

INSIGHTS INTO THE PROCESS OF GUIDING STUDENT TEACHERS
REFLECTION USING AUDIO COMPUTER CONFERENCES DURING AN
EIGHT-WEEK STUDENT TEACHING EXPERIENCE

by

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ABSTRACT

The purpose of this study was to examine the use of audio computer conferences on the process of guiding reflection among student teachers during an eight-week student teaching experience. After specific lessons that took place during the final eight weeks of their student teaching placement, each of the two student teachers participated in conferences with their university supervisor via the audio computer conferencing tool. The student teacher's comments were digitally recorded and analyzed. The Reflective Framework for Teaching in Physical Education (Tsangaridou & O'Sullivan, 1994) was used to describe the focus of the student teachers reflection. Both student teachers and the university supervisor then completed a follow-up interview with the researcher. Data collected through the follow-up interviews were analyzed using inductive thematic content analysis techniques. Content analysis provided insights into student teachers' and the university supervisor's views regarding the value of audio computer conferences in guiding reflection during an eight-week student teaching experience.

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Chapter 1

Introduction

Once content specific course work, pedagogical training and early field experiences are complete, students are considered for placement in the final component of their teacher preparation, the student teaching experience. The student teaching experience has been viewed as critical to the development of preservice teachers' pedagogical skills and the most effective preparation for teaching and learning the role of becoming a teacher (McIntyre, Byrd, & Foxx, 1996). Universities have the responsibility for the logistics of the student teaching experience: arranging the student teaching placement, selecting cooperating teachers, assigning university supervisors, scheduling on-campus conferences/seminars and reporting the student teachers' grades (Tannehill, 1989). The student teaching experience is generally regarded as a demanding process, but the single most important element of one's preservice preparation (Hynes-Dusel, 1999; Rikard & Veal, 1996; Tjeerdsma, 1998). It is also a rich environment for student teachers to engage in and practice reflective teaching (Schlagal, Trathen, & Blanton, 1996; Yan, Anderson, & Nelson, 1994).

Reflection: Looking to Research

The preparation of reflective teachers has been the focus of teacher preparation programs for a long time. Dewey (1904/1965), as far back as 1904, emphasized that teacher educators should prepare teachers who are able to think and reflect on their actions and practices. The idea that preservice teachers should be reflective practitioners and actively engaged in their professional development has received increasing attention from teacher educators. Several studies suggest that

preservice teachers can reflect and learn to understand the value of reflection (Pultorak, 1993, 1996; Rudney & Guillaume, 1990). Specific methods for encouraging reflective practice among preservice teachers include reflective journals (Hatton & Smith, 1995; Colton & Sparks-Langer, 1993; Yost, 1997; Yost, Forlenza-Bailey, & Shaw, 1999), case study writing (Hunter & Hatton, 1998), reflective interviews (Trumball & Slack, 1991), group seminars (Hatton & Smith, 1995; Pultorak, 1996), and structured telecommunication conversations via e-mail (Schlagal et al., 1996). Other studies note that some preservice teachers do not value reflection in teaching (Flickinger & Ruddy, 1992) making it difficult for teacher educators to facilitate its development. Researchers have investigated many aspects of the development of reflective practices in teacher education (Yost, Sentner, Forlenza-Baily, 2000). Research neither proves nor disproves the possibility of enhancing reflection among preservice teachers however, few dispute that it is an extremely complex process, involving a wide range of skills.

Promising Practices

Wideen, Mayer-Smith, & Moon (1998) suggest reflective skills can be taught and offer two important elements necessary for reflection to occur. First, student teachers must have a supervised practical experience that will serve as a foundation for reflection. Second, student teachers must acquire a personally meaningful knowledge base in pedagogy and theories of learning to which they can connect their experiences. Shulman (1987, 1988) recommends actively engaging students teachers in experiences that connect theory with practice and guiding them in developing a rationale for their teaching practices. Their rationale will form the basis of reflection

however; research suggests many teacher preparation programs do not support this methodology. Wideon et al. (1998) state that during practical experiences student teachers often lack much needed guidance and seem unable to apply learned pedagogical information. A recent methodology that holds the potential for altering the traditional preparation of student teachers' is telecommunication technologies.

Telecommunications Technology: Potential for Change

In the late 90's development of technologies brought explosive growth to telecommunication industries potentially altering teaching and learning as we know it (Silverman, 1997). In the student teaching process alone, telecommunications technologies have been used in the long distance supervision of student teachers by offering the opportunity to instruct, mentor, and supervise student teachers in a more flexible way with respect to time and place than common face-to-face conversational methods (Admiraal, Lockhorst, Wubbels, Korthagen, & Veen, 1998). Electronic mail (E-mail) has been widely noted and is one of the most recognized telecommunications technologies for guiding reflective practices among student teachers.

Guiding Reflection through E-mail

Schlagal et al. (1996), Thomas, Clift, & Sugimoto (1996), and Yan et al. (1994) investigated the use of e-mail in guiding reflective practices among student teachers. Within the student teaching experience researchers found e-mail to facilitate reflective practices and specifically address exchanges and experiences of classroom practice, routines, and teaching arrangements. While e-mail's potential for enhancing reflection exists, findings in the literature reveal other concerns regarding the

environment created through the use of e-mail and other telecommunication tools.

Thomas et al. (1996) used e-mail to successfully supplement course requirements and maintain contact between students and their university supervisors during a student teaching experience. While e-mail exchanges provided an opportunity for reflection, the environment created by the use of e-mail was quite different from student teachers' original expectations.

Within the telecommunications environment student teachers cited feelings of frustration in dealing with the rigid setting created by e-mail suggesting that it lacked the ability to quickly communicate and receive feedback from their university supervisor. Additional suggestions indicated that communication exchange via e-mail is not guaranteed because recipients can either actively filter information by ignoring or deleting messages or passively filter information by not checking their mail. Unlike the telephone or face-to-face communication, e-mail did not automatically command or demand an immediate response. Several technical issues also detracted from the use of e-mail in the reflective process. Factors included the unfamiliarity of the software presented, the technical training needed for student teachers to use the software, and the time constraints placed on student teachers due to required interactions that took place via e-mail.

Yan et al. (1994), in contrast, indicated e-mail fostered self-efficacy and reflective thinking for student teachers and decreased their anxiety associated with teaching. Schlagal et al. (1996) suggested e-mail has the potential to create a community of discourse where all those responsible for the preparation of teachers could open the paths of communication adding to the quantity and quality of

reflective experiences. Although the ability of e-mail to create useful supervised experiences is mixed an effective telecommunications tool that specifically addresses the ability to elicit the free exchange of dialogue among student teachers and members of the university needs to be developed.

Computer Conferencing Tool

The Institute for Distance and Distributed Learning (IDDL) at Virginia Tech has funded the development of an audiographics system which creates a telecommunications environment where conversational interactions among participants are immediate allowing a free flowing exchange of ideas and information. Referred to as a audio computer conferencing tool, it uses ordinary telephone lines for two-way computer based voice communication and uses low bandwidth telecommunications channels for computer software networking and graphics transmission. By using this audio computer conferencing tool a group of people can have a real time conversation over the computer. Even though individuals cannot see each other, they are able to converse using live Internet collaboration software (which is available to download off the IDDL website) to offer fully integrated, multi-way audio conferencing accessibility to all users on a LAN, Internet, or low bandwidth dial-up connection.

Within the audio computer conferencing environment, the session leader (see Appendix A for glossary of related computer conferencing terms) displays the content, which can be in Microsoft PowerPoint, HTML, or a number of graphical formats through simple point-and-click delivery. Graphical formats at the disposal of the participants included a shared white boarding tool, which allowed participants to

write or draw comments, that all could view. Also, while in an active audio computer conferencing session participants could share applications, make changes to existing files, save them, and even create new files creating a culture where instantaneous feedback to documents could occur. There are specific computer requirements for this conferencing tool (see Appendix B) but seem to be well within the area of typical computer hardware and accessibility issues faced by those who participate in the student teaching experience.

Exploring the Possibilities

Audio computer conferences performed through a telecommunications tool may be used by university supervisors to guide reflective thinking in student teachers. University supervisors could guide student teachers' thinking by assisting in the planning of a lesson or by asking questions in an attempt to create discussion about the meaning of a particular teaching experience. Feedback is also possible regarding a specific issue, or about a child in a specific class (Graham, 1999), potentially allowing student teachers to move past classroom management issues and allow the focus to be on more important issues such as student learning.

Statement of Purpose

The purpose of this study was to examine the use of audio computer conferences on the process of guiding reflection among student teachers during an eight-week student teaching experience.

Research Questions

Inspired and adapted from prior inquiries by McCollum (1997), Byra (1996), and Tsangaridou & O'Sullivan (1994) the following questions drove the investigation for the study:

1. What pedagogical events are valued by student teachers' during audio computer conferences during an eight-week student teaching experience?
2. What are student teachers' views on the value of audio computer conferences in guiding reflection during an eight-week student teaching experience?
3. What is the university supervisor's view on the value of audio computer conferences in guiding reflection during an eight-week student teaching experience?

Significance of the Study

Research on the use of computer conferences on the process of guiding reflection is a recent and on going topic of investigation (Admiraal et al., 1998; Schlagal et al., 1996). Scholars continue to examine important technologies in teaching and teacher education. Thomas et al. (1996) suggest organizations such as the National Educational Computing Conference, the Society for Information Technology and Teacher Education, and other special interest groups on technology which are sponsored by organizations such as the American Educational Research Association continue to provide forums for practitioners and researchers to explore and talk about findings of technology and teacher education. By investigating advances in telecommunications technology and applying findings from previous studies regarding its use, the researcher can make a unique contribution to the

growing body of literature assisting future researchers in their attempt to understand strategies needed to guide reflection using audio computer conferences during an eight-week student teaching experience.

Limitations of the Study

The following limitations are recognized:

1. The findings from this study will be limited to participants' reflections and views and cannot be generalized to other student teaching experiences nor the population of student teachers.
2. The student teaching experiences are limited by uncontrollable variables in the teaching context such as but not limited to: the cooperating teacher, the cooperating teacher's teaching philosophy and curriculum implementation, teaching schedules, students being taught, and university expectations.
3. The primary investigator in this project also served as the student teaching coordinator, but was not responsible for assigning the student teachers' grades.

Delimitations of the Study

The following delimitations were recognized:

1. The participants in this study were from a large university in the southeastern part of the United States.
2. The study was limited to two physical education student teachers and one university supervisor.

3. The selection of participants was limited to those student teachers that were placed at a school that met the computer requirements needed to operate the telecommunications tool used for the collection of data.
4. Audio computer conferences and the researcher's follow-up interview questions will be used as the primary data sources in the study.

Basic Assumptions

1. Data collection reflected the participants' true opinions as to how they viewed the environment created during their student teaching experience.
2. The meanings given to teaching experiences are best expressed by those who live the experience.
3. One cannot separate thought or feeling from action if the true meaning of an experience is reflected.

Definition of Terms

1. Telecommunication-offers the opportunity to instruct, mentor, and supervise student teachers in a more flexible way with respect to time and place than common face-to-face conversation methods (Admirall et al., 1998).
2. Audiographics system- uses ordinary telephone lines for two-way voice communication and the transmission of graphics and written materials through one's computer (McIsaac & Gunawardena, 1996).
3. LAN (Local Area Network)- A computer network limited to the immediate area, usually the same building or floor of a building.
4. Bandwidth- The amount of information allowed through an Internet connection. Usually measured in bits-per-second. A full page of English text

is about 16,000 bits. A fast modem can move about 15,000 bits in one second. Full-motion full-screen video would require roughly 10,000,000 bits-per-second, depending on compression.

5. Dial-up connection (AKA: Modem—Modulator, Demodulator)- A device that you connect to your computer and to a phone line that allows the computer to talk to other computers through the phone connection.

Chapter Summary

Chapter 1 began by highlighting the significance of the student teaching experience. Research was provided illustrating the examination and development of reflection in student teachers. Studies suggest that student teachers can reflect and be guided to learn the value of reflection during the student teaching experience (Pultorak, 1993, 1996; Rudney & Guillaume, 1990). Further suggestions were made indicating that telecommunications technology, particularly e-mail, could be used as an efficient means of enhancing reflection, although with serious shortcomings (Admiraal et al., 1998; Schlagal et al., 1996; Yan et al., 1994). It was then suggested that audio computer conferences could be used to investigate student teachers' ability to engage in discussions about their teaching. The remainder of this chapter focused on the studies statement of purpose, research questions, significance, limitations, delimitations, assumptions, and definitions of terms. The literature that served as the foundation for this study will be discussed in Chapter 2.

Chapter 2

Review of Literature

The purpose of this study was to examine the use of audio computer conferences on the process of guiding reflection among student teachers during an eight-week student teaching experience. Chapter two reviews the literature that served as the foundation for this study and has been organized into five sections. The first section provides an overview of the student teaching experience. A review of the literature surrounding the student teaching experience is followed. Addressed are the members of the student teaching triad and their potential to provide effective guidance within this experience. This leads to section three where literature identifying current limitations of the student teaching triad is presented. In section four the process of promoting reflective practices in teacher education is addressed. Concluding with section five, the potential of telecommunications technology within the student teaching experience and existing barriers regarding its use.

Overview of the Student Teaching Experience

The student teaching experience has been viewed as critical to the development of preservice teachers' pedagogical skills and the most effective preparation for teaching and learning the role of becoming a teacher (Carnegie Task Force, 1986; Locke, 1979; Zeichner, 1980). Past studies have identified differences in views surrounding the student teaching triad. Studies in general education (Copas, 1984; Grimett & Ratzlaff, 1986) reported differences in university supervisors, cooperating teachers, and student teachers. These differences included their role, decision-making skills and expectations. According to McIntyre, Byrd, and Foxx

(1996) cooperating teachers and student teachers perceived the most important factor as the development of self-confidence; however, university supervisors considered application of theory into practice as the most important factor. Conflicting views seem to be caused by a lack of communication and agreement as to the purpose of the student teaching experience. Research has contributed to the criticisms of the student teaching experience suggesting a lack of common goals among the three participants (Mitchell & Schwager, 1993).

Significance of Collaboration

The importance of open communication as to the program's purpose, roles, and responsibilities is generally accepted in principle, yet under achieved in reality (McIntyre et al., 1996). Physical education teacher education researchers have reached similar conclusions (Dodds, 1989; Graham, 1991; Lawson, 1983; O'Sullivan, 1996; Schempp, 1985) and found that the significance of communication affects all members involved in the teacher education process; however, the student teaching process and, more specifically, student teachers are the group most negatively affected.

Lemlech and Kaplan (1990) found that the professional knowledge and skills of student teachers are influenced by how quickly they learn to talk with others about the teaching process. The dialogue between student teachers and cooperating teachers lacks substantive talk about the profession. Lemlech and Kaplan (1990) suggest student teachers seldom observe experienced teachers working together, critiquing, coaching, or counseling each other about their teaching. As a consequence, student

teachers are not made aware of the specific behaviors that demonstrate teachers' interests, excitement, and love for teaching.

Common sense would indicate that three people working collaboratively towards a common goal would be more likely to achieve success than three isolated individuals. However, agreement, or even discussion, among triad members regarding roles and responsibilities of the teaching process is not prevalent (Guyton & McIntyre, 1990). A lack of agreement between teacher preparation programs and the triad prepares student teachers for the isolation of the classroom (Feiman-Nemser & Folden, 1986; Stroot, Fawcette & Schwager, 1993) and a lack of networking among colleagues.

The quality of a teacher preparation program, especially the student teaching experience, is affected by the ability of all involved to communicate content and specifics, what works and what doesn't (Curtner-Smith, 1996; Lemlech & Kaplan, 1990). Based on his analysis of both general education and physical education, Locke (1979) stated, "If we are to improve student teaching, we must understand it . . . The appropriate question at this stage is not are we right? But "What is out there?" (p. 68)

The Discouraging News

Reviewing what is out there can be discouraging. Many traditional student teaching experiences are disconnected from the university setting where the primary socializing agents during the experience are the cooperating teacher and students being taught (Bain, 1990). McIntyre et al. (1996) found the university supervisor has little or no measurable effect on student teachers' attitudes or behavior about teaching.

Where student teachers turn for guidance is an important issue in the student teaching literature. Schlagal et al. (1996) states that once student teachers are confined to the isolated placements of the student teaching experience and are interacting only intermittently with university personnel, they rely almost exclusively on the cooperating teacher for guidance, information, and support. As a result, students often dismiss as irrelevant what they learned in their teacher preparation courses/program. Further research states that student teachers abandon what they learned in teacher education courses in as little as two weeks (Richardson-Koehler, 1988). This can be discouraging for teacher preparation programs that do not have the opportunity to place student teachers with quality cooperating teachers who share a vision of teacher preparation.

A Competitive Experience

Many cooperating teachers that do not lack collaboration with university teacher preparation programs but this is not the norm. The shortcomings of cooperating teachers are well documented (Goodland, 1990; Richardson-Koehler, 1988). According to Zimpher & Sherrill (1996) the lack of collaboration is the result of cooperating teachers not being treated as true members of schools, colleges, and departments of education (SCDE's) faculty. As a result of this treatment, a competition in the structuring of the student teaching experience can occur between the cooperating teacher and university supervisor (Veal & Rikard, 1998). Student teachers witnessing this competition soon realize that the university's role in the student teaching experience is secondary at best to that of the cooperating teacher. The recognition of powerful elements in the structuring of the traditional student

teaching experiences can lead the student teacher to an uncritical replication of cooperating teacher's attitudes and practices (Schlagal et al., 1996; Veal & Rikard, 1998). Although cooperating teachers can be trained to increase their preparation, beliefs, and practices (Killian & McIntyre, 1986; McIntyre & Killian, 1986; Rikard & Veal, 1996) this is apparently not common practice.

In her review of student teaching literature, Dodds (1989) noted research on field experiences, such as student teaching, is hard to find especially when trying to uncover material that would help professors “ . . . be more deliberate and effective in using field experiences to intensify their programmatic message to trainees” (p.83). However, Dodds (1989, p. 83) as cited in O’Sullivan (1996) presented several guidelines for teacher educators to consider in the development of more effective field experiences:

1. All people associated with field experiences don't necessarily share the same teaching perspective, and thus no training program will strongly affect its students until the perspectives of all participants become broadly similar.
2. Teacher educators must design deliberately progressive, sequential, and well-timed field experiences. These experiences must support the programmatic teaching perspective and provide opportunities for trainees to compare and contrast their views of teaching with their education program and the cooperating teachers or clinical educators with whom they are working.
3. Teacher educators must explore implications of sport within field experiences by encouraging open discussion about the effects of sport when its messages are elitist, sexist, or homophobic.

4. Teacher educators must attempt to ensure that processes of reflection and choice become interwoven and apparent in field experiences. A haphazard series of field experiences does little to ensure that a programmatic perspective is transmitted to trainees (p. 331-332).

Regardless of how one defines effective teaching, teacher educators and teachers should work towards a shared vision of teacher preparation. Physical Education Teacher Education (PETE) programs should be taking the initiative and working towards developing a shared vision of teacher education, otherwise, they could lose the opportunity to prepare teachers. Siedentop (1985) suggests that, if universities cannot or will not develop effective training programs, the professional preparation of teachers might eventually move out of the universities and into the schools. While Siedentop's comments remind us of the catastrophic implications for teacher preparation programs' inability to provide effective training programs, let's now look at the roles of the student teaching triad and their potential for providing effective supervision through a shared vision of teacher education.

The Student Teaching Triad

Many agree that the student teaching experience is the most important event or learning experience in the development of a beginning teacher (Guyton & McIntyre, 1990; Tannehill & Zakrajsek, 1988). It has the potential to bridge the gap between theory learned in a teacher preparation program and the "real world" practice of teaching in the schools (Pellett, Strayve, & Pellett, 1999). The student teaching experience consists of three members, the cooperating teacher, the student teacher, and the university supervisor. In the next section of this document are brief

descriptions of each, the roles they hold and how other members of the triad perceive them.

Cooperating Teacher

The cooperating teacher's role has been cited as influential, important, and essential to the teaching experience of student teachers (Copeland, 1980; Koehler, 1984, Siedentop, 1981). However, cooperating teachers' perceptions of their own roles, as supervisors, have shown concern for guiding student teachers toward competence in classroom management, lesson planning, and lesson delivery (O'Neal, 1983; Rikard & Veal, 1996). Drummond (1980) reports that cooperating teachers tend to be overly concerned about their effectiveness in helping student teachers become teachers. Concern is due to cooperating teachers not feeling well versed in university expectations for their student teachers (Hynes-Dusel, 1999). Despite their concern, Koehler (1984) as well as Su (1992) indicate that cooperating teachers are continually perceived by student teachers as the most important person in their student teaching experience.

Student Teacher

Before entering the student teaching experience, students are commonly referred to as preservice teachers. Preservice teachers are students enrolled in a teacher preparation program generally having little, if any, prior teaching experience. Regardless of their lack of teaching experience, preservice teachers hold strong images about teaching processes employed by their former teachers. Both negative and positive, these images strongly influence how they approach their own teacher preparation program (Britzman, 1991; Calderhead & Robson, 1991).

Preservice teachers are, for the most part, highly confident of their own abilities as teachers (Book & Freeman, 1986). Weinstein (1988, 1989) suggested that they are “unrealistically optimistic” believing that there is not much they can learn in preservice teacher education except during the student teaching experience (Book, Byers, & Freeman, 1983) where they can solidify their beliefs that learning to teach can only be accomplished through experience (Richardson-Koehler, 1988). Unlike trainees in other professions, preservice teachers have had the opportunity to observe members of the teaching profession for twelve to sixteen continuous years (Su, 1992). This is what Lortie (1975) called “apprentice-by-observation”.

Graduates consistently praise field experiences, specifically student teaching, as the most useful part of their undergraduate preparation for teaching, sometimes as the only feature that they believe truly prepared them for their job (Locke, 1984). The third and final member of the student teaching triad is the university supervisor.

University Supervisor

An equally complex role is that played by the university supervisor (Snyder & D'Emidio-Gaston, 2001). Viewed by some as unnecessary or not important (Morris, 1974) while viewed as extremely important by others (Zimpher, de Voss, & Nott, 1980). Morris (1974) found no significant difference between the performance of student teachers supervised by a university supervisor and those only supervised by a cooperating teacher. Morris (1974) did note a perceived difference: students receiving college supervision rated themselves more effective than those without college supervision. Cole and Knowles (1995) suggest that if the university supervisor does

give supervision it's in the form of a summative evaluation, which has insignificant impact on the development of the student teacher.

Other studies suggest the supervisor can play a critical role in the success and development of the student teacher and the student teaching experience (Freidus, 2002; Koerner, Rust, & Baumgartner, 2002) suggesting that supervisors can serve as translators of the values and beliefs of a teacher preparation program. Zimpher, de Voss, and Nott (1980) noted that the primary activity or role of the university supervisor was to define and communicate university purposes and expectations to the student teacher and provide support while being phased into teaching activities. The role of support by the university supervisor had a major impact in assisting student teachers advance beyond a survival mentality and move towards a self-analysis for improvement (Zimpher, de Voss, & Nott, 1980). Mayer and Goldsberry (1993) suggest the university supervisor's role is to diffuse interpersonal tensions between the cooperating teacher and the student teacher, clearing the way for the student teacher's growth. As a result of these inconsistencies, researchers have called for a clearer explanation of the roles of those who are directly responsible for supervising student teachers (Freidus, 2002) but few dispute the significance of supervision.

Significance of Supervision

The process of supervision helps preservice teachers progress from their present skill level, to a level that is needed to efficiently carry out the necessary duties and behaviors of teaching (Metzler, 1990). Coulon and Byra (1995) suggest the process of supervision helps future teachers to develop competent pre-active and

interactive decision-making and instructional behaviors. Pre-active behaviors are those that occur prior to actual contact with learners (e.g., lesson planning), whereas interactive behaviors are the pedagogical behaviors that occur during the teaching of the lesson (Coulon & Byra, 1995). Taggart (1988) agreed, stating that supervision is the process of teaching preservice teachers the teaching skills, strategies, techniques, and ideas about effective teaching, and then observing them while they demonstrate the skills, strategies, techniques and ideas.

The Student Teaching Triad and Supervision: A Deeper Look

When it comes to the student teaching triad and supervision, the cooperating teacher plays the most prominent role, while the university supervisor is viewed as the more tolerant, secure, and independent (Griffin, Barnes, Hughes, O'Neil, Defino, Edwards & Hukill, 1983). Although cooperating teachers may have a more predominant role, typically university supervisors understand their place in this process. Koehler (1984) reported that university supervisors perceive their primary duties as providing support for student teachers while facilitating growth and moderating conflict resolution between cooperating teachers and student teachers. This is likely due to student teachers' perceptions identified by Griffin et al. (1983), which suggest that university supervisors are referred to as people they could talk to about both professional and personal issues (as opposed to cooperating teachers with whom they carried only professional dialogue).

While roles of the university supervisor include serving as a liaison between the university and the schools, providing a set of common expectations for cooperating teachers and student teachers, providing support for student teachers both

professionally and personally, securing favorable placements, orientating students to schools, evaluating student teachers relative to growth rather than specific skills or knowledge, providing feedback from observation, and conducting seminars (Koehler, 1984) there is not a clearly agreed upon technique of carrying out these roles.

McIntyre et al. (1996) cite a lack of clearly agreed upon and delineated goals, roles, and responsibilities of the student teacher. This lack of clarity not only hampers teacher preparation programs in general, but more specifically hinders the effectiveness of the triad as a supportive alliance to advance the growth and development of the student teacher. They further suggest the growth of the student teacher is based on supervision, but because of a lack of communication the student teacher can either extend one's self making a greater effort to communicate, or retreat into silence:

If the choice becomes one of silence, the student teacher can lose sight of the need for reflection and growth and simply focus on survival and graduation. The cooperating teachers may recognize a problem exists, but they may not have a quick solution. Also, concern for the welfare of their own students often causes them to distance themselves from the student teacher's failure. The university supervisor, who is not present on a daily or even a weekly basis, may be viewed as a disconnected observer/evaluator or worse yet, as an uninformed guest (p.179).

Potential of the Student Teaching Triad

Although not common practice, one way to address the structural deficiency of the student teaching experience is to engage students as full participants with

teachers, university personnel, and peers in critical conversation about the student teaching experience (Blanton, Thompson, & Zimmerman, 1994; Killian & McIntyre, 1986). In this view, according to Schlagal et al. (1996) the cooperating teacher, student teacher, and university supervisor act as one, and communication is multisided, ongoing, and genuine. Joined in this community of learners, students develop professional beliefs about teaching through interactions with informed and involved teachers invested in their development (Schlagal et al., 1996). In the next section are guidelines that can be used as a framework for establishing effective collaboration between public schools and university personnel.

Guidelines for Effective Collaboration

Lieberman (1986) as cited in Graham (1988) provide guidelines for effective collaboration between public schools and university personnel. They include:

1. Some type of organizational structure is needed to collaborate.
2. A small core of people actually working on the collaboration.
3. Time for collaboration needs to be allotted.
4. Skillful people working together enhance collaborative work.
5. Initially, activities propel the collaboration, not goals.
6. Large super ordinate goals for collaboration become clearer after people have worked together.
7. People often understand the amount of energy it takes to work with other people.
8. Collaboration with schools demands an understanding of schools as complex social organizations shaped by the realities of specific contents.

9. Ambiguity and flexibility more aptly describe collaborations than certainty and rigidity.
10. Conflict in collaborative work is inevitable; it has the potential for productive learning.
11. People can participate in collaborative work for different reasons, but they should include wanting to do things together. Products created by collaborating create sense of pride in collaborative work.
12. Shared experiences over time build mutual trust, respect, risk-taking, and commitment (p. 169).

Collaborative principles were further discussed by Graham (1988) who makes the analogy that successful collaboration is a lot like marriage, requiring people to get along with people-to communicate, to work hard together, to develop mutual respect, to struggle and to support one another. Graham further suggests that if teacher education is to influence in-service and preservice teachers alike, it will necessarily involve collaboration between universities and public schools. Application of collaborative principles like these could possibly increase the supervision and growth of all individuals involved, thus illustrating the potential of the student teaching triad to promote learning (Pellett et al., 1999; Tannehill, 1989). The application of collaborative principles is an excellent way in which a student teaching triad attempts to assist the growth of a student teacher; the development of reflective practices is another.

Promoting Reflective Practices in Teacher Education

There is an abundance of teacher education literature (Harvard, 1994; Colton & Sparks-Langer, 1993; Valli, 1992) that promotes reflective teaching. Development of reflective practice continues to be extremely difficult, with some questioning if it is possible at all (Calderhead, 1992). Cochran-Smith (1991) argues that reflection can only be learned by beginning teachers working in schools with experienced teachers who themselves value reflective practices. Berliner (1988) and Kagan (1992) suggest that reflective practice is beyond the developmental possibilities of preservice teachers and should best be thought of as a trait that is acquired by teachers who have several years of teaching experience. Others suggest that preservice teachers can reflect as well as learn the value of reflection in teaching and learning (Pultorak, 1993, 1996; Rudney & Guillame, 1990).

Specific methods for encouraging reflective practice among preservice teachers include reflective journals (Hatton & Smith, 1995; Colton & Sparks-Langer, 1993; Yost, 1997; Yost, Forlenza-Bailey, & Shaw, 1999), case studies (Hunter & Hatton, 1998); reflective interviews (Trumball & Slack, 1991), and group seminars (Hatton & Smith, 1995; Pultorak, 1996). Hunter and Hatton's (1998) study of the effects of case story writing based on student teaching experiences discovered that the initial writing samples showed low levels of reflectivity, whereas later excerpts revealed that the students' thinking moved toward critical reflection. They concluded that peer and professor collaboration helped preservice teachers evolve toward higher levels of thinking.

Until the early mid-90's, it has been unclear if students could develop capacities for critical reflection. Tsangaridou & O'Sullivan (1994) conducted a seminal study which identified and described how specific reflective pedagogical strategies influenced preservice teachers to successfully learn how to reflect on their teaching. Findings supported the positive influence of new pedagogical strategies in promoting the reflective abilities of preservice teachers; as a result Tsangaridou & O'Sullivan (1994) developed the Reflective Framework for Teaching in Physical Education (RFTPE). They also presented several other conclusions: First, "reflection can be a learned enterprise that can lead to professional growth and development" (p.26). A second conclusion was that technical issues of teaching dominated preservice teachers' focus of reflection suggesting teacher preparation programs should encourage preservice teachers to reflect on all aspects of teaching not only technical issues. Third, the supervision of preservice teachers was reported as an essential element in enhancing their reflective abilities (Tsangaridou & O'Sullivan, 1994). The Reflective Framework for Teaching in Physical Education (RFTPE) identified and described how specific reflective pedagogical strategies influenced preservice teachers; recent developments in telecommunication technologies have also proven to be helpful in moving individuals toward critical reflection in their teaching experiences.

Telecommunications Technology: Potential for Change

The potential of telecommunications and distance technologies as a tool for facilitating effective links between campus-based teacher education and participating schools are discussed. One example of this potential lies in telecommunication's

ability to resolve the lack of communication among the traditional student teaching triad by enabling reflective conversations to occur (Admiraal et al., 1998, Schlagal et al., 1996, Thomas et al., 1996, and Yan et al., 1994). By linking its member's telecommunications technology enabled participants of the student teaching triad to clarify and discuss complex professional meanings through discourse (Schlagal et al., 1996). Telecommunications technology has also shown the potential to overcome limitations such as time and distance (Murray, 1991), which could potentially alter teaching and learning as we know it (Silverman, 1997). Telecommunication technology's potential was further illustrated by Barone, Berliner, Blanchard, Casanova, & McGowan (1996) who wrote:

We have within our grasp the technological means to construct learning environments that have the informational density of the Library of Congress, the pedagogical skills of Socrates, and the excitement and holding power of a video game. Learners in these new networked environments are able to marshal colleges, faculty, libraries, laboratories and other resources from around the world at their own pace, according to their own schedule, in a setting of their own choosing, and in close contact and cooperation with others. (p. 1141)

Telecommunications has come to be known as "electronic" or "digital" communication across distances. Ultimately the telecommunications industry would like to create individual networks that allow free flowing secure information with little resistance from individual to individual (Barone et al., 1996). While not having achieved that goal telecommunications technology are already a major part of our

daily lives. Our personal computers can access a wealth of information over a network by the simple click of a mouse. These networks allow us to perform asynchronous and synchronous telecommunications. An example of asynchronous telecommunication includes communicating with family and friends via e-mail. Examples of synchronous dialogue can occur via on-line chats. Although helpful, these limited forms of asynchronous and synchronous communication represent the backbone of our interactions.

The Student Teaching Triad and Telecommunications

The opportunities for more advanced telecommunication networks to support educators are almost limitless. Barone et al. (1996) suggests that in the United States alone, an education telecommunication network could contain 80,000 K-12 schools, 15,000 school districts, 7 million teachers and staff, 45 million students, and several thousand colleges of education and educational agencies. These figures would suggest that telecommunications has the potential to change the way student teachers, cooperating teachers, and university supervisors interact. Through telecommunication networks teachers and students have an opportunity to affect what people think and feel by influencing those with whom they communicate, thereby changing perceptions and opinions (MacKenthun, 1992; Marcus, 1990; Thomas et al., 1996). Telecommunication networks not only support change in the way information is accessed and transmitted, but also opens possibilities for the accessibility of information.

Rogers (1986) has suggested that telecommunications can provide a substitute for transportation. Instead of moving people to information and ideas,

telecommunications networks can move information and ideas to people. This view holds many possibilities for current teacher preparation programs as well as student teaching triads. Along with traditional methods of supervision, university supervisors could communicate with other members of the student teaching triad right from their office.

One the limitation of the student teaching triad centers on the amount of time allotted for conversations about teaching. When student teachers have the opportunity to talk to their university supervisor, conversations usually focus on immediate practices and routines. With the emergence of telecommunications student teachers could receive feedback regarding a specific issue or child in a specific class and grade (Graham, 1999). While immediate feedback could help student teachers move past classroom management issues, allowing them to focus on more important issues such as student learning it is not the only possible educational benefit of telecommunications.

A Shared Vision

McDevitt (1996) suggests telecommunications allows for potential effective links between campus-based teacher education and the school, based on theories of teacher education and distance learning, helping aspiring teachers acquire a repertoire of effective teaching practices and allowing new relationships to forge between classroom teachers and university counterparts. Tannehill, Berekowitz, & LaMaster (1995) addressed this issue with the Franklin County Academy of Physical Educators (FCAPE). They examined teachers' problems and perceptions of networking through the use of electronic mail. Findings revealed that telecommunications technology

could play an important role in establishing shared goals among a university curriculum and public school settings (Tannehill et al., 1995). Other shared visions were improved preservice and in-service education, improved research consumption, increased parity between university and public schools, and effective assistance in the times of urgency (Graham, 1988).

An interactive telecommunications network connecting public school systems to a university teacher preparation program is an area of research being addressed. At the University of Virginia, telecommunications technology was used as a link between student teachers, cooperating teachers, and university supervisors (Bull, Harris, Lloyd, & Short, 1989; Bull, Sigmon, & Shidisky, 1991). The University of Virginia model uses a distributed network of fast personal computers connected to the Internet to support e-mail, electronic conferencing, and local and international interest groups by providing access to a number of electronic databases as well as other resources over the Internet. Findings indicate that incorporating networks between the university and public schools is both economically and technologically feasible.

Another telecommunications tool warranting investigation is video conferencing. At the University of Indiana of Pennsylvania (IUP), Garrett and Dutt (1998) attempted to reduce the financial burden of the College of Education, and ease faculty stress, by implementing video conferencing to supervise student teachers at distant locations. The College of Education at IUP received a three-year grant from the United States Department of Education, Fund for the Improvement of Postsecondary Education (FIPSE), to conduct research and evaluate video conferencing as a tool for reducing costs of supervising clinical experiences in the

teacher preparation program. University student teaching triad members reported many positive aspects of using video conferencing such as: saving time, being part of an innovative project, developing video conferencing skills for future activities, and the collaborative nature of the university and public school partnership. According to triad members the following needed to be improved: video quality, audio quality, increased number of observations, more preplanning of the video conferencing experience, equipment mobility, and equipment availability. Overall, student teaching triad members considered video conferencing to be an effective tool for supervising student teachers. The potential for telecommunications and distance technologies such as an interactive telecommunications network or a video conferencing tool seem limitless. However, specific barriers in teacher education other than the always-present money issue do exist and play a major role in failure of implementing these telecommunications technologies.

Barriers of Telecommunications and the Student Teaching Triad

In thinking about existing barriers to the implementation of telecommunication and distance technologies, and their relationship to the student teaching triad, we must first look at the “big picture”. Currently, teacher preparation programs disagree on how students should acquire technical competencies (Willis & Mehlinger, 1996). One school of thought is that technology courses should be taught in addition to adequate exposure in methods courses and content courses. Others believe that technology should be implemented seamlessly into all coursework making the need for an instructional technology course obsolete (Willis & Mehlinger, 1996). But members of both schools agree that there needs to be more integration of

technological skills within the teacher preparation courses (Willis & Mehlinger, 1996). While these types of issues exist on a macro-level, smaller barriers exist at the implementation level, directly impacting members of the student teaching triad and their use of telecommunication technologies.

One implementation barrier is the amount of time available to effectively communicate and provide supervision. According to Metzler (1990), the job of supervising preservice teachers is usually thrust upon individuals who have insufficient time to do the job correctly. Faculty members with large class loads and research duties, or graduate students who have their own research and teaching commitments are often chosen as supervisors for the preservice teaching program. The job of effectively supervising preservice teachers is time consuming and it is unlikely that an individual who has little time to dedicate to supervision will be able to provide the amount of effective supervision that is necessary to facilitate the skills needed to be an effective educator (Randall, 1992) as well as learn new types of telecommunication technologies.

The lack of time to access a system and interact with colleagues has been identified as a critical constraint in Thompson and Hamilton's (1991) study as well as others (Broholm & Aust, 1994; Thompson & Hayes, 1993). Broholm and Aust (1994) reported that overall, teachers expressed frustration with trying to access the computer system when they lacked time to attend their normal teaching responsibilities.

Thomas et al. (1996) echoed these findings stating that training was not the major factor. The problem was teachers' lack of time and the mentality that it would be just one more thing added to an overly full day. Although time was at a premium,

Komasky (1991) as well as Schmitz and Fulk (1991) concluded that the frequency with which an individual logs onto a system is dependent upon attitude toward electronic communication systems. In other words, one's attitude towards the use of telecommunications can and does factor into their amount of use.

Finding time for teachers and other members of the student teaching triad to implement these technologies is a major concern but not the only problem facing the student teaching triad. Wittenburg & McBride (1998) state other issues include: accessibility to the Internet, availability of technology between the university and student teaching sites, and the allocation of funds to install and upgrade to the current technologies. Although these issues do exist, researchers have attempted to bridge the technological gap between the university and remote teaching locations.

Chapter Summary

The purpose of this chapter was to examine the literature that served as the foundation for this study. This chapter reviewed relevant literature on the student teaching experience. Literature reviewed included: the members of the student teaching triad and their potential to provide effective guidance and reflection within the student teaching experience, the ability of teacher preparation programs to promote reflective practices in teacher education, and the potential of telecommunication technologies to address issues and barriers within the student teaching experience.

Developments of telecommunication technologies have opened new possibilities regarding the types of tools implemented during the student teaching

experience. Key studies in teacher education have investigated the ability of e-mail to enhance reflection among student teachers (Admirall et al., 1998, Schlagal et al., 1996, Thomas et al., 1996, & Yan et al., 1994). Based on the literature provided in this chapter, an important issue worthy of study is believed to be telecommunication technologies and ability to guide student teachers reflective practices during the student teaching experience. The literature reviewed in chapter two was used to guide the development of the methodology used in this study, as discussed in the next chapter.

Chapter 3

Methodology

The purpose of this study was to examine the use of audio computer conferences on the process of guiding reflection among student teachers during an eight-week student teaching experience. The study focused on the communication between a university supervisor and two participating student teachers. Three questions provided the direction of investigation: 1) What pedagogical events are valued by student teachers' during audio computer conferences during an eight-week student teaching experience? 2) What are student teachers' views on the value of audio computer conferences in guiding reflection during an eight-week student teaching experience? and 3) What is the university supervisor's view on the value of audio computer conferences in guiding reflection during an eight-week student teaching experience? The research design, rationale for the design, selection of participants, the context, protocols, data sources, analysis of data, and methods used to establish trustworthiness were explained in this chapter.

Research Design

A descriptive research design was selected in order to answer the research questions in this study. The theoretical perspective that guided this study was a phenomenological approach. In the phenomenological approach the researcher attempts to understand the meaning people hold for interactions, events and/or phenomena in particular settings and the interactions that occur from being in those settings (Bogdan & Biklen, 1998). Patton (2001) suggests phenomenological studies focus on descriptions of what people experience and how it is that they experience

what they experience. Phenomenologists believe that our interactions with others and our multiple ways of interpreting of those interactions constitute meaning and ultimately determine our perception of reality (Bogdan & Biklen, 1998). Within the phenomenological approach researchers do not assume they know what things mean to the people they are studying and a non-biased attempt is made to emphasize the subjective aspects of people's behavior. Following the investigation the experiences of those being studied are bracketed, analyzed, and compared to identify the nuances of the phenomenon being studied (Patton, 2001). The technique of content analysis was used to organize and report the descriptive data uncovered from the investigation in this study. Content analysis is the process of identifying, coding, and categorizing the primary patterns of data taken from interviews and observations (Patton, 2001). Content analysis was used to describe what pedagogical events are valued by student teachers', student teachers' views on the value of audio computer conferences in guiding reflection and the university supervisor's view on the value of audio computer conferences in guiding reflection during an eight-week student teaching experience.

Rationale for Design

A descriptive research design was selected, as it was the best fit for the exploratory nature of research on student teachers, the university supervisor and their use of audio computer conferences during an eight-week student teaching experience. Within descriptive research there are a variety of theoretical perspectives including ethnography, ethnomethodology, symbolic interactionism, and systems theory (Best & Kahn, 1998; Patton, 2001). This study used a phenomenological approach because

of the exploratory nature of the research questions. Descriptive research is process rather than product orientated and demands that everything be examined and nothing be perceived as trivial, everything is a potential clue that might lead to a deeper understanding of what is being studied (Bogdan & Biklen, 1998). In the descriptive approach the researcher's questions lead an investigation where information is scrutinized for knowledge and meaning with participant perspectives being the focus.

Uncovered during the investigation process are data. Within descriptive research data collected takes the form of words or pictures rather than numbers and results contain quotations from the data to illustrate and substantiate the presentation (Bogdan & Biklen, 1998). Most often descriptive research employs interviews for data collection in which the quality of the data depends on the researcher collecting, analyzing, and interpreting the data related to the research questions (Parse & Coyne, 1985).

Once data have been collected, it must be organized and reported. Patton (2001) suggests that the analysis of descriptive data is a creative process with no right or wrong way to go about organizing, analyzing, and interpreting data. However, Patton (2001) goes on to say that the analysis of descriptive data is demanding intellectual discipline, which requires analytical rigor and a great deal of hard work. The approach used to analyze descriptive data in this study was content analysis. Rosengren (1981) describes the field of content analysis as “a division of text into units of meaning and a quantification of these units according to certain rules...the content of the text is to be emphasized and the values and beliefs of the researcher must not influence the result of the examination”. Later in chapter 4 a detailed

description of the results of this investigation will be presented. First, a discussion of the selection of participants is provided below followed by a description of the research context and protocols or rules used to accurately obtain participant perspectives are presented.

Selection of Participants

Two student teachers and one university supervisor participated in the study. Two student teachers, 1 male (Eric) and 1 female (Kara), from the same teacher preparation program and one university supervisor volunteered to participate. “Eric” and “Kara” are pseudonyms. Both student teachers had completed the same undergraduate course requirements from their teacher preparation program and were enrolled in the final phase of their teacher preparation, a sixteen-week student teaching experience. All participants were perceived as being committed to the teacher preparation program. Perceived commitment was determined by their quality of work during the first eight weeks of their student teaching experience and the personal judgment of the researcher.

Student teaching placements were purposefully selected for this study. The rationale for purposeful sampling was to select schools that met the requirements needed to operate the audio computer conferencing tool used in this study. Purposeful sampling is typical to research (Patton, 2001). Selection criteria of the participating elementary schools were based on two major factors 1) the cooperating teacher’s computer and its ability to successfully fulfill the requirements needed to operate the computer conferencing tool (for requirements see Appendix B) and 2) the

accessibility of the elementary school's computer network. No other factors influenced the purposeful sampling of the student teaching placements in this study.

Along with the student teachers and their student teaching placements, selection of the university supervisor was also purposefully sampled: 1) the university supervisor's existing knowledge of undergraduate physical education teacher preparation curriculum including the student teaching experience 2) a basic understanding of the audio computer conferencing tool and 3) a willingness on the part of the university supervisor to participate in a study which used audio computer conferences to remotely supervise student teachers.

Research Context

This study was conducted in the southeastern part of the United States. The student teaching experience takes place over the course of sixteen weeks and is part of a large university consisting of approximately 25,000 students. The first half (eight weeks) of the student teaching experience was spent at either a high school (ninth through twelfth grade) or at a middle school (sixth through eighth grade). The second half (eight weeks) of the student teaching experience was spent at an elementary school (kindergarten through fifth grade) with all audio computer conferences taking place during the second eight weeks of the student teaching experience.

Student Teacher Protocol

Once the student teaching placements were finalized Eric and Kara were contacted via e-mail by the researcher to set-up a date and time for training sessions with the audio computer conferencing tool. Two training sessions were administered prior to their eight-week elementary placement. Each training session lasted

approximately 30 minutes to an hour. Along with the training sessions, Eric and Kara were directed to a website where they could access information, ask questions and troubleshoot a variety of technical issues that could potentially result from audio computer conferencing. The researcher addressed other technical questions or issues that presented themselves during the course of the study.

Eric and Kara were asked to demonstrate that they could successfully log on and communicate with the researcher through the audio computer conferencing tool before the study began. In order to communicate participants became familiar with the audio computer conferencing tool functions such as application sharing, white boarding and the audio wizard. Application sharing allowed the participants to make changes to existing files, create new files and save changes to those files. An example would be to open, review and make changes to the day's lesson plan. White boarding allowed participants to draw out an idea providing another way to articulate an idea or communicate a thought during the session. Finally, the audio wizard allowed participants to trouble shoot volume settings or issues during the audio computer conference on their own. Once Eric and Kara could successfully log on and communicate with the researcher from each of their student teaching placements, they were asked to negotiate dates and times for their five audio computer conferences, which were to take place with their university supervisor during the eight-week elementary student teaching placement.

University Supervisor Protocol

Once the university supervisor had agreed to participate in the study, he was contacted by the researcher to setup a date and time for training sessions with the

audio computer conferencing tool. Two training sessions were administered prior to their eight-week elementary placement. Each training session lasted approximately 30 minutes to an hour. Along with the training session, the university supervisor was also directed to a website where he could access information, ask questions and troubleshoot a variety of technical issues that could potentially result from the use of an audio computer conferencing tool. The researcher addressed other technical questions or issues that presented themselves. Before the study began, the university supervisor was asked to demonstrate that he could successfully log on and communicate with the researcher through the audio computer conferencing tool.

After a functional understanding of the audio computer conferencing tool was demonstrated, the university supervisor was asked to negotiate with student teachers dates and times to conduct five audio computer conferences. The negotiation process began as soon as student teachers received their student teaching placements and elementary teaching schedule. After their individual audio computer conferences schedules were negotiated, the university supervisor was responsible for communicating to the researcher the agreed upon schedule and any changes to that schedule. The requirements the researcher placed upon the university supervisor regarding the scheduling of the audio computer conferences was that at least five conferences were to take place during the eight-week elementary student teaching placement and all conferences were to take place during operating school hours.

Data Sources

This study used three different sources for data collection. These sources were (a) audio computer conferences, (b) follow-up interviews and c) the researcher's journal.

Audio Computer Conferences

Two student teachers (Eric and Kara) and one university supervisor were made aware of the requirements of the study. Requirements stated that the Eric and Kara and their university supervisor were a) responsible for communicating through audio computer conferences at least five times during their eight-week elementary student teaching placement and b) that all conferences were to take place during operating school hours. The university supervisor was asked to focus the conversation on the teaching and/or planning of lessons taught that day during each of the audio computer conferences with Eric and Kara. The university supervisor was given free reign regarding the approach and the content covered; however, it should be noted that the researcher did provide the university supervisor with a series of open-ended questions used in a similar study. These questions included:

1. What are the essential strengths of today's lesson?
2. What, if anything, would you change about the lesson?
3. What, if any, unanticipated things happened during today's lesson?
4. Can you think of another way you might have taught this lesson?
5. Describe one area of your planning or teaching that needs work. What can you do to improve on this area?
6. Do you think the content covered was important to students? Why?

(Yan et al., 1994)

Within the phenomenological approach the researcher must find a way to get the participant(s) to express his/her perception of the event being studied, one of the best ways to do that is through open-ended interviewing. The purpose of these questions was not to give the university supervisor a required criterion of questions, but rather examples of open-ended questions that have been used in similar studies addressing the teaching and/or planning of lessons. Once all structured audio computer conferences were completed they were subsequently transcribed allowing for line-by-line content analysis as suggested in Lincoln & Guba (1985). Following all audio computer conferences, independent interviews were conducted with Eric, Kara and the university supervisor.

Follow-up Interviews

Follow-up interviews were used as a source of data collection. The use of follow-up interviews is a technique suggested by Patton (2001) who asserts that the use of follow-up interviews with participants can provide meaningful additional information making it helpful when attempting to interpret data by allowing for clarification and/or further explanation of the issues discussed.

After the completion of all audio computer conferences, Eric, Kara and the university supervisor were contacted in order to set up a date and time for an independent follow-up interview. Follow-up interviews were performed by the researcher to further understand participants' thoughts and feelings regarding the use of the audio computer conferences during the student teaching experience.

Interview Dates and Protocol

The first follow-up interview was conducted in person with Eric and was 30-45 minutes long. The second follow-up interview was with Kara. Kara's interview was conducted over the phone and lasted from 30-45 minutes. Kara's interview was conducted over the phone because she was not available for an in-person interview until a couple of months later that same year.

The final follow-up interview was conducted in person with the university supervisor and lasted from 30-45 minutes. All follow-up interviews were subsequently transcribed allowing for line-by-line content analysis. Follow-up interview questions for the student teachers are presented in Appendix E and the follow-up interview questions for the university supervisor are presented in Appendix F. The final source of data was the researcher's journal, which will be discussed next.

Researcher's Journal

The final source of data was the researcher's journal. Journal notes often consist of the researcher describing the conversation, recording ideas, strategies, hunches, patterns that may emerge, and what they think in the course of collecting and reflecting on the data (Bogdan & Biklen, 1998). The researcher's journal was an important aspect to the research process. As a key player in the collection of data and analysis it is important to articulate the relationship the researcher has with the research design and analysis procedures (Bogdan & Biklen, 1998). Journal notes were taken both before and during university seminars, supervisory conferences, on-site observations of student teachers' teaching experiences, informal conversations, and follow-up interviews. Journal notes proved to be extremely helpful during the data

collection process and served as helpful reminders when attempting to maintain a researcher's frame of mind or being true to the theoretical perspective guiding this study. The last section of this chapter describes the steps taken for data analysis.

Data Analysis

Within the data analysis section the research questions used to drive the study are referred to by number. Each question provides a detailed explanation of the specific data analysis method used to accurately obtain participant perspectives. These questions and the format of presentation are inspired from prior inquiries by McCollum (1997), Byra (1996), and Tsangaridou & O'Sullivan (1994). The following questions drove the investigation for the study:

1. What pedagogical events are valued by student teachers' during audio computer conferences during an eight-week student teaching experience?
2. What are student teachers' views on the value of audio computer conferences in guiding reflection during an eight-week student teaching experience?
3. What is the university supervisor's view on the value of audio computer conferences in guiding reflection during an eight-week student teaching experience?

Analyzing the Data

Before addressing each research-specific question, the details of how the data were analyzed should be discussed. An important part of the analysis often overlooked is the actual handling and sorting of the data (Bogdan & Biklen, 1998). As the data from the audio computer conferences and follow-up interviews were collected, the data were sorted and identified in several ways. Audio computer

conferences were digitally recorded through a feature offered within the audio computer conferencing tool allowing each individual computer conference to be digitally recorded and converted into a wav file. Wav files are digital audio files that can be played and listened to just like a CD but over a computer. Once all audio computer conferences were digitally recorded and converted into wav files they were transcribed verbatim.

The raw data were sorted according to the source from which they were derived. Each participant was assigned a unique number, which was put on each item generated. Each item was collected chronologically and was given a page number so that the original piece of data could always be identified (Bogdan & Biklen, 1998). Each piece of data was assigned a participant number and page number, and placed in a computer folder, and a hard copy printed out and placed in a manila folder.

Following the identification of the raw data as described above, the researcher analyzed the content of the verbatim audio computer conferences and verbatim follow-up interviews by reading them at least twice as suggested in Bogdan and Biklen (1998). After becoming familiar with the data, the content analysis focused on uncovering embedded information and making it explicit (Lincoln & Guba, 1985). In the next three sections are details of how the data for each question were analyzed.

Question One

In question one, data from the transcribed audio computer conferences were used to investigate what pedagogical events are valued by student teachers' during audio computer conferences during an eight-week student teaching experience. From the transcribed audio computer conferences, the researcher categorized student

teachers' foci of reflection using Tsangaridou and O'Sullivan's (1994) Reflective Framework for Teaching in Physical Education (RFTPE). This framework was conceptualized from the reflective teaching literature (Ross, 1989; Van Manen, 1977; Zeichner & Liston, 1985) and developed for the purpose of describing the specific events student teachers referred to as meaningful for their professional development. Tsangaridou and O'Sullivan (1994) suggest that the framework is "a conceptual vehicle which describes the content of prospective teachers' reflection and the nature of that reflection" (p. 18).

Tsangaridou and O'Sullivan (1994) established the RFTPE to label, through a three-category system, the focus of reflection. The three categories include technical, situational, and sensitizing. Technical reflection is concerned with teaching techniques and classroom management procedures, while situational reflection deals with contextual elements of teaching, and sensitizing reflection deals with the ethical, social, and political issues related to teaching and schooling. (For a complete description of the RFTPE see Appendix C).

Question Two

In an attempt to answer research question number two, data from Eric and Kara's follow-up interviews were analyzed (Lincoln & Guba, 1985). Follow-up interviews were tape-recorded and transcribed verbatim into raw data that were sorted, identified, and analyzed. This involved two sub processes, which are unitizing and categorizing (Lincoln & Guba, 1985).

The unitizing process is also known as coding, a process in which raw data are systematically transformed and aggregated into units (Lincoln & Guba, 1985). Once

these units of information were selected for further analysis they were copied and pasted into a computer file and printed out to hard copy form. The individual units of data, still retaining their original identification numbers of participants, were then filed by data source.

After the raw data were transformed into units, the next step in the analysis was categorizing. The process of categorizing has also been described as the “constant comparative method” (Glasser & Strauss, 1967). The “constant comparative method” consists of comparing and contrasting each unit of information with all other units of information to unite those with similar meaning and to separate those with different meanings (Glasser & Strauss, 1967). Once the units of information were temporarily assigned a category, a new computer file was created containing these units of information while still maintaining their original identification numbers. The newly created categories containing smaller units of information were cut and pasted into a new computer file as well as printed out and placed on large poster boards for further analysis. It is important to note that a unit of data may be placed in more than one category (Bogdan & Biklen, 1998).

As a result of these procedures, provisional categories were established and the researcher wrote a propositional statement or assertion that serves as the basis of inclusion or exclusion of units of information into a particular category (Lincoln & Guba, 1985). Those propositional statements and/or assertions for each category were subject to revision until all the units of information were analyzed (Lincoln & Guba, 1985). Until all the units of information were permanently assigned to a category and had a propositional statement, the information was not analyzed.

The analysis of the propositional statements resulted in the identification of common themes, which were consistent within the data. These themes, known as higher-order themes, provided descriptive or inferential information about the context or setting from which the original units of information were derived (Lincoln & Guba, 1985). Thematic analysis provided insights into student teachers' views regarding the value of audio computer conferences in guiding reflection during an eight-week student teaching experience.

Question Three

In an attempt to answer research question number three, data from the university supervisor's follow-up interview were analyzed (Lincoln & Guba, 1985). A follow-up interview with the participating university supervisor was tape-recorded and transcribed verbatim into raw data that were sorted, identified, and analyzed. This also involved the same two sub processes, unitizing and categorizing (Lincoln & Guba, 1985) as used in attempting to answer research question number two.

Establishing Trustworthiness

In order to maintain methodological rigor, trustworthiness is established to the extent in which a particular study is worthy of consideration by the reader (Lincoln & Guba, 1985). The remaining section of this chapter discusses the techniques used by the researcher in order to establish trustworthiness for this study.

To reduce the likelihood of misrepresentation of data and help ensure the credibility of results, member checks, a thick description and an inquiry audit were employed. During member checks the researcher checked for agreement of the classification data. The first form of member checking took place after the data

analyses of the audio computer conferences were transcribed into a verbatim written document. The document was then sent via e-mail to the participants who were invited to correct any errors, comment for clarification and/or verification, and provide comments or further information. The same process was employed after each of the follow-up interviews with participants.

To further aid in the study's credibility, an inquiry audit, which is metaphorically based on a fiscal audit, was conducted. As outlined by Lincoln & Guba (1985), the purpose of an inquiry audit is two fold: a) in examining the process of the inquiry and determining its acceptability, the auditor attests to the dependability of the inquiry; and b) in examining the product meaning of the data, findings, interpretations, and recommendations, the auditor attests that they were supported by the data and internally coherent. In order for the inquiry audit to occur, the researcher prepared and maintained an audit trail. The audit trail consisted of four categories: a) raw data, b) data reduction and analysis products, c) data reconstruction and synthesis products, and d) instrument development information (Lincoln & Guba, 1985). A faculty member at a large university consisting of approximately 25,000 students performed the inquiry audit. To aid in the audit process and to help assure transferability, the technique of thick description will be employed. Thick description aids in the notion of transferability, through the representation of data. Prior to the inquiry audit, the researcher provided the inquiry auditor with sufficient information regarding the context and conditions of the study in order to allow him to make an informed decision on whether the information presented was relevant to the situation investigated (Lincoln & Guba, 1985). Thick description was accomplished by the

researcher providing the inquiry auditor a detailed account of the data collection processes, the data analysis strategies, and detailed findings.

Chapter Summary

Chapter 3 discussed the various methods used to complete this study. Methods included the research design, the selection of participants, the data sources including audio computer conferences, follow-up interviews, researcher's journal, data analysis procedures, and the methods used to establish trustworthiness. In the following section, Chapter 4, an analysis of the data sources is presented.

Chapter 4

Results and Discussion

The purpose of this study was to examine the use of audio computer conferences on the process of guiding reflection among student teachers during an eight-week student teaching experience. Results from a content analysis of the audio computer conferences, follow-up interviews with the participants and researcher's journal were used to answer the three research questions that guided the study.

Rosengren (1981) describes the field of content analysis as "a division of text into units of meaning and a quantification of these units according to certain rules...the content of the text is to be emphasized and the values and beliefs of the researcher must not influence the result of the examination". In an attempt to not influence the results of the examination the researcher followed the theoretical underpinnings of the phenomenological approach. In this approach the researcher attempts to understand the meaning of events and/or phenomena in particular settings and the interactions that occur from being in those settings (Bogdan & Biklen, 1998). The researcher does not assume he knows what things mean to the participants and makes a non-biased attempt to emphasize the subjective aspects of the participant's behavior. The three research questions led an investigation where information was scrutinized for knowledge and meaning with participant perspectives being the focus.

In an attempt to answer the research questions used to participant perspectives were gathered from two student teachers, 1 male (Eric) and 1 female (Kara), enrolled in the same teacher preparation program and one university supervisor who also volunteered to participate in this study in the study. "Eric" and "Kara" are

pseudonyms. Both completed the same undergraduate course requirements from their teacher preparation program and were completing the final phase of their teacher preparation a sixteen-week student teaching experience. The first half (eight weeks) of the student teaching experience was spent at either a high school (ninth through twelfth grade) or at a middle school (sixth through eighth grade). The second half (eight weeks) of the student teaching experience was spent at an elementary school (kindergarten through fifth grade). A typical day for the student teacher included approximately 8 hours a day teaching, planning, record keeping, evaluating students, class management, and other activities relevant to teaching physical education in a public school setting. At the time of the study both Eric and Kara were involved in the second eight weeks of the student teaching experience and the university supervisor was asked to interact with each of them five times via audio computer conferencing. Audio computer conferences ranged from 20-30 minutes long and were recorded digitally though a recording feature offered as part of the audio computer conferencing tool. During each of the audio computer conferences the university supervisor was asked to steer the conversation towards the teaching and planning of the student teacher by asking a series of open-ended questions.

This chapter includes data collected from the two student teachers' audio computer conferences, as well as comments from their follow-up interviews, which were administered at the conclusion of the sixteen-week student teaching experience. Comments from the university supervisor's follow-up interview are also provided. Data from the two student teachers' audio computer conferences were analyzed using

Tsangaridou and O’Sullivan’s (1994) Reflective Framework for Teaching in Physical Education (RFTPE).

Tsangaridou and O’Sullivan’s (1994) RFTPE labels the focus of reflection as technical, situational, or sensitizing. They suggest the instructional or managerial aspects of teaching are defined as “technical”. Contextual issues of teaching are defined as “situational” and “sensitizing” reflection represents reflection upon social, moral, ethical, or political aspects of teaching. An example of technical reflection would be:

As far as teaching skills, I felt like I did a good job. I felt like I had a good progression. I flowed well from the last time we were in class...I used students to demonstrate at the beginning of the lesson...I guess my intra-task variation would have been kicking at your own level as I gave certain students the option to scoot (change) the distance you and your partner were kicking. I think at this point it's starting to come more naturally...So, I can either, you know stop them and have students demonstrate from that point to make the lesson turn around and go better, or also, you know if people are doing a good job, pick them out, if they are doing the right thing I want to point them out, pinpoint them. (Eric, computer conference)

An example of situational reflection would be:

I do like being outside here just because there is more space to work with. However, time management is harder, things I never thought would be a problem.

For example, students getting hot and tired and wanting to stop. Also, the wind blowing the balls and hula-hoops all over the court. We also have a planting garden right next to the hardtop so that's another distraction with the kids.

These are all things I didn't even think about. So, I usually let them look at it for a minute and try to teach from there. (Eric, computer conference)

An example of sensitizing reflection would be:

I tried to have two males and two females in the teams as much as possible. They (students) didn't like it, and I don't think that it was so much because of discrimination, but I think at that age the girls and boys are very separate in a junior high school level. There are so many changes in their bodies and they don't want to be together in teams. I didn't do the teams based on skills, but I made them based on two boys and two girls. I told them that I would change it if I saw a need for change. (Jim, interview transcription, Tsangaridou & O'Sullivan, 1994, p.18)

Tsangaridou & O'Sullivan's (1994) RFTPE subcategorizes reflection stating technical, situational, or sensitizing reflection can be further defined as description, description and justification, description and critique, or description, justification and critique. An action about some aspect(s) of teaching would be description.

Description and justification provides the rationale or logic of an action related to teaching. Description, justification, critique provide an explanation and evaluation of various teaching actions. Further explanation or definition of each category of focus

and level of reflection can be found in the RFTPE (Tsangaridou & O'Sullivan, 1994) illustrated in Appendix C.

Focus of Reflection

Of the 80 total pedagogical events (illustrated in Table 1) 43 were categorized as technical, 37 were referred to situational and 0 events represented sensitizing issues of teaching. Consistent with Byra (1996) 20 of the 80 significant events were selected at random and reanalyzed by a second observer to determine interobserver agreement. An equal number of technical and situational responses were selected. The second observer was familiar with Tsangaridou & O'Sullivan's (1994) RFTPE. A simple percentage of agreement was also used as in Byra (1996). An interobserver agreement was determined at 95% for items categorized for student teachers' focus of reflection and an interobserver agreement was determined at 85% for items categorized in student teachers' level of reflection. The focus of reflections for each participant is presented for comparison. Data analysis indicated both Eric and Kara reflected on two out of three categories defined in the RFTPE (Tsangaridou & O'Sullivan, 1994). Each of the student teachers reflected on technical aspects of teaching more frequently (51.0% and 59.0%), than they did situational (46%) or sensitizing (0%). Since this was the first major teaching experience in a school setting, it is common that student teachers were mostly concerned with technical issues of teaching.

Table 1

Focus of Student Teachers' Reflection on Teaching

Student Teacher	Eric		Kara			Total	
Focus						frequency	%
Technical	frequency	%	frequency	%		frequency	%
Technical	27	51.0	16	59.0		43	54.0
Situational	26	49.0	11	41.0		37	46.0
Sensitizing	0	0	0	0		0	0.0
Total	53	100.0	27	100.0		80	100.0

Previous investigators have indicted that prospective physical education teacher's reflection on teaching during field experience is predominately technical (Byra, 1996; Curtner-Smith, 1996; McCollum, 1997; O'Sullivan & Tsangaridou, 1992; O'Sullivan & Tsangaridou, 1994). Undergraduate pedagogical courses which focus predominately on the technical issues related to teaching are commonly used to explain this phenomenon. For a complete list of undergraduate pedagogical courses and their reflective experiences see Appendix D. The low sensitizing percentage also agrees with findings from other studies suggesting that reflection on aspects of teaching that speak to social, moral, and political issues of teaching tends to be missing from prospective teachers' reflection (Calderhead, 1989, Gore, 1990, O'Sullivan & Tsangaridou, 1992).

Level of Reflection

Tsangaridou & O'Sullivan's (1994) RFTPE subcategorizes reflection stating technical, situational, or sensitizing reflection can be further defined as description, description and justification, description and critique, or description, justification and critique. In their RFTPE an action about some aspect(s) of teaching would be

description. Description and justification provides the rationale or logic of an action related to teaching. Description, justification, critique provide an explanation and evaluation of various teaching actions. The following is an example of description: “It (the lesson) was pretty successful” (Kara, computer conference). An example of description and justification would be the following “In today’s lesson we are kicking for distance which is very developmentally appropriate for these third graders” (Eric, computer conference). An example of description, justification, and critique would be: “I wanted them to work on kicking, as hard as they could, particularly at that age, I think that one of the important parts of kicking is to get them to really let loose with it, not just, you know, tap it with your toe or what have you” (Eric, computer conference).

The RFTPE as presented by Tsangaridou & O’Sullivan (1994) illustrates the coding scheme for the levels of reflection (see Appendix C). A total of 80 pedagogical events were derived from the audio computer conferences. A total of 53 were derived from Eric’s computer conferences and 27 were derived from Kara’s computer conferences. Levels of reflection ranged from description of aspects of their teaching, 38 for Eric and 17 for Kara to description and justification of aspects of a teaching episode, 7 for Eric and 8 for Kara, to description and critique of their teaching 4 for Eric and 2 for Kara, to description, justification, and critique of a teaching episode with 4 for Eric and none for Kara (see Table 2).

Table 2

Level of Student Teachers' Reflection on Teaching

Student Teacher	Eric		Kara			Total	
Level							
	frequency	%	frequency	%		frequency	%
Description	38	72.0	17	63.0		55	69.0
Description & justification	7	13.0	8	30.0		15	19.0
Description & critique	4	7.5	2	7.0		6	7.0
Description, justification, & critique	4	7.5	0	0.0		4	5.0
Total	53	100.0	27	100.0		80	100.0

The analysis revealed that in both their pedagogical comments participants were thoughtful of both technical and situational events in their teaching. Eric's reflections were more descriptive than were Kara's, who had a much higher percentage of critiqued events. Previous investigators have indicated that prospective physical education teacher's reflection on teaching during field experience is predominately technical (Byra, 1996; Curtner-Smith, 1996; McCollum, 1997; O'Sullivan & Tsangaridou, 1992; O'Sullivan & Tsangaridou, 1994). However, Kara and Eric valued both technical (54%) and situational (46%) issues related to their teaching.

Findings from previous investigators (Byra, 1996; Curtner-Smith, 1996; McCollum, 1997; O'Sullivan & Tsangaridou, 1992; O'Sullivan & Tsangaridou, 1994) also indicate the absence of reflection on sensitizing issues such as social, moral, and political aspects of teaching. Political issues have been addressed in the literature, as a factor relevant in educating prospective teachers for critical reflection during field experiences (Armaline & Hoover, 1989), and as an issue worthy of

discussion on teaching in a democratic society (Aronowitz & Giroux, 1985; Smyth, 1989). For a complete list of undergraduate pedagogical courses and their reflective experiences see Appendix D.

Student Teachers' Views on the Value of Reflection on Teaching

The previous sections focused on presenting the level of student teachers' reflection on teaching and the specific events of their reflective analysis. The following section addresses research question two: What are student teachers' views on the value of audio computer conferences in guiding reflection during an eight-week student teaching experience? This question is answered through the voice of the student teachers' during a follow-up interview with each of them. Raw data from the follow-up interviews consisted of comments and quotations, varying from a few words to a complete paragraph. Three assertions emerged from the inductive content analysis. These are 1) audio computer conferences provided a forum where the university supervisor could facilitate reflective conversations with student teachers 2) student teachers view traditional onsite observations as critical to their professional development and 3) when given a choice, student teachers preferred onsite observations or a combination of onsite observations and audio computer conferences to all observations via audio computer conference. This chapter will share the results of each of the assertions using the responses of the student teachers that were edited for grammatical mistakes.

Assertion 1) Audio computer conferences provided a forum where the university supervisor could facilitate reflective conversations with student teachers.

Information gathered during this study suggests audio computer conferences provided a forum where the university supervisor could facilitate reflective conversations with student teachers. Eric made the following comment:

You forget about those teaching skills you learned. That's probably what he brought out. By being able to talk to him on a regular basis, he brought out the reminder of the different teaching styles I could use to teach. (Eric, follow-up interview transcription)

This comment was echoed by Kara who stated:

I knew coming in, that reflection was important, but student teaching definitely allowed me to see how important it really is. Without it, I don't think I could have gotten through... I realized how important it was, when I actually got into the school setting...in the beginning we talked a lot about discipline, management, and things like that because that's what I really wanted to talk to him about...and it helped because talking to him made me feel like I could handle it because we talked about certain ways to handle situations. (Kara, follow-up interview transcription)

Additionally, student teachers stated audio computer conferences served as a way to bounce ideas off their university supervisor. Kara stated:

Because he (university supervisor) was not able to see me, it made me look at every lesson. It made me really pay attention to what the students were doing and what I would change...it got me thinking, you know, before I even got to the computer, what I was going to say, what I need to say...during our

conversations I could bounce ideas off of him and he could also bounce ideas off of me and this was very helpful. (Kara, follow-up interview transcription)

It allowed the university supervisor and student teacher to engage in a reflective conversation that required a deeper look at the elements of teaching:

I think that's one thing that the university supervisor got me to do, reflect on what teaching skills I would use. He would say, "Did you use a demonstration?" or "Did you use an intra-task variation?" and then give me feedback. It got me to open my eyes to what I could have done differently...that's another advantage of on-line observations, the university supervisor didn't see it, so you had to tell him everything you did. (Eric, follow-up interview transcription)

Student teachers also suggested that audio computer conferences provided a forum which allowed them to reflect. Eric commented, "When your supervisor comes to see you, and its only three times in eight weeks, you feel like those three lessons have got to be a step above. That's why I feel the online supervision is less pressure (Eric, follow-up interview transcription)

Eric went on to say:

Not being face to face is a little easier to be honest. Having the university supervisor onsite makes you feel like they're grading every little thing you do and so you feel like you have to defend why you did this as opposed to the online observations, I could say, I will never do that again...it's just a little easier to be honest, knowing that I could easily tell him straight out what I did

and I would be like this is what happened, it was terrible! (Eric, follow-up interview transcription)

The following comments regarding audio computer conferences were expressed by Kara who stated: "I reflected more on the computer than I did during the onsite observations" (Kara, follow-up interview transcription).

Kara appeared to reflect more because of the environment created through the audio computer conferences:

"I am more comfortable speaking with someone over the phone or over the computer than I am face to face...I'm more prone to speak up or ask my university supervisor questions about what I should do...I'm more shy when we're actually face to face talking...I just felt more comfortable and willing to share during the computer conferences." (Kara, follow-up interview transcription)

Although both Kara and Eric suggested that audio computer conferences provided a forum which allowed them to engage in reflective conversations with their university supervisor, they still view traditional onsite observations critical to their professional development. The following comments lead to assertion two.

Assertion 2) Student teachers view traditional onsite observations as critical to their professional development.

Both student teachers offered comments that supported their view that traditional onsite observations were critical to their development as a professional. Kara stated:

I think both worked very well. However, by having the university supervisor come to the school he had a chance to actually see me teach, and deal with all the things that goes along with teaching. If he needed to talk to my cooperating teacher to see how things were going, he could do that. I guess he didn't need to be there, but you know it was an extra bonus for me and for him. (Kara, follow-up interview transcription)

This feeling was echoed by Eric who stated, "Overall, I think that computer conferencing is a great tool for reflection. It was similar, but not quite as good as having someone come and actually see you teach." (Eric, follow-up interview transcription)

Eric goes on to say:

Although you probably get more feedback during the computer conferences, traditional onsite observations may be better because your university supervisor gets to see the reality of your situation, and your cooperating teacher...I think the one thing you would have to do in going completely to online supervision is sell the cooperating teacher on the fact that the university supervisor is not going to be there. Even though you'll be receiving supervision through the computer, the cooperating teacher wants to see the university supervisor come out and provide traditional onsite supervision. That's why I would probably say traditional onsite observation is better; because they can see the situation you're in. (Eric, follow-up interview transcription)

Both Eric and Kara offered comments that suggest they value traditional onsite observations but when given a choice between all student teaching observations being traditional onsite observations, or conferences via the computer. These comments lead to assertion three.

Assertion 3) When given a choice, student teachers preferred onsite observations or a combination of onsite ' and audio computer conferences to all conferences via computer.

Both Eric and Kara suggested if given a choice, they would prefer traditional onsite observations or a combination of onsite and audio computer conferences to all observations via computer. Eric, for example, shared, "I think a combination of both would actually be best. I liked the computer conferences because I thought it was low pressure...I probably got just as much feedback or more from those computer conferences, as I did from the onsite observations." (Eric, follow-up interview transcription)

Eric goes on to say:

I would have to say traditional onsite may be better because your university supervisor gets to see the reality of your situation and your cooperating teacher. The best case scenario to me would be one visit to see you teach and see what kind of situation you are in, get familiar with your school, and then switch to computer conferencing. So, for me a combination of both would be best. (Eric, follow-up interview transcription)

These feelings were supported by Kara who shared:

I would say a combination of both. During the first few weeks go out to see the site, see the surroundings, and the types of children the student teacher is dealing with. Then, during the rest of the placement, communicate with the student teacher through the computer. Also, I think it's important for the student teacher to provide a lesson plan, so both the university supervisor and the student teacher knows what they will be talking about. This allows the university supervisor to know what the plan was for the lesson, and if the student teacher had to change anything from the original plan. (Kara, follow-up interview transcription)

Summary of Student Teachers' Views

Developing reflective teachers remains a high priority in many teacher preparation programs and almost every teacher educator considers the ability to reflect a desirable characteristic of preservice teachers (Gore & Zeichner, 1991; Herrmann & Sarracino, 1993). During this investigation, traditional onsite observations were substituted with audio computer conferences during an eight-week student teaching experience. The audio computer conferences attempted to link members of a student teaching dyad (student teacher and university supervisor) and enable participants to communicate quickly over long distances.

Information from this investigation suggests that audio computer conferences provide a forum where the university supervisor could facilitate reflective conversations with student teachers (assertion one). Consistent with other studies these discoveries that suggest telecommunications technologies can be used to facilitate reflective practices among student teachers (Schlagal et al., 1996; Thomas et

al., 1996; Yan et al., 1994) and provides an environment that allows student teachers to express their opinions (Admiraal et al., 1998).

Assertions two and three support student teachers' positive views towards traditional onsite observations, stating that when given a choice, they preferred onsite observations or a combination of onsite observations and audio computer conferences to all observations via computer (assertion three). Student teachers also suggested that they view traditional onsite observations as critical to their professional development (assertion two). The participants of this study and their views towards the supervisory process are consistent with findings from the Tsangaridou & O'Sullivan (1994) study which reported that the onsite supervisory process is an essential element in enhancing reflection on teaching and critical for preservice teachers' professional development and growth. Additional findings suggest that preservice teachers, reflective practices can be affected through onsite post-lesson conferences with supervisors (Stout, 1989). Although developing reflective teachers remains a high priority in many teacher preparation programs, it would seem that more investigation is needed to address the role and value of audio computer conferences within the student teaching experience.

University Supervisor's Views on the Value of Reflection on Teaching

Research question three asks: What is the university supervisor's view on the value of audio computer conferences in guiding reflection during an eight-week student teaching experience. This question is answered through the voice of the university supervisor during a follow-up interview. Raw data from the follow-up interview consisted of comments and quotations varying from a few words to a

complete paragraph. Four assertions emerged from the inductive content analysis. These were 1) audio computer conferences required the university supervisor to modify his approach towards supervision, 2) audio computer conferences inhibited the university supervisor's ability to effectively perform his required roles and responsibilities, 3) audio computer conferences provide an alternative to but should not replace traditional onsite observations and, 4) audio computer conferences require the student teacher and university supervisor have a trusting relationship. The university supervisor's responses, which were edited for grammatical mistakes will be presented following each of the four assertions.

Assertion 1) Audio computer conferences required the university supervisor to modify his approach towards supervision.

Data suggests that the university supervisor found that audio computer conferences required him to modify his approach towards supervision. In the follow-up interview he said:

My job was to evaluate and help the student teachers with their teaching...as well as answer questions, helping to guide them along to become better teachers through feedback. By performing my observations over the computer I had to really come up with new approaches all the time...so I think I broadened my approach by coming up with questions and trying to probe them...I think it helped me to get better because I had to go deeper with my questions...I had to come at things from a different angle...for example I would say "So, tell me how you would rank this lesson compared to other lessons you've done before"...or "Would this be in the top five or would it be

in the bottom five”, so instead of just asking straight up questions, I would ask these goofy kinds of questions so they could think about the lesson and we could have a bit more fun. (University supervisor, follow-up interview transcription)

Although the university supervisor had to broaden his approach through probing types of questions, he also had to prepare differently for post-lesson conversations with student teachers:

Computer conferencing is a different type of thing you have to prepare for because you don't have any stimuli to go off of. You don't see anything, you don't hear anything, and you've really got to rely on the student teacher. So, I dug deeper to find questions that I was going to ask them and I also had to remember what we talked about two or three times ago because I wanted to revisit that. Also, it was harder to supervise this way as opposed to when I would drive out because when I would drive out I had a visual. A kid could remind me about something. For example, if I saw Johnny as soon as I walked in I knew that Johnny was going to be on that student teachers' mind. Then I could connect that to memory and say out of my eight student teachers I'm supervising, this one has the problem with Johnny and then I could, you know help them out with that, but I couldn't do that with the computer. Although I could ask how Johnny did or how Sally did, I couldn't get that same feel for what's going on. So, I think you've got to prepare differently. (University supervisor, follow-up interview transcription)

In an effort to prepare differently for student teaching conferences over the computer, the university supervisor offered the following comments:

You've got to write down some things on paper and I think it's a good idea to take notes after you're done...a series of questions, like the ones that were given to me were also helpful. They gave me a structured set of questions that I could pull out if I got stuck with some of my own questions. So, it was helpful to have something right there, for me anyway. (University supervisor, follow-up interview transcription)

Audio computer conferences required the university supervisor to modify his approach to supervision which led him to express feelings of discouragement when attempting to be an effective student teaching supervisor.

Assertion 2) Audio computer conferences inhibited the university supervisor's ability to effectively perform his required roles and responsibilities.

The university supervisor's offered the following comment:

There are times when I need to be that intimidator, or I need to be that support person. Sure it could be a very confident student teacher who thinks they got it all made, but it could be a real timid person who needs somebody out there just to help them out and be that support person, that father figure or mother figure but just someone from the university to say hey we're on your side, and I don't feel like I can do that over the computer. (University supervisor, follow-up interview transcription)

The university supervisor suggested another scenario regarding his ability to effectively perform his roles and responsibilities:

In all the student teachers I supervised I found that it's really hard to pull a student teacher if you can't go and see them and I've had to pull several students. There was no way I would have known what was going on unless they were right there in front of me dying and I had to put a stop to it. They weren't ready to be with kids. With onsite supervision they could never have masked that, there's a good chance they would have masked that in this type of communication. (University supervisor, follow-up interview transcription)

The university supervisor commented that another inhibition of audio computer conferences was not being out in the schools communicating with the cooperating teachers:

One of the things you miss with computer conferencing is the sites and smells of the gym, the school, the kids and the teachers. That's something you just can't replace. I missed not seeing and communicating with the cooperating teachers which I enjoyed doing. I didn't have that interaction and I felt like I completely ignored them and because of that, I felt they were cheated in some ways...they may agree to computer conferencing, but ultimately they want supervisors to come and that's just good public relations. It shows the university cares about their student teachers, it shows we want to help them, and I feel like I can't help them if I'm at a computer...and it's not just the student teachers it's also the cooperating teachers...I don't think I would ever connect with a teacher, like I've done in the past, if I just did computer conferencing. (University supervisor, follow-up interview transcription)

These comments suggested that the university supervisor felt negatively towards the ability of audio computer conferences to effectively allow him to perform his required roles and responsibilities.

Assertion 3) Audio computer conferences provide an alternative to but should not replace traditional onsite observations.

The third assertion that emerged from the inductive content analysis was that while audio computer conferences provide an alternative to they should not replace traditional onsite observations. This assertion was reflected in the following comment from the university supervisor:

I never see this type of approach taking over the onsite supervision. It's not a save all. It doesn't end all the problems associated with supervision...it could be a fall back thing, something where you've got a semester where your going to be really strapped to get out there, then it might be something to consider... it gives me another tool to think about, but it hasn't changed me in terms of how I do things. (University supervisor, follow-up interview transcription)

The university supervisor gave more detail in why audio computer conferences should not replace traditional onsite observations:

Traditional onsite observations allow me to help student teachers more, because I can see them and I can see their kids. With computer conferencing I'm completely ignoring the cooperating teacher and that is not good...its kind of like we just didn't come out...and ultimately cooperating teachers want supervisors to come out...I could have seen this being used as a time saver,

but not as a replacement. (University supervisor, follow-up interview transcription)

Another important element of onsite observations versus audio computer conferencing is the role of the cooperating teacher. The university supervisor offered the following comment:

Cooperating teachers need to be involved in the process of supervision. I see them having many roles, but one of them being a confirmers, someone to say, "hey yes that did happen." It gives me another way to validate what's going on...the process of supervision is so interesting, you'll go ask the cooperating teacher how things are going and they can either say, "it's going great" or "it's not going so well" and then you'll go talk to the student teacher and it could be the complete opposite. (University supervisor, follow-up interview transcription)

While the university supervisor offers comments recommending that audio computer conferences should not replace traditional onsite observations, he does suggest that audio computer conferencing can exist on some level. The fourth and final assertion that emerged from the inductive content analysis is that the student teacher and university supervisor need to have a trusting relationship if audio computer conferences are to take place.

Assertion 4) Audio computer conferences require that the student teacher and university supervisor have a trusting relationship.

This assertion was reflected in the following comment from the university supervisor:

Everything is based off what the student teacher is giving and they can choose what to give and what not to give as far as their teaching is concerned. They could easily cover up things that they don't want to talk about and I believe some of them really would...its not that I don't trust them, but they are very young and they haven't been out there for that long and not being able to talk to the cooperating teacher didn't allow me their perspective. So, this student teacher could have said, everything was going really well, and because I never talked to the cooperating teacher and because I never saw the lesson, it could have been a lie. (University supervisor, follow-up interview transcription)

The university supervisor added:

If I had a couple of student teachers who I really had to worry about this would not be a choice...but it is another nice tool to have at your disposal...and it gives me some things to think about if I decide to do this in the future. (University supervisor, follow-up interview transcription)

Summary of University Supervisor's Views

The university supervisor offers his views on the value of audio computer conferences. Information from this investigation suggests that audio computer conferences required the university supervisor to modify his approach towards supervision (assertion one), which inhibited his ability to effectively perform his required roles and responsibilities (assertion two). Although the university supervisor did not cite specifics, typical roles and responsibilities of a university supervisor include serving as a liaison between the university and the schools, providing a set of common expectations for cooperating teachers, providing support for teachers both

professionally and personally, securing favorable placements, orienting students to schools, evaluating student teachers relative to growth rather than specific skills or knowledge, providing feedback from observation, and conducting seminars (Koehler, 1984). Studies suggest that supervisors play a key role in helping preservice teachers develop their theories of teaching and reflective capabilities (Grimmett & Crehan, 1990; Nolan & Huber, 1989; Zeichner, 1990). The cooperating teacher's role is cited as also being critical in helping student teachers develop their theories of teaching and reflective capabilities. In fact, cooperating teachers are continually perceived by student teachers as the most influential person in their student teaching experience (Koehler, 1984; Su, 1992). The university supervisor went on to say that he felt it was very important that he had the opportunity to actually see the student teacher's students as well as have the opportunity to talk to the cooperating teacher in person. The university supervisor suggested that audio computer conferences provide an alternative to but should not replace traditional onsite observations (assertion three). Although there is no question that the cooperating teacher's role is critical in the development of the student teachers, they were not included as part of this study.

Finally, the university supervisor offered opinions for the use of audio computer conferences during a student teaching experience. Stating that if a teacher preparation program intended to use audio computer conferences then the student teacher and university supervisor must have a trusting relationship (assertion four). Audio computer conferences create an environment where the student teacher can choose what experiences to share with their university supervisor. Although the university supervisor stated that he understood the importance of engaging student

teachers in meaningful dialogue encouraging collaboration and challenging their viewpoints, he had no way of knowing if the information the student teacher was providing through audio computer conferences was accurate. These feelings stemmed from the university supervisor not actually seeing the lesson taught and having to rely solely on the student teacher for information about the lesson. Furthermore, he felt that with the cooperating teacher not being involved in the audio computer conferences, he had no way to validate the information offered by the student teacher.

Chapter Summary

Chapter 4 addressed the what pedagogical events were valued by student teachers', presented student teachers' views on the value of audio computer conferences in guiding reflection during an eight-week student teaching experience, and discussed the university supervisor's views on the value of audio computer conferences in guiding reflection during an eight-week student teaching experience. Following each of these individual sections was a discussion in connection with the related literature. A discussion of the findings, implications, and recommendations for future research will be discussed in Chapter 5.

Chapter 5

Findings, Implications, and

Future Research Directions

The purpose of this study was to examine the use of audio computer conferences on the process of guiding reflection among student teachers during an eight-week student teaching experience. Research on the use of audio computer conferences to promote reflection is a recent topic of interest, although few studies have been completed. Of the completed studies only a few have addressed the learning environment created through their implementation (Admiraal et al., 1998; Schlagal et al., 1996; Thomas et al., 1996). By investigating advances in the telecommunications technology and applying findings from previous studies the researcher attempted to acquire a greater understanding of the use of audio computer conferences during an eight-week student teaching experience.

An audio computer conferencing tool was used to create a telecommunications environment where student teaching interactions with their university supervisor were conversational and commanded an immediate response. The audio computer conferencing tool used in this investigation integrated a combination of voice communications, computer networking, and graphics transmission software. Transmitting through low bandwidth telecommunications channels (A.K.A.-ordinary telephone lines) two student teachers and one university supervisor were able to have real time conversations over their computers. Data collected from these audio computer conferences was used to address the following research questions:

1. What pedagogical events are valued by student teachers' during audio computer conferences during an eight-week student teaching experience?
2. What are student teachers' views on the value of audio computer conferences in guiding reflection during an eight-week student teaching experience?
3. What is the university supervisor's view on the value of audio computer conferences in guiding reflection during an eight-week student teaching experience?

The researcher used multiple sources of data collection including digitally recorded audio computer conferences, follow-up interviews, and journal notes taken by the researcher. Findings associated with the three major research questions will be discussed next.

Findings

Findings associated with the first research question discovered that student teachers' valued two aspects of teaching: technical (54%) and situational (46%). Eric and Kara demonstrated the ability to reflect on teaching by justifying, describing, and critiquing events they identified, as having meaning to them in the teaching and learning environment. The use of the Reflective Framework for Teaching in Physical Education (Tsangaridou & O'Sullivan, 1994) clearly identified what pedagogical events of the teaching/learning environment they cited as meaningful for their professional development. As with previous investigations prospective physical education teacher's reflection on teaching during field experience was predominately

technical (Byra, 1996; Curtner-Smith, 1996; McCollum, 1997; O'Sullivan & Tsangaridou, 1992; O'Sullivan & Tsangaridou, 1994).

However, when post-lesson observations were performed using audio computer conferences, Eric and Kara referred to technical (54%) and situational (46%) aspects of teaching. Given the limited number of participants more research is needed to further examine why technical and situational aspects of teaching were nearly equal. It is also important to look at why sensitizing aspects of teaching were not reflected upon at all. Sensitizing aspects of teaching as defined by the RFTPE (Tsangaridou & O'Sullivan, 1994) address social, moral, ethical, or political aspects of teaching. Findings from this study are congruent with the previously mentioned literature in that preservice teachers did not refer to pedagogical aspects of teaching that relate to social, moral, and political aspects of teaching. Sensitizing aspects of teaching are commonly missing from prospective teachers' reflection (Calderhead, 1989, Gore, 1990, O'Sullivan & Tsangaridou, 1992) perhaps, as the result of teacher preparation programs emphasizing technical aspects of teaching (Byra, 1996).

Growing criticism has centered on teacher preparation programs, which emphasize technical aspects of teaching. It has been suggested that these programs produce teachers who are not capable of reflecting on what ought to be taught or why it ought to be taught (Richert, 1991; Tinning, 1991). Opportunities that discuss issues relating to diversity and social, political and economic forces that impinge upon schools provide preservice teachers with a knowledge base from which they can critically reflect (Yost et al., 2001). Teacher education programs that encourage students to be inquisitive and make connections between educational, social, and

political agendas has been an area of interest (Zeichener & Teitlebaum, 1982) but seem to be inconsistent in their ability to make connections between classroom practice and broader aspects related to teaching. Tsangaridou & O'Sullivan (1994) suggest it may be more beneficial for teacher education programs to train supervisors to use dialogue in theoretical and practical ways as a means to enhance the reflective abilities of their prospective teachers. If audio computer conferences are capable of assisting teacher education programs in making connections between all aspects related to teaching questions surrounding their perceived value must be further investigated.

Discoveries from an investigation of the second research question suggested that audio computer conferences provided a forum where the university supervisor could facilitate reflective conversations with student teachers. Findings are consistent with other studies that suggest telecommunications technologies can be used to facilitate reflective practices among student teachers (Schlagal et al., 1996; Thomas et al., 1996; Yan et al., 1994) and provide an environment that allows student teachers to express their opinions (Admiraal et al., 1998).

Although audio computer conferences provided a forum where the university supervisor could facilitate reflective conversations with student teachers, student teachers view traditional onsite observations as critical to their professional development. And when given a choice between traditional onsite observations and audio computer conferences they valued both, but felt traditional onsite observations must be included during an eight-week student teaching experience. Assertions two and three clearly support Eric and Kara's positive views towards traditional onsite

observations, stating that when given a choice, they preferred onsite observations or a combination of onsite observations and audio computer conferences to all observations via computer and view traditional onsite observations critical to their professional development. Eric and Kara's views towards the supervisory process were consistent with findings from Tsangaridou & O'Sullivan (1994) which reported that the onsite supervisory process is an essential element in enhancing reflection on teaching and critical for preservice teachers professional development and growth as well as findings from Stout (1989) which suggest that preservice teachers reflective practices, in fact, can be effected through post-lesson conferences with supervisors.

While student teachers' views were mixed, the university supervisor's are not, as findings from inquiries associated with the third research question clearly suggest the university supervisor did not value the use of audio computer conferences in guiding reflection during an eight-week student teaching experience. The university supervisor stated that even though audio computer conferences required him to modify his approach towards supervision (assertion one), in general they inhibited his ability to effectively perform all the duties required of him (assertion two). Although the university supervisor in this study did not cite specifics, typical roles and responsibilities of a university supervisor include, serving as a liaison between the university and the schools, providing a set of common expectations for cooperating teachers, providing support for teachers both professionally and personally, securing favorable placements, orientating students to schools, evaluating student teachers relative to growth rather than specific skills or knowledge, providing feedback from observation, and conducting seminars (Koehler, 1984). The university supervisor

added that it was very important that he had the opportunity to actually see the Eric and Kara as well as have the opportunity to visit their cooperating teachers in person. Comments such as these led to the university supervisor to suggest that while audio computer conferences provide a nice alternative, they should never replace traditional onsite observations (assertion three).

Lastly, the university supervisor offered suggestions for the use of audio computer conferences during a student teaching experience. He suggested that if a teacher preparation program intended to use audio computer conferences then the student teaching dyad (student teacher and university supervisor) must have a trusting relationship (assertion four) suggesting that audio computer conferences create an environment where the student teacher can choose what experiences to share (or not share) with their university supervisor. The university supervisor went on to state that he understood the importance of engaging student teachers in meaningful dialogue that encourages collaboration and challenges their viewpoints, but feels he had no way of knowing if the information the student teacher was providing was accurate. Again, his feelings stemmed from not actually seeing the lesson taught and having to rely solely on the student teacher for information about the dynamics of the lesson. And with the cooperating teacher not being involved in the audio computer conferences, he had no way to validate the information offered by the student teacher. Clearly, findings from this investigation suggest the university supervisor did not value the use of audio computer conferences in guiding reflection during an eight-week student teaching experience.

Implications

Findings from the present study offer several implications for the process of guiding reflection in student teachers while using audio computer conferences during a student teaching experience. In this study, audio computer conferences allowed participants to engage in dialogue related to their professional development. The exchanges illustrate the potential of the joint construction of meaning as student teachers and their university supervisor engaged in discussions over technical and situational aspects of teaching. Discussions via audio computer conferences created a forum where participants could have discussions related to the teaching process seems to be a step in the direction of helping future teachers become reflective. However, much more research is needed. Audio computer conferences also allowed student teachers and their university supervisor to exchange descriptive information of an action regarding some aspect of their teaching, justified that action by providing rationale or logic of that action and even provided an explanation and evaluation of that teaching action. These exchanges illustrated the potential capacity of audio computer conferences to create a community of discourse between student teachers and their university supervisor. However, as teacher preparation programs consider the use of audio computer conferences they should also consider their misuse.

Audio computer conferences in this study did not involve the cooperating teachers. As a result, the university supervisor had to trust the student teacher, in that they would provide an honest portrayal of issues that presented themselves, as the university supervisor could not validate these issues with anyone but the student teacher. Comments made by the university supervisor led the researcher to speculate

on the issue of trust versus self-interest during the student teaching experience; especially when all student teaching observations are performed by way of audio computer conferencing without the inclusion of the cooperating teacher. For example, if a student teacher were experiencing problems, would it help or hinder them to disclose negative information about their teaching to their university supervisor over an audio computer conference?

Student teachers in this study suggested that audio computer conferences provided a forum that where the university supervisor could facilitate reflective conversations with student teachers. However, the researcher also questions these findings wondering if they are the result of the forum created through audio computer conferences or the result of less accountability of their teaching and the ease of simply telling the university supervisor what he wanted to hear? While comments suggest audio computer conferences allowed links with student teachers, their students, and their university supervisor by engaging them in dialogue related to the student teaching experience, the issue of trust versus self-interest should imply that teacher preparation programs understand and closely consider all potential outcomes of audio computer conferences before their implementation in a student teaching experience. Clearly, more research is needed to determine if audio computer conferences are capable of facilitating reflective practices among student teachers. As higher education moves into the 21st century the applications of technology will likely continue to be an important area of investigation.

Future Research Directions

The present study was exploratory and descriptive in nature; thus further research into the process of guiding reflection of student teachers using audio computer conferences during a student teaching experience is needed. Student teachers tend to reflect more on technical issues of teaching during early field experiences but post-lesson observations performed using audio computer conferences stated student teachers referred to both technical (54%) and situational (46%) aspects of teaching. This finding is encouraging, but clearly more research is needed to investigate how teacher education programs structure undergraduate pedagogical courses and reflective experiences and what aspects of the teaching/learning environment student teachers feel are meaningful for their professional development.

The use of real time audio computer conferences to create a forum where student teachers could not only reflect on what ought to be taught in schools, but also address why it ought to be taught warrants further investigation. Findings from this study could be applied to a new study that uses audio computer conferences to investigate the specific role of the teacher education program and its structure of undergraduate pedagogical courses and reflective experiences to guide reflective practices on all (technical, situational, sensitizing) aspects of teaching.

Findings from this study are consistent with other PETE research (Byra, 1996; Curtner-Smith, 1996; Gore, 1990; McCollum, 1997; O'Sullivan & Tsangaridou, 1992; Tsangaridou & O'Sullivan, 1994) stating that student teachers chose not to reflect on any aspects of teaching that are social, moral, ethical, or political. The need

to include sensitizing aspects as part of preservice teachers' reflective scope is encouraged by the literature and further strengthened by findings from this investigation. A future study that uses audio computer conferences to guide situational aspects of teaching, specifically, student teacher's attitudes towards pupil learning during the student teaching experience warrants further investigation.

Another logical step in following the present study would be to examine the integration of both traditional onsite student teaching conferences and audio computer conferences to gain insights into the process of guiding reflection of student teachers during the student teaching experience. This study did not include traditional onsite observations and conferences choosing to focus solely on the use of audio computer conferences. A study that integrated both "traditional" and "computer" approaches might provide further insight into what student teachers and the university supervisor value during the use of traditional onsite observations and audio computer conferencing methods. Other emerging telecommunication technologies might also be included into this type of investigation. Real-time digital video, e-mailed or streamed digital video clips, systematic observation software and/or the use of an entire distance learning system connecting all members of the student teaching experience might provide additional insights into the process of guiding reflection of student teachers during the student teaching experience. Along with these methods of observation other studies examining the process of guiding reflection during the student teaching experience should be studied.

The involvement of the cooperating teacher(s) into the audio computer conferencing process should be explored. The cooperating teacher is seen as a critical

member in the development of the student teacher. Their involvement in the process of guiding reflection via audio computer conferences, other emerging technologies or through the integration of both traditional onsite observations and audio computer conferences is an important area to be addressed. Insights into why researchers have difficulty eliciting cooperating teacher interest in using telecommunication tools that are at their disposal (Schlagal et al., 1996; Thomas et al., 1996) could also be addressed.

Contextual variables of the classroom environment and their potential influence on the satisfaction of members involved in the student experience are also warranted. Items paramount to the satisfaction of the experience include the school's context, school demographics, class size, teaching styles, facilities, equipment, curricular history, and cooperating teachers' value orientation. Insights gained could provide more in-depth understanding as to what student teachers, cooperating teachers, and university supervisors identify and value during the student teaching experience. The varied lengths of the student teaching experience would seem to also effect the satisfaction of the experience.

The use of audio computer conferences and other telecommunication tools to in an attempt to promote reflection needs to be further investigated. Teacher preparation programs need to understand how such technologies may assist them in developing reflective practitioners. In this section, recommendations for future research have been made. These recommendations have been made with the hope of adding to the findings of this study and to further assist teacher preparation programs

with their development of teachers who will seek opportunities to continually grow professionally and act as agents for improvement in physical education.

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Appendix A
Glossary of Related Audio Computer Conferencing Terms

Glossary of Related Audio Computer Conferencing Terms

Agenda Builder	Used to create or modify an agenda for computer conferencing events. This is a separate application, downloaded when you installed the computer conferencing Client software which resides on your machine in Program Files.
Agendas	List of activities for use by participants of a given computer conferencing event. Includes: whiteboard, text files, images, music, PowerPoint presentations, Web Safari activities, application sharing, evaluation forms, URL's, ad other folders for storing sub-agendas. Can be used while in session or out-of-session to organize a class meeting, small discussion group, a week's class, or the entire semester's materials for use in Symposium.
Application Sharing	For use while in an active computer conferencing session, allows the entire class to use the open application on the Leader's computer. By giving control to

	<p>any student on the Participant's list, they may make changes to existing files, save them, create new files, and explore contents. Web Safari is one kind of application sharing using a web-browser.</p> <p>Only available while In Session.</p>
Attend	<p>Under View My Schedule, clicking this starts the computer conferencing Client software and gives the Participant access to the Event Agenda.</p>
Audio Wizard	<p>Used to set microphone and speaker levels. Set by each user on their computer, it can be accessed as you login to your computer conferencing Home Page, or once you have joined an Event or Session.</p>
Availability	<p>Defines the time that an event is available for viewing or participating. This is set under Managing Events. An agenda or event may be available for as little as one hour, or be left up for the length of an entire semester or year.</p>
Breakout Session/Breakout Rooms	<p>During a session, the leader may divide the main discussion into smaller groups, or</p>

	<p>breakout rooms. Breakouts allow groups of participants to temporarily work together in a separate room. The leader creates breakout rooms and assigns participants to them. The leader may move between them, speak to all at once, and appoint breakout leaders in each area. Each breakout room has its own whiteboard and subset of the syllabus. This is only available during an active session.</p>
Breakout Leader	<p>A participant designated by the leader as the moderator for a breakout session. The breakout leader is responsible for giving microphone control to other breakout members, and for displaying syllabus items.</p>
Builders Folder	<p>The default folder within the larger computer conferencing folder in Program Files where the agenda builder stores new agendas.</p>
Client	<p>The computer conferencing client is a Java Applet running on the participant and leader's computer while they are</p>

	participating in an event. The client must be installed for anyone wishing to view an agenda either in or out of a session.
Control	When you have access to a microphone. When session is in session, you cannot speak or use the computer conferencing tools (Web Safari, Whiteboard, Discussion Groups) unless you have control of the microphone. When the leader gives you control of the microphone, a microphone icon appears next to your name in the participant list.
Description	When uploading an agenda to the server and associating it with a Subject and Event, there is a field provided for writing a brief description. This description is listed beside the name of the event in the events listing.
Enrollment	After registering a User Account, each potential participant must enroll in a session. Click on enroll beside the name of the event you wish to enroll in under the event list. Once completed, the event

	becomes listed under View My Schedule.
Evaluations	A form available in the Agenda Builder for including in an agenda, that allows for easy creation of multiple choice, short answer, and essay questions. Results of an evaluation are viewable only outside the session on the leader's computer conferencing page.
Event List	A list of all the events currently available for student enrollment.
Events	The way the computer conferencing program organizes information; an event constitutes a potential meeting. Events are scheduled or left open according to how long the leader or course builder makes it available. Generally an event would be a class meeting or scheduled time for students to meet to discuss issues in a class, project, or group. In effect an event is a scheduled subject in a particular content area.
History	A commentary that can be read, associated with agenda building, so that after an

	agenda has been passed between several course builders, each may make notes about what has been done. Viewed under Manage Subjects, Agenda History.
Home Page	The page from which each participant, course builder, event manager, and leader, views the choices that are native to their established roles. An event manager will be able to view lists of events and make changes to enrollment, whereas a basic participant will not have that available.
Host Machine	The computer being used as the Web server and computer conferencing tool's server.
In-session Mode	Begins when the leader presses the Begin Session button. During a computer conferencing session, only the instructor can access the syllabus, and the leader controls whom has control of the microphone and tools. See also: Pre-session mode.
Java, JavaScript	Programming and scripting languages used to create telecommunication tool.
Leader	The person who leads, teaches, or

	facilitates a session or class. The class instructor may grant leadership privileges to students for presenting as well.
Logging On	Done at the beginning of a computer conferencing event or subject/event management exercise, by entering the URL for the server from any browser over version 4.0. In this case, logging on to http://symposium.iddl.vt.edu . Enter your username (usually your PID), and your unique computer conferencing password.
Log Out	Done at the end of every session, event, or work with computer conferencing software. This signals the end of participant's activities with a session or event, or logs out the user from the computer conferencing server.
Media Window	The part of the computer conferencing client that displays the contents of an agenda item. Web Safari, images, film clips, texts, evaluations, other applications, PowerPoint presentations, and static web images all appear in this window which

	makes up the greatest part of the screen during an event/session.
My Schedule	A list of events a participant is enrolled in, including their appointed times, dates, and information about the event.
Nickname field	When filling out the forms for a registered User Account, this is the name that will be displayed during a computer conferencing event/session.
Participant	A participant in the class or session.
Participant List	List of all the session participants; also indicates who has microphone control, who has raised hands, and who has responded yes or no. You can sort the session list by clicking on the column headers.
Password field	Also part of registered student accounts, the password is used to log into the computer conferencing server. Must be a unique password.
Pre-session Mode	When a scheduled section is not in session (either before the leader clicks the Begin Session button, or after clicking the End Class button). In pre-session mode,

	participants can enter the main room, talk with other people in the room, and access all tools as well as the syllabus. See also: In-session mode
Registered User Account	When first registering with computer conferencing server, a form that requires each user to create their nickname, register their name, e-mail address, phone, department, and other fields for identification.
Schedule (View My Schedule)	A listing of “events” you have “enrolled in to attend at some predetermined period. See also: Enrollment
Sessions	The time you are actively participating with others in a live online collaborative event. Once you have enrolled in an “event” (see event above) and it appears listed under “View My Schedule”, you select “Attend” from your schedule listing to enter a live session in computer conferencing.
Snapshots	During a whiteboard event, clicking on this button on the whiteboard control bar takes a quick screen-shot of what is displayed in

	the media window, and saves it to a file that may be dropped into the agenda for later viewing.
Subjects	A group of specific “events” that fall within a certain content area. For example, “computer conferencing overview” is a specific event under the subject heading “computer conferencing”. Click on the “S” circular icon to the left of each event listing to see the subject area designation.
Target Audience	Identified as the specific audience an event is intended for. The target audience for an event can be displayed by clicking “S” circular icon to the left of an event listing.
Test Event	An online event in computer conferencing where the class instructor and/or tech support allow users to log into a session and test their audio and microphone settings, as well as get accustomed to the computer conferencing interface components.
User Profile	The online form in computer conferencing where registered users may change their

	name, session nickname, email, login password, phone number, etc.
Web Safari	In computer conferencing, the ability to access the World Wide Web from the virtual room. When someone with microphone control clicks the web button and specifies a web site to display, everyone in session sees the results. This is a collaborative experience, like the whiteboard, where everyone sees what everyone else sees.
Whiteboarding	A shared resource or space that participants can use to write or draw on. The main classroom has one whiteboard and does each breakout room. The whiteboard is displayed in the media window along with its tools for participation.

Appendix B
Audio Computer Conferencing Computer Requirements

Audio Computer Conferencing Computer Requirements

Operating System	Windows 95, 98 or NT 4.0 Workstation with Service Pack 3 or 4
Central Processing Unit (CPU)	Pentium 133 MHz (Intel based processors required)
System Ram	32 MB RAM (64 MB preferred especially for application sharing)
Sound Card	16 bit sound card
Minimum Screen Resolution	800X600 with at least 256 colors. (High Color 16 bit or higher preferred)
Sound input hardware	Microphone and speakers (Microphone- stereo headset preferred)
Web browsing software	Minimum Netscape 4.0 or higher or Internet Explorer 4.0 or higher

Appendix C
Reflective Framework for Teaching in Physical Education

Reflective Framework for Teaching in Physical Education

Focus Level	Technical	Situational	Sensitizing
Description	Reflecting on instructional or managerial aspects of teaching by providing descriptive information of an action.	Reflecting on contextual aspects of teaching by providing descriptive information of an action.	Reflecting on social, moral, ethical, or political aspects of teaching by providing descriptive information of an action.
Description & Justification	Reflecting on instructional or managerial aspects of teaching by providing descriptive information and the logic/rationale of an action.	Reflecting on contextual aspects of teaching by providing descriptive information and the logic/rationale of an action.	Reflecting on social, moral, ethical, or political aspects of teaching by providing descriptive information and the logic/rationale of an action.
Description & Critique	Reflecting on instructional or managerial aspects of teaching by providing descriptive information, explanations and evaluation of an action.	Reflecting on contextual aspects of teaching by providing descriptive information, explanations and evaluation of an action.	Reflecting on social, moral, ethical, or political aspects of teaching by providing descriptive information, explanations and evaluation of an action.
Description, Justification & Critique	Reflecting on instructional or managerial aspects of teaching by providing descriptive information, the logic/rationale, explanations and evaluation of an action.	Reflecting on contextual aspects of teaching by providing descriptive information, the logic/rationale, explanations and evaluation of an action.	Reflecting on social, moral, ethical, or political aspects of teaching by providing descriptive information, the logic/rationale, explanation and evaluation of an action.

Tsangaridou & O'Sullivan, 1994

Appendix D
Undergraduate Pedagogical Courses and their Reflective Experiences

Undergraduate Pedagogical Courses and their Reflective Experiences

The intention of the undergraduate program is to develop a reflective practitioner, who evaluates the effects of his/her actions on others, and seeks to grow professionally. The following undergraduate courses, and their learning experiences, are intended to promote self-reflection of their preservice teachers. Below are descriptions of the undergraduate pedagogical courses, and their reflective experiences.

Undergraduate Pedagogical Course Title	Description of course and reflective experiences
EDPE 2314 Gymnastics	EDPE 2314 is designed to prepare preservice physical education teachers how to teach educational gymnastics. During structured observations in school settings preservice teachers will be able to use a variety of resources such as professional literature, media, and technology for the presentation of instructional and assessment strategies in gymnastics. During micro/peer teaching experiences preservice physical education teachers will utilize self-reflection techniques in the form of e-mail reflective assignments for the purpose of enhancing future teaching experiences.
EDPE 2344 Teaching Group	EDPE 2344 is designed to provide preservice physical education teachers with the opportunity to research, gain

Physical Activities	<p>experience, and reflect upon content knowledge necessary to successfully teach large group sports, dances or other physical activities to middle or high school students. During micro/peer teaching experiences preservice teachers will utilize self-reflection techniques in the form of written reflective assignments for the purpose of enhancing future teaching experiences.</p>
EDPE 2354 Teaching Individual Physical Activities	<p>EDPE 2354 is designed to provide preservice physical education teachers with the opportunity to research, gain experience, and reflect upon content knowledge necessary to successfully teach individual sports, dances or other physical activities to middle or high school students. During micro/peer teaching experiences preservice physical education teachers will utilize self-reflection techniques in the form of written reflective assignments for the purpose of enhancing future teaching experiences.</p>
EDPE 2964 Field Study	<p>EDPE 2964 is designed to provide preservice physical education teachers with opportunities to analyze the process and context of teaching K-12 physical education. During structured observations in school settings and through an extended field experience preservice physical education teachers will discuss K-12 students attitudes and feelings toward physical education, student expectations, and the</p>

	<p>complexity of school contexts for K-12 students. Preservice physical education teachers will also realistically and accurately record insights into student/teacher interactions, the learning environment, and the role of health and physical education in K-12 schooling. Lastly, preservice physical education teachers will critically reflect on lesson plans, personal teaching beliefs, teaching skills, and their biases in relation to university classes and school setting.</p>
EDPE 3714 Teaching Physical Education	<p>EDPE 3714 is designed to provide preservice physical education teachers with the understanding of the many skills used by effective teachers of physical education. Emphasis is placed on understanding the theoretical implications of different teaching skills and the situations in which they are effective. Through micro/peer teaching experiences preservice physical education teachers will be able to recognize and describe the important pedagogical skills that are taught to comprise effective physical education teaching and the context in which these skills are (are not) effective. Also, preservice physical education teachers will be able to describe effective-teaching strategies used in direct and indirect instruction (i.e.-convergent and divergent problem solving). Lastly, preservice physical education teachers will be able to use e-mail and the internet to converse with other</p>

	<p>professionals. Reflective experiences will take place through written reflections of lesson plans, a videotape analysis, and networked computer assignments via the Internet and e-mail.</p>
EDPE 4134 Adapted Physical Education	<p>EDPE 4134 is designed to provide preservice physical education teachers with an overview of special education and adapted physical education, inclusion, developmental disorders, mental and physical impairments, strategies for meeting individual needs, education through physical activity, designing appropriate goals and writing IEP's (Individual Educational Plans) for physical education. Furthermore, EDPE 4134 is designed to provide the acquisition of knowledge and skills that will enable teachers to meet the educational needs of students with disabilities in Physical Education as outlined by Public Law 94-142 through current legislation. During structured observations in school settings preservice physical education teachers will reflect on their ability to design, write, and evaluate standard based Individual Education Plans (IEP's) for a variety of disabilities, developmental needs, program goals for each individual, and age level of students. Additionally, preservice physical education teachers will utilize a variety of professional literature, including on-line resources; to research, construct, and present a technology based multimedia presentation that</p>

	demonstrates effective interpretation and synthesis of the course content.
EDPE 4724 Children's Elementary Curriculum and Instruction	EDPE 4724 is designed to provide preservice physical education teachers with an understanding of “the skill theme approach” to children’s physical education curriculum based on motor skills, movement concepts and generic levels of skill proficiency. Emphasis is placed on the developmentally appropriate physical education content for children. Following short-term, clinical and early field experiences preservice physical education teachers will reflect on the need for generic levels of skill proficiency explaining how these levels are used in conjunction with skill themes to build a developmentally appropriate physical education curriculum for children that addresses youngsters with varying physical abilities and interests. Additionally, preservice physical education teachers will teach small groups of children demonstrating a correct and developmentally appropriate use of the skill theme approach and make changes to subsequent lessons based on their critical reflection.
EDPE 4734 Secondary Curriculum and Instruction	EDPE 4734 is designed to provide preservice physical education teachers with curriculum models and teaching styles that have shown to be effective at the secondary level. Following short-term, clinical and early field experiences

	<p>preservice physical education teachers will reflect through written assignments on physical education programs in K-12 settings given the “best practices” advocated in the professional literature such as NASPE’s Developmentally Appropriate Physical Education and National Standards for Physical Education, the CDC’s Guidelines for School and Community Programs to Promote Lifelong Physical Activity Among Young People, and the Department of Health and Human Services’ Surgeon General’s Report on Physical Activity and Health. Additionally, following short-term, clinical and early field experiences preservice physical education teachers will critically reflect on personal teaching experiences by discussing revisions to lesson plans and unit plans to better engage student towards physical activity.</p>
EDPE 4754 Student Teaching/Coaching	<p>EDPE 4754 is designed to provide an opportunity to preservice physical education teachers to practice and incorporate what they learned throughout their teacher preparation program in a K-12 school. Preservice physical education teachers will intern with a cooperating teacher at the secondary and elementary level for eight weeks each. Additionally, student will attend seminar meetings at the University and supervisors from the university will observe students throughout the semester to advise and support student</p>

teachers efforts. Additionally, preservice physical education teachers will develop an increased ability to engage in self-evaluation so one can assess their own teaching and professional strengths and interests while providing opportunities for preservice physical education teachers to reflect and re-examine their own goals and values in view of the complex demands of teaching.

Appendix E
Follow-up Interview Questions Used with Student Teachers

Follow-up Interview Questions Used with Student Teachers

What is reflection?

Where you taught to reflect in any of your undergraduate courses? Which ones? How did they get you to reflect?

As a teacher do you think it's important to reflect?

Did the computer conferencing tool assist you in reflecting about your teaching or planning? Which part?

Did you look forward to the computer conference? Why or Why not?

Talk about your perceptions of the onsite (in person) observations during your secondary experience vs. the computer conferences during your elementary experience?

In your opinion should the computer conferences be used in the future? Why? How should it be used? What would you change?

If Virginia Tech were to ask you to repeat your student teaching experience which method of observation would you chose and why?

One of the goals of your undergraduate teacher preparation program is to be a reflective teacher. For example in 3714 Dr. Krouscas ask you to write reflective observation of your micro-teachings. Did you find the computer conferences influential in guiding your development as a reflective teacher?

If you were to tell one of your friends about your experience with computer conferences what would you tell them?

What would you say if I were to tell you next year every student teacher will be supervised for the entire 16 weeks via the computer conferencing tool? What advise would you provide?

Did anything inhibit your exchange of information during the computer conferences?

Have you learned anything about reflection? In other words has going through this process changed you? In what way?

Appendix F
Follow-up Interview Questions Used with the University Supervisor

Follow-up Interview Questions Used with the University Supervisor

What are your roles and responsibilities as a university supervisor?

Have you ever used the Internet or computer conferences to address these roles and responsibilities?

Did you find this tool helpful in achieving these roles and responsibilities?

Did you look forward to the computer conferences? Why or Why not?

Talk about your perceptions of the onsite (in person) observations during your secondary experience vs. the computer conferences during your elementary experience?

In your opinion should the computer conferences be used in the future? Why? How should it be used? What would you change?

If you were given the choice of doing all your student teaching supervisor through computer conferences or all onsite observations which method would you choose and why?

One of the goals of this teacher preparation program is to develop reflective teachers. Did you find the computer conferences influential at all in helping guide reflection?

What would you tell your friends who are in teacher education about your experience with computer conferences?

Did anything inhibit your exchange of information during the computer conferences?

Have you learned anything about reflection? In other words has going through this process changed you? In what way?

Appendix G
Copy of Institutional Review Board Exemption Approval Form

- Virginia

VIRGINIA POLYTECHNIC INSTITUTE
AND STATE UNIVERSITY

Institutional Review Board

Dr. David M. Moore
 IRB (Human Subjects) Chair,
 Associate Vice Provost for Research Compliance
 CVM Phase II - Duckpond Dr., Blacksburg, VA 24061 USA
 Office: 540/231-4991; FAX: 540/231-6638
 e-mail: moored@vt.edu

2/25/2002

DATE: March 13, 2002

MEMORANDUM

TO: Craig Tacia
 Teaching & Learning 0313

FROM: David M. Moore

SUBJECT: IRB EXEMPTION APPROVAL - "Exploring the use of a computer conferencing tool to guide reflection among student teachers" - IRB # 02-132

I have reviewed your request to the IRB for exemption for the above referenced project. I concur that the research falls within the exempt status. Approval is granted effective as of March 13, 2002.

cc: File
 OSP: Dave Richardson 0170

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