was no single operational definition of mentoring found in the research literature data (Roberts, 2000) or the experiential mentoring data. A synthesis of these two data sources, however, has provided ample findings toward an informed development of a mentoring proposal. Three issues emerged from the research data: 1) problems arising in traditional conceptions of mentoring (Benishek et al., 2004); 2) issues specific to learning to integrate ICT in educational contexts (Brzycki & Dudt, 2005); and 3) deficits in mentoring research design (Colley, 2003).

5.1.1 Mentoring Issues Revisited

Research literature showed traditional conceptions of mentoring were not sufficient to meet the needs of diverse, complex situations (Benishek et al., 2004). Experiential mentoring data showed some success in fostering learning relationships when both participants contributed knowledge to the relationship (Kochan & Trimble, 2000). In a traditional mentoring relationship the locus of power resides in the more 'senior/advanced/expert' participant (Semeniuk & Worrall, 2000). Findings in this thesis indicated a more useful locus of power was the ability for either participant to withdraw from the mentoring relationship if they decided it was not working for them.

5.1.1.1 Traditional Mentoring

The traditional conception of mentoring was based on a mentoring dyad - a pair. A central feature of this dyad was a relationship of unequal partners. The location of knowledge capital in the dominant mentor position created a relationship openly based on inequality (Colley, 2001). The protégé commonly engaged in the relationship motivated by an intrinsic interest in career and personal development (Hansman et al., 2002). Traditional mentoring relationships were self-selecting, with either the mentor choosing a young protégé to cultivate, or a young protégé selecting a mentor to support his/her career (McDonald & Castleton, 2001).

5.1.1.1.1 Mentors as Transmitters

The basic function of the traditional mentoring relationship was transmissive (Morrow & Fredin, 1999). The mentor transmitted knowledge capital to the protégé/apprentice/mentee. On the surface this 'giving of benefit' was seen as an altruistic gesture, on the part of the mentor, toward improving the prospects of the protégé (Hansman et al., 2002). On a deeper level, it also served as a grooming process that prepared new members to fit into a profession or an organizational culture (Colley, 2003).

5.1.1.1.2 Paradigm of Helplessness

The traditional mentoring relationship was informed by a paradigm of helplessness. The protégé needed the protection and patronage of the mentor to enter a new level in the ranks of power (Mullen et al., 1999). The mentor bestowed the 'secret' knowledge that allowed the protégé to advance where others of the protégés 'caste' could not (Benishek et al., 2004).

5.1.1.1.3 Role Titles - the Problem with Protégé

The title 'protégé' is embedded with the notion of one who needed protection (Harper, 2001b). In an adult-to-adult relationship, this construction was disempowering

and demeaning. In a context of variable expertise, any one participant in a mentoring relationship could have specialized, valued, knowledge to contribute to the relationship (Margerum-Leys & Marx, 2004).

5.1.1.1.4 Perceptions of Power

Power imbalance was assumed in a traditional mentoring relationship, in fact, a desired state. The greater the power differential between the mentor and the protégé, the greater opportunity for both the mentor to ‘make a difference’ and for the protégé to ‘make it’ further up the hierarchical ladder (Jacobi, 1991). Traditional mentoring relationships assumed the ‘normalcy’ of power residing in one participant (White & Mason, 2001). Both participants engaged in this unequal power distribution as an accepted condition of the relationship because it was understood the mentor would ‘help’ the protégé acquire power (Jacobi, 1991). This embedded power structure became a problem when the privilege of power (McIntosh, 1988) failed to recognize differences between the participants in the mentoring relationship arising from institutionalized disempowerment as a result of class, race/ethnicity, gender, sexual orientation or dis/ability (Moss et al., 1999).

5.1.1.1.4.1 Unequal Mentoring Partners

Mentoring partners were bound to have elements of their relationship that were different and valued unequally as a historical reality (Hansman et al., 2002). In committed mentoring relationship, these differences needed to be openly acknowledged and understood by the participants to build confidence and trust (Benishek et al., 2004).

5.1.1.2 Institutional Change

Faculty, department and program culture did act as a barrier to the integration of ICT in teacher education courses (Finley & Hartman, 2004). Without institutional vision and support to facilitate instructor change, instructors had no extrinsic motivation to integrate ICT (Hopkins-Thompson, 2000). Traditional mentoring models were

constructed to perpetuate institutional culture, to acculturate the next generation of leaders to 'follow in their footsteps' (Berger & Luckman, 1966). In the absence of critical ICT discussions at the instructor level, the pervading individualistic notion of 'technology as a tool' prevailed.

5.1.1.2.1 Institutional Purpose

There was ample research reporting the preponderance of 'formal' mentoring programs being instituted to solve a variety of professional and personal development problems (Colley, 2003; Cornell, 2003; Glassford & Salinitri, 2007; Hansman et al., 2002). These formal mentoring programs appeared to codify a traditional or conventional framework for the mentoring relationships ("Support program for new teachers watershed in Ontario's public education system [new teacher induction: Growing into the profession]," 2003; White & Mason, 2001; *Working with colleagues: A guide for ICT mentors*, 2002). It appeared that the hope was that the good effects of the informal mentoring relationship could be imported into formal settings (Colley, 2003; Semeniuk & Worrall, 2000).

5.1.1.2.1.1 Mentoring for Statistical Evidence

A central tension arose from the wholesale import of the informal traditional apprentice model of mentoring into formal institutions to affect the development of professional attitudes and demeanor (Batt & Katz, 2004; Clark et al., 2006; Colley, 2001). One of the defining characteristics of a mentoring relationship was the longitudinal development of trust and caring between the mentoring participants (Clark et al., 2006). When an institution adopted mentoring as a strategy to achieve pre-set goals and objectives for human development and change, a contradiction of purpose, both on the part of the mentor and the protégé was found (Colley, 2003).

5.1.1.2.1.2 Proscribed Outcomes

I believe the field of education is facing a moment in its history of unprecedented change. Students need to be educated for a knowledge economy that is unique for its short cycles of innovation, adoption, maturation, and degeneration. The U.S. Department of Labour estimates that the average person in the U.S. held 9 jobs from the age of 18 to the age of 34 (Statistics). Traditional conceptions of mentoring designed to pass on previous knowledge may be less useful than inquiry based learning that prepares students for the future (Jacobsen & Lock, 2004). The problem with institutional prescriptions of what a mentoring relationship *is* is the loss of an ability to adapt to changing contexts and conditions (Monaghan & Lunt, 1992).

5.1.1.2.1.3 Institutional Support

There was a clear role for administrative leadership to play in fostering successful mentoring relationships (Healy & Welchert, 1990; Hopkins-Thompson, 2000; McDonald & Castleton, 2001). Traditional, conventional mentoring relationships were insufficient to meet the needs of instructors and teacher candidates to support ICT integration (Leh, 2005; Margerum-Leys & Marx, 2004). The institution could play a key role in developing a mentoring program that supported the learning needs of instructors and teacher candidates to integrate ICT (Brzycki & Dudd, 2005; Jacobsen & Lock, 2004; Leh, 2005).

5.1.1.2.2 Homophily

It is possible that well structured formal mentoring programs supported by institutional leadership could facilitate cross-gender, cross-race/ethnicity, cross-socio-economic, cross-sexual orientation, and cross-dis/ability mentoring relationships (Benishek et al., 2004; Bierema & Merriam, 2002; Moss et al., 1999).

5.1.1.2.2.1 Social Markers

People are harmed by social categorizations (Zack, 1998). Social markers are not eradicated, although they may be obscured, in online environments (Bierema & Merriam, 2002). Traditional mentoring relationships did not have a mechanism for acknowledging the presence and affect of social markers. Any contemporary conception of mentoring must take into account inequities perpetrated through unexamined positions of privilege (McIntosh, 1988; Zack, 1998).

5.1.1.2.3 Professional / Personal Focus

Mentoring relationships formed to support the integration of ICT into teaching and learning are primarily focused on professional development rather than personal growth (Brzycki & Dudt, 2005; Leh, 2005). Many instructors are reluctant, or anxious, to integrate ICT into their teaching practice (Bitner & Bitner, 2002). In some cases, attention to the personal aspect of ICT integration is needed before professional development can take place (Mullen et al., 1999).

5.1.1.2.4 Coping with the Magnitude of Change

Statistics depicting the exponential growth of digital technologies reveal an ongoing transitional state, where knowledge is being constructed and re-constructed. The instructor and the student are no longer passive consumers of information pre-packaged in the form of a textbook. Positivist notions of 'truth', 'certainty', and 'right and wrong answers', are being replaced with understandings of multiple truths, and a lack of uncertainty. This is a convergence of postmodern thought and ecological understandings coinciding with the digital technology. It has never been so clear that the individual and the communal interests are not in opposition to each other, but need to work in concert.

5.1.2 Issues Specific to ICT

Information and communications technologies in education also had an identity issue. Most of the research literature on ICT in education referred to technology as a

'tool'. There was a time when a computer was seen as little more than an overlarge electric typewriter and adding machine. The evolution of technology to what is currently called 'Web 2.0' as not had a commensurate identity change in the mind of the average instructor. There is still a pervasive notion that it is up to individual instructors and/or departments to decide whether they will 'take it or leave it'. This ambivalence, as to the role of technology in education, is informed by administrative leadership (Dawson & Rakes, 2003; Finley & Hartman, 2004; "Teacher education at UBC: Creating a framework for change," 2007), organizational culture (Adamy & Heinecke, 2005; Hu, 2007), instructor ICT knowledge (Rakes, Fields, & Cox, 2006), instructor pedagogical knowledge (Becker & Ravitz, 1999; Pierson, 2001), instructor content knowledge (Mishra & Koehler, 2006), instructor teaching experience (Hughes, 2005; Judson, 2006), institutional support (Jacobsen & Lock, 2004; Leh, 2005), hardware, software and infrastructure access (Bauer & Kenton, 2005; Bitner & Bitner, 2002), teacher education program schedules (Brzycki & Dudt, 2005), student ICT knowledge (Debevec, Shih, & Kashyap, 2006), and lack of supportive research data (Bull et al., 2006; Kay, 2006).

5.1.2.1 Inevitable Change

Integrating ICT in education is not a simple matter. The hardware, software and infrastructure are unreliable in teaching contexts. Hardware, software, and infrastructure are subject to ongoing upgrades, there are often different versions of hardware and software in use at the same time. Using ICT for teaching needs to be subject to critical inquiry and theoretical discourse. Pedagogy and curriculum are in a state of transition from pre-digital to post-digital states. Instrumental skill acquisition is situated, skills acquired in one setting may or may not serve in another educational setting. There are ethical, moral and safety issues to be decided. Users need to become a part of a learning community for ICT knowledge building. Using ICT in educational contexts cannot be done in isolation.

5.1.2.2 Instructor Resistance

Learning to use ICT is not linear, nor particularly scaffolded through a sequence of accumulative knowledge building. In any given group of learners there is a wide range of skills and competence. If an entire class, including the instructor, put themselves on a line that had most confident and competent ICT users at one end, and least confident and competent ICT users at the other end, the entire group would be strung out along that line. In addition, user depth of ICT confidence and competence with one or two uses of ICT, does not mean they have ICT confidence and competence in all uses. The learning involved in using ICT in education is not only in regards to individual instrumental skill acquisition to bring everyone to the same level. It is also knowing specific skills needed to be applied in a specific learning context.

5.1.2.3 Teacher Education Program Schedules

The two year teacher education program schedule is a full schedule of lectures, seminars, labs, and school visits. For example, in the upcoming year, the 2 year elementary diversity cohort has 11 classes scheduled in term 1 - between 21 and 30 hours of contact time every week; in term 2 - 24 hours of contact time per week. This program schedule was designed before ICT use was a factor in the learning process. Students in these classes are expected to have all the learning skills necessary to succeed in the class. Similarly, instructors are not expected to integrate ICT into their course objectives, and no time has been allocated for development in this area.

5.1.2.3.1 Acquiring ICT Knowledge Within Existing Schedules

Research has shown a positive relationship between using ICT in situated learning contexts integrated across subject disciplines (Brown & Warschauer, 2006). The need to manage continual change, coupled with schedule constraints, learning styles and skills acquisition, suggest that multiple forms of support are needed to successfully negotiate administrative, faculty and student expectations from pre-ICT management structures to integrated ICT management structures.

5.1.3 Issues Specific to Mentoring Research

Efforts to develop a knowledge base relevant to mentorship in education have been haphazard (Healy & Welchert, 1990). Until the past 15 years few empirical studies existed concerning mentoring, most studies were anecdotal in nature, and uncritical (Hansman et al., 2002). There does not appear to be a development of significant theoretical concepts or models of mentoring (Colley, 2001). The ongoing definitional problem associated with mentoring poses serious difficulties because it calls into question the validity of research findings and limits our ability to clearly conceptualize the process of mentoring and the dimensions that underlie the process (Benishek et al., 2004). Research theory and methodology to investigate mentoring in education seemed to share similar characteristics and issues to educational research in general. Borrowing from Rourke (2006), one approach to the study of mentoring would be to understand the reality of its own social construction. The study would be explicitly aware of the sociological and other conditions that inform it. This research paradigm would use this awareness to its own advantage. It would utilize ways of understanding the constructed, debatable, and interpretable nature of knowledge as a means of investigating its own subject matter (Rourke & Friesen, 2006). An interpretivist and phronetic approach (Rourke & Friesen, 2006) to mentoring research may yield definitional mentoring data to support and inform mentoring practice in education.

5.1.3.1 Benchmarking Within Definitional Vagueness

The challenge for mentoring research is constructing a research practice that will yield data that can be correlated across disciplines and across purposes. Perhaps the solution does not lie in attempting to publish and distribute mentoring curricula (Kolodner, 2004). Perhaps part of the solution lies in proposing a set of principles and constructs for organizing aspects of mentoring. These would be flexible enough to allow diverse researchers to adapt them for their own purposes. A 'core of commonality' would be maintained that could be used to discover relationships, associations and points of discussion.

5.2 Mentoring Re-Visited

The context and conditions that formed traditional or conventional notions of mentoring will not work to support learning to use ICT in a teacher education program. This research has shown me that conceptions of mentoring can be expanded to work in situations experiencing evolving social formations. For the purposes of this thesis, I propose a conception of mentoring that is fluid, where understandings of mentoring act as a domain of knowledge to inform learning relationships.

5.2.1 Principles of Mentoring

I will use this concept of mentoring for the rest of this chapter: mentoring is a social phenomenon comprised of individuals sharing an intention to learn through critical inquiry, co-operation and collaboration. Construction of knowledge is undertaken for mutual benefit within a supportive emotional atmosphere. The mentoring relationship is committed to a practice of social justice, diversity and empathy. The mentoring relationship is not limited by time, it can be of short or long duration. Mentoring relationships are not limited by persons, places or purposes.

5.2.1.1 Theoretical Perspective

In the context of a teacher education program, for the purpose of building instructor ICT knowledge, this concept of mentoring is intended to be a practical, intellectual activity. This activity would be aimed at clarifying problems, looking for possibilities and creating innovative uses of ICT for teaching and learning. This mentoring approach would draw on ecological, cognitive and postmodern perspectives to open up possibilities for learning to take place, as unfettered as possible, by historical legacy.

The phenomena emerging from mentoring ICT use in teacher education defies simplistic analysis and cause-and-effect explanations (e.g. Bauer & Kenton, 2005; Bell, 2001; Brown & Warschauer, 2006; Hansman, Mott, Ellinger, & Talmage, 2002). Many variables interact with one another. Although outcomes are unpredictable, they do display a discernible pattern. At a critical point, 'emergence' (Weaver, 1948, as cited in Clarke &

Collins, 2007) can take place. In my opinion, emergence, in this situation, would be a transformative moment in understanding, a moment when participants see themselves empowered and proactive in relation to ICT.

Attempts to apply positivist epistemology to mentoring to produce a consensus of definition have not been successful (Benishek et al., 2004; Glassford & Salinitri, 2007; Jacobi, 1991). Research on ICT integration also showed a problem with clear descriptions, valid measures, and research focus (Bull, Bell, & Thompson, 2006; Kay, 2006). Teacher education programs are challenged to re-define themselves in relation to ICT integration (Brzycki & Dudt, 2005; Finley & Hartman, 2004; Leh, 2005). I believe a contextually complex approach (Krug, 2007) that does not seek a definitive answer, will yield useful results. Through an 'ecology of cognition' (Krug, 2006b), I believe instructive findings can be gleaned to inform mentoring practice.

5.2.1.1.1 Complexity

Complex unities inform mentoring relationships and mentoring activities. Mentoring relationships would not be limited to a dyad, although they may begin as a one to one encounter. Mentoring relationships could be comprised of co-mentors. Co-mentoring relationships could form amongst participants who want to build ICT literacy. These mentoring relationships could be self organizing and spontaneously emerging in response to changing contexts and conditions. Co-mentors would be dependent on one another as collaborators in learning activities, while at the same time autonomous and empowered to create and maintain multiple co-mentoring relationships. Co-mentors could spontaneously gather to engage in small group or large group learning activities, generated in response to extrinsic and/or intrinsic motivation to acquire ICT knowledge. Co-mentoring relationships could begin as short range, just-in-time, opportunistic alliances. The purpose of these alliances would be to solve problems, discover possibilities and create innovative ICT solutions to educational problems. Co-mentors respond to emerging conditions and opportunities. They would be adaptable to other formations of mentoring relationships, such as reverse mentoring and classroom

mentoring.

Mentoring would take place within scale free networks, between three spheres of complex phenomena: using ICT for teaching and learning, teacher education, and mentoring relationships. At any given moment, within the intersection of these three spheres, new contexts and conditions could emerge arise spontaneously that give rise to new patterns of activities and rules of behaviour. Mentoring would be ambiguously bounded. The mentoring relationship, although founded on guiding principles (Hargreaves & Fullan, 2000; McDonald & Castleton, 2001) that inform a code of conduct, would not be pre-determined as to time, breadth, or depth of activity. The participants would be responsible for the quality of their mentoring experience and the level of professional and personal involvement they want to experience. The internal organizations of mentoring, ICT use and teacher education would endure, even as they, in a sense, call each other into being. For example, the mentoring relationships would not be called into being without the need to integrate ICT into teaching and learning in a teacher education program. The use of ICT in teaching and learning would be greatly facilitated by mentoring relationships that can form within a teacher education program. The teacher education program would be supported by mentoring, so that it can integrate ICT into teaching and learning. Each of these three 'bodies' would exist independent of each other, but they would also exist in relationship to each other.

Mentoring could change its own structure to adapt to changing contexts (Healy & Welchert, 1990): classrooms, online digital learning environments, online communication environments, one to one face to face encounters, small group activities, and large group activities, and changing conditions: hardware, software, infrastructure resources, learner skill levels, and instructional strategies. At the same time, it would be operating within two adapting systems: teacher education program directives, schedules, instructors, teacher candidates; and ICT systems, personnel, administrative initiatives and resource availability (in some cases, without notice).

Based on my experience, mentoring ICT for teaching and learning in a teacher education program would take place within intersecting systems out of balance within

themselves and each other. For example, time is a significant de-stabilizing factor (Irwin, 2007). There is a finite amount of time within which all the learning and tasks of the teacher education program must be accomplished. External interests, such as, government, governing bodies, school districts, individual schools, and community; and unforeseen developments, such as, demographics, politics, and educational research; impact program policy, design, direction and purpose. The amount of time available does not change, but the imperatives of what need to be accomplished, do.

5.2.1.1.2 The Social construction of Knowledge

Mentoring participants would understand knowledge is constructed by participants in the relationship, as individuals, within a pair, a small group, or a large group. When mentoring ICT in teacher education, there would be beliefs and values particular to the individual in regards to mentoring, ICT, and teacher education. At any given moment, the participants in the mentoring relationship would be engaged in discussing, understanding, affirming or revising these beliefs and values in light of new experiences arising from the mentoring relationship.

5.2.1.1.3 Dialogic Theory

Dialogic mentoring would be a core relational practice in this concept of mentoring. The intention would be to create a learning organization. Participants would be engaged in continual self renewal through learning. Change would become routine rather than an outcome or end state (Marshall, Mobley, & Calvert, 1995, as cited in Bokeno & Gantt, 2000). Social interaction would build dialogic competencies (Bouwen & Frye, 1991, as cited in Bokeno & Gantt, 2000). Learning would not only be an explicit formal knowledge sharing. Learning would also be about learning to behave as a member of a community of learners and innovators (Brown & Duguid, 1991, cited in Bokeno & Gantt, 2000).

Guiding principles for successful social interaction would include: 1) equitable and empathetic behavioural transactions; 2) outward looking and reflective transactions; 3)

transactions flow over time and through the experience of many views and voices; and 4) transactions allow genuine inquiry and exploration (McDonald & Castleton, 2001). Rules and principles for dialogic mentoring would include: 1) a genuine concern for the other person in the interaction; 2) ability and willingness to engage in individual and collective reflection; and 3) authenticity in speaking about one's thoughts, ideas, and assumptions (McDonald & Castleton, 2001).

5.2.1.2 Values

Values identification would be part of constructing a mentoring relationship (Jacobi, 1991). An important part of building the mentoring relationship would be that participant interests and values would be understood and respected. Part of the process of engaging in the mentoring relationship would be understanding that beliefs and values can change in light of new information and new experiences (Healy & Welchert, 1990). Reflection on how values and beliefs remain intact or are changed is a central activity of the dialogic process (Koschmann, 1999).

5.2.1.2.1 Paradigm of Continuous Learning

Participants in this mentoring relationship would be engaged in a process of continuous learning (Darwin & Dymock, 2000, cited in (Hansman, Mott, Ellinger, & Talmage, 2002). There would no end point, no conclusion to the process (Roberts, 2000). I suggest part of the learning would be becoming comfortable with cycles of transition and stability (Finley & Hartman, 2004). Meaning or value would not be attached to either state. Mistakes would be valued as teachable moments (Nelson & Harper, 2006). Errors or a lack of success would be seen as desired outcomes, rather than something to be avoided.

5.2.1.2.2 Mentoring for Uncertainty

Unexpected situations would arise when using ICT in teaching and learning situations. The use of ICT would call for an improvisational attitude that can

accommodate equipment failure, software glitches, network overload, and lost files. This mentoring approach would not be designed to create ICT 'experts' in the conventional sense of mastery. Rather, this mentoring approach would develop adaptable participants who experiment and innovate with ICT. Debriefing activity would be part of the process so that all mentoring participants could benefit from the learning (Siebert, Clark, Kilbridge, & Peterson, 2006).

5.2.1.2.3 Equal Mentoring Relationships

Using this mentoring approach, every participant would have a valuable contribution to make to the relationship (Mullen, Whatley, & Kealy, 1999). Instead of viewing the relationship in terms of power differentials, the mentoring relationship would be viewed as a combination of strengths aligned to facilitate the growth and development of all participants. Wherein any one participant had an advantage in a particular field of endeavor, that would be seen as a benefit to all participants in the mentoring relationship, a strength the mentoring participants could draw on and learn from (Mullen et al., 1999).

5.2.1.2.4 A Collective Purpose

Participants using this conceptual approach to mentoring would share a common purpose to create mutual benefits through mutual growth (Salinitri, 2005, cited in Glassford & Salinitri, 2007). Development and accomplishment would be seen as beneficial for both the participants in the mentoring relationship, and for the good of the organization they are operating within (Adamy & Heinecke, 2005). The mentoring relationship would be a locus for learning and adaptation. Mentoring activities would impact peripheral relationships through professional contacts (Margerum-Leys & Marx, 2004). The mentoring relationships would become a source of institutional resilience and support for responding to ongoing institutional adaptation to changing conditions (Mullen et al., 1999). Based on my experience in the Seeds Project, the strengths found in the mentoring relationships would become a consistent touchstone for building confidence. In this conceptual approach to mentoring, rather than forming attachments to institutional

identities or locations, participants would form social attachments that provide stability when inevitable changes occurs.

5.2.1.2.5 Fostering Learning Networks

As participants in this mentoring approach build confidence and competence in their use of ICT, there might be a consequent impulse to expand the learning to include more colleagues. It is possible that each new individual that became a participant in a mentoring relationship would bring their valued contribution, and their valued willingness to learn (Kochan & Trimble, 2000). In this mentoring approach the sum of the participants efforts would amount to more than could be achieved in isolation, for the benefit of both the organization and the individuals.

5.2.1.3 Mentoring Attributes

Two attributes could inform this mentoring approach but would not be intended to define it. First, the mentoring relationship would be a relationship formed for the mutual benefit of the participants (Kochan & Trimble, 2000; Mullen et al., 1999). Second, learning would be a central activity of the relationship (Margerum-Leys & Marx, 2004; McDonald & Castleton, 2001). It would be expected that the formation of mentoring attributes would be informed by the context within which the mentoring is taking place (Krug, Echols, Winston, Craig, & Yamamoto, 2005).

5.2.1.3.1 A Process Form

This concept of mentoring constructs the relationship within a process form (Roberts, 2000). The relationship would not be designed to produce a specific outcome, although it may have goals and objectives that inform the kinds of activities that take place within the relationship (Krug, 2005). It would be an experiential process, where risk-taking (stepping out of one's comfort zone) and unproven theories could be explored (M. Cobb et al., 2006). There can be an assessment and evaluation component (Batt & Katz, 2004; Krug, 2005). Assessment and evaluation would not be used as a mechanism

for exclusion, but rather as another instrument for reflection (Tierney, 2007).

5.2.1.3.2 An Active Practice

Engaging in this mentoring relationship would be an active practice for both participants (Bierema & Merriam, 2002; Law, 2001). There would be a commitment to engage, to invest time and energy into both the mentoring relationship and the activities arising from the dialogic process (Kochan & Trimble, 2000). Practice would imply a discipline, a form of ambition to make progress as a learner, and as a contributor to the relationship (Jacobi, 1991).

5.2.1.3.3 A Learning Process

All participants in this mentoring approach would be committed to learning (Hansman et al., 2002). Learning would take place through dialogic processes (McDonald & Castleton, 2001), through reflective processes (Bokeno & Bokeno, 1998, cited in McDonald & Castleton, 2001) through planning, actions, and evaluations (Hopkins-Thompson, 2000). A secondary purpose of the relationship would be to learn to learn (Koschmann, 1999), and auxiliary to that would be a purpose to facilitate learning in others (McDonald & Castleton, 2001).

5.2.1.3.4 A Formalized Relationship

This mentoring approach would take place within a formalized, institutional context. This would break down the entropic force of homophily (McPherson, Smith-Lovin & Cook, 2001, cited in Hildreth & Kimble, 2004). It would create opportunities to experience diverse productive relationships (Benishek, Bieschke, Park, & Slattery, 2004). Relational bonds could form that would not have otherwise occurred (Colley, 2003). As such, this mentoring approach would not be expected to mimic the qualities of a self selecting informal mentoring relationship (Colley, 2003). There would be institutional constraints around the formation and implementation of relationships (Viator, 1999, cited in (Hansman, Mott, Ellinger, & Talmage, 2002). There would be a

mechanism to end the relationship without incurring undue stress or hardship (Benishek et al., 2004). In fact, it is possible the ending of a mentoring relationship would be present another learning opportunity. Relational transitions are inevitable in continuous change (Brzycki & Dudt, 2005).

5.2.1.3.5 A Reflective Engagement

Reflective engagement would be enacted in this mentoring approach at three levels: 1) the individual participant engages in their own reflective practice to process and connect learning to prior experience and emergent needs; 2) mentoring participants engage in debriefing activities that allow them to articulate their experiences to one another and discover what new associations and meanings arise from that process; and 3) at an institutional level, mentoring participants share their experiences and learning through presentation, performance and teaching activities (Healy & Welchert, 1990; Kochan & Trimble, 2000; Margerum-Leys & Marx, 2004; McDonald & Castleton, 2001). Through these three levels of reflection, the individuals, the mentoring relationships and the organization would be engaging in a continuous process of renewal and growth.

5.2.1.3.6 A Supportive Attitude

In states of continuous change, familiar routines are disrupted and can be stressful. This is particularly true when there isn't a lot of time to adjust to upcoming changes. This approach to mentoring proposes to be a supportive relationship, a potential source of stability within rapidly changing environments (Mullen et al., 1999). At the same time, this support could take the form of continuous learning, so that changes in the institution would create opportunities for learning and adaptation. Participants in the mentoring relationship would agree to engage in a supportive attitude, both amongst each participant in the mentoring relationship, but also of the mentoring relationship itself (Bierema & Merriam, 2002). In this way, the participants in the mentoring relationship would become responsible for the life of the relationship. Participants, in turn, would benefit from the

active support of the mentoring relationship as they negotiate change (Bitner & Bitner, 2002).

5.2.1.3.7 A Re-culturing Purpose

Participants in this mentoring relationship would be participating in an innovation process (Finley & Hartman, 2004). It seems logical to conclude that these active learners would contribute new knowledge to the organization (Hargreaves & Fullan, 2000). This would result in a re-culturing process for the participants and the organization (Healy & Welchert, 1990). Participants would be undergoing their own, voluntary learning and growth (Leh, 2005). In accordance with development-contextual theory organization (Healy & Welchert, 1990), the institution would also undergo a re-culturing process as participants brought their learning back to the institution (Bokeno & Gantt, 2000). In this way, the institution and the individual become learning partners (Finley & Hartman, 2004).

5.2.1.3.8 A Research Process

Research implies investigation, inquiry, experimentation and discovery. Curiosity, questioning, searching, are all part of a research process. This approach to mentoring could be a research process (Krug, 2006; Krug et al., 2005). The participants in the relationship would take on the challenge of specific learning and critical engagement through their investigations (Bull, Bell, & Thompson, 2006; Krug, 2006; Law, 2001).

5.2.1.4 Mentoring Approaches

The traditional, conventional notion of mentoring was a dyad, a relationship between two people based on a power differential. This mentoring approach need not be the only concept of mentoring to serve the purposes of professional development. A number of mentoring concepts were reported in the literature: service learning, reverse mentoring, dialogic mentoring, co-mentoring, multi-cultural feminist mentoring, community mentoring, engagement mentoring, to name a few. Mentoring relationships

could be formed in one to one relationships, one to a few relationships, one to many relationships, many to many relationships, and digitally mediated relationships. By analyzing my mentoring experience in the Seeds Project, I was able to see mentoring could serve as a progressive approach to building learning relationships. These alternate forms of mentoring seemed particularly suited to support learning ICT literacy (Becker & Ravitz, 1999; Bierema & Merriam, 2002; Bull et al., 2006; Leh, 2005; Margerum-Leys & Marx, 2004).

5.2.1.4.1 Relationship Constructs

The conceptual approach to mentoring takes into account that the needs of the participants will change over time (Benishek et al., 2004) (Moss et al., 1999). The participants would be free to reform the description of their mentoring relationship as new priorities and learning opportunities emerged. The next sections are intended to provide ideas for constructing mentoring relationships responsive to the contexts and conditions of using ICT in a teacher education program. While it has been said it is important to provide enough time for mentoring relationships to develop authentic connections (Leh, 2005), it also appears to be important to ensure multiple mentoring relationships can be formed. Wide mentoring networks can protect participants from the formation of mentoring cliques or exclusive, possessive relationships (Benishek et al., 2004).

5.2.1.4.1.1 Service Mentoring

Service mentoring could address the issue of instructor ICT knowledge needs. A program could be arranged to match technology studies graduate research assistants with instructors to provide one to one, small group and larger group ICT knowledge building activities. These mentoring relationships could provide multiple situations for developing ICT knowledge. A discussion process could support the development of philosophical perspective for using ICT. Similarly, a working groups could build pedagogical knowledge of integrated ICT lessons. Inquiry collectives could explore curriculum design

of ICT infused learning activities. Instrumental ICT skill building could be seen as an integrated aspect of the mentoring relationship. Through these activities, a consequent understanding of the mechanistic environment of hardware, software and infrastructure would be essential to instructor competence and confidence.

5.2.1.4.1.1.1 Teacher Candidates

Service mentoring could support teacher candidates and their needs to use ICT to meet the requirements for graduation and certification. It cannot be assumed that teacher candidates will have the necessary theoretical and practical ICT knowledge to produce both integrated ICT instructional materials and an e-portfolio. At present the instructors do not have enough ICT knowledge to model ICT use (Bauer & Kenton, 2005). Both the teacher candidates and the instructors need support to learn to use ICT through collaboration and building communities of practice. A service mentoring program could provide the catalyst to facilitate these formations (Krug, 2006).

5.2.1.4.1.2 Reverse Mentoring

Research has shown that administrative leaders' ICT knowledge was central to successfully supporting the infusion of ICT into teacher education and teacher practice (Adams & Heinecke, 2005; C. Dawson & Rakes, 2003; Finley & Hartman, 2004). Administrative leaders need to be familiar with the theoretical and practical aspects of ICT use. A technology studies graduate assistant could reverse mentor administrative leaders to build their ICT knowledge. In exchange, the technology studies graduate assistant would have the opportunity to learn about ICT use from an administrative perspective.

5.2.1.4.1.2.1 First Year Teachers

Another reverse mentoring relationship could be formed between teacher candidates and their sponsor teachers during their practicum first year of teaching. By mentoring their sponsor teacher's ICT use, the teacher candidate could develop his or her

own teaching skills while building ICT knowledge. At the same time, the teacher candidate would be able to learn pedagogic, and pedagogic content knowledge from the sponsor teacher. The teacher candidate would be able to synthesize pedagogic knowledge with their ICT knowledge. The sponsor teacher would have the opportunity to improve their theoretical and practical ICT knowledge, while becoming more familiar with the ICT hardware, software and infrastructure available in their school.

5.2.1.4.1.2.2 Graduate Student Assistants

Graduate student assistants could also be reverse mentored by the teacher candidates, who would bring them into contact with new ICT practices going on in the personal lives of young people. The teacher candidate, while mentoring the graduate student assistant, would have the opportunity to place their ICT knowledge into the context of their teaching practice, and discover what personal ICT activities might be transportable into their classrooms.

5.2.1.4.1.3 Situated Mentoring

Problems arising in specific educational contexts need solutions that respond to teacher, student, administrative, political, parent and government interests (P. Cobb, McClain, Lamberg, & Dean, 2003). Situated mentoring would provide the support of having a mentor join the teacher, instructor or teacher candidate in the classroom as they implement an ICT infused lesson activity. This approach would provide immediate support to solve inevitable problems that arise when using ICT to teach and learn. It would provide an opportunity for the mentor to be observed improvising in the local environment. It would give the instructor, teacher candidate or sponsor teacher a chance to reform their own identity as teachers in relation to ICT (Becker & Ravitz, 1999). They would be able to see the entire class as a collaborating, supportive learning group committed to helping each other solve problems. It would build a resilient learning group able to maintain focus on content learning when unexpected ICT incidents occur.

5.2.1.4.1.4 Co-Mentoring

Mentoring could foster co-mentoring relationships amongst instructors, teacher candidates and graduate student assistants. Co-mentoring relationships could provide a social network not delineated by position or title. Co-mentoring participants would be free to ask questions, seek advice, problem solve and co-create. They would be free to discuss the philosophical implications of integrating ICT into teaching practice. They would be able to have a supportive relationship for those difficult conversations about what it means to address ICT in their teaching practice. In co-mentoring relationships, all participants would be able to openly share their ideas, their anxieties, their frustrations, their successes and their challenges in using ICT. Participants would be able to know there was at least one, if not more than one, person they can talk to about ICT knowledge, teaching practice, learning, and the politics of their specific situation.

5.2.1.4.1.5 Multicultural Feminist Mentoring

Social justice is an important aspect of ICT literacy in education. The use of ICT in educational practice makes information accessible in ways that were previously unavailable in the classroom (Jenkins, Clinton, Purushotma, Robinson, & Weigel, 2006). When instructors have a variety of means to represent content knowledge, learners have more opportunities to engage with learning and acquiring knowledge. In teacher education, teacher candidates from diverse backgrounds have more opportunities to 'keep up' with their colleagues.

My interest in social justice extends to mentoring relationships as well. In this conceptual approach to mentoring each participant in the mentoring relationship has a history, culture and worldview that is worthy of respect and consideration. This mentoring approach would not assume everyone has the same understandings of what is 'normal' or 'routine' (Berger & Luckman, 1966). It does not assume everyone has the same aptitudes, interests or propensities. This mentoring approach is interested in what strengths can be discovered and fostered through difference. It does not expect everyone

to be the same, or to adopt a cloak of sameness in order to fit in (Semeniuk & Worrall, 2000).

5.2.1.4.1.6 Discovery Mentoring

My idea of discovery mentoring was informed by my experience of discovery learning with an instructor. In this mentoring relationship there would be no expert, no one who has the answers. There would be a shared purpose in discovering what was possible and an attitude of curiosity to engage in learning pursuits. With this attitude, there would not be an expectation of success or failure. Rather, there would an expectation of learning, through trial and error, research, investigation and inquiry (Bitner & Bitner, 2002).

5.2.1.4.1.7 Educative Mentoring

Educative mentoring would foreground a commitment to educational processes as a central activity of the mentoring relationship. In this relationship learning takes precedence over professional or personal development. These mentoring activities can take place within ICT environments, ICT activities, discussions, sharing writing, commenting on each other's blogs, reading and discussing important texts. The focus of the relationship is learning.

5.2.1.4.1.8 Mentoring Networks

It only makes sense that a mentoring program whose purpose was to support the integration of ICT would use ICT resources to strengthen relationship bonds and embed learning in the communication activities. In this conceptual approach, as part of mentoring activity, various ICT resources would be explored and used for problem solving, course management, and multiple learning purposes. A short list of ICT resources that could be used as part of the learning process could be: email, website development, blog development, social software environments, wikis, moodle, drupal, podcast, and videocast.

The mentoring network would also include learning to use online information resources for solving ICT related problems, and building networks of like-minded educators to share ideas and build ICT infused lessons and activities. The mentoring network could also provide a resource for troubleshooting uses of ICT specific to educational contexts, with others who understand the complexity of classroom teaching and ways to mitigate common problems.

5.2.1.4.2 Participant Matching

I would suggest formal, institutionally supported mentoring relationships need a participant matching strategy that ensures all participants feel safe, valued and respected. Three participant matching strategies are suggested here.

5.2.1.4.2.1 Strategic Assignment

A strategic assignment strategy would be one that is arranged by the institution. The value of this strategy is that it creates the opportunity for people to work together that would not otherwise think of working together. The institution may have an interest in connecting participants from the same disciplines, different disciplines, across departments, or even across faculties. These relationship could also create intentional crossings of socio-economic backgrounds, race/ethnicity, sexual orientation, dis/ability. It would be important that the institution ensure participants understand the terms of the mentoring relationship. The institution would also support participants at transitional moments in the relationship.

5.2.1.4.2.2 Strategic Chance Assignment

A strategic chance assignment would be a formal institutionally sponsored mentoring relationship that used a chance operation to match participants in a mentoring relationship. This strategy could be useful for opening up possibilities for new learning to emerge from unexpected sources. The chance operation, in and of itself, encourages an attitude of adventure, a willingness to take chances, and puts both participants on the

same, slightly disoriented footing. This can be fun.

5.2.1.4.2.3 Self-Selection

Self-selection can be used as an institutionally sponsored strategy so that participants who find themselves in similar situations with similar concerns can work with someone who shares their situation. Institutionally supporting self-selected mentoring relationships would protect participants from issues of peer jealousy, rumor and innuendo.

5.2.1.4.3 Roles and Responsibilities

Successful mentoring programs need active support from the institution.

5.2.1.4.3.1 Institution Initiatives

Mentoring can work both as an institutional initiative and as a grassroots, bottom up emergent phenomenon. As an institutional initiative, it is important for administrative personnel to show leadership and commitment to mentoring as a mechanism for learning. Modeling from persons in leadership positions would include participating in mentoring relationships and supporting others to do the same.

5.2.1.4.3.2 Participants

Participants are responsible for understanding the conceptual frameworks that guide the mentoring relationship. Participants are also responsible for proactively engaging in the mentoring relationship.

5.3 Concluding Comments

Mentoring programs need fluid definitions capable of responding to contextual complexity and culture with clearly articulated key concepts. Participants need to be informed of the conceptual frameworks that support the mentoring relationships as part of their orientation to the mentoring program. Social justice and diversity need to be

considered in the design of a mentoring program. There are many different ways to construct a mentoring program. The institution must be clear on the purpose of the mentoring program and ensure mentoring is an appropriate activity to serve that purpose. Visible institutional support for a mentoring program is critical to success. Participants in a mentoring program are motivated by extrinsic and intrinsic factors. Traditional conceptions of informal mentoring relationships cannot be easily transferred into formal mentoring relationships. The element of caring is a central feature of a mentoring relationship. A mentoring relationship is a learning relationship that is capable of undertaking complex learning activities that involve theoretical and practical discourse.

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Appendix

Seeds Project Exit Interview

Instructor Name:

Date:

1. Describe your teaching philosophy in the context of the course you taught in the two year elementary program.
2. Describe how you facilitate this philosophy through your own teaching practices with your teacher education students.
3. Describe how ICT helps or hinders your ability to teach based on your philosophy.
4. Describe how you used ICT in your course this year?
5. Would you like to continue with the Seeds Project next year?
6. If yes, have you asked to continue with your area coordinator?
7. If yes, suggest how you would modify one or two course objectives to include the use of ICT.
8. Describe what you perceive to be the strengths of the Seeds Project.
9. Please suggest ways to improve the Seeds Project.

We would like to use your statement for the purpose of filing a report with the Faculty of Education and in possible research publications. Your identity will not be disclosed unless authorized by you.

Signature / Print Name / Date