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Reflective learning cycle of new teachers who are teaching ESL via desktop videoconferencing

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The reflective learning cycle of new teachers who are teaching ESL via desktop
videoconferencing

A thesis submitted in partial fulfilment
of the requirements for the degree of Master of Education
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ABSTRACT

The purpose of the thesis research was to understand and describe new teachers' experiences teaching English as a Second Language (ESL) via desktop videoconferencing (DVC) by applying a conceptual model of the reflective learning cycle based on the work of David Kolb (1984) and Donald Schön (1983, 1987). This model consists of four sequential stages: concrete experience/reflection in action; observation and reflection/reflection on action 1; forming abstract concepts/reflection in action 2; testing in new situations/reflection in action. I used interviews, field notes, journal entries, and videotapes to collect data about the experience of five teachers who volunteered to teach ESL conversation lessons via DVC. Results suggested that the teachers could reflect on their ESL interaction only after they accepted and adapted to technical problems with DVC. Results also suggested that teachers' reflection evolved from being self-centred to student-centred. I then adapted the conceptual model of the reflective cycle to better represent how teachers implement reflective learning in the combined ESL and DVC environment. Theoretical and practical implications are discussed.

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CHAPTER ONE:
INTRODUCTION

The thesis research was undertaken to generate knowledge about teachers' learning experiences for use in teacher education. It is an exploratory, descriptive study that examined the reflective learning cycle of new teachers teaching English as a second language (ESL) using desktop videoconferencing (DVC). The research is both timely and relevant because of the socio-political phenomenon of globalization.

Situating the study in its socio-political context of globalization

Held and McGrew (2000) define globalization as "...the expanding scale, growing magnitude, speeding up and deepening impact of interregional flows and patterns of social interaction. It refers to a shift or transformation in the scale of human social interaction that links distant communities and expands the reach of power relations across the world's regions and continents" (p. 4). According to Suarez-Orozco (2001), globalization is characterized by the growth of new information and communication technologies, the emergence of global markets and post-national knowledge intensive economies, and unprecedented levels of immigration and displacement. Teaching ESL via DVC is directly related to the central features of globalization because it involves the international exchange of knowledge using technology.

English has been referred to as a "global language" (Crystal, 1997; Sonntag, 2003). A language is considered global when many countries adopt it worldwide and give it a pivotal commercial and bureaucratic role within their communities (Crystal, 1997). A language also achieves global status when it is made a priority in foreign language teaching. English is the principal second language taught in more than 100 countries;

these countries aim to equip their citizens to participate competitively in the global market (Crystal, 1997). As such, English is recognised as part of the cause, the process, and the product of globalization (Sonntag, 2003).

There are several limitations to the traditional method of delivering ESL instruction in foreign countries. Traditionally, ESL has been taught face-to-face. The demand for English language instruction worldwide, however, exceeds the quantity of qualified teachers willing to relocate to teach in foreign countries. Relocation stress and acculturation problems are two reasons countries often experience problems recruiting and retaining native English speaking teachers. Moreover, the cost of relocating teachers is often prohibitive for small poor countries (Ling, 2001). As a result, many foreign students learn English from teachers whose knowledge of the language is poor (Crystal, 1997).

The increasing sophistication of distance learning technologies makes possible an alternative and more affordable delivery modality for teaching ESL. Technologies such as DVC can connect language learners and teachers across vast distances and permit face-to-face interaction, sometimes at very little cost. The enormous potential that communication technologies offer for revenue generation in language education also creates attractive economic opportunities for Anglophone countries. If technologies such as DVC, however, are to be used to deliver ESL instruction, teachers must be prepared to teach using this modality. The knowledge generated from the thesis research will further understanding of new teachers' experiences of teaching ESL via DVC.

Situating the study in the context of teacher education

Research across disciplines has established reflective learning as an effective

means of improving professional practice. Educational researchers, in particular, have examined extensively the potential of reflection as a learning tool in teacher education. As a result, fostering reflection in teacher candidates has become an important learning feature of practicum experiences in many teacher education programs (Wubbels & Korthagen, 1990; LaBoskey, 1993). The thesis study simulated a practicum using DVC for ESL instruction to explore the reflective learning cycle of new teachers teaching in the combined ESL/DVC environment. What is known about teachers' reflective learning cycles is extended into a previously unexamined environment, and has implications for teacher education.

Personal motivation

My work experience formed the foundation for my research interest. In 2002-2003, I worked as a foreign language assistant, teaching English in France in three primary schools. As part of a general reform for the teaching of foreign languages, France recruits language assistants of various nationalities to teach their native tongue to French students at the primary, secondary, and post-secondary levels. Teachers in France, especially at the primary level, do not have the English language skills to teach English to their students.

The Foreign Language Assistant Program has been successful; France recruits more and more assistants every year. While the goal of the program is to teach a variety of languages, English is the most common; 80 percent of French primary school students and approximately 93 percent of French secondary school students choose to study English (Hélot, 2003). In 2004-2005, France recruited a total of 3,658 English language

assistants: 1,295 at the primary level, 2,220 at the secondary level, and 143 at the post-secondary level (A. Fontaine, personal communication, September 28, 2004).

Despite the success of the program, implementing ESL instruction in France has been challenging. French recruiters have been unable to attract a sufficient number of language assistants from North America and the United Kingdom (Hélot, 2003; Wright & Whitehead, 1998). And while those they do recruit tend to be university educated, most do not have formal teacher training. Consequently, it is possible that the quality of ESL instruction has suffered. Considering the problems, I began to think about alternative ways to provide ESL instruction, including the use of computer technologies such as DVC.

While there is a great deal of literature about the importance of reflective learning in teacher education and practice, few researchers have examined teacher reflection when using DVC as the teaching medium. None have studied how to prepare teachers to teach ESL via DVC. If DVC technology is to be used effectively, teachers must be prepared for the work. Understanding new teachers' experiences of reflective learning in a combined ESL/DVC environment contributes to knowledge and is important for teacher preparation.

Overall purpose of the study

The purpose of the research was twofold: to understand and describe new teachers' experiences teaching ESL via DVC using a conceptual model of reflective learning based on the work of David Kolb (1984) and Donald Schön (1983, 1987); and to adapt this conceptual model to better represent how teachers implement the reflective learning cycle in the combined ESL and DVC environment. No previous research could

be located that examined reflective learning in a teaching environment that combined ESL and DVC. Theoretical and practical implications of the results for teacher education are also examined.

The research question and definition of terms

The research question

The research question was: How can new teachers' experiences of teaching ESL via DVC be understood and described using a conceptual model of a reflective learning cycle based on the work of Kolb and Schön?

Definitions of key terms

New teachers: For the purpose of the research new teachers are Masters of Education (M.Ed.) students at Lakehead University who have completed the Bachelor of Education program but have no full-time teaching experience.

ESL (English as a second language): For the purpose of the research, ESL is teaching English as a second language through conversation.

Videoconferencing, desktop videoconferencing, and multipoint desktop

videoconferencing: The terms videoconferencing (VC), desktop videoconferencing (DVC), and multipoint desktop videoconferencing (MDVC) as used in the thesis refer to the use of Internet-based conferencing systems that run on computers and facilitate text, audio, and video-based communication (Cifuentes, Beller, Lamb & James, 1997; Jerram, 1995; Schooler, 1996; Smith, Anderson, Brazfield & Zsiray, 2001). There are some fundamental differences between the three systems. Traditional VC units are frequently large, fixed installations often found in university audio-visual units or technology centres. Wright and Cordeaux (1996) describe these units as "often very expensive and

not particularly user friendly or easily accessible” (p. 194). DVC, however, has minimal equipment demands: a personal computer, videoconferencing software, and a web camera. Moreover, sessions can typically be run via DVC at a much lower cost. MDVC systems have properties similar to those of DVC systems; however, they facilitate interaction among multiple locations. Although all three systems are mentioned in the literature review, it is DVC technology that is used in the thesis research.

Reflective learning: The definition chosen to guide the thesis research was developed by Boyd and Fales (1983): “Reflective learning is the process of internally examining and exploring an issue of concern, triggered by an experience, which creates and clarifies meaning in terms of self, and which results in a changed conceptual perspective” (p. 101).

Importance of the research

While some researchers have examined the use of educational technologies to promote reflection in teacher education (Cunningham, 2002; Harrington & Hathaway, 1994; Kenny, Colvert, Schilz, Vignola & Andrews, 1995; Staten, Korthagen & Veen, 1996; Van den Berg, 2001), little attention has been given to examining the reflective learning cycle of teachers engaging in DVC sessions. In fact, no research was located that described the reflective learning cycle of teachers teaching ESL via DVC. Thus, the thesis contributes to the literature by addressing a gap in knowledge about the reflective learning cycle of new teachers who are teaching in the combined ESL/DVC environment.

The research also has practical applications in teacher education. With distance education ever more prevalent, proficiency in teaching using distance education technologies has become a valuable skill for teachers (Cifuentes, 1997). DVC has become a more frequent medium for delivering distance education (Cifuentes, Beller,

Lamb & James, 1997; Johnson, 1996; Kies, Williges & Rosson, 1997), and its applications for teaching subjects such as ESL are expected to increase due to globalization (Crystal, 1997). As a result, the demand for teachers trained to use conferencing technology will increase. Teacher education that includes curriculum to prepare teacher candidates to teach via DVC is needed.

The thesis research generated knowledge about the experiences of new teachers who are learning to teach ESL via DVC. The study used concepts of reflective learning that are fundamental in teacher education to understand and describe new teachers' experiences teaching ESL via DVC. The findings of the study can thus enhance teacher education curriculum by extending the application of reflective learning concepts into a new environment that combines ESL and DVC.

Organisation of the thesis

The thesis study has a twofold purpose: to understand and describe new teachers' experiences teaching ESL via DVC using a conceptual model of reflective learning based on the work of David Kolb (1984) and Donald Schön (1983, 1987); and to adapt this conceptual model to better represent how teachers implement the reflective learning cycle in the combined ESL and DVC environment. The background and relevance of the study has been presented in Chapter 1, situating the research in the socio-political context of globalization, the context of teacher education, and my own personal experience. The importance of reflective learning in teacher education, and the potential for the thesis findings to contribute knowledge to teacher education has also been discussed.

The relevant literature and the conceptual framework for the study are reviewed in Chapter 2. The topics of reflective learning, the use of technology for promoting

reflection in teacher education, and the use of videoconferencing technology in an educational context are explored. The evolution of the use of educational technologies in the promotion of reflection is discussed, as well as the existing empirical literature on the use of VC, DVC, and MDVC in language and cross-cultural learning. Based on the review of the literature, the work of David Kolb (1984) and Donald Schön (1983, 1987) emerged as the most relevant to the thesis study. I combined their work to create a model of the reflective learning cycle that provides the conceptual framework for the research.

The research design and implementation is outlined in Chapter 3. The paradigm, methodology, and method used in the study are reviewed, including data collection and analysis, as well as the procedures used to ensure rigour. The findings and discussion of the research are presented in Chapter 4. I identify and discuss the results of the analysis as they relate to the conceptual framework of the thesis, and present one case study to demonstrate a teacher's reflective learning cycle. I then present and discuss an adapted conceptual framework of the reflective learning cycle for the combined ESL/DVC environment. The chapter concludes with a discussion of the practical implications of the findings for teacher education and language learning.

CHAPTER TWO:

RELEVANT LITERATURE AND CONCEPTUAL FRAMEWORK

Introduction

The purpose of this chapter is to synthesise relevant research in three main areas: reflective learning; the use of technology for promoting reflection in teacher education; and the use of videoconferencing technology for language learning, professional development, and cross-cultural learning. These three areas of literature informed the approach to the research; however, the literature on reflective learning is most germane since the concept of reflection provided the conceptual framework for the study.

Reflective learning

Ideas about reflection in learning have been frequently investigated in many practice disciplines over the last 30 years (e.g., education, nursing, and social work). Researchers who study how to prepare teachers for practice have worked with the concepts of reflection, reflective practice, and reflective learning (Bengetsson, 1995; Chiarelott & Klein, 1996; Greenwood, 1993; Langer & Colton, 1994; Wubbels & Korthagen, 1990; Zeichner & Liston, 1987). The concepts have proven useful in understanding teacher education (Bengetsson, 1995; LaBoskey, 1993).

There is no consensus in the literature that defines the concept of reflective learning (Atkins & Murphy, 1993; Bengetsson, 1995; LaBoskey, 1993; Wubbels & Korthagen, 1990). Different authors understand the term differently. Thus, researchers and readers must know exactly how the term is being defined before comparing studies (Atkins & Murphy, 1993). Some authors use the term reflection, while others use the terms reflective practice, reflective thinking, or reflective learning to refer to the process

of learning by reflecting on experience. Because these terms are all used in the literature with similar meanings, for purposes of the thesis, the term reflective learning is used to include the others.

Different uses of the term reflective learning can be attributed to three things: the use of varied conceptual frameworks to explain and understand it, its use by many disciplines with varied traditions, and its application in diverse contexts. However, Moon (1999) argues there is little evidence that varied use of the term lies in the process itself. Examples of definitions by key authors are found below.

- “Reflection in the context of learning is a generic term for those intellectual and affective activities in which individuals engage to explore their experiences in order to lead to new understandings and appreciations” (Boud, Keogh & Walker, 1985, p. 9).
- “Reflective learning is the process of internally examining an issue of concern, triggered by an experience, which creates and clarifies meaning in terms of self, and which results in a changed conceptual perspective” (Boyd & Fales, 1983, p. 101).
- Reflective thinking is: “Active, persistent, and careful consideration of any beliefs or supposed form of knowledge in the light of grounds that support it and the further conclusions to which it tends” (Dewey, 1933, p. 9).
- “Reflection seems to be seen as a basic mental process with either a purpose or an outcome or both, that is applied in situations where material is ill-structured or uncertain and where there is no obvious solution” (Moon, 1999, p. 10).

- Reflective practice is: “A cycle of paying deliberate attention to one’s own actions in relation to intentions...for the purpose of expanding one’s opinions and making decisions about improved ways of acting in the future, or in the midst of the action itself” (Kottamp, 1990, p. 182).

Although their ideas are consistent with the definitions presented above, neither Kolb (1984) nor Schön (1983, 1987) use the term reflective learning. Instead, Kolb (1984) refers to “experiential learning,” and defines learning as “the process whereby knowledge is created through the transformation of experience” (p. 38). Schön (1983) refers to his ideas of practice in terms of “reflection in action,” which he describes as: “Each practitioner treats his case as unique, he cannot deal with it by applying standard theories or techniques...he must construct an understanding of the situation as he finds it. And because he finds the situation problematic he must reframe it” (p. 129). While neither Kolb nor Schön offer a formal definition of reflective learning, the thesis adopted a definition consistent with their ideas.

Boud, Keogh, and Walker (1985) and Boyd and Fales (1983) offer definitions of reflective learning that demonstrate fundamental commonalities consistent with the ideas of Kolb (1984) and Schön (1983, 1987): “Both authors see the processes of reflection as involving the self, and the outcome of reflection as a changed conceptual perspective” (Atkins & Murphy, 1993, p. 1189). I chose Boyd and Fales’ (1983) definition because it is the more specific of the two. Their definition states that “Reflective learning is the process of internally examining an issue of concern, triggered by an experience, which creates and clarifies meaning in terms of self, and which results in a changed conceptual

perspective” (1983, p. 101). The ideas of Kolb and Schön are discussed in more detail later in this chapter.

Moon (1999) divides the literature on reflection into three general categories. The first includes philosophical and epistemological literature about the nature of reflection and how it occurs. John Dewey (1933) and Jürgen Habermas (1971) have been key authors in this area. The other two categories involve applying reflection in the contexts of experiential learning and professional development. David Kolb (1984) has written extensively on experiential learning, while Donald Schön (1983, 1987) dominates the literature on professional development. These four writers – Dewey, Habermas, Kolb, and Schön – provide the theoretical foundation for the body of research on reflection; many researchers and writers have built upon their work. Nearly every article about reflection reviewed for this thesis referred to at least one of these four authors.

The nature and process of reflection

Dewey (1933) and Habermas (1971) examine philosophical and epistemological issues of reflective learning. Dewey studied the nature of the reflection process, while Habermas considered the role of reflection in learning. Both sets of ideas are important for developing a definition of reflection, and therefore deserve attention.

John Dewey (1933)

Dewey (1933) studied the skills with which people manipulate knowledge or reprocess it towards a purpose. He links reflection to thinking, describing it as “the kind of thinking that consists in turning a subject over in the mind and giving it serious and consecutive consideration” (Dewey, 1933, p. 3). It is a goal-oriented thinking process

wherein the goal generates linked ideas that represent more than a stream of consciousness; the goal determines the thinking process.

For Dewey (1933), reflection serves to make sense of the world during the process of education. He identified a model that involves three stages: problem definition, means-ends analysis, and generalization (LaBoskey, 1993). Reflection is precipitated by a “felt difficulty” and concludes by testing ideas through action. Dewey argues the quality of reflection is influenced by a combination of skill and attitude. He also distinguishes reflection from intuition, claiming that intuition is psychological and indicates a formed habit rather than thoughtful judgment. However, he acknowledges that intuition may result from prior reflectivity and can, in practice, be useful (Yoong, 2003).

Jürgen Habermas (1971)

Habermas (1971) focused on understanding the knowledge that people have selected to adopt or have been motivated to generate. He refers to this as the “knowledge constitutive interests,” which he argues “guide and shape” human knowledge (Habermas, 1971). Motivated by a desire to understand and ultimately to gain control over the environment, people draw upon the methods of the empirical-analytical sciences and critical inquiry. Thus, knowledge constitutive interests become the basis for reflecting on the self, the human condition, and the self in the human context. Reflection becomes a tool in this process of learning. In other words, what people choose to examine is their framework for self-reflection and, ultimately, this guides their learning.

The ideas of Dewey (1933) and Habermas (1971) are foundational to the work of Kolb (1984) and Schön (1983, 1987), and other researchers of reflective learning. While Kolb and Schön were more applied in their interests, their ideas drew on this earlier

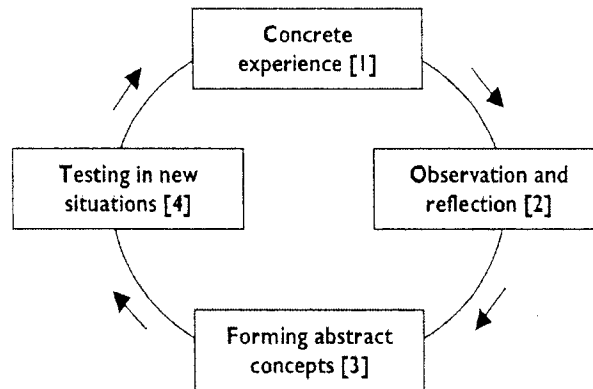
philosophical work in making assumptions about the process and nature of reflection (Moon, 1999). Essentially, they strove to understand the nature and process of reflection as it applied in different contexts: experiential learning and professional development.

Similar to the research of Kolb (1984) and Schön (1983, 1987), the thesis study focused on practice, and, specifically, on how new teachers learned to teach ESL via DVC. The research sought to understand and describe the process through which teachers, when placed in an unfamiliar teaching environment, adapted to the challenges of their situation. Both Kolb and Schön provide ideas that help to understand how practitioners learn to practice in unfamiliar situations, which I felt could be applied to help understand and describe how teachers adapt to teaching ESL via DVC. The study's conceptual framework incorporates the ideas of Kolb and Schön in a model of a reflective learning cycle. The remainder of this section of the literature review is devoted to their theories.

David Kolb (1984)

Kolb (1984) was the first author to develop a reflective learning model that was widely cited in the literature (see Figure 1). While Kolb speaks little about the process of reflection, his work is significant because it sets reflection in a context of learning. He describes reflection as the process by which concepts are developed from experience (Moon, 1999).

Figure 1: David Kolb's (1984) model of the experimental learning cycle



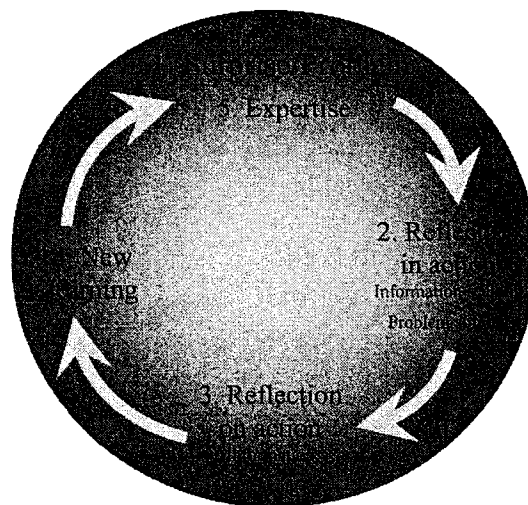
Kolb (1984) describes learning as a four-phase cycle. The first phase, “concrete experience,” represents how learners experience a situation in the moment. In the next phase, learners engage in “observation and reflection,” during which they begin to reflect on the situation from different perspectives. “Forming abstract concepts” represents the phase when learners develop generalizations that help transform their observations into sound theories or principles. In the final phase, “testing in new situations,” learners apply what they have learned to future experiences (Murrell & Claxton, 1987). Kolb’s model describes the process of learning as cyclical, creating a new form of experience on which to reflect and conceptualise at each phase of the cycle. The more learners reflect, the more they progress in their learning (Kolb, 1984).

Kolb (1984) applied the cycle to a wide range of situations, including those in which action and reflection occur around the same time (Moon, 1999). He implies that learners vary in their abilities to function in the different stages of the cycle, and may require different degrees of help to guide them through the stages. Their abilities determine how far they progress in the learning cycle and how successfully they internalize what they learn (Sugarman, 1985).

Donald Schön (1983, 1987)

Donald Schön's *The Reflective Practitioner: How professionals think in action* (1983) and *Educating the Reflective Practitioner* (1987) have inspired much work on the role of reflection in the professions (Atkins & Murphy, 1993; Boyd & Fales, 1983; Moon, 1999). Schön's model emphasises the context and time in which reflection takes place (Hu et al., 2001). He argues there are two main forms of reflection: reflection in action and reflection on action. Reflection in action refers to reflection that occurs immediately; reflection on action refers to reflection that takes place afterward. Like Kolb (1984), Schön describes the reflective process as cyclical; it uncovers new understandings of events, which in turn fuel further reflection. I developed Figure 2 to represent Schön's ideas about reflective learning.

Figure 2: Representation of Donald Schön's (1983, 1987) model



The first two stages of the model relate to reflection in action. According to Schön (1983, 1987), professionals respond through the activity of reflection in action when confronted by something unexpected or surprising. Reflection in action is “a restructuring of the relevant understanding, a reframing of the problem and the development of a new

way of performing” (Moon, 1999, p. 42). During this stage, past experiences are applied to the new situation. The learner re-examines the problem and reframes it based on the understanding of the situation developed in the first stage. Reframing involves looking at the situation in new ways; it gives rise to a new understanding of the problem and new possibilities for action in future situations (MacKinnon, 1987). Finally, the learner formulates a new conclusion about the problem, and often derives new implications (Schön, 1987).

The third and fourth stages of the model involve reflection on action. For Schön (1983, 1987), reflection on action occurs after the action. It can occur either privately or collaboratively with others (Sharpe et al., 2002) through, for example, keeping a journal, or discussing issues with a supervisor or co-worker. Reflection on action involves the learner looking back on the experience and building new understandings to inform future actions. This results in new learning, which is the last stage of Schön’s reflective learning cycle.

According to Schön (1987), the ideal method for promoting reflection in the professions is through practicum experience. Schön recommends that practicum experiences offer students the opportunity to explore their professional action in a risk-free environment. Ideally, experienced practitioners coach students to respond appropriately to varied situations so students begin to develop a capacity for engaging in reflection in action. This aspect of Schön’s thinking is particularly relevant to the thesis research as its subjects engaged in a practicum type experience teaching ESL via DVC.

While the work of Kolb (1984) and Schön (1983, 1987) has been widely embraced, it is not without criticism. Since the thesis draws heavily on their work, it is

important to discuss the criticisms and explain how the study attempted to address them. Although no literature located criticized Kolb's experiential learning cycle as used in the thesis, authors did criticize his conceptualisation of learning styles, as they are associated within the cycle. Kolb identified four learning styles that correspond with the cycle's four stages, which he calls divergers, assimilators, convergers, and accommodators (Murrell & Claxton, 1987). Because the conceptual model of reflective learning used in the thesis does not concern the learning styles identified by Kolb, I will not address these criticisms.

There are, however, four main criticisms of Schön's work. The first and most fundamental criticism is that Schön's (1983, 1987) ideas of reflective learning oversimplify a complex process with simple terms and dichotomies. The real world is less clearly defined. Sequences of events are not as predictable as they are presented to be; his concepts of reflection in action and reflection on action cannot account for all learning experiences (Moon, 1999). I acknowledge this criticism. However, concepts – by definition – simplify complex processes to help understand the relationship between theoretical ideas and empirical reality. The thesis employed Schön's concepts to help develop questions to understand and describe the reflective learning cycle of new teachers who teach ESL via DVC. His concepts were also used to help interpret the data; however, analysis was not limited to them. The use of Schön's concepts in the thesis research will be discussed further in the methodology chapter.

Schön's (1983, 1987) model has also been criticised for being unoriginal, given that it is heavily dependent on the work of Kolb (1984) (Moon, 1999). Acknowledging the overlap, I combined the work of Kolb and Schön to create a model that provides the conceptual framework for the research. This model will be discussed later in the chapter.

Critics also argue that Schön's (1983, 1987) model does not account for the influence of the ethical, social, and political context in which personal and professional development occurs (Moon, 1999). The thesis design helped mediate this shortfall in Schön's model by collecting data on the contextual factors that influenced the reflective learning cycle, such as participants' values, attitudes, and experience with technology. Schön's concepts were also adapted to better account for context by combining them with Kolb's work on experiential learning.

The final criticism of Schön is that his concepts, while intuitively logical, are challenging to operationalise, making research aimed at testing them difficult and inconclusive (Moon, 1999). In the thesis study, however, the purpose was not to test the concepts, but rather to use them in a conceptual framework to help understand and describe the reflective learning cycle of new teachers working in an unfamiliar environment. The concepts were treated as speculative and used to question the data; they were not presumed to be true. Because none of the literature reviewed for the thesis employed Schön's (1983, 1987) concepts to understand teaching ESL via DVC, the study contributes to knowledge on the subject.

Other models of reflective learning

There are similarities between the work of Kolb (1984) and Schön (1983, 1987) and other models of reflective learning located in the literature. For example, Korthagen and Kessels (1999) describe the ALACT model, named after its five stages: action, looking back, awareness of essential aspects, creating alternative methods of action, and trial. The fifth phase is the same as the first (action) phase of the next cycle; the model depicts an ongoing process of professional development.

Jaworski (1991) developed a descriptive model for the reflective cycle based on his work with teachers. The model identifies five stages: classroom event, reflecting, accounting for, critical analysis, and classroom change. According to Jaworski, reflecting on a classroom event leads a teacher to revisit and give an account of the event, examining questions of what and how. This leads to distancing, which is necessary to critically analyse the event. In Jaworski's model, critical analysis derives from an attempt to account for the event. This involves exploring reasons or motivations: the whys of the event. Critical analysis leads to more overt knowledge, which can affect choices and decisions in the classroom, leading to classroom change.

The above models have common properties that make them useful for studying reflection. First, while the authors identify the stages differently, they depict similar concepts. Some models have four stages; others combine two stages into one. Second, all models commence with an event that represents a surprise or problem as perceived by the learner. This event results in a changed perception of the situation, and ultimately ends with new learning. Third, all models incorporate reflection as an iterative cycle.

While it is important to acknowledge the existence of other models of reflective learning, I chose to use Kolb (1984) and Schön's (1983, 1987) concepts to guide the research analysis because their ideas complement one another; they can be integrated and used conjointly to understand the reflective learning of new teachers who teach ESL via DVC. Both Kolb and Schön describe reflective learning as an iterative cycle composed of stages that begin with a surprise or problem perceived by the learner and end with new learning. The conceptual framework used in the thesis will be discussed later in the chapter.

Reflective learning, teacher education, and professional development

The following section discusses two empirical studies that used the conceptual frameworks applied in the thesis research: Kolb's (1984) model of experiential learning and Schön's (1983, 1987) model of reflection in action. These studies provide examples of how the respective models can be used to understand the reflective process of pre-service teachers or practicing professionals. No studies were found that used both models in combination.

McGlenn (2003) applied Kolb's (1984) model to study the effectiveness of reflection for enhancing student teachers' self-awareness of their practice. Over four semesters, McGlenn observed student teachers, and studied their written reflections to see how their thinking evolved over the course of the semester. She developed a set of questions, based on Kolb's model, to guide the students through the reflective process. According to her findings, all students felt positive about the influence the cycle had on their development as teachers; students, however, operated at different levels in their ability to use the cycle. Based on her findings, McGlenn developed a set of guiding principles for using the reflective cycle in teacher education. She discussed the importance of allowing students to jot down impressions immediately after their lesson. These results influenced the methodological design of the thesis study; participants documented their reflections by completing journals immediately after each session. The journals used in the thesis research are discussed in Chapter 3.

MacKinnon (1987) also used Schön's (1984, 1987) concepts as a framework for the promotion of reflection in pre-service teachers. MacKinnon sought to determine the appropriateness of using Schön's conceptualisation of reflection in action to study how

teacher candidates made sense of their practicum experiences. To detect reflection in action, MacKinnon developed a clue structure, which consisted of a series of “look fors,” stated in the form of questions used by the researcher to identify the stages of reflection in action in the data. The data consisted of five lesson transcripts from different student teachers, as well as the transcripts of five discussions that took place between the students and their supervisors. MacKinnon illustrated the clue structure by providing examples of dialogue that demonstrated each of the stages.

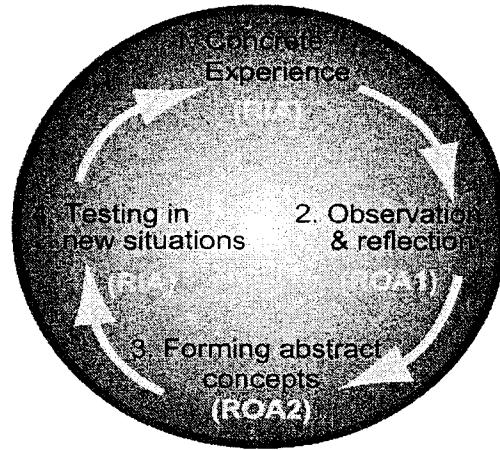
MacKinnon (1987) concluded that Schön’s (1983, 1987) model provided a useful way to interpret how student teachers made sense of their practicum experiences. He also concluded that the clue structure developed was faithful to Schön’s work and helpful for detecting reflection in pre-service teachers. The clue structure served as an example for the thesis research of how clues or a template for analysis can be used to detect reflective learning in teachers. The template for analysis developed for the thesis research is discussed in Chapter 2.

Conceptual framework

Both Kolb (1984) and Schön’s (1983, 1987) concepts of reflective learning are important to the thesis research. Both concepts describe reflective learning as cyclical in nature with stages that begin with a surprise or problem perceived by the learner, and end with new learning. Moreover, Kolb and Schön’s concepts complement one another and can be used together to understand the reflective learning cycle. Kolb’s model depicts four stages of the overall cycle of reflection, while Schön’s model adds a temporal dimension that includes reflecting at the immediate time, and reflecting back on experience. As a result, I drew on the work of both researchers to develop a conceptual

framework that integrates both Kolb and Schön's ideas. I developed Figure 3 to illustrate the integration of Kolb and Schön's concepts for purposes of the thesis research.

Figure 3: Kolb (1984) and Schön (1983, 1987): An integrated model



In the integrated model, Schön's (1983, 1987) reflection in action (RIA) and reflection on action (ROA 1 and 2) stages are linked to Kolb's (1984) model. Stage one – concrete experience – corresponds with reflection in action; they both represent the participants' experience in the here and now. They ask: what problems did they encounter and how did they solve them in the moment? During stage two – observation and reflection – the participants reflect on their experience for the first time, which corresponds with Schön's definition of reflection on action, and is categorised as ROA 1. During stage three – forming abstract concepts – participants look back and reflect again on their experience; this is categorised as ROA 2. The final stage, testing in new situations, occurs when participants refine and test teaching strategies they have been working on, creating a new form of experience in the here and now; this is an opportunity to stimulate reflection in action. This model served as the conceptual framework for the thesis study and guided the data analysis.

This section of the literature review provided background on the conceptual framework for the thesis study. A review of the relevant empirical studies follows.

The use of technology for promoting reflection in teacher education

Thanks to the work of researchers such as Kolb (1984) and Schön (1983, 1987), reflective learning has become recognised as a vital component of teacher education and professional development. Subsequent researchers have investigated ways to facilitate the development of reflection in student teachers (Clark, 1995; Hoover, 1994; Langer & Colton, 1994; MacKinnon, 1987; Russell, 1993; Zeichner & Liston, 1987); few, however, have investigated the use of technology to achieve this end. While the purpose of the thesis was not to examine DVC technology as a means to promote reflection, reviewing videotaped lessons was incorporated into the methodology to help participants reflect on their experience teaching ESL via DVC. Research findings thus included teachers' perceptions of DVC's potential in teacher training. Empirical studies that use technology to facilitate the development of reflection are discussed below.

Video assessment

One of the first technologies used to promote reflection in teacher candidates was the videotape. As early as the 1960s colleges and universities were using video equipment for teacher self-assessment (Biberstine, 1971). Self-assessment was considered fundamental for the development of competent and reflective teacher professionals (Biberstine, 1971; Bouas & Thompson, 2000; Jensen, 1994; McCurry, 2000; Sharpe et al., 2002). According to McCurry (2000), "video offers the reflective practitioner a tool to gather information about the self in authentic practical settings" (p. 7). Video technology's capability to pause, fast-forward, or rewind enables teacher

candidates to focus on specific teaching skills (Jensen, 1994). These qualities have made video technology “one of the most used technologies for improving teacher trainees’ instructional behavior” (Sharpe et al., 2002, p. 531).

Jensen (1994) illustrated the importance of self-assessment in a study that explored how video technology can be used to facilitate reflection in initial teacher preparation. Participants were asked to videotape three teaching episodes and to complete a written self-assessment evaluation form focusing on a different teaching skill immediately after reviewing each tape. Participants were also asked to fill out a pre-service teacher reflection and self-analysis survey designed to elicit perceptions of their overall teaching competencies over the course of the trials. Overall, students felt using video to examine particular aspects of their teaching helped them reflect on their strengths and weaknesses. Jensen (1994) concluded that self-assessment via video technology was an effective tool for teacher preparation.

Bouas and Thompson (2000) conducted a similar study that incorporated video self-assessment into students’ practicum experiences. The researchers collected data using reflective thinking protocols, structured interviews, questionnaires, and observation notes and checklists. The study aimed to determine which self-assessment strategies were most effective for eliciting student reflection. The researchers observed that writing proved a valuable tool for self-reflection, that teacher feedback was beneficial in the reflective process, and that self-assessment by videotape was a valued attribute of the program. The researchers also observed an increase in the confidence and comfort levels of the student teachers over the course of the study. Bouas and Thompson’s (2000) findings “affirm the value of having practicum students engage in reflective writing and

other self-assessment activities to challenge pre-service teachers to focus on teacher actions and student involvement” (p. 2).

Microteaching is another application of video technology that promotes self-assessment in pre-service teacher education (Sharpe et al., 2002). Microteaching is a method of practice teaching in which small video segments of a student’s teaching are recorded, watched, and then evaluated by the student, instructor, and peers (Biberstine, 1971; Kpanja, 2001; McCurry, 2000; Sharpe et al., 2002). Video playback allows students to engage in self-assessment, while discussions with supervisors and peers enhance students’ reflective learning. Researchers have studied this application of video technology for its effectiveness in promoting reflection in pre-service teachers’ practice (Sharpe et al., 2002).

For example, Kpanja (2001) conducted a quantitative study to determine how video playback could promote self-assessment in microteaching sessions. In the study, two groups of students used microteaching to practice various teaching strategies: one used video equipment to record and play back their teaching episode, and one simply engaged in reflective discussion with peers afterwards. Kpanja found the video group showed significant improvement over the control group in the mastery of teaching skills. Similarly, Struyk and McCoy (1993) found that “pre-service teachers can, based on the information provided by self-evaluation assessment instruments (video technology), reflect on what occurred, make decisions about why certain aspects of the activities were successful, why some failed, and what they could do differently” (p. 4). Self-assessment procedures using videotape were credited with providing pre-service teachers with specific information regarding their performance, allowing them to evaluate their

teaching as often as they desire, affording them a less threatening vehicle for evaluation than by a supervisor, and enabling them to observe growth (Struyk & McCoy, 1993).

In recent years additional studies have examined the use of digital video technology as a vehicle for reflection (Catalano, 2002; Cunningham, 2002). Cunningham (2002) explored the technology's potential for program-wide integration through preliminary trials. According to Cunningham, the strength of new digital video technology lies in its capacity for permitting student teachers to "collect, review and manipulate video to demonstrate their growth as a professional and as a reflective practitioner" (Cunningham, 2002, Introduction section, par. 1). The findings of initial trials demonstrated the technical advantages digital video has over traditional or analog videotaping methods, including faster data transfer and ease of use. Cunningham, however, also reported that while students spent a great deal of time reflecting on which video segments to select, they spent significantly less time reflecting on their performance. Thus, reflection did not increase based on technological advancement. Further trials will be run in an attempt to identify methods for improving the quality of students' reflection. Cunningham's study illustrates that as technology evolves, studies will be conducted to determine how it can be used to facilitate reflective learning.

The literature reviewed in this section illustrates the potential that technologies offer for promoting reflection. The technologies discussed provide teachers with a means of capturing and reviewing their experience and practice. Videotape (microteaching), digital video, VC, DVC, and MDVC all incorporate recording mechanisms that permit teachers to review and reflect on their experiences.

Asynchronous and synchronous technologies

Over the years, researchers have experimented with asynchronous and synchronous conferencing technology (i.e., discussion lists, email, interactive software) in the facilitation of reflective learning (Admiral, Veen, Korthagen, Lockhorst & Wubbels, 1999; Galanouli & Collins, 2000; Harrington & Hathaway, 1994; Helflich, 1997; Kenny, Colvert, Schilz, Vignola & Andrews, 1995; Lamy & Goodfellow, 1999; Placier, 1999; Straten, Korthagen & Veen, 1996; Van den Berg, 2001; Wolcott, 1995). While there has been considerable research done in this area, none of the aforementioned studies have incorporated the use of video technology; consequently, their findings are not transferable to that area. There is, however, a small body of literature that focuses on the use of videoconferencing technology in the promotion of reflective thought (Admiral et al., 1999; Hu et al., 2000, 2001, 2002; Murray & Tolbert, 1998). These studies are explored in the next section of the literature review.

Desktop videoconferencing

Admiral, Veen, Korthagen, Lockhorst, and Wubbels (1999) reported on the results of the REFLECT project, a year-long study that incorporated the use of DVC in teacher education programs to encourage reflection in teacher candidates. Researchers from four European universities collaborated for the project: the Universities of Barcelona (Spain), Exeter (U.K.), Trondheim (Norway), and Utrecht (Netherlands). In one trial, Exeter University student teachers on practicum were connected via DVC with their supervisors at the university site. The role of the supervisors was to provide social support for the student teachers, to assist them in identifying and solving any problems that arose, and to lead them in conversations to promote reflective learning. Researchers

transcribed and analysed the discourse of six videoconferences. In general, the participants reported that the DVC environment provided an incentive to reflect on their teaching; it was necessary, however, for supervisors to prompt reflective thinking by encouraging students to revisit specific events. The study illustrates how DVC can be used to promote reflection in teacher education.

Hu et al (2000, 2001, 2002) have made significant contributions to what is known about the use of multipoint desktop videoconferencing (MDVC), and how it can be used to facilitate reflective learning. MDVC facilitates interaction among multiple locations, allowing student teachers working at different schools to communicate with each other and with their supervisors at the university site simultaneously. Grounded in Dewey (1933) and Schön's (1983, 1987) conceptual frameworks of reflective learning, the research team wrote a series of articles discussing trials that incorporated video streaming with MDVC for teacher preparation. Hu et al (2001) argue that MDVC is a perfect avenue for reflection because it enables student teachers to "share ideas, problems and solutions in real time with peers and supervisors" (p. 793).

To enhance MDVC's reflective capacity, Hu et al (2000, 2001, 2002) incorporated video streaming into the sessions. Student teachers recorded three-minute digital video clips of their teaching to demonstrate a specific teaching competency, and uploaded the clip into a password protected area of the project website. The clips were then streamed during four MDVC sessions; that is, all MDVC session participants were able to view the video clip simultaneously. Students could view and discuss their video clips, as well as the video clips of their peers, and receive immediate feedback from their supervisor.

Hu et al (2000, 2001, 2002) used a post-teaching practice questionnaire and focus group discussions to obtain feedback from participants. Despite technical difficulties at the beginning of the study, feedback from the student teachers was generally encouraging. MDVC allowed the students to engage in reflective conversations that would otherwise have been impossible. Watching the video clips made student teachers aware of their own strengths and weaknesses, and exposed them to alternative approaches and solutions. Students also used the sessions to gain peer support, which positively affected stress levels. Videoconferencing provided a less formal atmosphere for student-teacher interaction, reducing communication barriers between student teachers and their supervisors.

Technical difficulties, however, prevented students from video streaming during MDVC until the later part of the study (Hu et al., 2000, 2001, 2002). Until a solution was found, students were obliged to stream the video clips independently before conferencing took place. The researchers found that previewing the video clips had a positive effect on students' reflective process. It enabled students to reflect on clips prior to discussing them. It also allowed the researchers to direct student teachers through their reflective learning experience. They were able to lead discussion on focused topics and guide students to reflect on solutions to the problems they encountered.

Based on the results of the same trials, Hu et al (2000, 2001, 2002) concluded that MDVC offers the potential to increase both the quantity and quality of discourse between student teachers and their supervisors. They argue that a combination of MDVC and video streaming "opens new ways of providing opportunities to dialogue among trainees in different schools and supervisors and enhancing the process of reflectivity" (Hu et al.,

2002, p. 530). This study demonstrates the potential of videoconferencing technology for promoting reflection, and enhancing the professional preparation of future teachers.

Murray and Tolbert (1998) also used MDVC to explore the feasibility of using videoconferencing activities to promote collaborative reflective learning in the professional development of teachers. In the study, distance education teachers using MDVC for the first time met at regular intervals via videoconferencing to share and discuss their experiences. The technology was used as a vehicle to provide collaborative social support as teachers dealt with the challenges of unfamiliar technology and adapting course material for delivery via the new medium.

Murray and Tolbert (1998) found the interaction of the teachers via MDVC prompted reflective conversations and consequently led to the development of strategies that improved the professional practice of the teachers in DVC environments. Based on their findings, Murray and Tolbert (1998) concluded that “a culture characterised by dialogue, high levels of interaction and collaborative reflective learning can be successfully achieved in videoconferencing classes” (1998, p. 126). Interestingly, researchers found that teachers located in urban areas became more frustrated with the technology than rural remote participants. They attributed this to the rural participants’ dependence on the technology for collaborative communication with peers. Therefore, it can be posited that the use of videoconferencing technology is extremely beneficial in situations where the remoteness of locations limits face-to-face communication, but it is far less appreciated in situations where it is viewed as unnecessary. This suggests using DVC to teach ESL would be more beneficial and acceptable to students in locations where face-to-face instruction is not feasible.

Video technology, whether analog or traditional, digital or conferencing, offers great potential for promoting teacher reflection. While researchers have examined the use of traditional video technology in teacher education, there has been little research on the use of newer technologies such as VC, DVC, and MDVC for this purpose. Nonetheless, existing literature highlights the need to find new ways to utilise the technology to encourage the development of competent and reflective professionals. For example, distance education teachers could incorporate the use of DVC for reflection where DVC is the medium of instruction, such as those teaching ESL via DVC.

The use of videoconferencing technology in an educational context

Existing research on videoconferencing technology in cross-cultural learning, teacher education/professional development, and language learning is reviewed in this section. Despite the differences among the three systems, VC, DVC, and MDVC all use the same media for communications; therefore literature on all systems was reviewed.

Videoconferencing technology and language learning

This section begins with a review of literature related to second language acquisition. The strategies used by teachers when teaching ESL, as well as factors that influence second language learning are highlighted by the review. This literature is relevant to the thesis research because it provides a background for examining the experiences of new teachers who are teaching ESL for the first time.

Krashen (1981) proposed an input hypothesis that stated comprehensible input was a crucial component of successful second language acquisition. According to his hypothesis, simplified and easy to understand vocabulary must be used when speaking to second language learners. Krashen (1981) stated that one of the strategies language

teachers use to ensure comprehensible input is foreigner talk or learner language. The terms foreigner talk and learner language are used interchangeably to “describe native speakers’ imitations of second language speech”(Krashen, 1981, p.121). This simplification of language has been compared in the literature with the way people speak to animals and young children (Gass, 1997). Thus, foreigner talk and learner language are strategies used by ESL teachers when communicating with second language learners (Krashen, 1981), and are relevant to this research.

Brown (2000) argued that pre-prescribed language teaching methodologies for second language learning do not exist; rather, methodologies differ due to a variety of factors. The uniqueness of the teacher, student, student-teacher relationship, and learning context determines language teachers’ approaches. If this is the case, teaching strategies used in a classroom setting will not necessarily be successful in a virtual setting and visa versa. According to Brown (2000), the development of an appropriate and context specific methodology is paramount for ensuring successful language learning and teaching experiences. Brown’s (2000) views support the approach taken to conducting this research, which examines the teaching experiences of new teachers within a combined ESL and DVC teaching context. In the case of this thesis research, teachers are new teachers without formal ESL training who are unable to create preconceived notions about how the teaching and learning process should unfold. The research methodology requires them to develop their teaching approaches during the teaching process, tailored to the combined ESL and DVC context.

O’Malley and Charmot (1990) and Oxford (1990) described strategies students employed when learning a second language. O’Malley and Charmot (1990) defined

learning strategies as “the special thoughts or behaviours that individuals use to help them comprehend, learn, or retain new information”(p.1). While this literature on learner strategies is important in the overall context of second language learning, a detailed examination falls outside the scope of this thesis that focuses on the experience of the teachers, rather than the experience of the ESL students as learners.

According to Tomalin and Stempleski (1993), an important factor affecting second language acquisition is cultural awareness or cultural competence. This term refers to the cultural knowledge acquired through second language learning transactions. The exchange of cultural knowledge ultimately results in increased mutual understanding between the teacher and learner, as well as an increased understanding of the target language. Cultural practice is important because it affects all aspects of communication, including non-verbal gestures such as posture and facial expressions (Tomalin & Stempleski, 1993). During this research, the teacher participants engaged in a cross-cultural exchange with students from France, creating the conditions for an exchange of cultural knowledge that could influence second language learning and thus be relevant to these research findings.

This section of the literature review described teaching strategies and influences on second language learning. Potential implications for the participants’ experience in this current research were identified. Existing empirical research that explores the use of DVC in the language learning context will now be described.

Videoconferencing (VC) has been suggested as an ideal tool to facilitate language instruction (Kinginger, 1998). The telephone and VC are currently the only existing technologies that facilitate synchronous oral communication between two participants at

a distance (Marquet & Nissen, 2003). VC has an advantage over traditional telephones as it provides the user with a visual image of the person they are talking to (Goodfellow, Jefferys, Miles & Shirra, 1996; McAndrew, Foubister & Mayes, 1996). Distance language learning more closely resembles face-to-face communication when you add the visual dimension. Consequently, researchers have widely explored the use of VC, DVC, and MDVC in language-learning contexts (Coverdale-Jones, 2000; Goodfellow et al., 1996; Jennings, 1995; Kinginger, 1998; Matthews, Watson, Buckett & Watson, 1996; McAndrew et al., 1996; O'Conaill, Whittaker & Wilbur, 1993; Wright & Whitehead, 1998).

An advantage of using videoconferencing in a language-learning context is it provides face-to-face access to native speakers or experts of the target language. This type of interaction would be impossible with most other technologies. Even videophones are inferior, as they capture images of single faces and little more (Kinger, 1998). VC is also one of the few technologies that has the potential to allow language learners to practice their listening, speaking, reading, and writing skills at the same time (Matthews, Watson, Buckett & Watson, 1996). The benefits as well as some drawbacks are outlined in the following studies to determine whether VC is a viable alternative for language learning at a distance.

British researchers have been experimenting with DVC technology in a language-learning application for several years. McAndrew, Foubister, and Mayes (1996) used DVC to connect distance education students and their language professors to determine its viability as an alternative to face-to-face communication. The study was grounded in the belief that oral practice with synchronous feedback is essential in second language

learning and that DVC offers the potential to facilitate this interaction from a distance. A class of Business students learning French was divided into two groups: members of one group paired up in a series of role-plays via DVC; members of the other group participated in similar role-plays in person. After working collaboratively for several weeks, the students presented their role-plays to their professors. The researchers reported no significant difference between the presentation scores of pairs of students who had worked via DVC and those who had worked face-to-face. The study did not report how the students felt about their learning experience.

McAndrew, Foubister, and Mayes (1996) collected feedback on students' experiences through interviews and questionnaires measuring both quantitative and qualitative data. The data revealed that DVC motivated the students because it enhanced communication through visual cues. The researchers also found that using DVC eliminated physical barriers, increased students' concentration on learning, and provided them opportunities to work independently and collaboratively. The study also identified problems: lack of eye contact; difficulty sharing material; strain on students having to wear a headset and watch the monitor at the same time; difficulty interpreting partners' body language; and the time used in making the connection. Despite these problems, McAndrew et al (1996) concluded that DVC is both "effective and acceptable as an alternative to face-to-face communication in the learning of a language" (p. 207). The findings indicate that DVC can support collaborative task-based learning and is a viable tool for distance language learning. The researchers recommended additional studies to explore the potential of using DVC to connect language students across national borders.

Matthews, Watson, Buckett, and Watson (1996) and Bucket and Stringer (2001) also explored the feasibility of using MDVC in language learning, and reported their findings of a longitudinal study. Researchers from the University of Exeter and University College London collaborated in a project called ReLaTe (REmote LAnguage TEaching) and published separate articles describing their findings. The group conducted a series of trials using MDVC to connect language teachers and students at different sites. Another language teacher and a human-computer interface specialist observed the sessions, and their observations made up part of the data. The other part consisted of questionnaire data collected from students. Based on the study's findings, the researchers concluded teaching foreign languages over MDVC is feasible, but that more research must be done before it can be fully incorporated into language instruction. Students also reported greater satisfaction being taught via MDVC compared to students using other distance technologies. Students valued MDVC's capacity to transmit non-verbal gestures that helped clarify meaning and gauge reactions. The technology also helped students become better acquainted with their instructor. The researchers found, however, that unreliable audio and video quality interfered with the sessions. Students could tolerate some loss of quality during video transmissions; however, interference with audio quality was unacceptable in a language-learning context. In response, the researchers developed an improved audio tool to prevent sound delay.

Wright and Whitehead (1998) identified the potential of using DVC to prepare candidates for General Certification for Secondary Education (GCSE) modern language examinations. The GCSE examinations assess the listening, speaking, reading, and writing skills of students studying modern languages in England. Wright and Whitehead

(1998) proposed DVC as a possible solution to problems identified in current approaches to delivering foreign language instruction in Europe. A study conducted by two British universities connected teachers in training with students studying either German or French who were preparing for the GCSE examinations. The pairing resulted in mutual benefit for both the teachers in training and the modern language students. The language students received extra preparation for their examinations, while the teachers received practice preparing GCSE examination candidates. Researchers obtained student feedback using a Likert-style questionnaire. The majority of students found the technology to be beneficial. When students were asked to compare their experience using the technology with face-to-face oral practice with a tutor or a normal classroom situation, they rated it favourably. The students recognised the potential of DVC for providing one-to-one instruction. The researchers concluded that DVC offers potential for distance language education. The authors also recognised the future potential of using DVC to link European partner schools in a language-learning context.

In another study, Goodfellow, Jefferys, Miles, and Shirra (1996) compared the learning experience of language students interacting face-to-face and via DVC. They designed the study to determine how the current teaching methodology should be changed to accommodate teaching via the technology and to generate goals for future trials. Two 75-minute sessions were conducted between a language class and a professional language expert. Students reported on their learning experience during feedback sessions. Data also included the observations of two non-participants and student responses to a post-session questionnaire.

The study demonstrated that DVC could support non-lecture style interaction (Goodfellow, Jefferys, Miles, and Shirra, 1996). The researchers acknowledged, however, that the interaction could not be expected to have immediate language-learning benefits. During the trials, participants experienced a slight delay in audio transmission, which contributed to some difficulty comprehending participants who spoke too quickly or used technical vocabulary. The participants also experienced difficulty interpreting visual cues, and the researchers concluded that the technology does not adequately transmit body language. The participants nevertheless learned to adapt by using verbal rather than visual cues for managing the interaction. Most students regarded the visual dimension as an essential feature of the experience. They also felt the technology motivated them to learn.

Goodfellow, Jefferys, Miles, and Shirra (1996) acknowledge DVC's potential in the promotion of student self-reflection: "a second implication is that reflective teaching and learning activity, such as correction etc. may best be reserved for 'after the event', for example: watching the recording for self-evaluation..." (p. 14). The article also suggests students be prepared for engaging in DVC sessions beforehand, for example, by reading a set of guidelines on what to expect. Overall, the researchers argue DVC has much to offer language learning. The sessions, however, must be planned for, and teaching and learning methodologies must be adapted to suit the new environment.

The literature reviewed in this section has demonstrated how videoconferencing technology has been used to facilitate language learning from a distance. These studies were useful to the thesis research in several ways. They shaped the study's methodology

by providing examples. They also alerted me to potential technological difficulties.

Finally, their results could be compared with the results of the thesis research.

Videoconferencing technology and cross-cultural learning

More recent studies have explored videoconferencing technology's potential for language learning by connecting students across international borders. A study by Coverdale-Jones (2000) linked students in the United Kingdom and Germany in a language-learning context. Researchers conducted a series of VC trials in which the German language students practiced their English skills and the British practiced either German or French. The trials emphasised collaborative learning by engaging the students in role-plays. Overall, the students were impressed by the medium, despite occasional poor video quality that made interpreting body language difficult. Students found ways to adapt to the videoconferencing medium by communicating without the use of visual cues. The students also experienced other technological difficulties, such as time lag and connection problems. Despite the technical drawbacks, many students were enthusiastic about connecting with people their own age from another country. Students also identified other advantages, including: the immediacy of communication regardless of location; interaction with native speakers at a lower cost than flying abroad; greater interactivity and more personal than email; and it was effective for building relationships at a distance. Conversely, the students felt that communicating via VC was less personal than communicating face-to-face. The advantages or drawbacks of the medium depended on the medium to which it was compared. When compared with face-to-face interaction it was viewed as an inferior form of communication. When compared with other distance learning technologies, however, VC technology was considered superior.

The findings of Coverdale-Jones (2000) support Goodfellow, Jefferys, Miles, and Shirra's (1996) conclusions that it is important to prepare students for VC beforehand and that teaching methodology has to be adapted to accommodate some limitations of communication in the delivery medium (e.g., the inability to use body language). An interesting by-product of the study was the use of VC in the facilitation of reflective thinking. Recording and reviewing the VC sessions helped students identify and discuss elements of their personal behaviour that they may not have recognised otherwise. This enabled students to consciously work on improving areas where they felt they were having difficulty.

Some researchers have undertaken empirical studies that examine the impact of cultural differences on second language learning in videoconferencing environments. O'Dowd (2000) conducted a study in which VC was used to facilitate a cross-cultural exchange project between schools in Spain and the United States. The aim of the study was to increase students' cultural awareness. The study assumed that exposure to members of other cultures prepares students for the challenges of visiting or living abroad, and helps promote positive views of the foreign culture. Some of the themes identified by the researcher included the challenges of intercultural communication and the alteration of cultural views as a direct result of the experience.

Kinginger (1998) conducted another study in which language learners in the United States and France connected via DVC in a cultural and linguistic exchange. The aim of the course was to encourage cross-cultural awareness, both through self-analysis and through contact with a different culture, in preparation for careers requiring knowledge of the global marketplace. The cross-cultural collaboration resulted in mutual

benefit for both the American and French students; half the DVC time was spent communicating in French, half in English. The article was written based on the experience of the American students. The French and American students worked collaboratively on a variety of activities: analysing texts (i.e., Hollywood remakes of French films, children's literature, and television series), publishing their work on web pages, corresponding with an assigned partner via email, and two 60-minute DVC sessions. After each DVC session, the American class reviewed a videotape of the session and engaged in discussions about the interaction that had taken place, thus promoting reflective learning. Teachers also used this opportunity to ensure the discourse was completely understood by each student.

Kinginger (1998) found that the American students did not yet communicate at the level required to interact with the French students; consequently, a few students experienced anxiety. Nevertheless, student feedback was encouraging. The students appreciated the opportunity to practice their oral French and enjoyed meeting and forming relationships with students from a different culture. The study demonstrated that DVC can be an effective tool to connect students across the Atlantic. Kinginger concluded that DVC has the capacity to positively affect classroom language use; however, sometimes "the change can be so drastic that it leaves the learners behind" (p. 511). This was the case for students who had no previous experience communicating with native language speakers.

LEarn from Video Extensive Real Atm Gigabit Experiment (LEVERAGE) was a three-year (1997-1999) European collaborative research project aimed at determining how DVC can support rapidly expanding language-learning needs. A series of online

articles ("Leverage: Learn from video extensive real atm gigabit experiment") describe several DVC trials conducted among three European universities: University of Cambridge (England), Institut National des Télécommunications (France), and Universidad Politécnica de Madrid (Spain). Eight one-hour DVC sessions (one per week) linked pairs of students who took turns tutoring the other in their native language. Questionnaires and personal interviews with the students were used to collect data. The technology proved motivating for the students as they enjoyed making contact with students abroad. The study demonstrated that it is possible to connect students internationally for language learning. The researchers viewed this DVC-based learning approach as a new and different way of practicing and learning a language, and as a complement to traditional classroom instruction.

In a descriptive article, Dustdar and Hofstede (1999) discuss critical issues in cross-cultural communication and propose a framework that could be used to predict how communication issues might affect cross-cultural learning via DVC. The researchers also propose a series of guidelines to be applied in cross-cultural DVC sessions. The literature on videoconferencing technology in cross-cultural learning highlights the fact that culture is a relevant consideration in studies of second language learning, and therefore should be considered as a contextual factor in the thesis research.

Videoconferencing technology and teacher education/professional development

Several researchers have explored the use of videoconferencing technology in teacher preparation and professional development. MDVC has been posited as an ideal tool for teacher education because it enables student teachers to interact with their professors from their placement sites, which are often located far from the university

(Admiral, Veen, Korthagen, Lockhorst & Wubbels, 1999; Hu et al., 2000, 2001, 2002). Sharpe et al (2000, 2002) studied the use of MDVC in pre-service teacher education programs in Singapore. The researchers conducted a longitudinal study in which weekly conferences were held between student teachers on placement and their supervising professors. They designed the study to assess the technology's potential for increasing the quantity and quality of student-student and student-supervisor discourse. Initial findings indicated that the technology supports short, low-level, and factual discourse between student teachers and peers; however, newer data have yielded more positive results.

More recent trials undertaken by Sharpe et al (2000, 2002) have shown that MDVC technology effectively facilitates professional sharing among participants. The technology allowed student teachers to share experiences and discuss problems and solutions collaboratively. Students used the sessions to share teaching strategies and alternative viewpoints. In addition, the technology enabled the students to ask their supervisors questions and receive immediate feedback. The researchers found that MDVC breaks down communication barriers between student teachers and supervisors. Compared with traditional face-to-face meetings it provides students with a less formal environment for bringing up issues and asking questions. The researchers concurred, "the quantity of discourse is much greater for the student teachers participating in MDVC, mainly due to the removal of the barriers of time and space" (Sharpe et al., 2000, p. 63).

In another study, Davis, McShea, Osorio, Still, and Wright (1996), as part of the Telematics for Teacher Training project (T3), collected data from seven teacher education institutions across Europe. Staff were interviewed about how they perceived the use of various technologies in six scenarios. The four scenarios that used DVC

included supervision tutorials, expert seminars, language development, and student/teacher discussions. The data revealed that all countries would use DVC in the scenarios described; in fact, many universities did so already. These studies proved the desirability of the application in teacher education. While existing research on the use of DVC in teacher preparation has studied how it can be used to connect students to peers, supervisors, and experts, little research has looked at its use in professional development. The following study was the only one located that examined the use of DVC in the professional development of practicing teachers.

The University of Exeter developed a continuing professional development service delivered by DVC. The service allowed national experts to connect with in-service teachers and deliver individually tailored programs aimed at improving practice and updating knowledge and skills. In a descriptive article, Sharp, Still, and Davis (1998) describe how DVC is used at Exeter's Centre of Telematics for Education in curriculum development, curriculum enrichment, school policy support, skills training, extension expert seminars, assessment, building expert communities, and promoting innovative teaching strategies. The DVC format has proven effective in this context, allowing teachers to participate in the session, reflect on what they learn, put it into practice, and come back to the instructor with any questions and concerns. The authors argue that DVC has great potential for the delivery of quality, relevant, and effective professional development programs for teachers. The researchers demonstrate that videoconferencing technology has been implemented in the professional development of teachers and that it is important to study its strengths and weaknesses.

The research reviewed in this section represented empirical research on the usefulness of using DVC in the education and professional development of teachers. Based on these studies, I noted a gap in knowledge on the subject. While the potential for the use of videoconferencing technology has been demonstrated, there is a need for further research about ways to maximize its benefits and minimise its limitations.

Conclusion

A rationale for studying the process of teaching ESL via DVC using a conceptual model of reflective learning was provided in this chapter. It established the importance of reflective learning in teacher education by examining the work of key authors, including David Kolb (1984) and Donald Schön (1983, 1987), whose ideas form the basis for the conceptual framework of the thesis. A model of reflective learning that combines the concepts of both authors was presented. Literature pertaining to the role of technology in promoting reflective learning in teacher education, and the use of videoconferencing technology for language learning, cross-cultural learning, and teacher education/professional development was also reviewed. These studies informed the methodology of the research, and their findings served as useful points of comparison with the findings of the thesis study. The thesis' methodological approach is outlined in the next chapter.

CHAPTER THREE: RESEARCH DESIGN AND IMPLEMENTATION

Introduction

Qualitative research methods were used to address the research question: How can new teachers' experiences of teaching ESL via DVC be understood and described using a conceptual model of a reflective learning cycle based on the work of Kolb and Schön? In this chapter, I outline the study's overall research design, including its methodology and methods for data collection and analysis.

A research design is defined as a flexible set of guidelines that connects paradigms (worldviews) to strategies of inquiry (methodologies) and methods for collecting and analysing empirical material (Guba & Lincoln, 1998). The research paradigm represents beliefs about the nature of knowledge, truth, and how to discover it. According to Denzin and Lincoln (2000), a paradigm is "a basic set of beliefs that guides action. All research is interpretive; it is guided by a set of beliefs and feelings about the world and how it should be understood and studied" (p. 19).

For a research design to have integrity, the paradigm, methodology, and method must be compatible, or fit with one another and with the questions posed in the study (Chenail, 1997). In the following section, I argue that the proposed research design chosen for this study is appropriate, and identify how issues of rigour and ethics were addressed.

Paradigm

The paradigm chosen for the research was the interpretive paradigm. In the interpretive paradigm reality is viewed as socially constructed and subjective. It can thus

never be known absolutely (Denzin & Lincoln, 1998). When adopting an interpretive paradigm, researchers collect data in the natural environment to provide contextual understanding. The researcher's insight (interpretation) is the key instrument for analysis; objectivity is not the goal. Analysis tends to be inductive, as findings are sought from the data themselves.

In the interpretive paradigm, the researcher does not test theories or concepts because this would violate the inductive assumptions of the paradigm. Theories or concepts of interest are used, however, to focus the inquiry and for comparison in theory building (Morse, 1994). Huberman and Miles (1994) argue that qualitative designs can use pre-structured conceptual frameworks, as well as designs that have the conceptual framework emerge from the data over the course of the study. They recommend a tighter design for researchers who are working with well-delineated concepts (such as reflective learning), and for beginning researchers who would benefit from having greater clarity and focus for their analysis. Nevertheless, in the interpretive paradigm, the researcher does not impose concepts or test theories, but rather examines them for usefulness in the research. Concepts and their relationships are compared against the data to see if they apply in a new or different context (Silverman, 1993). Thus, while conceptual frameworks are used in the interpretive paradigm, the overall stance of the research remains inductive rather than deductive. The thesis research used concepts of reflective learning and a conceptual framework of a reflective learning cycle while remaining true to the values of the interpretive paradigm.

The goal of research conducted within the interpretive paradigm is to understand phenomena in new ways. The interpretive paradigm is appropriate for the thesis research

because the goal was to understand and describe new teachers' experiences teaching ESL via DVC as a process of reflective learning. Specifically, I sought to transform the understanding of Kolb (1984) and Schön's (1983, 1987) concepts of reflective learning by examining them in a new teaching environment: the combined environment of ESL and DVC. In the analysis, the data from this research were compared with the concepts of reflective learning to determine whether they could explain the reflective learning cycle of new teachers teaching ESL via DVC. The analysis resulted in an adapted conceptual model that better represents how teachers implement the reflective learning cycle in the ESL/DVC environment.

Methodology

The thesis study employed the methodology of naturalistic inquiry, an approach that seeks to understand phenomena in their natural context (Guba & Lincoln, 1998; Patton, 2002). It is a generic term for a research strategy that is qualitative, interpretive, and inductive. Naturalistic inquiry fits within the interpretive paradigm and purpose of the thesis research, which focused on understanding and describing the reflective learning cycle of new teachers teaching ESL via DVC.

Naturalistic inquiry is a flexible methodology that allows the researcher to create the best method and gather several types of data to capture the phenomena of interest. Possible sources of data include: 1) documents, texts, and artefacts including existing databases, photographs, and visual displays such as videotapes; 2) interviews or conversations (including surveys and focus groups); 3) observations of people and activities; and 4) measurements of phenomena (Patton, 2002). In the thesis research, I collected data from new teachers engaged in a teaching process (preparing, teaching,

reviewing), which is a complex social process in action. I chose to collect four types of data to gain a comprehensive understanding of the research phenomenon under study. These included: videotapes, interviews, field notes, and journal entries. These data allowed me to capture the environment and observe the teaching process in person and via videotape. Thus, the thesis data collected is appropriate for a naturalistic inquiry. More details about data collection are provided in the next section of the chapter.

Method

Planning

The methodology chosen for the thesis study required forming a partnership with a university in France. I identified a potential partner through a personal contact. I emailed the research proposal to the contact, an English language professor at the University of Pau (located in southwestern France), who agreed to be involved. Planning the study required that I visit France three months in advance of data collection to make personal contact, discuss the methodology, deliver DVC equipment, and show the French professors how to use the technology. We held several trial DVC sessions between the University of Pau and Lakehead University to test the technology. We agreed on dates for data collection that accommodated the schedules of the students in France and the teachers in Thunder Bay. I then returned to Canada.

Data collection

Data were collected over a period of one week in November 2004 during which five M.Ed. student volunteers conducted a series of ESL conversation lessons with five student volunteers from the University of Pau, in southwestern France. The M.Ed. students were all new teachers, who had just completed their Bachelor of Education

(B.Ed.) degrees. The M.Ed. students are referred to as new teachers or teachers throughout the thesis. Because the goal of the thesis was to understand and describe the reflective learning cycle of new teachers teaching English via DVC, the teachers are the subjects of the research. The participants, procedures, and instruments used in this study are described in the following sections.

Participants

The professor in France recruited five volunteers, all French university students 18 years of age or older from her English language classes. I recruited the five new teachers for the study from Lakehead University's Faculty of Education.

Consistent with qualitative methodology, I purposefully selected the five M.Ed. student participants. The teachers were chosen for this study for two main reasons: 1) in the B.Ed. program, they had gained some experience teaching and reflecting in a traditional classroom setting; and 2) they had little or no experience teaching ESL or teaching via DVC. As the goal of the research was to ascertain how the combined environment of ESL and DVC affected the reflective learning process of teachers, it was important the teachers had experience reflecting on their practice in a traditional classroom setting. The teachers' lack of experience teaching in this new combined ESL/DVC environment increased the likelihood they would encounter problems that would stimulate reflection. Because the conceptual framework for the study indicated that dealing with a problem or surprise initiates the reflective learning cycle, the participants chosen for the study were appropriate to the purpose.

Participant recruitment of teachers proved difficult because of the time commitment involved. The study methodology required teachers to commit

approximately two hours per day over five days. Dates and times were determined months in advance and were not flexible due to the advanced planning involved in an international exchange. The ESL lessons had to take place in the morning in Thunder Bay to accommodate the time change between Canada and France. Teachers had to be available for data collection according to the study schedule.

Initially, I recruited two participants from the M.Ed. program. I then used snowball¹ sampling procedures to recruit the remaining three. Snowball sampling “begins with a few participants and then asks them to nominate or recommend others who are known to have the profile, attributes or characteristics desired” (McMillan, 2004, p. 115). A small gift of appreciation was offered to participants at the conclusion of the study.

I collected demographic data in the pre-interview of all teacher participants. Data collected included age, experience using technology in general, experience using DVC specifically, teaching experience, and ESL experience. A summary of characteristics of the five teacher participants is outlined in Table 1.

¹ This is also referred to as network sampling (McMillan, 2004).

Table 1

Participant attribute table

Name	Male/ Female	Age	Experience Using Tech	Experience Using DVC	Teaching Experience	ESL Experience
Max	M	37	Extensive	Extensive	Minimal	None
Isabelle	F	25	Minimal	None	Minimal	None
Karen	F	26	Minimal	None	Minimal	None
Martha	F	25	Minimal	None	Minimal	None
Mary	F	23	Minimal	Minimal	Minimal	Minimal

Note. Participants' names were changed to ensure anonymity.

It was necessary to consider contextual factors that may have influenced participants' experience. As one can see from Table 1, the ages of the participants ranged from 23 to 37, with the majority in their mid-20s. Four of the five participants were female and the eldest was male. Max was the only participant with extensive experience using technology, and a self-proclaimed "computer geek." He had experience working as an Outlook administrator, computer consultant, and campus computer support worker. All other participants had minimal experience using technology, and possessed basic word processing and Internet skills.

Max was also the only participant who had extensive experience using DVC. Max often used high-end videoconferencing equipment to keep in touch with friends and family. He had experience working as a videoconferencing equipment retailer and was therefore knowledgeable about the technology's applications. Mary also had some experience using DVC to keep in touch with friends and family and she used web-based

conferencing software and a Logitech web cam. All other teachers had never participated in a DVC session before.

All teachers had minimal teaching experience; they enrolled in the M.Ed. program immediately after graduating with their Bachelor's degree. All teachers had practicum experience from their undergraduate education; a couple did some supply teaching; one had experience as an outdoors wilderness instructor; and one had a part-time contract teaching grades seven and eight math. Mary was the only participant with experience working with ESL students. She spent a summer working at an ESL camp where she complemented the students' ESL curriculum by engaging them in conversational English. It is noteworthy that Mary was the only participant who had the combined experience of using DVC and teaching ESL, although her experience was minimal in both.

Data collection procedure

The teachers were paired with the French students for the DVC sessions according to availability during the data collection period between November 2 and November 8, 2004. Approval from Lakehead University's research ethics committee was obtained. All ten participants signed letters of introduction and consent forms prior to data collection. Letters of introduction and consent forms can be found in Appendices A and B. The French university did not require ethics clearance, as all volunteers were adults who had sufficient English language proficiency to comprehend the letter and consent.

I conducted a pre-test of the data collection process with a B.Ed. teacher candidate at Lakehead University. Few changes were recommended; they included preparing a list of discussion topics for the teachers before commencing the sessions. The participant also

suggested I locate articles focusing on themes relevant to life in Canada to share with both the teachers and the French students; these could be used as stimuli for conversations. I located five articles on a variety of topics: Halloween; the smoking ban at Lakehead University; the American presidential election and its meaning for Canadians; the hockey lockout; and *Supersize Me*, a documentary film about America's obesity epidemic. Throughout the week, the students and teachers read the articles and had the opportunity to engage in discussion about their content.

Other than being provided this reading material, the teachers were not prepared in advance for their participation in the study. Specifically, they were not oriented to the technology, nor were they provided with ESL lesson plans or teaching strategies. The expectation was for teachers to engage in conversation with the students, not to deliver a formal lesson. The intent was to place new teachers in an unfamiliar environment and to study their learning over the course of the week. Therefore, the content of ESL sessions differed for each student-teacher dyad. A detailed example of the content of one dyad can be found in the case study presented in the findings.

The data collection procedures are outlined chronologically in Table 2, and include brief descriptions of each method of data collection. The table contains a step-by-step overview of how the week unfolded for each teacher participant. All methods discussed in the table are elaborated on in the following section.

Table 2

Chronological overview of data collection

Method (step-by-step)	Brief Description
Pre-interview	Teacher participant was interviewed for approximately 25 minutes to obtain demographic information.
DVC session 1	Session time was approximately 20 minutes and was recorded on a mini video recorder.
Reflection on action journal 1	Teacher participant completed journal entry immediately after completing session 1.
Video upload	The session 1 video was uploaded to the Internet.
Video review	Teacher participant downloaded and reviewed the session 1 video.
Reflection on action journal 2	Teacher participant completed journal entry immediately after reviewing the downloaded video.
Field notes	Based on the teacher participant's session 1, I recorded my personal observations for future analysis. The field notes were based on observations made in person.
DVC session 2	Steps 2-7 were repeated for session 2.
DVC session 3	Steps 2-7 were repeated for session 3.
DVC session 4	Steps 2-7 were repeated for session 4.
DVC session 5	Steps 2-7 were repeated for session 5.
Post-interview	Teacher participant was interviewed for approximately 40 minutes to obtain overall understanding of their experience.

Data collection instruments

I used four sources of data to understand the reflective learning process of teachers who taught ESL via DVC: interviews, videotapes, journal entries, and field notes.

Interview data

I collected data on the reflective learning of teachers and their experience using the technology for teaching and learning through two semi-structured, face-to-face interviews with each teacher. One interview was conducted before the ESL lessons took place, and one was conducted after. I conducted the interviews using two separate interview guides (pre-interview and post-interview) consisting of several open-ended questions. The interview guides can be found in Appendix C.

The interview guides provided structure to the interviews and some parameters to the conversation; however, they were not rigidly followed. I encouraged participants to raise additional issues, and elaborate on their experiences. Each interview lasted between 25 and 45 minutes and took place at Lakehead University. The interviews were audio taped with the permission of the participants and transcribed verbatim.

Videotaped ESL sessions

The teachers conducted five 20-minute ESL conversation lessons via DVC with their partner, one per day, over five weekdays. The videoconference sessions were conducted using version 2.1.5 of a Wave3 software product known as Session. The K1 (Kritter) web camera was used to capture the images of the videoconferencing sessions and the audio was collected with a ClearMic, a microphone designed to remove the echo feedback that frequently afflicts DVC systems. I videotaped all teaching sessions using a

mini video recorder for subsequent review by the teacher and for use as a data source for the study. The videotaped lessons were uploaded to a university website so the participants could review the daily lessons from home on their personal computers.

Structured journal entries

Teacher participants were asked to write ten short, structured journal entries, two per day, for the five days of ESL teaching. Kolb (1984) and Schön's (1983, 1987) reflective learning concepts discussed in Chapter 2 guided the design of the journal entries. The journals helped the teachers reflect on issues, ideas, and feelings that might otherwise have gone unexplored, unquestioned, and unnoticed. As a result, the data amassed from the journal entries were vital for answering the research question. The journal entry templates are found in Appendix D.

The teachers completed the first journal entry, reflection on action 1, immediately after each day's session. The teachers documented immediate reflections on their practice and their experiences with the technology. The journal consisted of four questions.

Participants completed the second journal entry, reflection on action 2, later the same day after reviewing the lesson tape. The teachers were encouraged to reflect again on their experience to see how their perceptions of the lesson changed after viewing the videotape. This journal consisted of seven questions. The students were asked to identify, describe, and reflect on one teaching skill they would like to work on over the course of the study. They were also asked to identify strategies they intended to employ to achieve their goal. The study did not provide participants with a list of problems or strategies from which to choose; instead, the teachers developed their own ideas about their practice that could serve to inform their actions in future teaching situations.

The journal questions were based on a series of questions developed by Johns (1994, cited in Moon, 1999) to guide the reflective process of practicing professionals. They consist of a core question and a series of further questions, which provide a comprehensive means to examine one's own practice. While Johns' field of research was nursing, Moon (1999) argues his questions have relevance for other professional situations and notes that the model has been adopted in a modified form in studies involving teacher education. Johns' questions were incorporated in the journals because they had been successfully used to gather data in previous research.

Journaling approaches to data collection have been used previously in studies on reflective learning (Hoover, 1994; Langer & Colton, 1994; Zeichner & Liston, 1987). Langer and Colton (1994) argue that journal keeping is a powerful way of forming new ideas, reframing problems, and monitoring thinking. Hoover (1994), based on her study of journaling in the promotion of reflection in pre-service teachers, concluded that "assigning a writing task based upon a more focused observation of data and the meaning surrounding that data increases the chance that pre-service teachers will look beyond themselves toward their interactions with students" (p. 92). As a result, I structured the journal entries in an attempt to guide participants' reflective process.

Field notes

I was present during all DVC sessions and recorded my general observations and reflections at the end of each day. The field notes described my thoughts and feelings on the progress of the lessons as well as my experience with the data collection process (i.e., videotaping the sessions, uploading the videos to the internet, etc.). Reflecting on my

field notes, I was able to improve data collection by generating solutions to methodological problems I was experiencing such as computer malfunctions.

The field notes helped me examine my role in the data collection process. Bogdan and Biklen (2003) stress that the researcher is central to the data collection. Therefore, as the researcher I had to be aware of my own relationship to the research setting. I was actively present in the ESL/DVC sessions because I was responsible for managing the technology. Teachers would often seek my assistance when they were having difficulty in their interactions with their French partners. Given my experience with ESL instruction in France, I was sometimes able to assist them. My field notes therefore provided a personal record of the teachers' experiences from my perspective, and were used to supplement other data sources in subsequent analysis.

This section provided an overview of the research methods used, including the rationale for the design of this approach, the teacher recruitment process, and the specific research procedures used in this study. The method I used to prepare and analyse the data is discussed in the following section.

Data management

Data management refers to the systematic process used to collect, store, and retrieve data. The goal of data management is to ensure that data are of high quality and accessible, a clear record of analysis is kept, and data are retained after the study is complete (Huberman & Miles, 1994).

Use of N Vivo in data management

The N Vivo software program was used in the thesis research to assist in the storage and retrieval of data. This software program was specifically developed for

management and analysis of qualitative data. Verbatim transcripts of interviews, field notes, and journal entries were imported into N Vivo for storage, coding, and analysis.

I created proxy documents of the videotapes so the observational data could be coded and tracked within N Vivo. Proxy documents are documents created to represent the contents of an original document, audiotape, or videotape. In the case of the research, I watched the videotapes using Windows Media Player and created memos based on my observations. The time of each memo was recorded using the counter on the media player. I created a proxy document representing each of the videotapes; the relevant memos linked to it at the correct time. These memos were then coded during data analysis.

Data analysis

Throughout the data analysis, I examined the similarities and differences between the categories and themes generated from the data, and the integrated model I developed from the work of Kolb (1984) and Schön (1983, 1987). The data analysis did not impose the integrated model of the reflective learning cycle on the data, but rather used it to help uncover issues, problems, or themes relevant to the research question. The integrated model allowed me to focus my analysis and identify data most relevant for answering the research question. My focus in the analysis sought to explore whether the model was applicable within the environment of teaching ESL via DVC and to identify how it needed to be adapted to better represent new teachers' reflective learning cycle in this environment.

I conducted the data analysis using the approach of Huberman and Miles (1994). This approach, referred to as analytic induction, fit well with the interpretive paradigm, the methodology of naturalistic inquiry, and the purpose of the thesis research.

Analytic induction

Analytic induction provides guidance and structure to data analysis without being rigid in its approach. Miles and Huberman (1994) identify six general strategies that are used in analysing qualitative data in the interpretive paradigm. These are: meeting and coding data as data records are created; recording reflections and insights; sorting and sifting through the data to identify similar phrases, relationships, patterns, themes, distinguishing features, and common sequences; seeking patterns or processes, commonalities and differences, and extracting them for subsequent analysis; gradually elaborating a small set of generalizations that cover the consistencies discerned in the database; and confronting these generalizations with a formalised body of knowledge in the form of constructs or theories.

Analytic induction assumes that regularities can be identified in the physical and social world, and expressed using concepts (Huberman & Miles, 1994). It combines inductive and deductive analysis in a cyclical process. The process uses the research question and/or the conceptual framework of the study as the focus for analysis, and questions the data to generate themes that express these regularities. These themes are used to examine more data, and then modified accordingly. Ultimately the themes encompass all of the variations on the phenomena under study and relate them to the research question and/or conceptual framework. In this process, analysis and interpretation form an integrated and circular process. The researcher alternates between

the inductive creation of new ideas grounded in the data, and the deductive examination of these ideas against new data.

Following the above process, I used the research question and conceptual framework to focus the analysis. The conceptual framework was the integrated model of the reflective learning cycle developed from the work of Kolb (1984) and Schön (1983, 1987) presented as Figure 3. Based on the conceptual framework, I began questioning the data² to see how it did or did not fit. Entering the iterative process using established theory or concepts is accepted practice when the intent is to extend or examine the relevance of existing theories and concepts to a different population or context (Silverman, 1993), as is the case in the thesis research.

In preparing for data analysis, I used the integrated reflective learning model to create a coding template to begin to examine the data. The initial codes defined in this template provided a starting point for questioning the data; they were based on the major elements of the integrated model of the reflective learning cycle. Once immersed in the data, I added additional codes. I created these sub-codes by inductively identifying dominant themes in the data. A summary of the codes used to begin data analysis is provided in Table 3.

² For example, what do the data say about the students' experience of reflective learning in this environment?

Table 3

Initial codes for questioning the data about factors related to reflective learning

Initial Codes ³	Description of codes ⁴
Concrete experience/ Reflection in action	<p data-bbox="626 399 1105 428">How does the teacher experience a problem?</p> <ul style="list-style-type: none"> <li data-bbox="678 449 1377 519">• What was the teacher's here and now experience of teaching ESL by DVC? <li data-bbox="678 541 1295 570">• What factors contributed to the experience (context)? <li data-bbox="678 591 1240 620">• What issue emerged that needed to be resolved? <li data-bbox="678 642 1089 670">• How did the issue manifest itself? <li data-bbox="678 692 1289 720">• How was the issue addressed at the immediate time? <li data-bbox="678 742 1300 770">• Was the issue experienced as a problem to be solved?
Observation and reflection/ Reflection on action 1 (looking back on the action)	<p data-bbox="626 781 1068 810">How did the teacher clarify the problem?</p> <ul style="list-style-type: none"> <li data-bbox="678 832 1166 860">• Did the teacher identify a problem/issue? <li data-bbox="678 882 1175 910">• How willing was he/she to be thoughtful? <li data-bbox="678 932 1273 1004">• How did the teacher explore/examine the issue? (self-awareness, self-honesty, analytic persistence) <li data-bbox="678 1026 1312 1054">• How did the teacher review and recollect the incident? <li data-bbox="678 1076 1305 1105">• How did the teacher consider his/her emotional state? <li data-bbox="678 1126 1284 1199">• How were context and contextual factors taken into consideration?
Forming abstract concepts/ Reflection on action 2 (awareness of essential aspects)	<p data-bbox="626 1214 1084 1242">How did the teacher analyse the problem?</p> <ul style="list-style-type: none"> <li data-bbox="678 1264 1382 1292">• How willing was the teacher to consider alternative choices? <li data-bbox="678 1314 1068 1343">• What options were considered? <li data-bbox="678 1365 1208 1393">• What sources of knowledge were drawn on? <li data-bbox="678 1415 1312 1487">• How were internal factors (e.g., feelings, motivations) considered? <li data-bbox="678 1509 1354 1537">• Were the consequences of alternative choices considered? <li data-bbox="678 1559 1382 1587">• How were contextual issues addressed in the considerations? <li data-bbox="678 1609 1273 1638">• How were the French students' needs considered? <li data-bbox="678 1659 1370 1731">• To what extent did the teacher "make sense of the experience" in light of past experience and future practice?

³ Based on work done by Schön (1983, 1987) and Kolb (1984).

⁴ Questions in Table 3 were developed by reviewing Calderhead and Gates (1993), Jaworski (1991), Johns (1994, cited in Moon, 1999), Kolb (1984), Korthagen and Kessels (1999), MacKinnon (1987), Moallem (1998), and Schön (1983, 1987).

	(ability to apply learning in new situations)
Testing in new situations/	How did the teacher take action on the problem/issue?
	<ul style="list-style-type: none"> • What new actions were taken?
Reflection in action	<ul style="list-style-type: none"> • To what extent was the problem/issue resolved? • Has this experience changed the teacher's way of knowing and doing for the future?
(creating alternative methods of actions)	<ul style="list-style-type: none"> • How satisfied is the teacher with the outcome of the problem/issue? • How satisfied is the teacher with the outcome of the reflective learning process?

Overall interpretation

The three-stage method of data transformation

According to Huberman and Miles (1994), data analysis or data transformation is a three-stage process of data reduction, data display, and drawing and verifying conclusions. It involves condensing, clustering, sorting, and linking data to create new ideas. First, data are reduced based on the conceptual framework and research question, using processes of coding, summarising data, finding themes, or clustering. The researcher then organises and displays the reduced dataset in various ways to help make meaning of the information. Data can be organized and clustered using tree structures or datasets. The researcher can create tables, diagrams, matrices, and preliminary models from the data to show relationships within them. The final stage of analysis involves drawing meaning or constructing explanations that can account for the data, and then verifying these conclusions. This is done by comparing and contrasting instances of the phenomena within the data, noting patterns and themes, clustering, and using metaphors. The researcher can confirm preliminary conclusions using triangulation, looking for

negative cases, following up surprises, and checking results with respondents (Huberman & Miles, 1994).

Generating conclusions from the research requires creating both an explanatory structure that transcends the data, and a careful descriptive account of each component and how it fits into the explanatory structure. Thus, the analysis is interpretive, but also includes strong, rich, descriptive support for the interpretation. It involves both inductive and deductive processes.

Overview of the analysis

The thesis analysis followed the three-stage process of analytic induction. The data were analysed in relation to the research question and the integrated model of the reflective learning cycle. The outcome of the analysis was an adaptation of the integrated reflective learning model that better represents how new teachers implement the reflective learning cycle in the combined ESL and DVC environment.

Step-by-step approach to the analysis

I conducted the analysis in three steps: I prepared for the analysis by understanding the story, interpreting the dataset to answer the research question, and drawing conclusions to identify how the integrated reflective learning model needed to be adapted to better describe teachers' experiences of teaching ESL via DVC.

Understanding the story

I began the analysis by reviewing all data twice without applying the integrated model of the reflective learning cycle. I listened to the interview tapes carefully, and noted initial insights after reviewing the transcripts. This grounded me in an understanding of the experience of the teachers teaching ESL using DVC for the first

time. I then created memos that summarised the key aspects of the participants' experiences after reviewing all data sources. This was a preparatory phase for later analysis to help ensure the results of the study were trustworthy; trustworthiness is the standard for rigour in the interpretive paradigm and is discussed later in the chapter. This step also protected the integrity of the data; that is, the concepts derived from the literature were not imposed but only used to focus the analysis.

Reducing, organizing and interpreting the dataset to answer the research question

I employed two different but complementary approaches to organize and interpret the data. First, because the research concerns the evolution of the teachers' reflective learning process over the course of the week, I created three temporal categories to begin the analysis: before, during, and after. The category "before" consisted of data collected in the pre-interview, and captured participants' feelings and impressions before commencing the sessions. "During" included all data derived from the journal entries and videotapes representing what occurred in the actual setting. "After" consisted of data collected in the post-interview, and dealt with participants' feelings and impressions after the sessions took place. Categorizing the data chronologically enabled me to observe how participants' feelings and attitudes evolved over time. This was important for answering the research question since the reflective learning cycle concerns changes in teaching practice over time.

Second, I analysed the data using the integrated reflective learning cycle that provided the conceptual framework for the research. During this analysis, data were

coded into three levels. When the analysis was complete, I reduced and organized all of the data into categories, concepts, and codes.⁵

The analysis using three levels of coding provided an understanding of the reflective learning process of teachers teaching ESL via videoconferencing. How I generated these categories, concepts, and codes and used them to develop tables that display the data is illustrated in Chapter 4.

Case study analysis of one student-teacher dyad

The nature of the research design allowed me to analyse the data not only as a total dataset, but also by individual cases. The data consisted of five case studies that illustrated the experiences of teacher-student dyads over five days. “Case analysis involves organizing the data by specific cases for in-depth study and comparison” (Patton, 2002). I used a single case analysis in the presentation of the findings to provide one specific and detailed example of the more general experience of the teachers. I selected the particular case study because it provided the richest, thickest description of the different stages of the reflective cycle. It provides an example of how the concepts of the model are manifested for an individual teacher (Stake, 2000).

Highlighting a detailed case study enhanced the credibility of the overall research results because thick description is a criterion for rigour in the interpretive paradigm. The writer describes in detail a participant in the setting under study, allowing the reader to better judge possible transferability of the findings (Creswell, 1998).

⁵ Grouping similar concepts through a process of constant comparison creates categories. This involves interpreting and transcending the data by giving new meaning to the codes so that relationships among the categories can be created. Codes are very specific descriptions of what is contained in the empirical data. The principle of coding is to be true to the empirical data, with minimal interpretation (Morse & Richards, 2002).

Summary of data analysis

The overall process of analysis is summarized in this section. It included a three stage method of data transformation: preparing for the analysis by understanding the story, interpreting the dataset to answer the research question, and drawing conclusions to identify how the integrated reflective learning model could be adapted to better describe teachers' experiences of teaching ESL via DVC. The overall process of analysis is summarised in Table 4.

Table 4

Summary of data analysis

	Method
Understanding the story	Reviewed all data twice without coding. Created memos that summarised the key themes.
Interpreting the dataset to answer the research question	Coded interview, video, reflective field note, and journal entry data into categories, concepts, and codes. Coded data chronologically to evaluate how participants' feelings and attitudes evolved over time. Initially coded data using the concepts of the reflective learning cycle outlined in Table 3. Generated additional codes from the data to expand or modify the concepts of the reflective learning cycle in relation to teaching ESL via DVC. Three main categories were identified: ESL problems and strategies; DVC problems and strategies; other problems and strategies. Case study analysis of one student-teacher dyad.
Drawing conclusions	Organized categories, concepts, and codes into tables to display the data and show relationships within it. Adapted the integrated model of the reflective learning cycle based on the study findings.

Rigour

The standard for rigour in the interpretive paradigm is trustworthiness.⁶ The researcher must ensure the interpretation is true to the participants' stories and consistent with the empirical data. Because the goal is to understand, the important question in determining rigour is: Did the researcher get the story right? The procedures used to establish trustworthiness for the thesis research are outlined in Table 5.

⁶ Each research paradigm has a different criterion for rigour, and the research must be judged using a criterion appropriate for that paradigm. Because the research is situated in the interpretive paradigm, the standard criteria and procedures appropriate to that paradigm are discussed.

Table 5
Research rigour in the interpretive paradigm

Criteria for rigour in the interpretive paradigm	Procedures to ensure rigour ⁷
Confirmability Dependability Credibility	Triangulation: Using multiple data sources or theoretical perspectives in a study to ensure the data are complete.
Transparency of logic & decisions about methodology	Thick description: Data must provide rich, detailed, and concrete descriptions of people and places.
Applicability	Persistent observation: The researcher must observe for a sufficient time to provide saturation or redundancy.
	Reflexivity: The researcher must be aware of and acknowledge personal experiences, values, and biases that will influence interpretation of the data.
	Audit trail: The researcher makes detailed memos about data collection and decisions about coding and analysis so others can verify the rigor of fieldwork and confirmability of data collected.

The thesis study employed four data sources to accomplish triangulation of the data: interviews, field notes, journal entries, and videotapes. During the interviews, I probed to ensure the data pertaining to the issues of interest were thick and rich. Structured journal entries also drew out detailed comments from participants. I observed each participant conduct five ESL lessons, and then reviewed the videotapes of the teaching sessions repeatedly, accomplishing the requirements of persistent observation. I

⁷ Definitions are based on the work of Bogdan and Biklen (2003) and Patton (2002).

employed reflexivity in my personal perceptions in the field notes; I was aware of how my personal experiences teaching ESL in France could shape my interpretation of the data. Finally, I maintained an analysis journal throughout the study that recorded details of the coding process and decisions made during analysis. This detailed audit trail ensured transparency of decision-making.

The use of these five procedures helped ensure the findings were confirmable, dependable, and credible. The thesis provided the research results with contextual detail to allow the reader to judge whether the results are applicable in similar contexts.

Summary of research design

The paradigm, methodology, and method used in the research approach were explained in this chapter. The research was conducted within the interpretive paradigm, which seeks to understand phenomena in new ways. The methodology was naturalistic inquiry, which emphasises understanding phenomena in context. Data were qualitative; they consisted of interviews, journal entries, field notes, and videotapes.

How the knowledge presented in Chapter 2 was incorporated during the analysis and interpretation of the data was also discussed in this chapter. First, I developed a conceptual framework for use in the research – a model of an integrated reflective learning cycle based on the work of Kolb (1984) and Schön (1983, 1987). I then transformed the data by examining them using a template for analysis based on the conceptual framework.

Analytic induction provided the guiding principles for the data analysis, which sought to understand and describe new teachers' experiences teaching ESL via DVC by using the conceptual framework. The outcome of the research answered the question:

how can new teachers' experiences of teaching ESL via DVC be understood and described using a conceptual model of a reflective learning cycle based on the work of Kolb and Schön? Finally, I adapted the model of the integrated reflective learning cycle to better represent how teachers implemented the reflective learning cycle in the combined ESL and DVC environment.

In Chapter 4, I present the findings of the thesis research and provide a detailed description of the problems and strategies used by teachers teaching ESL via DVC. A case study of one teacher's experience is presented, as well as my adaptation of the conceptual framework. I also discuss the practical implications of the research for education and practice.

CHAPTER FOUR:
FINDINGS AND DISCUSSION

Introduction

The purpose of the thesis research was twofold: to understand and describe new teachers' experiences teaching ESL via DVC by using a conceptual model of reflective learning based on the work of Kolb and Schön; and to adapt this conceptual model to better represent how teachers implement the reflective learning cycle in the combined ESL and DVC environment. The results, however, must be considered in the following context.

First, the research examined and conceptualised the experiences of new teachers teaching ESL via DVC using a conceptual framework of the reflective learning cycle. I developed the conceptual framework for the study based on the work of Kolb (1984) and Schön (1983, 1987). While their work on reflective learning is much broader than the reflective learning cycle, the thesis research did not intend to examine all aspects of reflective learning. Second, because the research goal was to understand the experience of teachers working in a combined ESL and DVC environment, the analysis created a model that demonstrates how they are experienced in combination. The thesis also sought to understand and describe learning, not teaching. Therefore, teachers in the study are viewed as learners learning to teach in the combined environment of ESL and DVC. Fourth, the thesis research studied new teachers who had no previous experience teaching ESL or teaching via DVC. Consequently, I acknowledge that the findings cannot be applied to experienced teachers, in particular experienced ESL teachers. Finally, the results of the research are my interpretations of the data, examined from a particular

theoretical perspective and based on my own knowledge, skills, and experience.

Therefore, like all research conducted in the interpretive paradigm, alternative interpretations are possible.

The remainder of this chapter is divided into seven sections. The key findings of the analysis are presented in the first two sections. The theoretical implications of the results in relation to the conceptual framework and learner-centered principles are presented in sections three and four. The implications of the research for education and practice are presented in section five. Finally, limitations of the research and directions for future research are presented in sections six and seven.

Overview of results

Themes presented in analysis of videotapes, field notes, journal entries, and post-interviews

How I used the conceptual framework to begin the three-level analysis process described in Chapter 3 is illustrated in Table 6. Initially, I organized the data into four categories based on the stages of the model of the integrated reflective learning cycle (level one coding). Within each category, I developed explanatory concepts about the teachers' problem-solving process (level two coding). Finally, codes were inductively generated from the data to understand and describe how teachers in the combined ESL/DVC environment experienced this process (level three coding). When the analysis was complete, the concepts explained the categories, and the codes explained the concepts.

Table 6

Overview of three levels of coding

Level one coding	Level two coding	Level three coding
Categories derived from Kolb (1984) and Schön's (1983, 1987) integrated model of reflective learning	Concepts derived from the template for analysis (Table 3)	Codes derived inductively from the data
Concrete experience/ Reflection in action	Identifying the problem	Technological problems (see Table 7) Understanding one another
	Solving the issue	Implementing various strategies to solve technological problems (see Table 7)
Observation & reflection/ Reflection on action 1	Exploring the problem in different ways	Feelings/emotions
	Exploring strategies	See Tables 7 and 8
	Reflecting in different ways	Watching videotapes Filling out journal entries Discussing with peers
Forming abstract concepts/ Reflection on action 2	Considering conceptual factors	Cultural ignorance Language barrier Technology
	Exploring strategies	See Tables 7 and 8
	Considering the student's experience	The effect of the technology Student's feelings
Testing in new situations/ Reflection in action	Reflecting on outcome	Positive Negative
	Applying learning to future experiences	Teaching experiences Teaching ESL

Because the goal of the thesis research was to understand and describe the reflective learning cycle of new teachers teaching ESL via DVC, it was important to identify instances where the teachers were engaged in reflection. The conceptual framework for the thesis research — the integrated model of the reflective learning cycle — predicates that reflection is prompted by a surprise or problem.⁸ As a result, it was necessary to isolate within the dataset occasions when the teachers experienced problems.

To begin the analysis, I reviewed and analysed the 25-videotaped ESL sessions in order to identify problems. As it was impossible to see the teachers' reflection in the videotapes, I looked for signs of participant stress that indicated they were experiencing a problem. Signs of stress included: shaking their head, shrugging their shoulders, biting their lip, muttering to themselves, asking the researcher (myself) for assistance, etc. These problems were then coded into themes. The journal, field note, and post-interview transcript data were then reviewed looking for additional problems. When new problems were mentioned, they prompted the creation of new themes. The problems I identified in the videotapes were corroborated in the journal entries, field notes, and post-interviews.

Based on the analysis of the videotapes, journal entries, field notes, and post-interview transcripts, all of the teaching problems identified were grouped into eight themes: 1) building the student's confidence; 2) forming a relationship; 3) coping with the technology; 4) teaching knowledge; 5) seeking comprehension; 6) generating conversation; 7) keeping the student engaged; and 8) managing anxiety. The following table defines these themes as they were used in the coding procedures.

⁸ For the purpose of the research, the term "problem" will be used to refer to this stimulus for reflection.

Table 7

Problem themes and definitions

Themes	Definitions
Building the student's confidence	The problem teachers experienced making the students feel confident expressing themselves in their second language to a stranger from Canada.
Forming a relationship	The problem the teachers experienced forming a relationship with their partners so that students felt comfortable engaging in conversations.
Coping with the technology	The problem the teachers experienced with the technology.
Teaching knowledge	The problem the teachers experienced discussing topics they were not knowledgeable about.
Seeking comprehension	The problem the teachers experienced being understood by/understanding the students.
Generating conversation	The problem the teachers experienced generating and keeping up the flow of conversation.
Keeping the student engaged	The problem the teachers experienced keeping the students interested in the topics of discussion.
Managing anxiety	The problem the teachers experienced managing the anxiety they were feeling because they had no previous experience teaching in this environment.

Of the eight themes, coping with the technology and seeking comprehension were the most significant for answering the research question. How the teachers coped with the technology was specifically associated with the DVC environment, and comprehension issues were directly related to the ESL environment. The other challenges could be associated with any classroom or teaching situation. Many of the problems identified

could have been coded under more than one theme. To address the problem, I went through the data twice, once coding all data that illustrated specific DVC and ESL problems, then again coding the remaining problems under the alternative themes. Data are organized into three separate tables for this reason.

Once the problems were coded, I followed a similar process for identifying and coding the strategies the teachers implemented to address the problems. I began by reviewing the videotapes to look for techniques or approaches the teachers used during the sessions to rectify the problems they were experiencing. I coded these strategies as I observed them. After analysing the videotapes, I also reviewed the teachers' journal entries and post-interview transcripts, and created new codes based on comments made by the teachers about additional strategies they used.

In the process of analytic induction, once the data are reduced through coding, they must be displayed. In this case, I created a series of tables to organize the ESL and DVC problems and teacher strategies. These tables are presented and discussed below. Tables 8 and 9 address the two problems most germane to the thesis research: coping with the technology, and seeking comprehension; Table 10 addresses the remaining six.

Strategies used by teachers to address the problems of coping with the technology

The following table describes the evolution of the teachers' reflective learning cycle as they addressed problems associated with coping with the technology over the course of the week. The table's column headings correspond with the stages of the integrated model of the reflective learning cycle. Problems and strategies are highlighted in bold to indicate reoccurrence in more than one stage.

Table 8

Strategies used by teachers to address problems of coping with the technology

	Concrete experience/ RIA (Videos)	Observation & reflection/ ROA 1 (Journal entries)	Forming abstract concepts/ ROA 2 (Post-interview)
DVC Problems	Hearing the student and being heard Seeing the student and being seen Setting-up and adjusting the equipment Dealing with equipment malfunctions	Hearing the student and being heard Seeing the student and being seen Setting-up and adjusting the equipment Dealing with equipment malfunctions Dealing with a poor videoconferencing environment Dealing with poor connection quality	Becoming comfortable with DVC Hearing the student Seeing the student for visual cues Forming a relationship with the student (length of time) Operating the equipment Feeling detached Changing teaching style to accommodate DVC
DVC Strategies	Using/Attending to body language Making technological adjustments Repeating phrases Asking student to confirm/repeat Giving the student the floor ⁹ Describing the problem to the student Suggesting solutions Carrying on Giving up	Using/Attending to body language Making technical adjustments Repeating phrases Listening intently	Acknowledging/discussing problem with the student

Note. Problems and strategies highlighted in bold recur in more than one stage.

⁹ Giving the student the floor refers to allowing the student to direct the conversation.

The videotapes were the only data source that accurately represented the teachers' here and now experience. As a result, data derived from them were categorised as the teachers' concrete experience/reflection in action (RIA) stage. Based on my observations from the videotapes, column one lists the problems experienced with the technology and the strategies teachers used to address them in the moment. In the videotapes, I observed teachers' frustration with poor audio/video quality, awkward setup, and malfunctioning equipment. Some of the strategies observed were coded as using/attending to body language, making technological adjustments, and giving the student the floor. The teachers engaged in a trial and error process, experimenting with different strategies to see how they impacted the problem. This explains why the strategies listed in this column are so numerous.

Data derived from the journal entries are listed in column two. Observation & reflection/ROA 1 represents the participants' first opportunity to reflect back on the lesson. During this stage, the teachers began to formulate new ideas about the problems and reflect on alternative strategies. In the journal entries, participants explored problems similar to those identified in the videotapes, as well as problems of environment (lighting, room temperature) and Internet connection quality. After his first session, one teacher wrote: "Some spotting from the other end, camera related. Some lag time delay. The office was not very good for videoconferencing – too bright." Another student elaborated after the fifth session: "As usual it was hard to hear [my partner] sometimes. At one point I had to ask her to repeat herself 4 or 5 times. The audio was cutting out at the same spot in her story."

The second column contains data from journal entries completed immediately after each session (reflection on action journal 1), and after reviewing the videotapes (reflection on action journal 2). I chose to combine these data because I found participants' reflections changed little after reviewing the videotapes. Question six of the reflection on action journal 2 asked participants: "Did reviewing the tape change your impression of the lesson? If so, in what way?" The question frequently generated responses such as: "No, not really." This could be because both entries were made within a 24-hour time span. It was observed, however, that participants' reflections changed drastically by the end of the week. In the post interview, participants unanimously stated that reviewing the videotapes was an important and successful stimulus for reflection. This contradiction indicates the video review did not immediately stimulate reflection, but did so gradually over time.

Themes developed from the data collected in the post-interview are listed in the final column of Table 8. Forming abstract concepts/ROA 2 represents the participants' second and final reflection on their experiences at the end of the week. I used the post-interview questions to prompt the teachers to explore their experience from start to finish and reflect on the overall problems experienced and strategies implemented. During the post-interview, the teachers put less emphasis on the specific technological problems they experienced, and demonstrated a more abstract reframing of their experience. Problems were reframed in terms of their influence on the quality of their interaction with the French student. In the post-interview, one teacher described how the technology made him feel detached from the student:

From a lesson point, I think it was just getting comfortable with the person cause, we talked about this, about how difficult it was to sit on a computer on one end and the other end and not having a human interaction. You could still see the reactions on the video but it was...different in essence. I said to her it would be much more exciting if we were sitting in a café having a cup of coffee and talking like that, cause then we can see the body language, how relaxed you are...but over the video camera you didn't get that. You still got the reactions, but you didn't have, it's almost as if you needed that personal contact. So, that was the one thing we talked about...she said it was really fun to sit down and talk to me but it would be much more fun if we were in person doing it.

Reading Table 8 from left to right, it becomes evident that the teachers' understanding of their experience evolved from the more specific and technical to the more broad and general. Teachers' preoccupations changed from teaching concerns to the student's experience as a learner. While the teachers initially identified specific problems they were having with the technology, the teachers later became more concerned with how the technology made them feel detached from the student and, as a result, made the process of building a relationship more difficult and time consuming.

It is also noteworthy that teachers identified fewer strategies for coping with the technology in the journal entries and fewer still in the post-interviews. This indicates the teachers adapted to the technology over time by making adjustments, and eventually accepting that the technology was outside of their control. Ultimately, all they could do was acknowledge and discuss the problem. This critical point, that the technology was beyond the teachers' control, influenced the adaptation of the integrated model of the

reflective learning cycle presented later in the chapter. The teachers' acceptance of the limitations of the technology is illustrated by the following quote:

...the sessions evolved from uncomfort to comfort both with each other in our interactions and conversations and also with being comfortable with the technology. So it is going to happen that the video's going to cut out and won't be able to see her. Or it's going to happen that I'm going to have to ask her four times to repeat something that she said and that's going to happen and that's OK.

This section illustrated the problems the teachers encountered with the technology and the strategies they used to cope. The evolution of the teachers' reflective learning cycle as they addressed the problems associated with seeking comprehension is discussed in the next section.

Strategies used by teachers to address the problems of seeking comprehension

The evolution of problems of seeking comprehension, and the strategies teachers used to address them is illustrated in Table 9. Problems and strategies related to the challenge of delivering ESL instruction have been categorised as ESL problems and ESL strategies. Bold text is used to indicate problems and strategies that reoccur in more than one stage.

Table 9

Strategies used by teachers to address the problems of seeking comprehension

	Concrete experience/ RIA (Videos)	Observation & reflection/ ROA 1 (Journal entries)	Forming abstract concepts/ ROA 2 (Post-interview)
ESL Problems	Choosing vocabulary: British/North American English Slang/colloquial English Technical/advanced vocabulary Misunderstandings: Cultural differences Various meanings for the same word Slowing down rate of speech Enunciating clearly Effectively teaching: Vocabulary Culture Geography Pronunciation Grammar	Being understood Understanding the student	Being understood Understanding the student Not knowing about one another's culture Getting the student talking
ESL Strategies	Rephrasing/rewording Repeating phrases Slowing down rate of speech Using/attending to body language Enunciating clearly Asking student to repeat Confirming understanding: Body language (nodding)	Rephrasing/rewording Repeating phrases Slowing down rate of speech Using/attending to body language Enunciating clearly Asking student to clarify Choosing vocabulary, avoiding anything	Rephrasing/rewording Repeating phrases Slowing down rate of speech Using/attending to body language Asking for assistance Asking student to repeat Choosing vocabulary, avoiding anything

Repetition	slang/technical/ advanced	slang/technical/ advanced
	Putting oneself in the student's position	Putting oneself in the student's position
	Correcting/prompting the student	

Note. Problems and strategies highlighted in bold recur in more than one stage.

In Table 9, teachers' progress with ESL instruction is illustrated from left to right. In the videotapes, teachers struggled with a number of ESL-related problems. The teachers had trouble being understood; they frequently used vocabulary that was either too advanced for, or unfamiliar to, the French students. The teachers also experienced problems because they often enunciated poorly or spoke too quickly. Some misunderstandings also resulted from cultural differences. The teacher would talk about something familiar to them, such as Halloween. The students, however, would be confused because Halloween is not celebrated in France. Teachers also experienced stress when students asked them about things they were not knowledgeable about. Several French students, for example, were interested in talking about the American presidential election, but not all the teachers had been following the election. This was an ESL-related problem because, as participants in a cultural exchange, the teachers felt obligated to know about issues that affected their country.

The teachers employed various strategies to solve misunderstandings. Rephrasing, rewording, and repeating helped clarify meaning. The videotapes also showed the teachers making a conscious effort to slow down their speech and use familiar vocabulary. They began to use body language, such as gestures or facial expressions, to help convey ideas. The teachers also occasionally asked for my assistance because I was available, and they knew I had taught ESL in France.

The teachers focused more on the strategies and less on the problems as the week progressed. In their journal entries, the teachers identified only two general ESL problems: these were fundamental problems of being understood and understanding the student. The teachers' list of strategies, however, was more extensive, perhaps because as the week progressed they reflected on ways to improve the sessions. Some of the strategies considered are illustrated in the following excerpts from the reflection on action 2 journal entries completed after the first DVC session. These excerpts were chosen based on an analysis of all five participants' entries.

Some of the teaching strategies I used was [sic] observation, listening and rephrasing...I had to use her body language to determine if she was understanding [sic] what I was trying to ask. I also listened to what [my partner] was saying and would ask questions that allowed her to elaborate on topics she felt comfortable with. When [my partner] had difficulty with the wording of a question, she would shake her head; I used this non-verbal cue to reword my question so that she was able to understand.

In the future I will also try to slow down my speech pattern and enunciate my words so that there is no confusion as to what I am saying. For example, when asked how old I was, I said "twenty-three." Although [the researcher] warned me not to do this, I guess I am accustomed to doing so. [My partner] asked me a few times how old I was before I realised I was not pronouncing it correctly.

In the post-interviews, the teachers focused less on their own problems and more on the students. In addition to the two fundamental problems of understanding and being

understood, they identified cultural ignorance as an issue. Several of the teachers mentioned misunderstandings occurred because the teachers and students were unfamiliar with each other's cultures. According to the teachers, knowing more about the French language and culture would have been beneficial because they would have been better able to understand the students' lives. Several teachers also had difficulty getting students to initiate conversations and speak freely. One teacher described her experience in the post-interview:

One of the things that I found that was a challenge in the first session was that she didn't communicate with me, so I felt like I was leading the conversation. And I think the first one [session] was only like 12 minutes because after 12 minutes I didn't know what more to ask...I'd ask her everything that you would ask somebody when you are trying to strike a conversation with them the first encounter. And when they don't respond, or they give you a one word answer, you're like, OK, well I have nothing to go on, there's nothing for me to ask because if they're not elaborating, I can't [say], "OK, so how was this, or tell me more."

The teacher's reflections were becoming student-centred; she was concerned the student was not benefiting from the sessions.

The strategies explored in the post-interviews were similar to the strategies mentioned in previous stages. In fact, many of the same strategies recurred at each stage, which illustrated that the teachers did not necessarily develop new strategies, but instead practiced and refined pre-existing ones. While the specific strategy of rephrasing and rewording recurs at each stage, the teachers' reflections evolved over the week. They

gradually identified more general strategies to improve students' comprehension, such as choosing vocabulary and putting oneself in the student's position.

This section examined the evolution of the teachers' reflective learning cycle as they addressed problems of seeking comprehension. The remaining six problems identified as stimuli for teacher reflection are discussed in the next section.

Other problems and strategies

While Tables 8 and 9 describe data related to the influence of DVC and ESL issues on the reflective learning cycle, several other problems influenced the teachers' experiences. Once I had identified the problems and strategies related to ESL and DVC, I analysed the data to identify other problems and strategies not specifically associated with ESL or DVC. The themes I identified were: building the student's confidence; forming a relationship; generating conversation; keeping the student engaged; managing anxiety; and teaching knowledge. The other problems and strategies are summarized in Table 10. Problems and strategies highlighted in bold reoccur in more than one stage.

Table 10

Other problems and strategies

Other Problems	Concrete experience/ RIA Strategies (Videos)	Observation & reflection/ ROA 1 Strategies (Journal entries)	Forming abstract concepts/ ROA 2 Strategies (Post-interview)
Building the student's confidence	Positive/encouraging body language Reassuring student of abilities Positive verbal responses Confirming comprehension Commenting on student's improvement	Positive/encouraging body language Reassuring student of abilities Using simple vocabulary Giving the student the floor	Positive/encouraging body language Reassuring student of abilities Avoiding slang/using simple vocabulary Slowing down rate of speech
Forming a relationship	Sharing personal information: Showing photos Exchanging email addresses Finding things in common Talking about visiting one another's countries Joking/laughing	Sharing personal information Connecting interests Exchanging email addresses	Sharing personal information Connecting interests Having a positive attitude Getting background information
Generating conversation	Controlling the floor: Asking open-ended questions Giving the student the floor Suggesting they prepare ideas for next time Discussing articles Finding interesting topics: Language/culture Current events Personal lives	Questioning skills: Asking open-ended questions Giving the student the floor Preparing topics/questions in advance Using prompts Asking students to come prepared Researching French culture Keeping up on current events	Preparing topics/question in advance Asking open-ended questions Reading up on current events in Thunder Bay/Pau (newspapers) Brainstorming for new topics/keeping track of topics already discussed Comparing university life/culture in Canada and France

Keeping the student engaged	Using visual aids Giving the student the floor	Listening intently Giving the student the floor Finding topics that interest the student Asking open-ended questions Encouraging the student	Finding topics of interest to the student/being knowledgeable about them Asking student to talk about him/herself
Managing anxiety	Asking for assistance Expressing concern to the researcher Nervous laughter Communicating problem to the student	Asking for assistance Trying to be more prepared Trying to relax	Asking for assistance Trying to be more prepared Having a positive attitude
Teaching knowledge	Providing words/phrases when the student was stuck Explaining the meaning of words Teaching subjects: Canadian culture Geography Repeating words so the student could hear proper pronunciation Helping student with grammar	Providing words/phrases when the student was stuck Keeping up on current events Forcing the student to figure out words for him/herself Repeating words so the student could hear proper pronunciation Telling student to look things up on the Internet to learn more Correcting the student Confirming that the student was using the correct word	Providing words/phrases when the student was stuck Keeping up on current events Forcing the student to figure out words for him/herself Varying conversation so they could cover lots of vocabulary Encouraging the student to do the talking Explaining things in detail Finding subjects/topics of interest Brainstorming for new topics/keeping track of topics already discussed

Note. Problems and strategies highlighted in bold recur in more than one stage.

Building the student's confidence

Understandably, some French students felt insecure and uncomfortable expressing themselves in their second language with a stranger. The teachers used several strategies to build the students' confidence and make them feel more comfortable. In the videotapes, observable strategies included verbally reassuring the student of his/her abilities, verbally commenting on their improvement, and using positive/encouraging body language (i.e., smiling, nodding). In the journal entries and post-interviews, the teachers identified less obvious strategies they were using. Some teachers felt allowing the student to lead the conversation conveyed their confidence that the student possessed the skills necessary to communicate at that level. Some teachers felt using only basic vocabulary would prevent the student from feeling frustrated, and make the student feel better about him or herself. One teacher described in the post-interview how her partner became more confident in her abilities over the course of the study:

...at the beginning she seemed very unconfident in her abilities...She kept saying how her English wasn't very good and how, you know, she's still learning....Yet, her English, in my opinion, was amazing. Like, for someone to be able to communicate in the way that she was able to with minimal training was incredible. And I think that in the end she became a lot more confident in her abilities and realised that she was able to speak English and communicate in English with an English speaking person.

Forming a relationship

The more comfortable the students were, the easier it was for the teachers to develop relationships with them. Forming a positive relationship with the student helped

put everyone at ease and made the learning process more enjoyable. However, forming a relationship is especially difficult in the DVC environment. This is how one participant described her experience:

...Person to person, we don't hear each other go '[teacher makes sounds like a robot].' We don't hear that bleeping out in our own voices, so I think the technology, the time that it takes to get done what you want to get done, and have the conversation that you want to have while not having the personal connection...it took a week, five sessions to feel the connection that I think probably could have happened a lot easier had we been face-to-face. Not necessarily that it needed to be face-to-face, let me just clarify...[but] I think we could have gotten to that [connection] point but it took longer because of the technology problems.

These challenges forced teachers to spend a lot of time and effort forming a relationship with their partners. In the videotapes, the teachers were observed joking and laughing with the students. Some also attempted to steer the conversation into the personal realm, asking about the student's family, friends, likes, and dislikes to get to know them better. Several teachers brought photographs of friends and family to share with the students, making them feel like they knew each other better. Without the visual dimension offered by DVC, this personal exchange would have been impossible.

While many of the same strategies were explored in the journal entries and post-interviews, one teacher also mentioned that having a positive attitude helped him bond with his partner. He discovered that thinking positively about the sessions made them more enjoyable; soon he began looking forward to their daily chats. Teachers' strategies

proved successful in forming relationships with their students; on the last day all participants expressed regret that the sessions were coming to an end. All pairs exchanged email or home addresses so they could keep in touch. In the reflection on action 2 journal entries completed after the last session, one teacher said it made him feel "...almost as if you were losing a friend."

Generating conversation

Many of the teachers expressed anxiety about their problems generating conversation. The awkwardness of meeting and carrying on a conversation with a stranger from a foreign country is difficult under normal circumstances; the DVC environment only exacerbated the problems. Many of the teachers found the first few sessions extremely stressful because there were many awkward pauses. The teachers asked yes or no questions, which did little to stimulate conversation.

Some teachers attempted to overcome this problem by allowing the student to lead the conversation. In the videotapes, teachers frequently asked students questions like: "Do you have any questions for me?" or "What would you like to talk about?" In an attempt to find interesting topics of conversation, teachers suggested students come to the following session prepared with a list of questions or topics they would like to discuss. Teachers and students also relied on the five articles I provided for them for generating topics of conversation.

In their journal entries, teachers began to look critically at their questioning skills. They soon realised they would have to start asking open-ended questions if they wanted the students to elaborate. Some teachers experimented with the use of prompts; they brainstormed a list of potential discussion topics the night before the session and, when

stuck for ideas, would refer to the list. Many teachers acknowledged the importance of keeping up on current events. The French students frequently asked about popular news items, such as same-sex marriage; the teachers had to inform themselves in order to have a conversation. One teacher even mentioned researching aspects of French culture so he was prepared with questions to ask the student.

In the post-interview, the teachers discussed many of the same strategies; however, the teachers also began to brainstorm more specific ways of generating conversation. One teacher proposed the following idea:

...it would have been interesting had we known which newspaper, English speaking newspaper was from Pau. That way we could have read their newspapers to find out what's going on in their community. And then could have had them look at the *Chronicle Journal* [Thunder Bay daily newspaper] and that way they could have found out what's going on in our city. [We] could have talked about how those things relate, or even to see if there was a University newspaper that they publish and we could have given them a link to the Argus [Lakehead University's student newspaper]. That way they could see what's going on on our campus, we could talk about how that affects our lives, our student lives.

Statements such as this suggest the teachers invested in their relationships with their partners and became more committed to their roles as teachers. How the students perceived the lessons became important to them and, consequently, they wanted to do everything necessary to keep the conversation flowing smoothly.

Keeping the student engaged

While a continuous conversation was key, it was also important that the students remain engaged in the discussion. In conversations where understanding each other was a challenge in itself, teachers and students often found themselves bored with conversations they were unable to follow. One teacher described in her post-interview the difficulty she experienced engaging her partner in conversations:

...at times I felt like I was way more into it than she was cause she clearly didn't understand, or she just was not wanting to do it...I don't know what her factors were really, but there were times where I was really excited to go and talk to her and she just kind of didn't want to talk.

In the videotapes, I also observed the teachers using visual aids to enhance the conversation. One teacher brought in photographs of Thunder Bay landmarks such as the Sleeping Giant and the Terry Fox monument. She used them to visually engage her partner. The photographs enhanced her verbal description, and her partner showed more interest in what she was saying. Teachers also attempted to engage their partners by allowing them to choose the topic and direct the flow of conversation, on the premise that the students would choose topics that interested them and more easily engage in conversation. After the second session, one teacher described in her journal a strategy she used to keep the student engaged: "Letting him have most control over the conversation, but asking questions to find out more and get him talking more." After the fourth session, another teacher commented: "I feel like I am still leading or directing the conversation. I would like the conversation to flow from the student."

More strategies used to keep students engaged were revealed in the journal entries and the post-interviews. Some teachers felt if they themselves were engaged in the conversation, the students would be aware of this and reciprocate. Listening intently, they noted, is one effective way of demonstrating interest. This showed that the teachers believed listening plays an important role in good conversation. During the post-interview, teachers said asking the students to talk about themselves also kept them engaged in the conversation.

Managing anxiety

The circumstances under which participants were brought together sometimes made for uncomfortable and challenging conversations. One teacher described the anxiety she was feeling: "...it was worse when it first started because of the nervousness...I really wanted to figure out how to overcome that. I don't like that feeling of sweating and being nervous." The teachers had to manage their anxiety so it would not be evident to their partners. During the sessions, the teachers sometimes resorted to asking me for assistance, or expressed concerns to me when things were going badly. The teachers often responded with nervous laughter when the technology problems were so bad they could barely understand what the students were saying.

In the journal entries, the teachers commented that making a conscious effort to relax helped ease their anxiety. Preparing things to discuss ahead of time also made them feel more confident. In the post-interviews, the teachers identified similar strategies. One teacher added that having a positive attitude helped alleviate some of her anxiety.

Teaching knowledge

The teachers teaching knowledge was the final problem theme identified in the data. None of the teachers who participated in the thesis study had previous experience teaching ESL. The teachers were never trained in ESL instruction; moreover, they were inexperienced teachers. As a result, they were unprepared and unaware of what to expect. For many native English language speakers, English grammar, such as sentence structure and verb conjugation, comes naturally. Consequently, it is difficult for a teacher to explain grammar rules when they are unfamiliar with the basis for the rules. Nonetheless, I observed the teachers teaching ESL knowledge to the students. For example, they often defined words when students expressed difficulty understanding. In an indirect way, the teachers also taught pronunciation by correcting words the students mispronounced, as one teachers explained in her journal following the fifth session:

She [my partner] was “forced” to figure out the English words to explain things to me. Good practice for her, I think. I also repeated certain words for her (not in a rude way) so that she could hear the proper way to say it (pronunciation).

Some teachers also prompted their partners with words or phrases when it was evident they were struggling.

In the journal entries and post-interviews, the teachers explored other ways of addressing the problem. One teacher wrote about the importance of letting the student figure out words for him or herself. The same teacher also felt it was important to correct student’s errors, believing this was how the student would learn to speak proper English. One teacher placed the onus on the student to learn by himself. After introducing a topic, she concluded the discussion by suggesting he do some additional research on his own.

She suggested he “look up some things on the internet he is not familiar with (i.e., Tragically Hip music).” In the post-interviews, the teachers also mentioned a few other strategies. One teacher revealed she tried to vary conversations so different types of vocabulary would be covered. Others mentioned providing students with detailed descriptions of places and events to help them learn about Canadian culture.

This section has presented an overview of the results of the data analysis, and outlined eight themes representing problems that stimulated teacher reflection. Of the eight themes, coping with the technology and seeking comprehension were most relevant to answering the research question. Other themes, however, were important for understanding the overall experience of teachers who teach ESL via DVC.

The analysis presented here provides an understanding of the problems experienced by teachers in a combined ESL and DVC environment. It also illustrates how teacher problems and strategies are linked to the integrated reflective learning cycle. These results fulfilled the first purpose of the thesis study, namely, to understand and describe new teachers’ experiences teaching ESL via DVC by using a conceptual model of reflective learning based on the work of Kolb and Schön. The following case study of one teacher’s reflective learning cycle illustrates these findings in greater detail.

ESL/DVC and the reflective learning cycle: A case study

The following case study provides as an in-depth analysis, applying the model of the integrated reflective learning cycle in one particular instance. The specifics of each teacher’s problems and strategies were different due to their different personalities and backgrounds; however, each teacher experienced the reflective learning cycle as presented in Tables 8, 9, and 10. The case study was selected because it provided the

richest, thickest description of the stages of the reflective learning cycle. Case study analysis can be used to demonstrate applicability of the general to the specific (Stake, 2000).

Karen was the participant chosen for the case study. At the time of the study, she was 26 years old and completing the final year of her M.Ed. program. She enrolled in the Masters program immediately after completing her Bachelor of Education, and had minimal teaching experience. Other than practicum experiences, Karen worked for two years as an occasional supply teacher.

Karen uses the computer for Internet access and word processing, but she describes her experience with technology as “very basic, very minimal.” She feels her proficiency at learning new programs or software is sufficient as long as someone shows her how to use it. At the time of the study, Karen had no experience using DVC technology and no experience teaching ESL. Karen’s lack of experience as a teacher, using DVC technology, and teaching ESL helped guarantee she would experience problems over the course of the study that would stimulate reflection. In the following case study, I describe Karen’s DVC and ESL reflective cycles separately to illustrate how her reflection evolved over the course of the week.

Karen’s DVC reflective learning cycle

Concrete experience/Reflection in action

In the videotapes and in person, I observed Karen struggling with technological difficulties. Karen experienced problems with the audio (robotic sound, lag time, screeching noises), the video (pixilated images, screen freeze-ups), and equipment malfunctions (microphone not working). Poor audio quality was particularly troublesome

for Karen, so much so that she and her partner had difficulty understanding one another. Audio quality is extremely important in ESL learning. ESL students have enough difficulty understanding English when it is delivered in a clear, unobstructed fashion; when the sound is distorted or robotic, it makes the task almost impossible. Likewise, the technology made it more difficult for Karen to understand her partner's accent.

When the technology made communicating with her partner difficult, Karen was observed biting her lip, shaking her head, laughing nervously, and shrugging her shoulders – signs of stress in response to the technological problems. Karen attempted to solve the problems by: asking me for assistance, repeating herself, discussing the problem with the student, and adjusting the technology. These strategies were perceived as the ways Karen addressed the problems at the time. Dealing with the technological problems appeared to preoccupy much of Karen's time and attention. Based on this observation, I concluded that Karen attributed the misunderstandings she and her partner experienced to the technological difficulties.

Observation and reflection/Reflection on action 1

Karen vented some of her frustration about the technological problems in her journal entries. One of the reflection on action 1 journal questions prompted her to describe any technological problems she had experienced that day. After the first session, she wrote:

It took a few minutes to figure out how to best hear him and him hear me. There were a couple moments that were hard to hear but we just had to repeat ourselves. The colouring and clarity of the screen was not exact. I felt I looked different than in person.

After the fourth session, Karen also commented: “He said I sounded like a robot and there was a red square in front of my face. Sometimes his voice was broken and the screen was fuzzy.” In her journal entries, Karen also expressed frustration about the setup of the equipment. Because of technological difficulties, I arranged the web cam differently for the third session. Afterward, Karen explained how the different setup made for awkward conversation: “[I] could not see him because camera and TV were set up differently,” she wrote. “When looking at the camera, could not see him, so it was not as interactive.”

Karen was unable to watch the web cam and the computer screen at the same time; consequently her partner saw a side view of her face. This technological problem was outside of Karen’s control as I had set up the equipment prior to the session. This was the first technological problem Karen accepted and adapted her teaching strategies to accommodate. She had to make a conscious effort to look into the camera, even if her instinct was to look at her partner when he was talking.

At this stage of reflection, Karen explored how she was feeling during the sessions. Karen’s experience with the technology had a significant influence on these reflections. When the technology provided poor audio and video quality, she felt frustrated; however, when the technology worked well, she felt more positive about the interaction. After the second session, Karen reflected on how the technology influenced her emotions: “More frustrated today, the equipment wasn’t working well. It was hard to hear him. Also could not see him moving or talking which made it a harder conversation.” After the third session, she wrote: “Went well today. Had lots to talk

about. The flow went good. He had a lot of questions. I am enjoying our sessions and learning a lot as well.”

The technology enabled Karen to review the sessions on videotape and reflect further on the problems she experienced. After reviewing the sessions, a journal question prompted her to reflect on how her impression of the lesson changed. Three out of five times, Karen answered: “Not really.” Watching the videos had not changed her impression of the lesson, perhaps because they were reviewed too soon after the session. Karen’s impression of her experience was too fresh in her memory to be changed in any significant way. The two instances where Karen’s impression changed after reviewing the videotapes had to do with the setup of the technology. Visual issues, including how the camera was framing her, were brought to her attention after the first session: “Reviewing the tape I realised I need to centre the camera more and not chew gum.”

Karen reflected on how she was being perceived via the technology. This reflection influenced subsequent sessions, as she was more careful to adjust the camera and dispose of her gum. While this type of reflection considers the student, based on my analysis of the data, I perceived it to be more self-centred in nature. Karen was more concerned about how she appeared to the student than about how it affected the student’s learning.

Forming abstract concepts/Reflection on action 2

In the post-interview, Karen explored how the technological problems influenced the student’s learning:

He sounded like, kind of like a robot...It was hard to pick up on what he was saying and I think the same thing happened a couple times on his side. I know he

kept saying the last couple days that I had a big red square in front of my face, so I imagine for him that would probably make it more difficult because he couldn't see my lips moving as I was talking.

Karen recognised that in a language-learning environment people often read lips to help decipher what is being said. Audio problems also made the visual image even more crucial. Karen acknowledged that, without a clear visual image, the student's learning could have been compromised. Karen's reflections became progressively more student-centred during the post-interview.

While Karen saw the technology as a significant problem in the observation and reflection/ROA 1 stage, her attitude appeared to shift in the post-interview. While she acknowledged the problems still existed, Karen said by the end of the week they no longer provoked anxiety. She began to take the audio and video problems less seriously. She was even able to laugh with her partner when poor audio quality made their voices sound robotic. The limitations of the technology, coupled with Karen's lack of knowledge and experience using DVC equipment, made it impossible for her to solve the technological problems. As a result, Karen became accustomed to experiencing these problems and began to accept the difficulties as a reality of videoconferencing. She simply had to adapt her teaching to the technology and generate strategies to cope.

During this stage, Karen compared her experience teaching via DVC with previous experiences teaching face-to-face:

I just found the technology. . .it was hard to get past some of the technical difficulties with not being able to hear them all the time. Reviewing the tapes at night, there was a lot of times that I couldn't even hear what was being said. So I

think it definitely takes a lot more effort and more time to get the same sort of point across than if you were right face-to-face. But I mean, it works well, we wouldn't have had the chance to talk to someone who's in France, that easily accessible, if we were trying to do it face-to-face. So I think there's benefits and disadvantages.

Here Karen looked beyond the technological problems and acknowledged some benefits of using the technology. In the post-interview, her reflections became more abstract; she put aside specific problems and began to look at the bigger picture.

Contrary to what she wrote in her journal entries, Karen revealed in the post-interview that reviewing the videotapes indeed helped stimulate reflection. She said it allowed her to sit back and reflect on the sessions in a detached way, where she could view the conversation from both perspectives: "I think I thought about it [reflection] mostly when reviewing the tapes at night... obviously it just refreshed your memory that there were times that you weren't totally clear with each other."

The inconsistency between Karen's journal entries and her interview transcripts indicated she did not perceive the videotapes to have an immediate effect on her reflective learning cycle. It is possible that the benefit of using the videotapes for reflection evolved gradually over time, and that her perception of their value was heightened through the discussion with me in the post-interview.

Testing in new situations/Reflection in action

In the final stage of Karen's reflective learning cycle, she reflected on the outcome of her efforts. Karen explored the idea that as she became more comfortable with the technology, she also became more comfortable interacting with her partner. "I

was getting more comfortable and, you know, more familiar with him and just with the scenario, so it wasn't as nerve racking as maybe the first day was." This was the only reference Karen made to the technology at this stage of the cycle, illustrating that she was no longer preoccupied with the technology. Her reflections concentrated on ESL-related problems that she could control. These problems are discussed in the following section.

Karen's ESL reflective learning cycle

Concrete experience/Reflection in action

Karen and her partner experienced many misunderstandings during the sessions. Based on my analysis, Karen attributed these misunderstandings to the technological problems she experienced. Karen was so preoccupied with DVC problems, she failed to recognise when the misunderstandings were ESL related. While some of the misunderstandings were caused by poor audio quality, others were caused by poor enunciation, fast speech, or cultural differences. I observed all of these problems both in person and in the videotapes. Because Karen failed to recognise them as ESL problems, the strategies she used to solve them were ineffective. Karen often repeated words and phrases when her partner misunderstood. While repeating could be an effective strategy for solving a DVC related problem, it would not help if the student did not understand the word in the first place. It was not until subsequent stages of reflection that Karen began to explore different factors that contributed to these misunderstandings.

Observation and reflection/Reflection on action 1

In her journal entries Karen recognised instances where her lack of experience teaching ESL created misunderstandings. She used the journal entries to explore strategies for building shared understanding. They included: enunciating words clearly,

slowing down her rate of speech, rephrasing and rewording questions and statements, and clarifying understanding before moving on, among others. After session three, she described how using clarification prevented misunderstandings: “A couple of times there were language barriers (terms) so I had to ask to make sure he understood. The clarification helped.”

For the first time in her reflection on action 2 journal entries Karen began to reflect on the student and his experience. One of the journal questions prompted Karen to reflect on how she felt the student had benefited from each lesson. She cited the opportunity to practice his oral and listening skills, and gain knowledge about Canadian culture. She also remarked after the fifth session that he had learned new vocabulary: “Learned a new word ‘roommate.’ Practiced his English. He also got to exchange email [addresses] and this will be a new means of learning for him to practice writing.”

Based on my analysis of the data, I found that while the technological problems were still a significant issue for Karen, she was beginning to explore strategies for building shared understanding. She was also considering the student’s learning. In the next stage, Karen took a more in-depth look at the ESL problems she was experiencing.

Forming abstract concepts/Reflection on action 2

In the post-interview, Karen considered factors that could have affected her and her partner’s inability to understand one another. One factor already identified in previous stages was technology; however, in the post-interview, Karen identified a new factor: cultural ignorance.

Karen recognised that her lack of knowledge about French culture influenced her ability to understand her partner. In the post-interview she mentioned that had she known

more about her partner's culture, she would have been better able to make associations to help the student relate to and/or understand what she was talking about. She described one misunderstanding where, looking back, she attributed the problem to cultural ignorance:

...There was one time, we were talking about Halloween, and I was trying to ask him if they had anything similar. But since I didn't know about their culture, I didn't know that they had carnivals. You had to tell me to ask about that, so I think there were times like that, where we didn't know enough about the other one's culture.

When she asked her partner if they celebrated anything similar to Halloween in France, he had difficulty understanding what she meant. Halloween is not typically celebrated in France so the student did not know what to compare it to. Because I had experience living and working in the French language and culture, I was able to assist Karen by offering her a prompt: "Ask him about Carnival," I said. I knew Carnival was a festival celebrated in France in the spring, for which everyone gets dressed up. Karen felt knowing more about her partner's language and culture would have prevented misunderstandings such as these.

In the post-interview, Karen elaborated more about how she was feeling during the sessions:

At first I felt more nervous talking. I didn't know some of the things he was asking me about, like when he asked me about gay marriage. I don't know much about that, so that made me feel a little nervous that, OK, I don't know what I can tell him about this because I don't really know much about it myself...So, yeah,

there's times like that that I thought back to how I was feeling during it, and I think that's why I thought to myself, you know, I maybe need to be a little more prepared with some of the stuff he might ask. But then again I didn't know what he was going to ask me in advance either.

Karen felt some anxiety about being unable to answer some of her partner's questions. She wanted to discuss things that interested her partner, but she did not always know much about them. Current events such as the American presidential election and the debate about same-sex marriage did not interest her, so at times she felt incapable of participating in those discussions.

During this stage, Karen's reflection focused on the lesson itself: how interesting the content was, or how to get the student talking more. Karen reflected on these issues with the goal of improving her partner's learning experience. Karen contemplated strategies to adapt the content of the lessons to capture the student's interest: "One thing I thought was being a little more prepared, like having more ideas in my head to talk about each day might have made things go a little more smoothly."

She considered reading up on current events, particularly news that interested her partner. She also expressed a desire to have the student talk as much as possible to maximize his English practice. She mentioned it would be beneficial to do some research on France to determine what might interest her about French culture. This would have enabled her to generate questions for her partner, and give him more opportunity to express himself. It would have also enabled her to compare French and Canadian cultures, and in so doing identify things about Canadian life that her partner would find interesting. Researching French current events would also have had a positive impact on

their interactions for similar reasons. She felt knowing more about her partner's interests, language, and culture could have helped her better understand and relate to him.

In this stage Karen looked at factors other than the technology that could have influenced how she and her partner understood each other. Karen's reflections became more student-centred, more about improving the student's learning experience, and developing strategies to achieve that end. This demonstrated an evolution in Karen's learning.

Testing in new situations/Reflection in action

In the final stage, testing in new situations/reflection in action, Karen reflected on the outcome of her efforts. She examined the effectiveness of her strategies for building shared understanding between her and her partner. Karen said she felt satisfied with the outcome of the sessions. By the end of the week, she felt their conversations flowed naturally and smoothly. Karen also felt she refined her strategies for coping and dealing with misunderstandings over the course of the week; she believed this was the reason their sessions improved.

Karen also considered how her experience teaching ESL could be used in future teaching experiences:

I think what it's done is, it makes you aware that not everyone thinks about things the same way that you might. Like, in explaining some things to him, I would explain them the way that it would make sense to me. But that didn't come across to him, so I'd have to think of a new way to explain it. I thought about this before with teaching too. There are a lot of kids who don't get things easily, and I was always someone who it just came to me easily. So I don't really know how to

explain it to them in different ways than what I'm used to. So I know that...this was kind of an eye opening experience for that too, just making sure that you're able to explain things in more than one way. Not everyone's going to understand it the first way.

Karen recognised similarities between teaching conversational ESL and teaching other subjects. In a regular classroom teachers must be able to accommodate various learning styles and levels of ability. While some students may understand with a verbal explanation, others may need the teacher to elaborate or enhance the explanation with a visual aid. In this way, Karen drew a parallel between her experience teaching conversational ESL and her previous experiences in the classroom. Karen recognised that the strategies and skills she gained through this experience could easily be applied in future teaching situations, even if they are not in the ESL context. She felt the experience was beneficial because it increased her sensitivity to students' learning needs and armed her with new teaching strategies she could implement in future teaching situations.

This section presented Karen's reflective learning cycles as she dealt with DVC- and ESL-related problems. While presented separately to provide greater clarity, the problems were not experienced independently of one another; they unfolded simultaneously. In Karen's reflective cycle, her reflections evolved from being preoccupied with technological problems to accepting them and adapting her teaching strategies. Once Karen accepted the problems, she focused her reflections on the ESL-related problem of building understanding. She assumed greater responsibility for the success of the student's learning experience. Karen's reflections evolved from being focused on her own needs to being focused on the student's learning needs.

I adapted the conceptual framework based on the entire dataset to illustrate the reflective learning cycle of the teachers in this environment. Adapting the conceptual framework addressed the second purpose of the thesis study – to better represent how teachers implement the reflective learning cycle in the combined ESL and DVC environment. The adapted model is presented in the following section.

Theoretical implications: Adaptation of the conceptual framework

The thesis study found that the conceptual framework helped understand the reflective learning cycle of new teachers. Based on these findings, I adapted the conceptual framework to better represent how teachers implemented the reflective learning cycle in the combined ESL and DVC environment. The adapted model answers the research question: How can new teachers' experiences of teaching ESL via DVC be understood and described using a conceptual model of a reflective learning cycle based on the work of Kolb and Schön? Figure 4 illustrates the adapted conceptual framework.

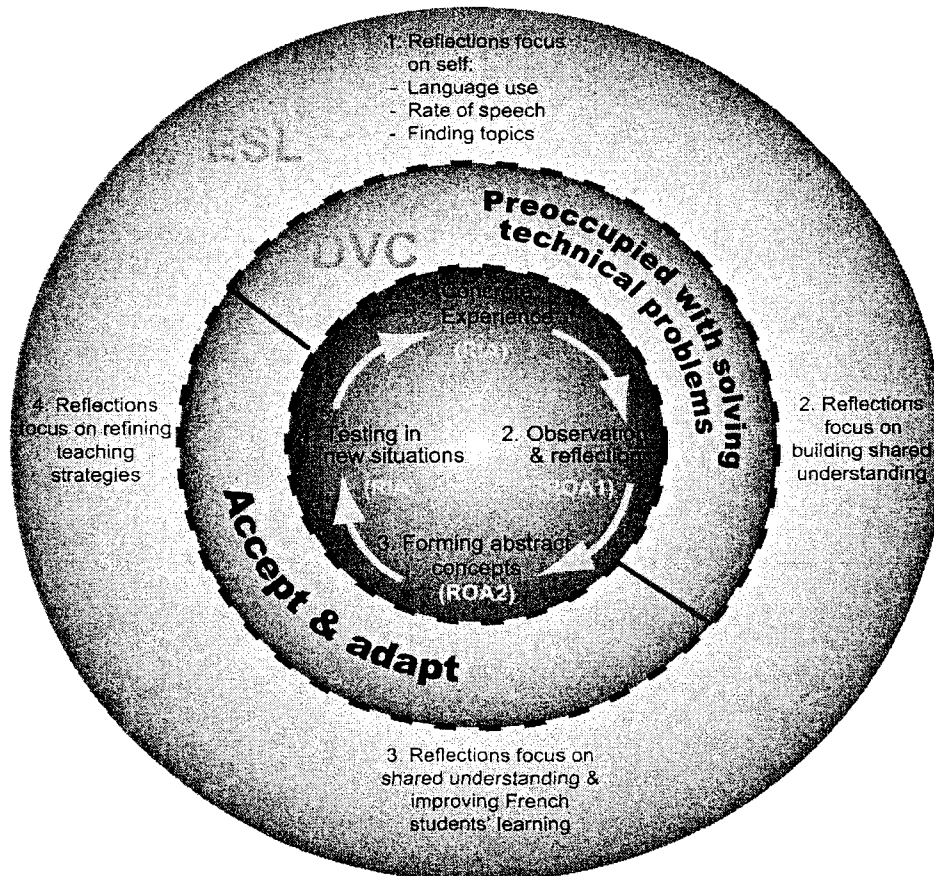


Figure 4: Adaptation of the conceptual framework: Teachers' reflective learning cycle while teaching ESL via DVC

In this adaptation, the conceptual framework – Kolb (1984) and Schön's (1983, 1987) integrated model of the reflective learning cycle – is represented at the centre. Two circles surround the conceptual framework, forming a "bull's eye" figure. The circle closer to the centre, labelled DVC, illustrates how the technology influenced the teachers' reflective learning cycle, while the outer circle illustrates how the ESL environment influenced the cycle.

The model shows how during the first two stages of the reflective learning cycle the teachers were preoccupied with solving the numerous technological problems they experienced. In the final two stages, the teachers accepted the technological problems and

began to adapt their practice to accommodate them. Once the teachers recognised they had no control over the technology, they turned their attention to their teaching, an action over which they had control. All data collected for the research (interviews, field notes, journal entries, and videotapes) corroborated this finding. The consistency in the data suggests the finding is trustworthy.

The outer circle of the model illustrates how the teachers' reflections on ESL-related problems evolved through the stages of the cycle. Based on my analysis, I concluded that the teachers' reflections initially focused on themselves and their own teaching problems, but then evolved to eventually focus on the students and their learning needs. Teachers' reflections, as learners in the ESL/DVC environment, became more student-centred. This finding is consistent with established learner-centered principles, which will be discussed in the following section.

The model illustrates how DVC and ESL interact with one another to influence the reflective learning cycle of teachers. The dotted lines between the two circles illustrate that the two influences are not independent, but work in combination to influence teachers' reflective learning. According to the data, the technology stood between, or mediated, the reflective learning process for the teachers. The teachers could identify a problem, such as cultural barriers influencing student comprehension, but technological difficulties with audio, video, setup, and equipment interfered with their ability to generate solutions. The teachers were so preoccupied with solving the technological problems they could not focus on the teaching task at hand. This was prominent particularly in the first two stages of the reflective cycle. In fact, teachers' reflective learning can be described as sequential: only once the technological issues were

accepted or solved were the teachers able to move beyond them and concentrate on ESL-related issues. In the final two stages of the cycle, as the teachers began to accept that there was nothing they could do to alleviate the impact of the technology, they shifted their focus to the students and their learning needs. The next section explores how this finding relates to pre-existing teaching theory.

Understanding the adapted conceptual framework using learner-centered principles

The evolution of teachers' reflections found in the thesis study prompted an exploration of related teaching theories. I sought out research to help explain this development in the teachers' practice over the course of the study. I found an explanation in the literature about learner-centered psychological principles.

Since the early 1990s, researchers have been developing and articulating principles of learner-centered education (McCombs, 2003). The American Psychological Association (APA) has been a champion of this initiative, publishing a document in early 1993 entitled "The Learner-centered Psychological Principles: A Framework for School Reform and Redesign" ("Learner-centered psychological principles," 1997). These 14 learner-centered principles, outlined in Appendix E, present a research-validated knowledge base about how students learn and what influences their learning.

The core of learner-centered teaching is "putting learners first. The focus is shifted from what teachers teach to what students learn" (McCombs, 2003, p. 94). The principles guide teachers to create learning environments for their students that support and motivate them. The findings of the thesis research can be viewed from the perspective of teachers developing learner-centered approaches over the course of the study. The principles that address the context of learning (Principle 6) and motivational

and emotional influences on learning (Principle 7) are of particular relevance to the thesis study.

The principles suggest “learning is influenced by environmental factors including culture, technology and instruction. Teachers play interactive roles with both learners and the learning environment. Instructional practices must be appropriate for the learner’s level of prior knowledge, cognitive abilities, and their learning and thinking strategies” (“Learner-centered psychological principles,” 1997). In the thesis research, the data illustrated how cultural misunderstandings between teacher and student, unreliable audio and video quality during DVC sessions, and teachers’ lack of knowledge and skill in ESL instruction all created barriers to the teaching and learning process. Over the course of the study, the teachers became more knowledgeable about the students’ culture (which improved their communication), less preoccupied with the technological problems, and more skilful in implementing ESL teaching strategies. Thus, the study findings illustrated how the teachers became more learner-centered in the combined ESL and DVC environment.

The influence of motivation on learning is also germane to the thesis research. Personal values, interests, and goals influence motivation (“Learner-centered psychological principles,” 1997). While data were not gathered specifically to describe participant motivation, it can be interpreted that both teachers and students in the study were motivated to complete the study because all participants remained until the end of the study. The retention of the teachers is particularly noteworthy given the considerable time and preparation the study required of them. At the end of the study, both teachers and students expressed regret that the project was ending. While the focus of the research

was not the learning outcomes of the French students, learner-centered principles would suggest that teacher-student motivation positively contributed to a successful teaching/learning process.

Finally, learner-centered principles suggest emotions influence learning:

“...intense negative emotions (e.g., anxiety, panic, rage, insecurity) and related thoughts (e.g., worrying about competence, ruminating about failure, fearing punishment, ridicule, or stigmatising labels) generally detract from motivation, interfere with learning, and contribute to low performance” (“Learner-centered psychological principles,” 1997). In the thesis research, video data indicated that teachers initially experienced high levels of stress and anxiety. Teachers were also self-conscious and worried about failing. Teachers articulated these feeling through their journals and during interviews. As teachers adapted to the technology and became more skilful at ESL conversation, they became more confident and able to manage their emotions. As a result, their focus shifted from managing their own emotions to their students’ learning needs.

This section related the findings of the current study to pre-existing empirical research on learner-centered teaching. Existing research corroborated the finding that teachers’ reflections became more student-centred as the week progressed. This contributes to the trustworthiness of the study. The following sections discuss DVC’s potential for teacher education and language learning.

Implications for education and practice

Desktop videoconferencing’s potential for teacher education

The thesis research has practical implications on the use of DVC in the training of teachers. During the post-interview, I prompted teachers to express their opinions about

using DVC as a training tool for teacher candidates. The results indicated that while teachers felt implementing DVC sessions in teacher education would be beneficial, its use would be limited by several factors.

One teacher argued the technology is too unreliable to be used in pre-service teacher education. She felt the audio and video problems would be too overwhelming to allow significant learning for teachers. Previous research has also identified technological problems as a significant issue. In a study that connected language teachers and students via DVC, Matthews, Watson, Buckett, and Watson (1996) concluded that unreliable audio and video quality interfered with the lessons. Coverdale-Jones (2000) experienced similar technological problems in her study that linked students via DVC across international borders. However, consistent with the findings of the thesis study, Goodfellow, Jefferys, Miles, and Shirra (1996) concluded that despite technological problems in teaching language via DVC, teachers were able to effectively communicate once they adapted their practice to accommodate the medium.

Teacher participants in the thesis study also felt the use of the technology was too time consuming to be effective for learning. The considerable time spent dealing with technological problems made the prospect of using it in teacher education unappealing. One participant explained why she would not recommend DVC for teacher education:

I think it's just the amount of information and interaction you would get with the videoconferencing in the same amount of time as, you know, a day at a teaching placement. You're going to learn a lot more when you're actually there and able to talk back and forth and not have to be worrying about...the technology messing up. You have to fix this, and oh, I can't hear you....I don't think it [the

technology] would be able to replace it [traditional practicum experience], by any means.

While the teachers felt DVC sessions could never replace traditional practicum experience, they felt it would be beneficial to incorporate DVC sessions into teacher education either as a supplementary practicum or a component of a course. Teachers felt the technology offered great potential for training ESL teachers. They felt it would also give students additional opportunity to practice teaching ESL. One teacher explained:

I think it should be used as a training tool for teacher candidates because I think that if any of them plan on going overseas, or if any of them plan on doing anything with technology, it would be neat to actually show them how to use the application so that they can either use it for personal use or for teaching.

This teacher recognised the benefit of becoming proficient with DVC technology. Distance education and web cam use are becoming more widespread; the ability to teach via videoconferencing technology will be a desirable skill for teachers to possess. Goodfellow, Jefferys, Miles, and Shirra (1996) recommend students be prepared before using DVC technology. They argue that with sufficient preparation DVC has much to offer language learning. In the thesis study better preparation may have improved teachers' ability teach via DVC.

Previous teacher education research has focused on the use of DVC for promoting student-teacher interaction (Admiral, Veen, Korthagen, Lockhorst & Wubbels, 1999; Hu et al., 2000, 2001, 2002). Several studies have found that the promotion of reflection is a by-product DVC use (Goodfellow, Jefferys, Miles & Shirra, 1996; Coverdale-Jones, 2000; Kinginger, 1998; Sharpe et al., 2000, 2002). While not the focus of the thesis study,

findings indicated that DVC (reviewing the videotapes) promoted reflective learning in teachers.

Overall, teachers who participated in the study supported using DVC in teacher training. One teacher described how she felt she benefited from the experience:

...even just in the five days, I feel like I learned a lot from that. I'm not talking necessarily specifically about teaching, or specifically about personal learning, but both of them together. Because to be a good teacher, I think you have to be a good person, and in communication, and all those things. Doing this experience helped me in both of those ways.

According to the teacher, teaching ESL via DVC promoted both personal and professional growth. While the participant did not attribute the benefits only to DVC, she viewed her overall experience as worthwhile, and felt other students could benefit the way she did. The next section outlines the technology's potential for use in language learning.

Desktop videoconferencing's potential for language learning

While teacher participants had diverse opinions on DVC's potential for teacher education, they felt unanimously that DVC was an effective vehicle for language learning. In the post-interviews, the teachers recognised that DVC facilitated communication that would otherwise be impossible:

I think it's very useful, like I said it brings people together that are really far away which otherwise wouldn't be possible. I think it would be great to do something like this with younger kids. If you could get 8 and 9 year olds, I guess that might be too young, but kids who want to talk to kids in another country, I think that

would be really interesting for them...it would definitely be interesting for kids to learn about the different cultures in that way. You get something a little more personal out of it, rather than just reading in a book about culture in France, or wherever it may be.

This teacher suggests the technology has potential for younger students, perhaps bringing together children from different countries. Such an interaction could incorporate both language arts and social studies.

The results of previous research indicate that participants enjoyed meeting and forming relationships with people from other cultures (LEVERAGE, Kinginger, 1998). Coverdale-Jones (2000) concluded that connecting via DVC in a cross-cultural context was a positive experience for students. Teachers in the thesis study also enjoyed meeting and interacting with students from France. As one teacher explained:

I think it's great. I think it's really useful, especially being able to just learn about other cultures too, and express each other's opinions and views. You can kind of get a first-hand knowledge of what's going on in their world because it's so far away. I really thought it was neat. It was really enjoyable.

Nevertheless, while teachers felt the technology offered potential in a language-learning environment, they would have preferred meeting face-to-face.

...without having the experience, I thought that using desktop videoconferencing would be a good idea to use for teaching ESL. And now I think I could just say that with more conviction...I think that ideally all teaching would be done face-to-face...[if] I had a choice between teaching face-to-face and teaching over video desktop conferencing, I think I would say: "come here to Canada, come to

Thunder Bay and I'll do a class." But if ...English as a Second Language students have a choice between not practicing English with someone who was raised speaking English and practicing via desktop videoconferencing, then, of course, the desktop videoconferencing...[it's] almost not a choice because, "do you want to practice, or not at all?"

Matthews, Watson, Buckett, and Watson (1996) also concluded that face-to-face interaction is superior to interaction via DVC; however, they maintain that DVC can be useful in situations where face-to-face interaction is impossible. Coverdale-Jones (2000) also found that DVC was less personal than face-to-face.

Teachers in the thesis study felt that the DVC technology made it more difficult for them to form relationships with their students than would have been the case in a face-to-face situation. One teacher described the technology as being "impersonal":

...now that I've actually used it, I see that the potential's there. But you have to build the relationship and build the trust before you can actually start to teach. It's not one of those things that you can right off the bat say, "OK, here's our first lesson, let's go" because they need to be comfortable and feel that it's OK to ask questions. The questions they are going to ask might seem silly or might seem very easy and basic to you, but to them, it clarifies everything.

Teachers in the thesis study felt DVC technology was beneficial for connecting student-teacher dyads, but would be less effective for teaching larger groups. This finding is consistent with Wright and Whitehead (1998), who identified the potential of DVC for one-on-one interaction.

Limitations of the research

There were a number of limitations to the thesis study. First, the ideal sampling strategy in the interpretive paradigm requires continuous data collection until all of the categories of interest are fully saturated and data become repetitive with no new ideas emerging. Efforts are made to sample for variety to ensure conclusions capture breadth and diversity in the phenomena (Bogdan & Biklen, 2003). In the case of the thesis research, data collection was not open-ended; it was restricted to five subjects and confined to one week. The study used a convenience sample of teachers in the M.Ed. program who volunteered to participate; participants were not selected for maximum variation. Most were females in their mid-twenties, and all were studying in a context that valued self-reflection for learning. Further, I was not involved in the selection of the French student volunteers. These decisions about sampling were made for reasons of practicality, the complexity of the method, and the constraints imposed by using DVC technology. I acknowledge these sampling factors may limit the study.

Second, the results are not generalisable beyond the study population; however, the findings may be applicable to similar populations and in similar contexts. The nature of the study population has been clearly described. Having more and varied participants would have broadened the applicability of the findings.

Third, I acknowledge the influence of the research process on the participants. Some of the teachers' reflections that emerged in the data may be related to participating in the research as opposed to being the outcome of the ESL and DVC environment. I promoted teacher reflection through the use of structured journal entries and interviews. The teachers' reflective learning cycle may have evolved differently had I (through my

data collection methods) not directed their reflection. Participants' reaction to me as the researcher, the data collection method, or the conditions of the research may have limited the study.

Fourth, how I gathered data about reflective learning was limited. In the thesis study, the teachers and I watched the videotapes separately. It would have been more consistent with existing research on promoting reflection had I reviewed the videotaped ESL sessions together with the teachers. This would have provided two advantages: it would have allowed me to probe for more detail about the teachers' reflections, and it would have enhanced the trustworthiness of my interpretations of teachers' problems and strategies captured on the videotapes.

Finally, the research environment was not a naturally occurring situation. My interest in the research was to study the experience of teachers teaching ESL via DVC; however, there were no programs of this nature being offered in Thunder Bay. It was necessary, therefore, to simulate such a program specifically for the study. It is not known if its findings would have been different had the teaching situation not been artificially created.

Directions for future research

The findings that emerged from the thesis study are considered preliminary in terms of conceptualising the reflective learning process of teachers who teach ESL via DVC. This was a small, exploratory, descriptive study that examined the reflective learning cycle in a previously unexamined environment. Its findings serve to generate an initial understanding of a well-understood process in a new teaching environment. There

is still much to learn, particularly if DVC technology is going to be implemented in teacher education and language-learning programs.

Future research should include a replication of the thesis study with a larger and more varied sample. It would also be interesting to explore the process of teaching ESL via DVC with experienced ESL teachers. This would serve to further isolate the effects of the technology from the challenges of teaching ESL. Similarly, if the thesis study could be replicated with teachers already proficient with the use of DVC technology, it would be interesting to see whether they experienced the same preoccupation with technological problems. Implementing a longer data collection period would also allow the reflective cycle to be further examined. Teachers could be asked to review the videotapes the following week rather than the same day to determine whether this indeed affected teachers' reflections.

Another area of research could examine one of the findings of the thesis study: the evolution of teachers' reflections from self-centred to student-centred. I undertook a small literature review *ex post facto* looking for pre-existing theory in psychology and education to explain this phenomenon. I located research that explored learner-centered teaching; however, I found no literature that examined this evolution in beginning teachers. A study that explores teacher candidates' reflective learning process in traditional practicum experiences could be conducted to see whether similar findings emerge.

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Appendix A: Introductory letter and consent form for teacher volunteers

Date

Dear (participant's name),

Thank you for volunteering in a study that examines the reflective learning process of new teachers teaching English as a Second Language (ESL) via desktop videoconferencing. I am a graduate student in the faculty of education and this research is my M.Ed. thesis supervised by Dr. Christina van Barneveld.

For this research, we are collaborating with the Université de Pau, located in Southwestern France, in order to provide ESL instruction to five French students. Should you agree to be part of this research, you will be asked to conduct five 20-minute ESL conversation lessons with a student at the Université de Pau via desktop videoconferencing. After each lesson, you will be asked to review the videotaped lessons and write ten short journal entries reflecting on your teaching and learning experience. You will also be asked to participate in two 30-45 minute interviews: one before and one after your teaching experience.

All information you provide during the research will remain confidential. The data will be securely stored at Lakehead University for seven years as required by university policy.

I have attached a consent form to this letter. If you agree to participate, please sign and date and return the consent form to me. Please contact me at ajkelley@lakeheadu.ca or by telephone at 768-7774 if you have any questions.

Sincerely,

Allison Kelley
(807) 768-7774
ajkelley@student.lakeheadu.ca



Consent Form

My signature on this form indicates I agree to participate in a study by Allison Kelley entitled “The reflective learning cycle of new teachers who are teaching ESL via DVC”. It also indicates that I understand the conditions of my involvement such that:

1. I am able to withdraw at any time regardless of reason without penalty.
2. There is no risk of physical or psychological harm.
3. All data collected is confidential and will only be presented in aggregate form through scholarly publications.
4. Data from this study will be securely stored for seven years.
5. A summary of the project will be available in Dr. Christina van Barneveld’s office and in the Lakehead University library.

I have received explanations about the nature of the study, its purpose, and procedures.

For any questions or comments, please don’t hesitate to contact Allison at ajkelley@lakeheadu.ca or by telephone 807-768-7774.

Signature of Participant

Date

Appendix B: Introductory letter and consent form for French student volunteers

Date

Dear (participant's name),

Thank you for volunteering in a study that examines the reflective learning process of new teachers teaching English as a Second language (ESL) via desktop videoconferencing. I am a graduate student in the faculty of education at Lakehead University in Thunder Bay, Ontario, Canada and this research is my M.Ed. thesis supervised by Dr. Christina van Barneveld.

Should you agree to be part of the research, you will be asked to participate in five 20-minute ESL conversation lessons via desktop videoconferencing with a Canadian teacher. It is the Canadian teacher's experience that is being studied; your experience will not be studied in any way.

I want to assure you that your participation in the research is voluntary. I have attached a consent form to this letter to be signed if you wish to participate. Please contact me if you have any questions. If you agree to participate, please sign, date and return the consent form to Professor Chini.

Sincerely,

Allison Kelley
(807) 768-7774
ajkelley@student.lakeheadu.ca



Consent Form

My signature on this form indicates I agree to participate in a study by Allison Kelley entitled "The reflective learning cycle of new teachers who are teaching ESL via DVC". It also indicates that I understand the conditions of my involvement such that:

1. I am able to withdraw at any time regardless of reason without penalty.
2. There is no risk of physical or psychological harm.
3. All data collected is confidential and will only be presented in aggregate form through scholarly publications.
4. Data from this study will be securely stored for seven years.
5. A summary of the project will be available in Prof. Chini's office.

I have received explanations about the nature of the study, its purpose, and procedures.

For any questions or comments, please don't hesitate to contact Allison at ajkelley@lakeheadu.ca or by telephone 807-768-7774.

Signature of Participant

Date

Appendix C: Interview Guide

Pre-Interview (Demographics):

Age:

Gender:

Year level:

Previous teaching experience in months (not including practicums):

Previous experience using technology:

1. Please describe your familiarity with computers. (What do you use computers for in your day to day life? How frequently? How easy do you find learning new software/programs?)
2. Describe any experiences you've had using similar technologies (web cams, video cameras etc.).
3. How comfortable do you feel using desktop videoconferencing?
4. Based on your experience, what is your expectation of the technology's potential for teaching and learning?
5. Previous experience with reflection in past teaching experiences:

3 stages:

Problem identification:

In a previous practicum experience, could you give me a specific example of a teaching problem you encountered?

Reframing (re-examine the problem):

How did you work on this problem to understand it in different ways?

- Reflected on them alone afterwards? Discussed them with parents/friends/classmates/boyfriend/girlfriend? Kept a journal?

- Look at the problem from several points of view?

Resolve:

What decision did you make about how to improve your teaching around this problem for the future?

Were you able to implement these new teaching skills in future teaching experiences?

Previous experiences with English as a second language instruction:

1. Have you previously taught ESL?
2. If yes, when? Where? For how long? What were some of the teaching challenges?
3. If no, what do you expect to be the teaching challenges?
4. Based on your experience, what is your opinion of the technology's potential for teaching ESL?

Post-interview:

1. How did your learning experience using desktop videoconferencing differ from your previous learning experiences as a student teacher?
2. In general, from the first to the fifth lesson, describe how your teaching strategies evolved.
3. Specifically in relation to the skill you chose to develop, to what extent do you feel your teaching improved over the course of the week?
4. Overall, what strategies did you find to be the most helpful for your teaching?
 - How did reviewing the tapes help you improve your teaching strategies?
 - Did you find keeping a daily journal beneficial for improving your teaching? Why or why not?
5. When you watch yourself on video how does what you see compare with how you perceive your teaching? Similarities/differences?
6. Can you apply some of the things you learned this week in future teaching experiences? Please explain.
7. Do you think desktop videoconferencing could be used as a training tool for teacher candidates? Why or why not?

8. Do you feel a similar type of virtual practicum could be substituted for traditional practicums in teacher education? Why or why not?
9. How do you feel the ESL student benefited from the lesson?
10. What do you think are the benefits of using this technology for teaching ESL?

Appendix D: Journal templates

Reflection on action 1 Journal (to be filled out immediately after each lesson)

1. Overall, please describe how you are feeling about the lesson.
2. Please describe any technical problems you may have encountered.
3. What were some of the teaching problems you faced and describe how you dealt with them.
4. Based on this first session, please select and describe one teaching skill you want to improve over the course of the week. Why do you want to improve this skill?
5. In relation to this skill, what strategies do you plan to use in the future to improve?

In subsequent journals: In relation to the skill you chose, have you done anything since the last lesson to improve your practice? If so, please describe what you have done.

Reflection on action 2 Journal (to be filled out after reviewing the lesson tape)

1. Which aspects of the lesson do you think went well?
2. How do you feel the ESL student benefited from the lesson?
3. What teaching strategies did you use that you will use again in your next lesson? Why?
4. What teaching strategies did you use that you will not use in your next lesson? Why?
5. In future lessons, what new teaching strategies will you attempt? Why?
6. Did reviewing the tape change your impression of the lesson? If so, in what way?
7. Overall, how do you think you could have improved the lesson?

Appendix E: Learner-centered psychological principles: A framework for school redesign and reform (American Psychological Association, 1997, <http://www.apa.org/ed/lcp.html#Nature>)

COGNITIVE AND METACOGNITIVE FACTORS

1. Nature of the learning process. The learning of complex subject matter is most effective when it is an intentional process of constructing meaning from information and experience.
2. Goals of the learning process. The successful learner, over time and with support and instructional guidance, can create meaningful, coherent representations of knowledge.
3. Construction of knowledge. The successful learner can link new information with existing knowledge in meaningful ways.
4. Strategic thinking. The successful learner can create and use a repertoire of thinking and reasoning strategies to achieve complex learning goals.
5. Thinking about thinking. Higher order strategies for selecting and monitoring mental operations facilitate creative and critical thinking.
6. Context of learning. Learning is influenced by environmental factors, including culture, technology, and instructional practices.

MOTIVATIONAL AND AFFECTIVE FACTORS

1. Motivational and emotional influences on learning. What and how much is learned is influenced by the learner's motivation. Motivation to learn, in turn, is influenced by the individual's emotional states, beliefs, interests and goals, and habits of thinking.
2. Intrinsic motivation to learn. The learner's creativity, higher order thinking, and natural curiosity all contribute to motivation to learn. Intrinsic motivation is stimulated by tasks of optimal novelty and difficulty, relevant to personal interests, and providing for personal choice and control.
3. Effects of motivation on effort. Acquisition of complex knowledge and skills requires extended learner effort and guided practice. Without learners' motivation to learn, the willingness to exert this effort is unlikely without coercion.

DEVELOPMENTAL AND SOCIAL

1. Developmental influences on learning. As individuals develop, there are different opportunities and constraints for learning. Learning is most effective when

differential development within and across physical, intellectual, emotional, and social domains is taken into account.

2. Social influences on learning. Learning is influenced by social interactions, interpersonal relations, and communication with others.

INDIVIDUAL DIFFERENCES

1. Individual differences in learning. Learners have different strategies, approaches, and capabilities for learning that are a function of prior experience and heredity.
2. Learning and diversity. Learning is most effective when differences in learners' linguistic, cultural, and social backgrounds are taken into account.
3. Standards and assessment. Setting appropriately high and challenging standards and assessing the learner as well as learning progress -- including diagnostic, process, and outcome assessment -- are integral parts of the learning process.