

**A STUDY OF THE POTENTIAL USEFULNESS OF ELECTRONIC MAIL
COMMUNICATION BETWEEN STUDENT TEACHERS, FIELD
EXPERIENCE STUDENTS AND UNIVERSITY SUPERVISORS**

MASTER'S THESIS

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Dedication

This research project is dedicated to my family, without their help and support, this would have been impossible. To my husband John and our children, John and Madeleine, thanks for believing in me.

To Dr. Patricia Hart, thank you for your advice and for the countless opportunities you have made available to me. You are my mentor and I admire you.

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CHAPTER I

INTRODUCTION TO THE PROBLEM

Since the introduction of the personal computer in the late 50's, the world has drastically changed. Technology has changed society in numerous ways. Computers are now part of everyday life and have become a necessity in the business world. The recent addition of telecommunication via phone lines has rendered the world much smaller. Fax machines and electronic mail have transformed communications and particularly the speed of interactions. These modes of communication have tremendously affected the business world and these technological advancements are beginning to have similar impacts on the field of education.

As schools of education prepare their candidates for the world of teaching, new challenges lay ahead. Future teachers need to be prepared and must acquire basic computer skills, to gain personal and professional proficiency, to competently use technology in teaching, and to meet the new standard requirements. Teacher education programs should pay careful attention to the National Standards for Technology, developed by the International Society for Technology in Education (ISTE). ISTE is the professional education organization responsible for recommending guidelines for accreditation to NCATE for programs in educational computing and technology teacher preparation. The technological standards set by the ISTE recommend that teachers must be able to demonstrate skills in using computers to support problem solving, data collection, information management, communications, presentations, and decisions making (ISTE, 1997).

The National Council for Accreditation of Teacher Education (NCATE) is the official body for accrediting teacher preparation programs. It has adopted the curriculum guidelines set by the ISTE. The NCATE urges that schools of education should increase their emphasis on technology and makes several recommendations for stimulating effective use of technology in teacher education programs (NCATE NEWS, 1997).

An opportune time for candidates in teacher education to try telecommunication and to see its benefits, is during the student teaching experience. During that time, preservice teachers can use the computer as a tool for communication and support. They can easily connect with friends, cohorts, university professors, their campus supervisor, their cooperating teacher, and the rest of the world.

As students in the field of education become student teachers a sense of separation from the university is strongly felt. Students are widely dispersed during their field work, and often lose contact with their peers, former faculty members and mentors. Student teachers are disconnected from other classrooms and feel alone in their experiences. Student teachers, like regular teachers, are classroom bound most of the day with limited access to the outside world (OTA, 1995).

Furthermore, student teachers are immersed in a new environment in which they tend to adopt the same methods as their cooperating teachers, and may find themselves at odds with some of their recent methods course teachings. Simply put, student teachers often feel lost and are filled with an array of questions regarding issues such as classroom behavior, lesson plans, and teaching styles.

Many times, the only link between the student teacher, the cooperating teacher, and the university is, the university supervisor. However, the frequency of these connections between supervisors and student teachers depend highly on the supervisor's availability. Many questions go unanswered or are answered too late in the view of the preservice teacher. Site visits from university personnel and student-teaching seminars seem insufficient to bridge the gulf between the islands of university training and public school teaching (Schlagal, Trathen, and Blathon, 1996). Typically, a campus supervisor is expected to make five visits during a period of fifteen weeks. Many times communication is limited to those visits and to one hour weekly seminars given throughout the 15 week experience. This lack of communication can be highly

damaging to the success of the student teacher's experience. Research documents that poor communication among supervisors, interns and cooperating teachers is commonplace, resulting in mutual misunderstanding and blame (Schlagal, Trathen, and Blathon, 1996). When student teachers require guidance and assistance, their needs are immediate.

A solution to that problem may be the use of electronic mail. E-mail may increase the communication between all parties involved and therefore, could possibly reduce the stress associated with the experience of student teaching. A message can be sent just as easily to a colleague two doors down the hall or 2,000 miles away. Electronic mail is not intrusive; it awaits the convenience of the recipients, and batches of inquires can be answered at one time (Bull, Harris, Lloyd, and Short, 1989). Student teachers no longer have to wait for a visit from their supervisor to provide answers to their important questions. The students can log on and quickly pose their questions, or share their thoughts with their university supervisors. The supervisors can answer back without having to actually be in the school placements of any of his or her student teachers.

To prepare future teacher educators, universities are gradually making changes in their programs to incorporate electronic mail as part of the curriculum. In 1989, with the aid of a grant, TeacherNet was created at California State University, in order to improve the student teacher experience, increase interaction between faculty and students and enrich the quality of supervision and support (Casey, 1989). The Teaching Teleapprenticeship (TTa) project at the University of Illinois at Urbana-Champaign uses electronic mail communication. Through network interaction and resource sharing, this model brings together and involves all personnel close to the preservice teachers. The university coordinators, student teaching supervisors, school district instructors, preservice teachers and public school students are all connected and a part of the equation in this apprenticeship program (Thomas, Larson, Clift, and Levin, 1996).

Can electronic mail be used as a tool for communication between student teachers, field experience students and their campus supervisors? Is electronic mail an appropriate tool to enhance communication between supervisors and student teachers? Can electronic mail serve as a tool for journaling and reflecting? This study proposed exploration of the potential usefulness of electronic mail communication as a vehicle for enhancing communication between student teachers, field experience students and their campus supervisor

In summary, three reasons make this study of the potential use of electronic mail between student teachers and university supervisors relevant. First, knowing that technology is already impacting the educational field and the preparation of future teachers, preservice teachers need to be proficient with technology. Second, student teaching can be a challenging process for many preservice teachers and, if a lack of support is felt, the experience for the student teachers is that much more difficult. Third, having a broader understanding of the student teacher's experiences and types of inquires can lead to improved support for that new professional.

Purpose of the Study

The purpose of this study was to determine if the use of electronic mail could enhance communication and reflection between student teachers, field experience students and their university supervisor.

Limitations

The limitations to this study had a direct connection to the participants and to the ease of usage of the system. Factors to consider are, the participants' personal history use of electronic mail and their individual settings for use of electronic mail. The convenient access to computers and electronic mail is to be a primary concern. Another important factor may be the participants likeliness to share personal problems and issues in electronic communication versus personal journals.

Definition of Terms

Electronic mail (e-mail): A computer software application for exchanging information over a distance using a modem and a computer. Communication is asynchronous. E-mail typically consists of text and/or graphics. It can be addressed to an individual, as well as to groups of people.

Electronic address: A specific, locatable, electronic address that designates a person or service at a specific network site. Electronic mail addresses include a user name, the symbol "@," and a domain name (e.g., teacher@school.edu).

Mailbox: A file or directory on the end user's host computer that holds the user's e-mail.

Modem: A device that allows two computers to communicate over telephone lines. It converts digital computer signals into analog format for transmission. A similar device at the other end converts the analog signal back into a digital format that the computer can understand.

Student Teaching: A guided experience to prepare individuals for the role of a classroom teacher. The length of the student teaching experience will vary according to the type of certification.

Cooperating Teacher: A veteran classroom teacher who accepts responsibility for daily guidance of a field placement student or a student teacher. The cooperating teacher provides opportunities for the student teacher to gradually assume the full responsibility of teaching in the classroom.

Field Experience Student: Student in his/her sophomore or junior year in the educational program, taking the methods classes. The student attends classes at the university in conjunction with a practicum in a school setting. During the practicum the field experience student is asked to participate in the daily classroom activities.

Campus Supervisor: Person employed by the university to observe and appraise the student teachers and/or field experience student's performances during the field placement or student teaching experience. The supervisor makes observational visits of the student teachers and field experience students.

Student Teacher: Student in his/her senior year doing his/her final practicum. The length of the practicum will depend on the certification. Students wanting a primary degree (1-8) must be in the field for 15 weeks. The students wanting a primary degree including a kindergarten certification will be in the field the same amount of time but divide their time 10 weeks in a grade (1-8) and 5 weeks in a kindergarten classroom. Students wanting a special education degree must do two 10 week practicums; one in a 1-8th classroom and one in a special education classroom.

CHAPTER II

REVIEW OF THE RELATED LITERATURE

The purpose of this chapter was to review the literature regarding the student teaching experience and the theme of reflection in student teaching as an important component. It will also examine the increasing role of technology in teacher preparation programs specifically during the student teaching experience, not only as a vehicle for enhancing communication but also as a mode for preservice teacher reflection. The recent standards which dictate the infusion of technology for schools and colleges of teacher education were examined, focusing on the standards dealing with the use of telecommunication. Finally, results of research on the use of telecommunication to facilitate reflection are reported.

Student Teaching

Student teaching is a vital and essential part of the teacher education program. School experiences are described as the most important element in professional education (Posner, 1989). Student teaching provides preservice teachers the opportunity to put theory into practice. The impact of the student teaching experience on the prospective teacher can be far reaching.

Requirements

Most student teaching takes place in public schools and is a full-time experience for 10-15 weeks. This basic organizational framework is universal in the United States (Guyton and McIntyre, 1990) and the student teaching practicum is required by all the states. Student teaching is full-day, full-time, off-campus, school-based teaching experience. It provides students with a full-semester of invaluable classroom practice and prepares them for entry into the professional world of teaching. The specific length of time spent in classrooms during the student teaching experience is based on the type of certification the elementary education candidate is seeking. In the state of Ohio, an elementary certification requires a fifteen (15) week practicum. Kindergarten

certification requires an additional five (5) week practicum. A combination of these two certificates is possible whereas the student teacher completes 10 weeks in a elementary classroom and 5 weeks in a kindergarten classroom. Another combination of certification may be that of a special education and elementary education. To acquire a special education certificate the candidates must complete a 10 week practicum in an elementary school setting and another 10 week practicum in a special education classroom.

Cooperating Teacher

The college student, most often a senior in his/her last semester, is assigned to a school, a cooperating teacher and a university supervisor. In the state of Ohio, cooperating teachers must have a teaching certificate and certified and a minimum of three years teaching experience. The selection process varies from district to district but many cooperating teachers have chosen to have a student teacher in their classrooms. The cooperating teacher's role is to model effective teaching methods, provide daily guidance and instruction and to help the student teacher develop into a confident, competent professional (Student Teaching Handbook, 1997). The cooperating teacher must also evaluate the student teacher's performance by providing feedback and by completing two formal written evaluations; a mid-term and a final.

University Supervisor

University supervisors serve as liaisons between the university and the school district (Guyton and McIntyre, 1990). The campus supervisor is a member of the university faculty with the primary responsibility to observe and evaluate the student teacher's competency as a prospective teacher. The supervisor observes teaching lessons and meets with the student teacher after each teaching episode to hold a post-observation conference. The supervisory conferences are considered to be an important learning context for student teachers and focus on both the classroom lessons that have been observed and the general development of student teacher perspectives over the course of the semester (Zeichner and Liston, 1987). During those conferences, reflection on the

teaching situation and on the teaching episodes are discussed. The student teacher and supervisor together find ways to improve teaching techniques and skills. Evaluation of the practicum is given a letter grade at the final observation. The university supervisor is responsible for grading the student teacher. The supervisor asks for input from the cooperating teacher and a final grade is given based on this feedback and the supervisor's observations of the student teacher.

During the semester, the supervisor must also conduct seminars with his/her student teachers. The seminars serve as forums for reflection and discussion. Topics range from problems in the field to effective models of teaching. The seminars are designed to help students broaden their perspectives on teaching, consider rationales underlying alternative possibilities for classrooms and pedagogy, and assess their own developing perspectives toward teaching (Zeichner and Liston, 1987).

Student Teacher

The student teacher is expected, over the course of the semester, to gradually take over the cooperating teacher's role and assume full responsibilities for the classroom and all aspects of the classroom teacher's role. Most student teachers "solo teach" for a minimum of two weeks and a maximum of five weeks. The amount of time spent soloing depends on the length of the student teaching practicum; the longer the practicum, the longer solo teaching the candidate will do.

Student teaching can be overwhelming and difficult for students facing for the first time, the responsibilities and various roles a classroom teacher must perform. The experience is unique to each college student because each placement differs, each classroom and cooperating teacher is different. The school calendar, the school setting, the cooperating teacher, the classroom atmosphere, the students and the university supervisor are all elements of a student teacher's realities and impact his or her experience. Researchers have found that the major influence on a student teacher's

acquisition of skills is the ecology of the school, by which the pupils, physical environment, curriculum, community and other school-related variables support and promote a student teacher's performance (Guyton and McIntyre, 1990). As they are immersed in a new environment and are influenced by the methods and philosophies of their cooperating teachers, student teachers tend to forget recent methods classes. Rather than working to apply what they have learned, they adapt and replicate the practices of their cooperating teachers (Schlagal, Trathen, and Blanton, 1996). Probably the greatest influence on the quality of a field experience, particularly for the student teacher, is the cooperating teacher. In many ways, the student teacher is an apprentice and the cooperating teacher is a master teacher (Posner, 1989).

The cooperating teacher is the most significant person in introducing educational attitudes and behaviors to the student teacher. In some situations, the student teacher is expected to copy the cooperating teacher's techniques without ever having a chance to discover his or her personal teaching style. The student teachers are engulfed in their classroom placement. Once in a classroom, students often find that the room becomes a world unto itself and they seldom visit other grades, other schools, or other teachers (Schlagal, Trathen, and Blanton, 1996).

During their practicum student teachers are often required to keep personal journals. The journals are viewed as an integral part of the supervisory process (Zeichner and Liston, 1987). Though the journals are mandatory, they are not graded. They are used as a means of communication between the student teacher and supervisor and also as a means of reflection on the part of the student teacher.

Reflection

Definition

The concept of reflection is not new to the field of education but several views on the meaning of reflection exist. John Dewey, in his 1933 book *How We Think*, characterizes reflection as a specialized form of thinking and writes that reflection starts

when one inquires into the reliability, the worth, on any particular indication; when one tries to test its value and see what guarantee there is that the existing data really point to the idea that is suggested in such a way as to justify acceptance of the latter. To Dewey, (1938) every experience is a moving force and when individuals note the different forms in which continuity of experience operates, the basis of discriminating among experiences can be acquired. He argues that people do not learn from experience but rather from reflecting on experience. He stressed the importance of reflection and believes that experience combined with reflection produces growth. He makes a clear distinction between routine action and reflective action. Routine action is merely appetitive, blind and impulsive guided primarily by tradition, external authority and circumstance.

Comparatively, reflective action emancipates us from routine activity and converts routine action into intelligent action. The attitudes which need to be cultivated in order for the student teacher to reflect are open-mindedness, responsibility and whole-heartedness. Posner (1989) tells us that reflection enables us to consider the consequences of actions in light of past experiences and the ideas derived from formal study of education. Reflective thinking allows the teacher to critically examine the assumptions that schools make about what can count as acceptable goals and methods, problems and solutions. The study of reflective practice in teacher education is essentially concerned with how educators make sense of the phenomena of experience that puzzle or perplex them (Grimmett, MacKinnon, Erickson, and Riecken, 1990).

Reflection is also defined as a way of thinking about educational matters that involves the ability to make rational choices and to assume responsibility for those choices (Ross, 1990). Zeichner and Liston, (1987) describe the goals of the elementary student-teaching program at the University of Wisconsin, Madison. In this program the goal is towards reflective teaching where emphasis is on the preparation of teachers who are both willing and able to reflect on the origins, purposes, and consequences of their

actions, as well as on the material and ideological constraints and encouragements embedded in the classroom, school and societal contexts in which they work. These goals are directed toward enabling student teachers to develop the pedagogical habits and skills necessary for self-directed growth and for preparing them, individually and collectively, to participate as full partners in the making of educational policies. It is their belief that learning, for both pupils and teachers, is greater and deeper when teachers are encouraged to exercise their judgment about the content and processes of their work and to give some direction to the shape of schools as educational environments. The underlying orientations of these goals are greater teacher autonomy and increasing democratic participation in systems of educational governance.

Though many definitions of reflection have emerged, Yan, Anderson, and Nelson (1996) tell us that common agreement regarding reflective teaching includes the following two elements: a) content knowledge which refers to how teachers use knowledge in their planning and decision making and b) mode of thought which refers to beliefs and dilemmas of teaching as well as the social outcomes of education.

Application

Regardless of the definition of reflection used, the process of reflection implies observation and evaluation of experiences. As Dewey (1933) points out, the moment one begins to reflect, one must begin to observe in order to take stock of conditions. These observations become the facts or the data and the moment one thinks of a possible solution and holds it in suspense, he turns back to the facts. Data (facts) and ideas (suggestions, possible solutions) thus form the two indispensable and correlative factors of all reflective activity. Not only are the skills of observations and ideas important, but to be reflective, one must also appraise and analyze. Self-analysis and appraisal will help student teachers to become more aware of themselves and their environments and will give them perspective on their teaching and on their professional identity.

Reflective Journals

In the student teaching experience, if professional and personal growth are to be important outcomes, then reflection must be an integral part of the practicum. Campus seminars, conferences, and personal journals allow the student teachers to become reflective upon their experiences in the field. Personal journals have typically been used to help student teachers in the process of reflection. Journals give the student teacher a chance to think about the day's activities, critical incidents and feelings (positive and negative) about the student teaching situation. It also gives insight on the student's personal and educational views and details successes and failures in teaching episodes or with individual classroom students. It permits students to privately review the meanings and consequences of these events. Journals reveal information about the student's placement, classroom rules and pupils, cooperating teacher methods, and school policies. Through the aid of reflective journals, the student teacher learns to interpret new experiences, devise solutions to individual problems and come to better understand the teaching world.

Reflective journals are also used as a means of communication between the student teacher and the supervisor. Supervisors, by reading the daily entries, gain a better understanding of the student teacher's attitudes, experiences, and needs. The journals provide the supervisors with information about the ways in which their students think about their teaching and about their development as teachers, with information about the classroom, school, and community contexts; as well as to provide student teachers with a vehicle for systematic reflection on their development as teachers and on their actions in the classroom and work contexts (Zeicher and Liston, 1987). Handwritten journals can be an effective communication tool in teacher education courses. However, for the instructor, gathering the journals from students, reading information, providing feedback to the students, and then returning the journals can be very time consuming. Usually, by the time students receive feedback, they already have other concerns that need to be

addressed (Cooper, 1996). The supervisor ordinarily reads the journal during a site visit and usually comments on events that are documented in the journal. Some of these events can be as old as three weeks and it may seem irrelevant to the student teacher to receive feedback on events that are outdated and no longer important.

Though reflection is considered an important factor in the development of student teachers, Yan, Anderson, and Nelson (1996) found that reflective thinking was difficult for student teachers, not only because it is a cognitive exercise which entails that one must look back and learn from one's experience within a classroom environment but also because of the overwhelming demands the field experience places on the student teacher's time to reflect. It would seem that reflection on teaching is not a priority with student teachers. The pressures of teaching with the combination of other college demands make it difficult for student teachers to find time to reflect. As Zeichner and Liston (1987) indicate, the prevalent attitude among student teachers is that time spent on inquiry and reflection is time "taken away from" the more important tasks of applying and demonstrating knowledge and skills. They also found that despite efforts to legitimize inquiry and reflection by student teachers, some student teachers and cooperating teachers do not actively support these goals for student teaching and exert various pressures to focus attention of program participants upon the concerns characteristic of apprenticeship.

As preservice teachers are asked to reflect on their teaching during their student teaching, teachers and preservice teachers are also changing and developing based on the new technological standards. These new technological standards demand that teachers learn to modify teaching.

Technology and Teacher Education

As a new millennium is quickly approaching, the need to better prepare our prospective teachers for the future is eminent. It is no longer a question whether the new technology will be used in schools since the role technology plays in the daily classroom

is forever growing. The question now becomes, how can we adequately prepare teachers for their role in this new technological age? Louis Gerstner, Chairman of IBM, addressing the Administration's Technology Literacy Challenge, stated that technology has transformed the American workplace. It can also transform the American classrooms and the way schools operate. In his 1996 State of the Union Address President Clinton declared that in our schools, every classroom in America must be connected to the information superhighway, with computers, good software and well-trained teachers. It is evident that for teachers to be ready to use and to teach with technology they must have a solid preparation.

Technological Standards

The International Society for Technology in Education (ISTE) recommended technology content guidelines to NCATE for programs in educational computing and teacher preparation. The ISTE guidelines encompass five general areas: 1) recommended foundations in technology for all teachers; 2) educational computing and technology literacy -endorsement; 3) secondary computer science education - endorsement; 4) secondary computer science education - bachelor's degree, and 5) educational computing and technology leadership - advanced program (ISTE, 1997).

NCATE adopted these guidelines for use in the accreditation of teacher education programs beginning in the fall of 1998. The first area, "recommended foundations," lists eighteen competencies which all teacher education programs should address. This list of foundation standards provides fundamental concepts and skills for applying information technology in educational settings. These are divided into three categories: Basic Computer/Technology Operations and Concepts, Personal and Professional Use of Technology, and Application of Technology in Instruction. School of education candidates should have opportunities to learn and to explore the diverse possibilities of computer technology and to build their skills as developing professionals. It states that teacher candidates should learn to apply tools for enhancing their own

professional growth and productivity. They are to use technology in communicating, collaborating, conducting research, and solving problems.

These standards specifically mention the use of telecommunication to access information and enhance personal and professional productivity (standard 1.2.3). This standard means that prospective teachers need to learn how to reach out and make connections outside of their classrooms and share practical ideas with others. As Davis (1994) points out, the potential of electronic communication is related to its potential audience: it is world wide. Where students [and teachers] are given access, they can ignore the walls of the classroom and make direct contact with others across the world.

Standard 2.3 requires that candidates use telecommunications and information access resources to support instruction. The uses of telecommunication are growing and the resources seemingly endless. Telecommunications, from simple telephones to advanced networks, can transcend the walls of isolation that shape the teaching profession and allow teachers to converse and share experiences with colleagues, schools administrators, parents, and experts in the field (OTA, 1995). With the click of a button, access to resources are possible and teachers can find ideas for lessons, projects and can network with others who share similar specifics of classrooms (i.e. grade, environment, pupils,) within the school district and outside the district. Networks designed for such a purpose are capable of providing significant opportunities for professional development, new learning, the dissemination of research, and the transformation of schools (Watts and Castle, 1992).

Standard 2.3.1 specifies that candidates should have access and use telecommunication tools and resources for information sharing, remote information access and retrieval, and multimedia/hypermedia publishing.

Standard 2.3.2 demands that candidates use electronic mail and web browser applications for communications and for research to support instruction (ISTE, 1997). For teachers, the ability to communicate with other teachers, parents and others has

typically been restricted, due to the structure of the school day, time constraints and also to the availability of the school telephone. With the use of electronic mail, the barriers of time, availability and geographical distance are reduced. Some traditional school functions that might take advantage of electronic mail include: scheduling meetings, announcing events, and reporting grades, attendance and disciplinary problems (Broholm and Aust, 1993).

These comprehensive guidelines submitted by the ISTE have been accepted and adopted by the National Council for Accreditation of Teacher Education (NCATE) for use in accreditation for schools and colleges of education. In 1997 the NCATE Task Force on Technology and Teacher Education's report, *Technology and the New Professional Teacher: Preparing for the 21st Century*, developed three broad categories of recommendations about the use of technology in teacher preparation programs. One of these recommendations stipulates stimulating effective use of technology in teacher preparation programs. As NCATE president, Arthur E Wise points out that while technology moves from the periphery to the center in P-12 schools, it should also move from the periphery to the center in teacher candidate preparation (NCATE NEWS, 1997).

NCATE's accreditation standard I.D.2, *Professional and Pedagogical Studies*, expects that professional studies for all teacher candidates should include knowledge and experiences with educational technology, including the use of computer and related technologies in instruction, assessment and professional productivity. In standard III , *Professional Education Faculty Qualifications*, an indicator has been added stating that faculty need to be knowledgeable about current practice related to the use of computers and technology and integrate them in their teaching and scholarship. Teacher education institutions must prepare their students to teach in tomorrow's classrooms. Rather than wait to see what tomorrow's classroom will be like, they must experiment with the effective application of computer technology for teaching and learning in their own campus practices (NCATE, 1997).

The preparation of educators must take on new meaning and direction to meet the needs of a changing society (Schmitz and Schmitz, 1995). The changes technology has brought to the workplace have enormous implications for teacher education. If teacher education is to meet its responsibility to prepare teachers for the information age, then teacher educators have a professional responsibility to provide leadership in developing the full potential of existing and emergent technologies in teacher training (Brooks and Kopp, 1989). The responsibility of preparing future teachers to be proficient in the use of computer technology rests on the colleges of education. In colleges of education where technology is an integral part of the teacher education preservice program, technology has been used not just to train prospective teachers about technology, but also as a resource to enhance the overall teacher preparation experience (OTA, 1995).

Technological Educational Models

Many schools of education have developed models which integrate and combine the use of technology throughout the teacher education program. All the schools in which the University of Virginia's Curry School of Education preservice students spend their internships are linked to Virginia's Public Education Network, permitting the teaching intern, the supervising teacher, and the faculty at the Curry School to confer via electronic network throughout the teaching internship. The Curry School first began examining the potential of electronic mail for instructional use in 1984. In January 1987, a joint study know as Teacher LINK was initiated by IBM Academic Information Systems and the Curry School of Education to study the process of establishing a network to support the student teaching process. Students receive an electronic mail identification code (ID) when they first enter the Curry School and retain it until graduation. During this time it is used for informal conversations, formal research applications, between class interaction with professors, and as a communications link during field experiences. Students can also use the network during teaching internships. They can share a lesson plan with an advisor, obtain support from peers during a stressful period, and share ideas

with one another. The director of this program, Joe Garofalo, observes; "Because I have different students, in different schools, teaching at different times, it is not easy to set up an efficient observation schedule by using the telephone. The electronic mail has made the task of scheduling very easy. I can coordinate all my observations and also schedule around tests and quizzes, school assemblies, and other noninstructional sessions" (Bull, Harris, Lloyd and Short, 1989). The underlying idea of the electronic village is that interactions can happen rapidly and informally without regards to geographic locations and that an extended academic community can be formed as an instructional resource. The model at the University of Illinois at Urbana-Champaign, Teaching Teleapprenticeship (TTa) project has evolved during the past four years. TTa, funded by the National Science Foundation with additional support from Apple Computer and the Microsoft Corporation, has involved College of Education faculty, student teachers, supervisors, research assistants, and undergraduates in a new approach to technology integration. The TTa approach infuses technology throughout the teacher preparation experience and takes advantage of interdisciplinary faculty teaming (Thurston, Secaras, and Levin, 1996). The research team of Thomas, Larson, Clift and Levin (1996) in describing their project, state that the objectives of the project are to: 1) examine the ways in which teleapp..renticeships can provide a diverse set of authentic instructional experiences, created by electronic interactions with K-12 teachers and students that enhance learning; 2) study the kinds of skills which university students and faculty will need, to operate effectively as teachers in such interactions on educational networks; 3) examine the impact of state-of-the-art communication tools and resource servers, on the interactions among teacher education participants and 4) explore ways to involve student teachers as mediators of network-learning frameworks. The TTa project provides Macintosh PowerBooks and software to preservice program participants and student teachers. Instructional and technical support is available from graduate students and faculty both at the computer lab and at the TTa Project office. These are both located in

the College of Education and the support staff are also available by e-mail and by telephone. From their data, and recent research and literature, plus conversations with other teacher educators who are incorporating technology into their programs, the team has been able to identify and elaborate upon three factors which have a strong impact on the quality and character of the participants' use of technology. The three main factors affecting technology use were: 1) access, 2) context, and 3) training. With the issue of access, which they broadly defined to include the opportunities all participants have to utilize technology, the researchers discovered that readily, available, consistent and expert help, was to be primordial. They found that solely making equipment available to the participants was not sufficient. A non-threatening climate of support was essential for novice computer users and for continued sustained use of technology. Once access to equipment and knowledge was obtained, the nature of access changed and the participants discovered the ease with which electronic mail and discussion groups could facilitate information exchange and help in problem solving.

Context, which was defined as the setting in which prospective teachers worked, varied within districts and within school buildings. They found that when hardware and software were not readily available at the school, technology use was unlikely and caused frustration among professors, teachers, and students who wanted to use technology. The use of technology by student teachers was also based upon the cooperating teachers use of the computer. Elementary student teachers whose cooperating teachers used the classroom computer strictly for parent newsletters, lesson planning, assessment, and gradebook management were less apt to use the computer as a resource for curriculum planning or to explore other software for use with their students. With training, the conclusion was made that training in technology use must coincide with course goals and be seen as an integral course component. The overall conclusion in this research was that when technology topics are infused throughout meaningful, contextualized experiences in university and school settings, student teachers are more apt to embrace,

model, use, and incorporate technology into their instructional planning and classroom organization.

Casey and Roth (1991-1992) describe their pilot study, TeacherNet, conducted with the Graduate School of Education at California State University. This project involved six student teachers, six cooperating teachers and one university supervisor. All participants were provided with computers with modems loaned by Apple Computer Inc. and were trained to use the Advanced Technology Laboratory (ATL) network. The study was designed to pilot the technological enhancement for student teaching. It was based on three premises: a) increasing support during student teaching can increase its effectiveness as a learning experience, b) providing greater access to communication can increase the level of support and enhance the student teacher's self-esteem and c) using computers can significantly contribute to opening communication channels and hence strengthen the student teaching experience. Using Microsoft Word the pre-service teachers could write their lessons and receive feedback by sending them to their supervisor and/or cooperating teachers. Many more advantages resulted from this communication system. The students communicated more with each other, formed a support system and therefore did not feel isolated. Not only did the frequency of communication double but the depth of the messages written by the students to the supervisors showed serious reflection. The supervisor was also able to keep updated with any changes in the routine and could easily reschedule if necessary.

The disadvantages of this project related to the cost of such a program and to the collection, distribution, and storage of the equipment. The students felt that expense of phone calls and the difficulty in logging onto ATL system were other factors which they cited as inconveniences, though they all recommended the use of the computer for the following year.

The positive results of this pilot study include, the establishment of a support system among participants, improved communication among participants, and the

utilization of a system that encourages ease of writing; allowing time to think and reflect on all aspects of teaching.

Reflection through Electronic Mail

Increased communication is one of the biggest changes technology offers classroom teachers. Telecommunications can link members of the student teaching triad (cooperating teacher, student teacher, and university supervisor), enabling participants to clarify and negotiate complex professional meanings (Schlagal, Tarthen, and Blanton, 1996). Because students are widely dispersed during their field work, communication networks are particularly suited to the needs of schools or colleges of education (Bull, Harris, Lloyd and Short, 1989, Casey and Roth, 1991-1992). Technology is a valuable resource for improving teacher education. It can forge stronger connections among student teachers, mentor teachers in the field, and university faculty (OTA, 1995).

Advantages and disadvantages of electronic mail

Electronic mail is rapid and private. Burton listed the principal advantages of electronic mail as: a) directed or broadcast distribution of information; b) information may be sent across large distances; c) time differences become irrelevant; d) there is no need to rely on the recipient (s) being at the workplace; e) messages can be sent at any time convenient to the sender; and f) messages can be read as the recipient requires. Recipients have time to consider their response or gather their thoughts about a particular topic and can spend more time preparing an expressive narrative to share (Cooper, 1996). Thomas, Larson, Clift, and Levin's (1996) data documents that students, professors, and teachers all value e-mail for easy access to instructors, supervisors, student teachers, and peers because it offers an additional form of communication. Professors and teachers also value e-mail because it saves time and money. Not only is the use of e-mail in the supervision process helpful for long distance supervision, but it provides a means for mentoring between cooperating teachers, supervisors, and the student teacher. It would

therefore seem that providing triad members access to e-mail and the Internet would facilitate the student teaching process by improving communication between members

Electronic mail has many benefits and advantages, but some users may perceive writing rather than speaking as depersonalizing learning (Thomas, Clift, and Sugimoto, 1996) and as Larson (1995) noted, although e-mail was important to them, student teachers did not view telecommunications as a replacement for face-to-face communication with peers, cooperating teachers, supervisors, and methods course instructors. They viewed e-mail as another form of communication—not to displace personal interaction and the intimacy which comes from face-to-face human dialogue. Appropriately, student teachers found e-mail preferable at times when it was inconvenient or impractical to contact others by telephone or in person. However, during crises, student teachers wanted face-to-face communication, not e-mail. Thomas, Clift, and Sugimoto, (1996) noted that because e-mail messages do not always demand an immediate response, ongoing interaction can be supported only if the educational and social construction of e-mail creates rules that make *no response* socially unacceptable.

Research results in reflection through the use of electronic mail

The benefits of electronic mail have been manifold but the use of electronic mail as a tool for journaling and reflecting is just beginning to emerge in recent research. Reflective journals dialogue sent to supervisors via e-mail allow preservice students to receive feedback immediately rather than waiting the next observation the next campus seminar (Larson, Clift, and Levin, 1996). The component of speed of messages is having an impact on communication and on the process of reflection. The style of communication where messages are read with an answer composed and returned without the recipient waiting around, permits the process to become more reflective (Davis, 1994).

Cooper (1996) found that through the use of e-mail journals, she could gain a deeper insight of her students' concerns and learning experiences. She found that when they had a concern or an "eye-opening" experience, they needed an avenue to express their feelings and would immediately send her an e-mail message, because they knew they would receive prompt feedback. Whereas, with a handwritten journal, the need for feedback was not addressed in a timely fashion.

Yan, Anderson, and Nelson (1996) conducted a study to investigate the effectiveness of a research project that utilized electronic mail as a means of communication among student teachers, university supervisors, teacher education faculty, and participating classroom teachers. They examined the effects of electronic mail communication on student teachers' reflective thinking. Six university supervisors and ten selected student teachers participated in the study. The student teachers were selected on the basis of their interest in participating, their perceptions of the value of the study, and either their experience with electronic mail or their willingness to be trained to use the technology. Modems were provided and training sessions were offered to familiarize the student teachers with the electronic mail system. Guidelines for reflective thinking were provided and student teachers were asked to read their e-mail every day and to respond as often as they could. Once a week the student teachers responded to a reflective thinking question provided to them during the initial training session. The students' e-mail logs were analyzed and a content analysis focused on six reflective thinking categories. These reflection categories were: a) adapting lessons plans, b) class management, c) content/subject matter knowledge, d) anxiety and stress in teaching, e) relationship between cooperating teacher and student teacher and f) sharing teaching experience. The researcher also found that the student teachers shared several other experiences. Four more categories emerged: sharing solutions to problems, parent teacher conferences, admission that they were wrong/didn't know everything, and sexual harassment.

From this analysis, it was clear to the researchers that the student teachers wanted to share their experiences (positive and/or negative) and that the project appeared to facilitate timely communication between student teachers and faculty members. Student teachers used the electronic mail system for a variety of reasons. They would use e-mail to encourage each other, to ask questions, or to request more information about a topic. The researchers found that this communication system had fostered a great amount of self-efficacy and reflective thinking for student teachers and university faculty members. The university supervisors found that student teachers were more willing to ask how they might do things differently and that by using the system they were more able to consider alternative approaches to the handling of challenging situations. Through the use of telecommunication the student teachers could reach out to one another and not only benefit from being the receiver of information but also the giver. Overall there appeared to be a decrease of anxiety in student teaching and an increase in confidence in the use of technology.

This study indicated that there were several technical difficulties. The factors that put constraints on the use of electronic mail for reflective thinking were the location of the computer and modem, training of the student teachers, and a very busy internship. Since most student teachers did not have a computer at home, access to the computer was limited to the school placement. The installation of the modem within the school developed into a major problem. Both the location of the phone lines and the access to the phone lines posed problems. As the researchers found out, the times the lines were available for student teachers' use were limited and it was difficult for the student teachers to find a quiet place where they could use the modem without being disturbed. Also, while the students had been trained to use a specific software, the communication software they found on the school computer was different from the software used in the training session. The unfamiliarity of the software kept some students from using the modem. Even with eager participants, the demands of planning and teaching during the

student teaching practicum placed time constraints on the student teachers. Lack of time was the major reason given for not using the electronic method of communication.

The findings of this study indicate that in order to facilitate reflective thinking in student teaching, a teacher education program needs to a) provide more direct guidelines on reflective thinking, b) give more individual consultation and c) use all kinds of vehicles, especially educational technology, to facilitate reflective thinking.

Driven by the desire to combine the need for field experience supervision with the potential for inclusion of technology into the reflective process, Hoover (1996) engaged in a study designed to join preservice teachers, their supervisors, and university faculty in group-oriented inquiry during student teaching. Nineteen secondary preservice teachers and two supervisors participated in the study and were loaned an IBM computer, printer, modem, word processing and telecommunications software, and provided with a PENN*LINK account and toll-free access into the network. Students were required to send three messages a week, and respond to another message. They also had to complete two assignments; 1) share a lesson plan and 2) initiate a topic of discussion. All this data was interpreted and the coding for the content analysis revealed three general categories: combating frustration with camaraderie and support, promoting a focus on content-specific pedagogy, and forging the way toward critical inquiry into practice. The researchers were pleased and felt that the study exceeded their expectations and requirements. The analysis showed that preservice teachers enthusiastically responded to electronic mail as a medium of communication and reflection about teaching.

The results of this study indicate that the participants believe that technology is an effective means for personally linking educators for immediate communication about both general and content-specific pedagogy. It also provides for camaraderie and collegial supervision without the barriers posed by time and distance. As Hoover concludes, the preservice teachers have demonstrated that telecommunications network

offers the potential for the self-supervision necessary to empower teachers with a voice in shaping the future of education

As Dewey says in Article I of *My Pedagogic Creed* (1897) : "With the advent of democracy and modern industrial conditions, it is impossible to foretell just what civilization will be twenty years from now. Hence, it is impossible to prepare the child for any precise set of conditions. To prepare him for the future life means to give him command of himself." We could easily substitute the words "modern communication technology" for "advent of democracy" and "global industrial conditions" for "modern industrial conditions" and Dewey's thoughts about education are made contemporary and are illuminate the challenge for educators in our era.

CHAPTER III

METHODOLOGY

This study aimed, through a variety of methods, to explore the potential usefulness of electronic mail as a vehicle for enhancing communication between student teachers, field experience students and their campus supervisor.

The purpose of this study was to determine if electronic mail could be used for communicating and for writing personal journals to enhance student teachers' reflective thinking. The participants answered a survey, were informally invited to communicate via e-mail, and were given three optional methods for reflecting on their field experience. One of these optional methods was electronic mail.

Subjects

The subjects for this study were undergraduate, elementary education program students, at a private midwestern university. The researcher served in the capacity of campus supervisor to the subjects in the study. The subjects included two groups; student teachers and field experience students. All subjects were placed in the same elementary school.

Student Teachers

Initially, the researcher was assigned six student teachers. One student teacher was removed after five weeks due to poor performance. The remaining five student teachers were seniors in the elementary education program and were composed of one male and four females. These student teachers can be classified by their certification areas and classroom grade placement. One participant was seeking an elementary education certificate in combination with a special education certificate. She was placed in a fourth grade elementary classroom for a ten week period. She then moved to a different setting for her special education practicum and was assigned to another university supervisor. One more student teacher was seeking dual certifications but in her

case it was for kindergarten and elementary education certifications. She was able to complete both assignments in the same building and remained with the same supervisor. This student teacher was assigned to a third grade classroom for ten weeks and then to a kindergarten classroom for five weeks. The other three student teachers were seeking elementary education certificates. Two of those student teachers were assigned fifth grade classrooms for fifteen weeks, and the other was in a fourth grade classroom for fifteen weeks. These subjects, with the exception of the special education student teacher, were in the field for a period of fifteen consecutive weeks.

During student teaching, these above subjects gradually took on the teacher position and were required to solo-teach for a minimum of three weeks. Again, with the exception of the special education major, this was the subjects' final teaching practicum before completing a degree in education. The special education major still needed to complete a semester of course work.

As part of the student teaching experience, the subjects wrote personal reflective journals and attended weekly seminars. Ten one-hour seminars were conducted at the school site by the university supervisor. The private journals were shared solely with the university supervisor. These journals were used to help the student teachers with the reflective process and were used as a means of communication between the student teachers and the university supervisor.

Three of these subjects were still attending classes while doing their practicum. These classes were held in the evening at the university. The classes were held once a week and gave the student teachers the opportunity to use University computer labs.

Field Experience Students

The thirteen field experience students were all females in their junior year of the program. During the semester, these students divided their time between classes at the university and practicums in elementary classrooms. The field experience students began the semester by attending method classes at the university for 5 1/2 weeks. They then

went to assigned elementary classrooms for their first three week practicum. Once that was completed, they returned to their methods classes at the university for a period of three weeks. The second practicum followed and the field experience students went back to the same classroom placements for another 3 1/2 weeks. During each practicum, the field experience students were asked to participate in the daily classroom activities and assist the cooperating teacher. They were required to prepare and teach five lessons. These lessons followed specific guidelines and the supervisor observed one of these lessons. These field experience students were observed twice; once during the first practicum and a second time during the following practicum. To conclude the semester, the student's final exams were completed at the university during the last week of the semester. These students were not required to write a reflective journal

Setting

The settings in this study were many, including the university, the elementary school, and the subjects' and researcher's homes.

The University

All of the subjects attended a private midwestern university. This university is a comprehensive midsize, Catholic, university which serves approximately 10,320 students. The students were enrolled in the department of teacher education. The vision of the department of teacher education in which these subjects were enrolled is stated as follows: " Throughout their learning at the University, students are provided with developmental experiences that encourage them to make reflective decisions which are informed by and respectful of the technical, personal and critical aspects of teaching which recognize the competing demands inherent in a pluralistic society" (Student Teaching Handbook, 1997). In the Student Teaching Handbook, the department clearly stated its expectations and requirements for the subjects to successfully complete their student teaching experience. The handbook thoroughly

explains the program itself, seminars, evaluation, and duties of all personnel (student teacher, cooperating teacher, principal, and supervisor). The department's motto, "Teacher as a reflective decision maker in a pluralistic democracy" (Student Teaching Handbook, 1997) is emphasized during the student teaching practicum through post-observation conferences, seminars, and through the use of personal journals.

Since subjects were still attending classes on campus, the university's computer labs were included as part of the setting for sending electronic mail. The university has several computer labs. These participants could potentially access computers located in two University buildings, the library and the School of Education. The library has six computers available for electronic mail. The computer lab and the material center in the School of Education building were also accessible. The material center had two computers. The lab facility is divided into a front and back section. The front section is equipped with 21 computers. These computers were made available only if classes were not being held. The back section has 10 computers but only 3 of these were electronic mail ready.

The School

The elementary school in this research study was situated in a rural area. It had approximately 900 students enrolled in grades K-5. It also has maintained a long standing relationship with the university. During the semester in which this study was conducted, the school accepted nineteen field experience students and seven student teachers from this particular university. The school library had four computers with one of those computers hooked to the Internet with electronic mail software available. The computer availability throughout the school varied depending on the classrooms. The kindergarten and first grade classrooms had no computers. The second and third grades had five computers hooked to the Internet but without electronic mail capabilities. The fourth and fifth grades had six computers and none of these were hooked to the Internet and therefore lacked electronic mail.

A committee of five school personnel headed by the business manager of the district made decisions regarding network possibilities. The school year started without the aid of a technology coordinator, but this committee recommended hiring one for the school. A technology coordinator was hired at the end of March. In the interim, the school librarian functioned, in limited capacity, as the school's tech coordinator.

The Homes

The home environment of the subjects and the researcher were also considered important settings for this study. The researcher's base for use of electronic contact was the computer in her home. Some subjects had access to personal computers in their living quarters. Most subjects, however lived on campus but in different settings; ten subjects lived in houses while five subjects were in apartments and still one subject was housed in a dormitory. Two subjects lived off campus, at home with their parents. These two subjects had easy access to computers and had electronic mail available in their homes.

Data Collection

Three strategies were used to collect information regarding the use of electronic mail as a tool for enhancing communication and for promoting reflection in student teaching.

In the first data collection strategy, the researcher administered two surveys. The first survey was a pencil and paper survey designed by the researcher (see appendix). The researcher surveyed all participants early in the semester. The student teachers were surveyed during the first seminar at the elementary school and the field experience students were surveyed during the supervisor's first practicum visit. The purpose of the survey was to acquire information regarding the participants' use of and attitudes toward, electronic mail. In the first section of the survey, participants were asked four general "yes or no" questions concerning their use of electronic mail. In the second section, participants were asked to rate on a semantic differential, their attitudes toward the

effectiveness, the dependability, and convenience of electronic mail. A post field experience survey was conducted at the end of the semester. This second survey was a phone interview. The survey consisted of six questions (see appendix) and was designed to determine the extent to which each participant had access to electronic mail technology.

In the second data collection strategy, the researcher invited students to communicate via electronic mail. Early in the semester, the researcher randomly selected seven of the thirteen field experience students and invited them to participate in this part of the study. Specifically the seven subjects were invited to initiate and maintain electronic mail conversations in which they reflected on critical teaching events, sought technical or strategic advice, or simply desired to express their personal joys or frustrations. The researcher then monitored and recorded any electronic mail communication from the subjects. Spontaneous communication, critical teaching incidents and schedule changes were tallied and patterns of communication defined.

In the third data collection strategy, the student teachers were asked to use electronic mail to fulfill their reflective journal requirements. During the first seminar, the researcher discussed the study and handed the student teachers an informative letter (see appendix). The student teachers invited to participate in the study were informed that their participation would in no way endanger their grades. To carry out the reflective journal requirement, the participants were given three choices. First, student teachers could choose to reflect on their teaching by writing a daily personal journal. This journal was to be handwritten and made available to the supervisor before each observation. The second choice, involved the use of a specific lesson plan format which requires reflective comments at the end of each lesson. This lesson plan format is one the student teachers were familiar with since they had used it during their field experience. These lesson plans were either handwritten or typed. Finally, the student teachers could choose to fulfill their reflective journal requirement by maintaining an electronic mail journal. The researcher

encouraged the participants to choose the electronic mail option to communicate. By using electronic mail, the researcher argued that the opportunities for communication between herself and the student teachers could dramatically increase. Knowing that problems and dilemmas occur during student teaching and that immediate feedback is often necessary and most helpful to the student teachers, this mode of communication was offered as a solution. The researcher for personal reasons encouraged the use of electronic mail as a vehicle for making her own work easier and for decreasing the difficulties in coordinating observation times and thus avoiding phone tag.

In this study, the researcher was also the university supervisor. The role of the supervisor as a member of the university faculty, was to reinforce the departmental theme through seminars and assignments, to observe and appraise competency of prospective teachers, to assign the final grade and to write a letter of recommendation. The role of the researcher was to collect and analyze data relative to the subjects use of electronic mail during their field experience and student teaching.

Data Analysis

The data generated by each of the three data collection strategies were analyzed and reported differently. The survey data were analyzed, computed and the results displayed in bar graphs. The electronic mail communications were tallied and a frequency count per month and per participant was done. The researcher also planned to analyze the content of any electronic mail communication she received from the subjects. The hope was to develop a categorical framework for reporting the types of communication. For example, the mention of a request for technical support or help with dealing with a challenging child as opposed to a communication requesting clarity on an assignment, would form the basis for determining themes and categories.

CHAPTER IV

RESULTS

This chapter is organized in two sections. Section one reports the results of the survey with a series of bar graphs. The survey data represents the total group of participants. Section two reports data on the frequency and nature of electronic mail. The electronic communications between subjects and supervisor were compiled to represent individual students and examined to determine the prevalent themes in those communications. This data was also reported via bar graphs.

Survey

Survey results indicated that all nineteen participants were familiar with electronic mail, possessed an electronic mail address, and had used electronic mail. The participant's frequency use, as illustrated in Figure 1, indicates that the majority of students (53%) used electronic mail several times a week, while 26% of the participants reported using electronic mail once a week. The remaining 21% of participants used electronic mail once a month. Relative to this data, it was obvious that the majority of participants (79%) regularly employed electronic mail in their daily lives.

However, the participants used the electronic mail for different reasons (see Figure 2). Survey results also suggested that participants either used electronic mail for social interactions, and/or for professional and educational interactions. Analysis of the data indicated that 47% of the participants used electronic mail solely for social interactions, 16% used it solely for professional/educational purposes and the remaining 37% used it for both social and professional interactions. Analyzing the data in a different way, we can say that 84% of the participants used electronic mail for social purposes while 53% of the participants used it for professional purposes. It can therefore be concluded that participants favored electronic mail for social interactions versus professional interactions.

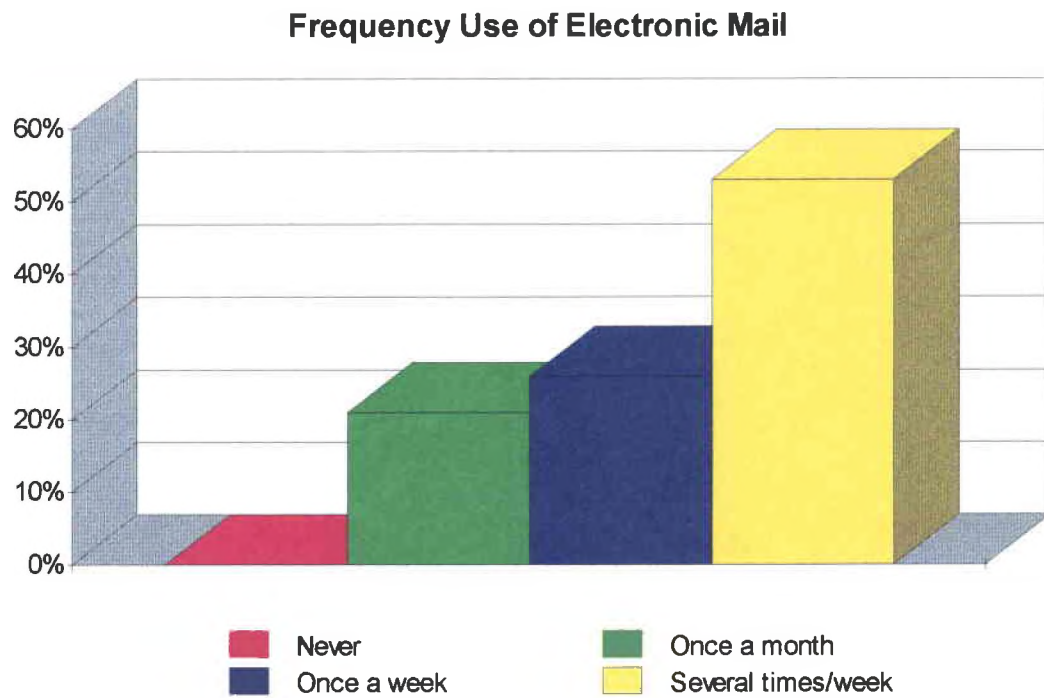


FIGURE 1. Represents the participants' frequency use of electronic mail.

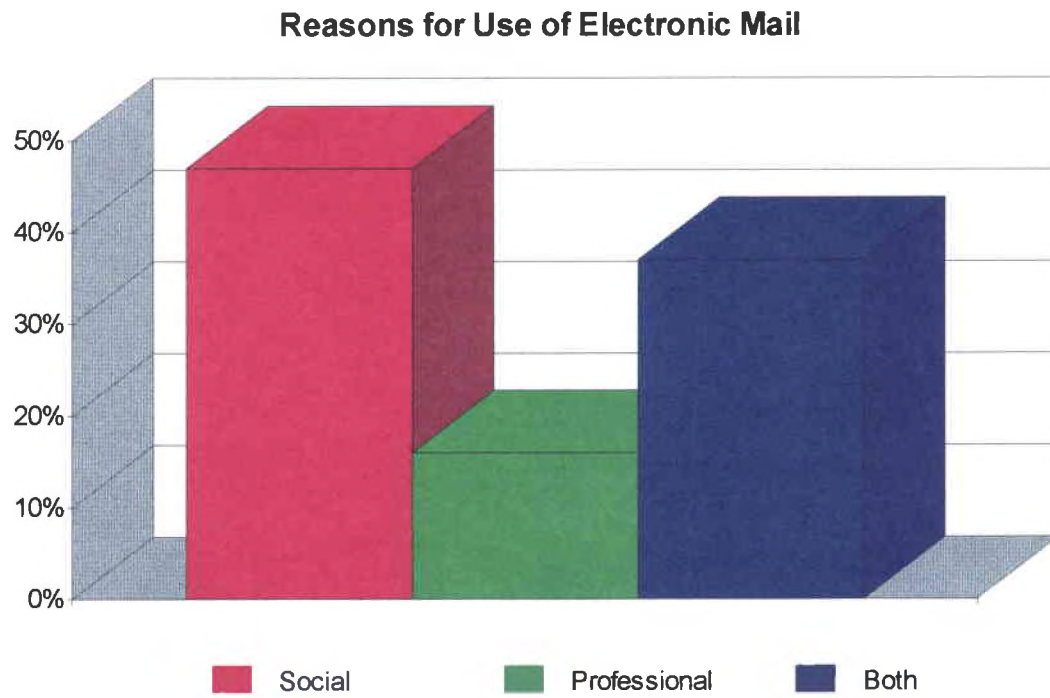


FIGURE 2. The reasons to use electronic mail

Using a semantic differential, the participants appraised three factors dealing with electronic mail. They rated the effectiveness, the dependability, and the convenience of electronic mail. To assist in data analysis, the researcher assigned numerical values to the semantic differential and the following terms were applied to correspond to the numerical values; 1: became "not at all"; 2: "a little"; 3: "somewhat"; 4: equaled "the specific factor"; and 5: meant "very". Factors were individually analyzed and graphically represented. The mean score of these three factors were compiled and a graph illustrated the comparison of these scores.

Figure 3, illustrates the participants' opinion regarding the effectiveness of electronic mail. Examining the participants' evaluation of the effectiveness of electronic mail, it is interesting to note that a high percentage of students (68%), rated electronic mail as a very effective tool for communication. An overwhelming majority of participants (84%), saw electronic mail as an effective to very effective mode of communication. Again, it is easy to conclude that the participants' viewed electronic mail as an effective apparatus and means for communicating.

Figure 4, illustrates the participants' views on the dependability of electronic mail. Participants rated the dependability of electronic mail and 73% of the participants rated electronic mail as a dependable or very dependable tool to communicate. Overall, it can be said that the participants considered electronic mail to be a dependable method of communication.

The convenience of electronic mail, as indicated in Figure 5, demonstrated that only a small percentage of participants (26%) viewed electronic mail as a very convenient means of communication. The majority of students (47%) viewed electronic mail as a convenient means of communication. The remaining 27% of participants either viewed electronic mail as somewhat convenient (11%) or as a little convenient (16%) to use.

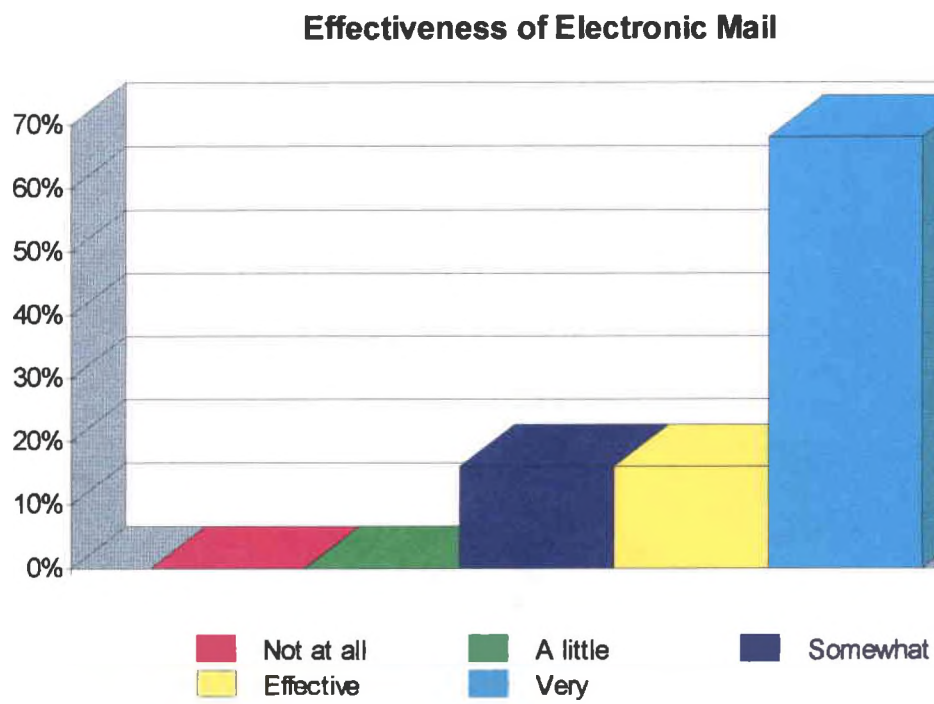


FIGURE 3. The participants' views on the effectiveness of electronic mail.

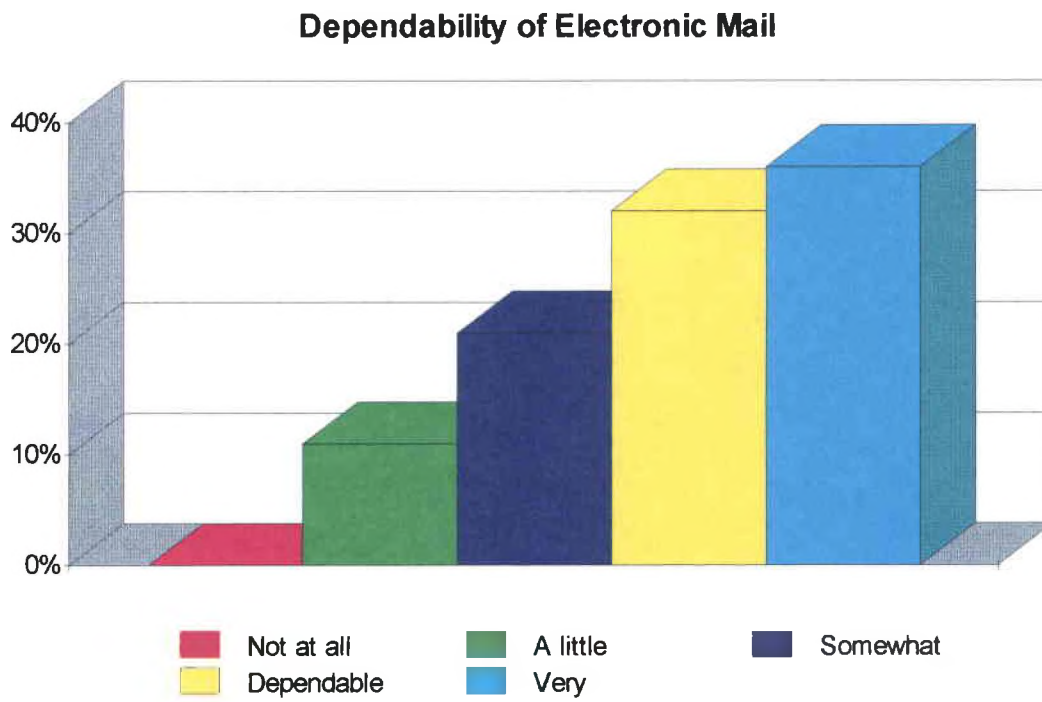


FIGURE 4. The participants' views on the dependability of electronic mail.

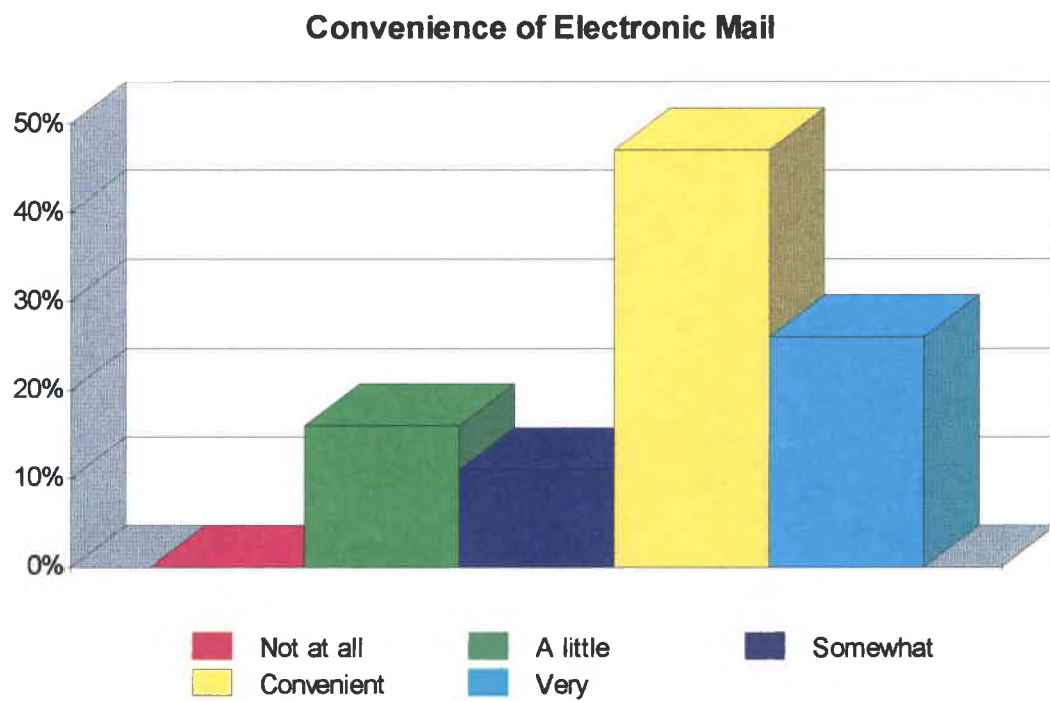


FIGURE 5. The participants' views on the convenience of electronic mail.

Figure 6, compares the mean scores for all three factors. It revealed that the students saw electronic mail as a highly dependable tool but did not perceive it to be highly convenient. The reasons attributed to the low rating of convenience may be due to the students limited access to computers and electronic mail.

The researcher also collected data on how many students owned personal computers and had an electronic mail hook-up, which would then give them easy access to e-mail from their residences. A phone survey, done at the end of the semester, indicated that hook-up was available to half of the participants living on campus. It also revealed that 50% of the participants owned a personal computer, but that only 16% had both computers and electronic mail.

Electronic Messages

The electronic mail messages sent to the researcher were tabulated to establish frequency and evaluated to determine content. Two graphs illustrated frequency use. The first graph (Figure 7), indicates the number of times individual students contacted the researcher and the second graph (Figure 8), illustrates a monthly frequency count.

Examining frequencies in Figure 7, it is evident that Erica sent the most messages. This may be attributed to the fact that she was a student teacher and not a field experience student. Erica was the only student teacher who attempted to fulfill her reflection requirement through the use of electronic mail. She did however encounter technical difficulties. At the beginning of the semester she was unable to receive messages and resorted to using her roommate's electronic mail address. After a few weeks, she was able to obtain a new e-mail address. She said, "I would send you some of my journals, but I don't trust the e-mail yet, as it does not seem to be reaching anyone else." Six weeks into her student teaching experience she said, " I finally figured out this crazy computer!" and subsequently sent her journals through electronic mail. Unfortunately, Erica only had a few weeks left to do in her student teaching and only one message was received and classified as a journal entry.

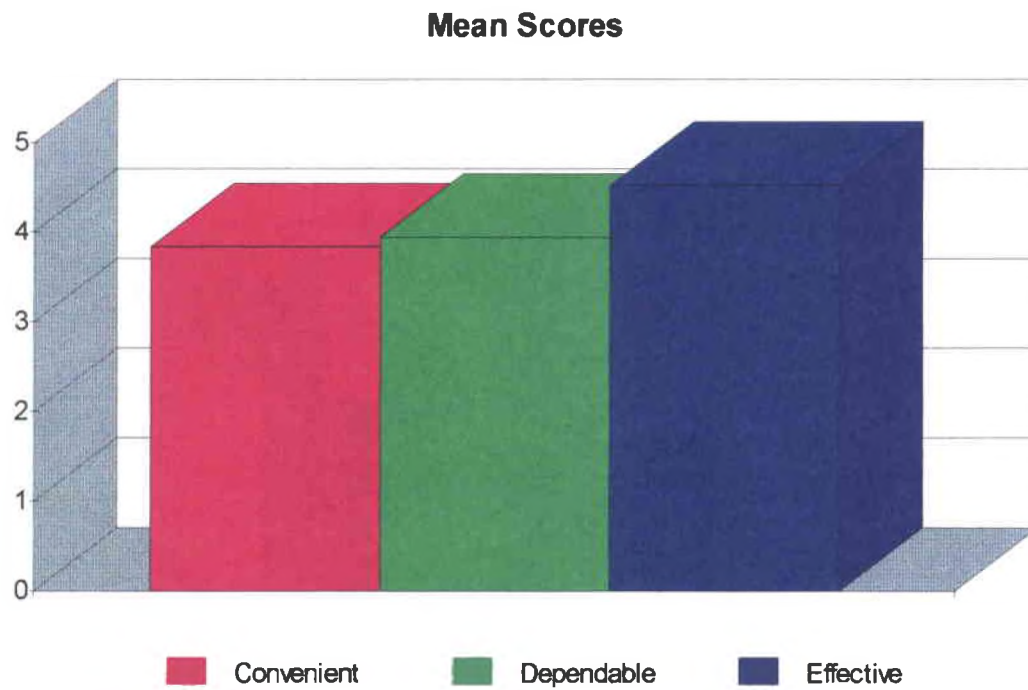


FIGURE 6. Compares the mean score of the dependability, the effectiveness, and the convenience of electronic mail.

Frequency Count per Students

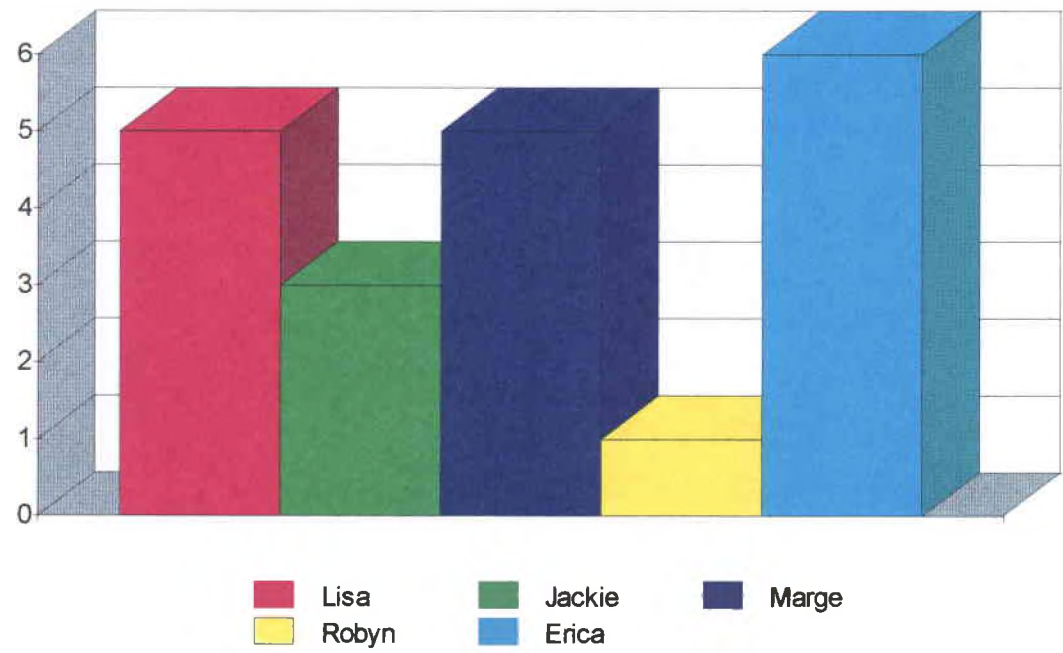


FIGURE 7 The number of messages sent by individual students.

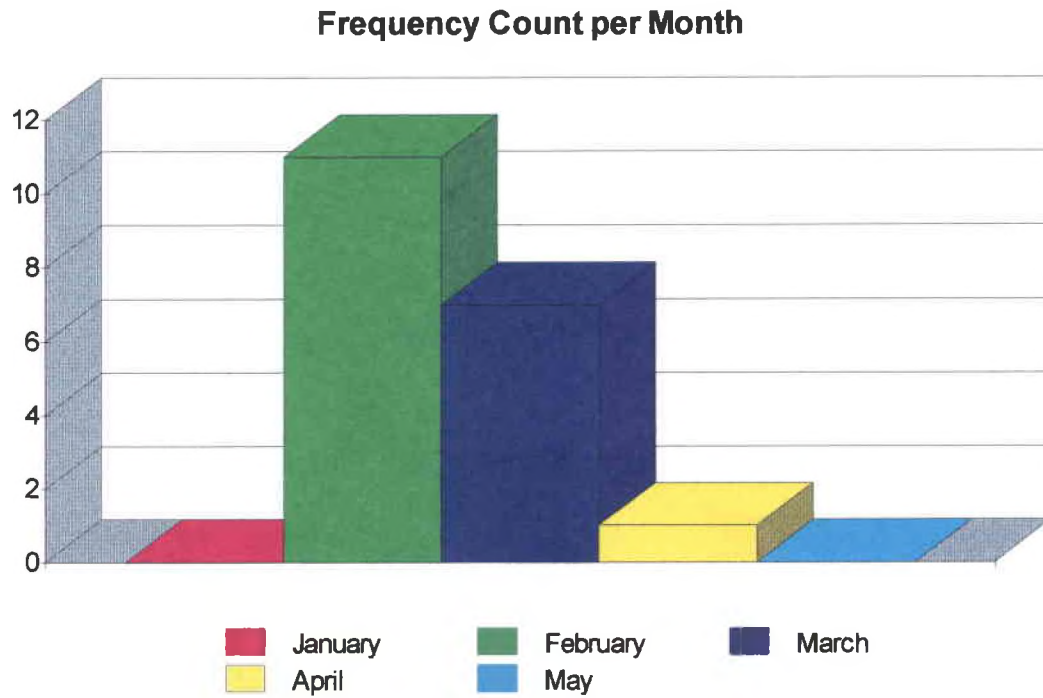


FIGURE 8. The number of messages received per month.

Erica's first electronic mail message was received two weeks after the seminar meeting where student teachers were asked to use electronic mail for communication and reflections. Her first electronic mail journal entries were received five weeks after the first seminar. At that point Erica only had three weeks left to complete her student teaching experience and no more messages were sent while she student taught at the elementary school. She did however send two messages during her student teaching in special education.

The remainder of all messages received were from field experience students. The researcher sent an electronic mail message to seven of the thirteen field experience students. This message was sent on the first day of the students' field experience. Three students replied quickly. Two students replied the next day and one replied two days later. The remaining students never replied. On the second field assignment the researcher again contacted those three students and contacted one more student. This student made one reply.

The analysis of the type of communication received revealed several categories (see Figure 9). The researcher established six content categories: a) logistic/schedule changes, b) classroom management/ methods, c) lesson topics, d) classroom description e) support and f) personal accomplishment. The researcher found that students use electronic mail primarily for logistic purposes such as schedule changes or observation times. Messages often were similar in nature and dealt with observation issues. Robyn's e-mail exemplifies these kinds of messages whereas the content reveals her concerns with her observation time: " The only time I could sign up for an observation was on April 16th from 12:00 to 12:30. Is that too short of a time?". The need for an observation time change also accounted for messages in this category. In one of Erica's e-mails she wondered: "Is there any way we can change our observation time on Thursday- you are coming at 10:45 but I forgot we had a field trip that day." Marge also indicates: " I would like to sign up for Tuesday morning for a lesson for next

Categories in Electronic Mail Content

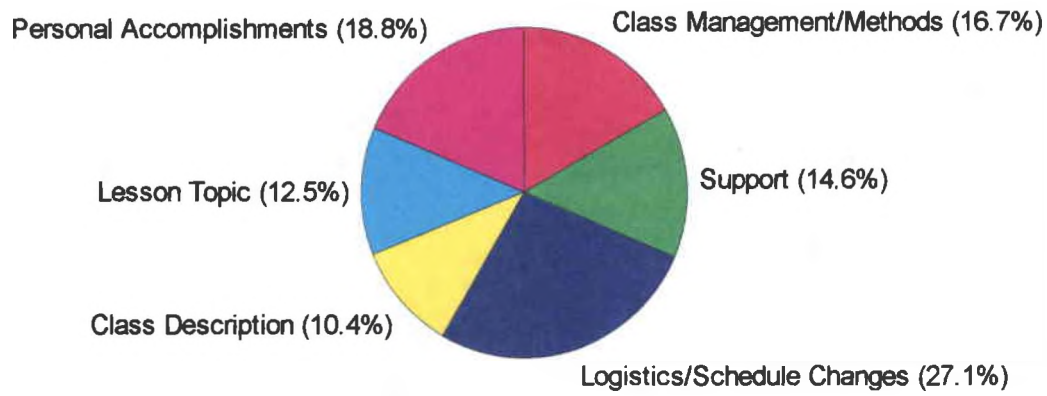


FIGURE 9. Distribution of categorical themes in electronic mail content messages.

week." Jackie wanted to confirm her observation time: "I have signed up to be observed next Thursday from 2-2:30." and during her second experience she wrote: "I signed up for April 7th at 11:45-12-15." As illustrated in figure 9, the majority of messages (27.1%) dealt with scheduling issues.

The theme of personal accomplishment was found in many electronic mail messages. Erica described a situation where she helped an autistic child and she reports: "I worked with him on it and he did really well. We both were proud of what he had accomplished!" In Lisa's message she wrote: "I did two lesson plans today and after the second one, I thought to myself...I can do this!" Jackie echoed the same sentiments when she said: "I taught my first lesson today. It went really well."

Another common theme throughout these messages was that of classroom management and/or classroom methods. Students either shared new methods they wanted to try or methods used by cooperating teachers. Erica mentioned how hard it was to keep track of students who failed to turn in their homework and wrote:

"It was hard for me to keep track of it all the time so I decided to do something new. I am going to have the students put all their homework on their desk before morning silent reading. While they are reading, I will go around and check to make sure they have turned it all in."

Participants also commented on certain classroom management techniques as Marge's e-mail indicated: "It is interesting to watch teachers' reactions to problems and even every day transitions and I can see that little classroom management techniques can make a big difference." In another e-mail Marge wondered about the use of texts, worksheets and round robin reading and she comments on how: "these techniques are different than the methods we are learning at the University." Lisa observed: "Ironic, that there is always something new to learn or some other approach to teaching a concept-guess that's what makes this experience so unique compared to past observational experiences."

Students also frequently mentioned the word support or felt that they received support from their cooperating teacher, supervisor, or students. As Lisa wrote: "I have to admit how overwhelmed I am at times with the amount of support I receive." In a later e-mail she mentions: "It means a lot to have a supportive supervisor." Erica expressed her gratitude: "Thanks for looking over my resume, I appreciate you taking the time." Jackie affirms that: "My experience with second grade is going very well. I am really excited."

The last two categories were more descriptive in nature. The students either described their setting or a lesson to be taught. Robyn wondered about her lesson topic when she wrote: "I was thinking of doing a lesson about drama/dance, to follow our guest speaker's presentation." and Lisa discussing her future plans said: "Seems like the second grade classes are going into the topic of biographies and my cooperating teacher feels that I could present Abe Lincoln, however that's as far as the conversation has gone." Jackie, also in second grade, adds: "My class is studying Presidents next week. Should be fun." In describing her setting Erica mentions that: "My fourth grade classroom is made up of 23 students and 4 of these are involved in special education." Marge describes the fact that she has to eat lunch with the children and: "I have yet to get used to eating lunch with them everyday. At least I get to hear interesting stories."

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS FOR PRACTICE AND RECOMMENDATIONS

The purpose of this chapter is to provide a summary of the study and to report conclusions. This chapter also makes implications for practices and recommendations for future research.

Summary

Technological advancements are influencing society and the field of education. The new technological standards require that future educators be prepared to use technology in every aspect of teaching. In Chapter One, the researcher describes the purpose of this study. This study aimed to explore the potential usefulness of electronic mail communication as a vehicle for enhancing communication between student teachers, field experience students, and their campus supervisor. This study involved six student teachers, thirteen field experience students and one university supervisor.

Chapter Two reviewed the literature related to the student teaching experience, the theme of reflection in student teaching, and the increasing role of technology in teaching and learning. The review of literature on the increasing role of technology in education dealt more specifically on the examination of the current technological standards in teacher preparation programs and on the use of telecommunications during the student teaching experience. At the conclusion of the chapter, recent research results in the use of electronic mail as a tool for communication and as a mode to facilitate preservice teacher reflections, was given.

In Chapter Three the researcher describes the methodology employed to determine the potential usefulness of electronic mail as a tool for communicating and for writing personal journals to enhance student teachers' reflective thinking. All nineteen participants, six student teachers and thirteen field experience students, were surveyed to acquire information regarding the participants' use of and attitudes toward, electronic

mail. The researcher then monitored and recorded any electronic mail communication from the subjects.

Finally, Chapter Four analyzed two types of data. First, the survey data was analyzed to represent the total group of participants. Percentages were tabulated to determine frequency and reasons for electronic mail use. Participants' views on factors such as effectiveness, dependability, and convenience were analyzed and also tabulated into percentages. To report this data, bar graphs were used to summarize the results in a clear format. This study also reported data on the frequency and nature of electronic mail communications. The electronic communications between the participants and the supervisor were compiled to represent individual students and examined to determine the prevalent themes in those communications. To report the results, pie graphs, bar graphs, and representative quotes from e-mail communications were used to support the data.

Conclusions

The survey data results were consistent with the participants' frequency use of electronic mail. Subjects in this study failed to employ electronic mail as a regular form of communication despite their positive attitudes towards electronic mail. The researcher determined that the subjects found electronic mail to be a highly effective tool for communication but viewed it to be inconvenient to use.

The lack of participation from the students may be attributed in part to the school setting. For this study, it was hoped that the elementary school would offer the participants easy and convenient access to computers and to electronic mail. Investigating the school's infrastructure indicated that only one computer in the school was electronic mail ready and available to the participants. The lack availability of electronic mail at the school might have been an influencing factor in the scarcity of electronic mail communications.

The University setting may also be a contributor to the students' modest rating of convenience and lack of participation. As the researcher discovered, even with equipment and hook-up, participants were not necessarily using electronic mail. As one of the participants reported: "The reason the electronic mail is not as convenient to me is because we do not have a campus connected hook-up at my house." Though a hook-up was available to her, she mentioned that she lived with nine other girls and that once electronic mail was installed and available to her, she would be paying for everyone else's use. As she said: " In the long run I have to use the campus computers because they have free use. The only problem with this, is that I have not been on campus very often since I have been in the field, and I don't have much free time to make it to the labs." It would seem that access to computer labs are reduced, at best, to participants' time on campus. The availability of labs and of computers has turned out to be a serious factor. The limited amount of time students were on campus resulted in limited opportunities for them to access computers. It is important to remember that even if students were on campus, computers may not necessarily be accessible to them. Given the fact that the library lab serviced the entire university and that the lab in the School of Education serviced all education majors, the assumption may be made that students may be willing to use electronic mail but computers may not be free, open, or available.

It is interesting to note that electronic mail was rated highly on the three factors of dependability, effectiveness, and convenience by three students. This may be due to the easy access to electronic mail these three students had. Two of these participants lived off campus, at home with their parents, and owned a computer with electronic mail capabilities. The other student lived on campus, and had a personal computer equipped with an Internet card.

This data would seem to indicate that when students have easy and convenient access to electronic mail their frequency of use is greater.

Implications for Practice

Few electronic mail communications occurred during the study and the preponderance of these messages dealt with logistical issues rather than substantive exchanges in terms of teaching and learning. The implication is, that participants may need to be encouraged to openly communicate their needs without fear of revealing their incompetencies. It would also seem that more direct guidelines may be required, and if provided, could allow for students' deeper reflective thinking.

The effective use of electronic mail in enhancing student teachers' and field experience students' time in the field will also require that university faculty have easy access and positive dispositions towards the use of electronic mail. From the researcher's perspective, based on personal experience as a campus supervisor, the use of electronic mail could make life easier for triad members (cooperating teachers, student teachers, and university supervisors) in terms of logistical issues such as scheduling and would easily keep everyone informed and updated on changes.

Finally, the advantages of electronic mail communications can lead to ongoing conversations between campus supervisors and student teachers or field experience students. This researcher plans to continue using this method of communication as it has been a positive factor in maintaining relationships with students beyond the student teaching experience.

Recommendations

Upon reviewing the data collected and analyzing the results, the researcher offers the following recommendations. First, it is recommended that schools, colleges, and departments of education continue their efforts to integrate technology in their teaching and learning. The training of future teachers in the use of technology must continued to be modeled by university faculty and cooperating teachers. This recommendation is especially important with regards to simple and increasingly available communication technologies such as electronic mail.

Schools of education wishing to exploit the educational possibilities of electronic mail will need to think creatively and systematically about how e-mail can be used in their courses and field assignments.

As was learned in this study, it will not suffice to assume that students will use such technology on their own, or on a voluntary basis. To be more specific, instructors desiring to experiment with electronic mail as a tool for enhancing student teacher interactions may need to require students to communicate only via electronic mail.

Secondly, it is recommended that a similar study be conducted when both the internal infrastructures of the university and the school setting, permit easy and convenient access to electronic mail. Such a study may provide better insight into the relative advantages and disadvantages of electronic mail as a method for promoting teacher reflection. Such researchers may also want to design reflective teaching exercises to be carried out via electronic mail to prevent electronic communications from focusing only on more mundane topics.

From the researcher's perspective the value of electronic mail as a tool for communicating has been confirmed in this study. Despite the few electronic mail communications received and labeled as reflective journals, the researcher is hopeful that this type of technology will continue to be employed, not only as a tool for communicating between triad members, but also as a tool for promoting and supporting student teachers' reflective teaching and developmental growth.

APPENDIX

Information to Participants

This letter is a description of the research and the protection assured the participants conducted by Marie-Andree Eiting titled " A Study of the Use of Electronic Mail and its Communication Content Between Student Teachers and University Supervisors". This research is intended to provide a examination of the communication content between student teachers and university supervisors. It is understood that the participants will be communicating via electronic mail and that the messages will be coded and categorized without revealing names of the participants as pseudonyms will be used.

It is also understood that participation in this study will not affect the grade of any subject. No person other than the researcher will have access to the data, and the researcher is bound not to reveal any personal and professional issues to anyone.

Any published research will not reflect the identity of the subject nor the school district site.

Each participant will receive a copy of this information. Furthermore, all participants are able to withdraw their consent to participate in this research at any time.

SURVEY OF ELECTRONIC MAIL USE

Name: _____

Are you familiar with the use of electronic mail? Yes
 No

Have you used electronic mail before? Yes
 No

Do you have an e-mail address? Yes
 No

How often do you use your e-mail? Never
 Once a month
 Once a week
 Several times a week

If you use e-mail, is it mostly for social interactions
 professional/educational interactions

Is electronic mail available at your placement site? Yes
 No

On this scale rate how effective you view electronic mail as a tool for communication.

ineffective-----/-----/-----/-----/-----/-----effective

Again, using that same scale, rate how dependable you view electronic mail as a tool for communication.

undependable-----/-----/-----/-----/-----/-----dependable

Using the same scale, rate how convenient you view the use of electronic mail as a tool for communication.

inconvenient-----/-----/-----/-----/-----/-----convenient

PHONE SURVEY

Name _____

1. Do you live on campus? Yes
 No

1b. If Yes Specify- Where do you live? Dorm Apartment House

2. Is Hook up Available? Yes
 No

2b. If it is Available- Are you hooked-up? Yes
 No

3. Are you able to e-mail? Yes
 No

4. Do you have a computer? Yes
 No

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