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Student technology mentors for college of education faculty: two case studies

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Student technology mentors for college of education faculty: Two case studies

by

Paul Marlin Reinhart

A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Major: Education (Curriculum and Instructional Technology)

Major Professor: Ann D. Thompson

Iowa State University

Ames, Iowa

1997
This is to certify that the Master’s thesis of

Paul Marlin Reinhart

has met the thesis requirements of Iowa State University

Signatures have been redacted for privacy
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ABSTRACT

The purpose of this study was to investigate the approach of mentoring two college of education faculty by a graduate student and an undergraduate student. A qualitative case study approach was utilized to examine the mentoring process and its outcomes. Data were collected from two mentoring pairs in the form of journals, observations, interviews, and documents. These case studies provide descriptions and analysis of the mentoring experiences. The data in each case will provide the reader with significant insights into the complexities of student/faculty technology mentoring relationships.
CHAPTER 1
INTRODUCTION

Introduction

The idea that “teachers teach the way they were taught” is alive and well in the American education system. Perhaps this is why so few teachers are able to effectively integrate and use technology in their classrooms. Fulton (1989) states, “Although it is reasonable to expect new teachers...to come in the classroom skilled in teaching with technology tools, the data suggest otherwise” (p. 13). One factor impeding the integration of computers into K-12 classroom instruction is the fact that many teachers have little or no training in the use of computers in their classrooms (Scrogan, 1989). A key finding of the Office of Technology Assessment’s Teachers and Technology: Making the Connection (1995) study revealed that teachers are not adequately trained to integrate technology into their teaching.

Because many incumbent and new teachers do not have basic computer skills, or the skills to integrate computers into instruction, school districts have relied on inservice training to give teachers the necessary skills. The fact that inservice training has had little impact on the use of technology in schools is well documented (Bitter and Yohe, 1989). Inservice efforts have focused on basic computer using skills, and school districts have failed to give time and support to training the teachers on how to integrate computer technology into instruction. It seems as though the education world has approached the process of integrating technology into the classroom backwards, since “the purpose of inservice should be to update skills, and the role of a preparation program is to develop competence” (Bitter and Yohe, 1989, p. 25).
The awareness of the inability of teachers to integrate computer technology into instruction has not been totally lost on teacher educators or policy makers. Twenty-three states and the District of Columbia have implemented requirements that all or some preservice teachers must take computer courses to become certified teachers (Bruder, 1989). Such measures are a start to improving technology integration skills of teachers, but the amount of instruction varies greatly from state to state, as well as, institution to institution (Novak and Berger, 1991; Bruder, 1989). Approaches vary from requiring three-credit courses in New Jersey and Texas to proving computer competency of preservice teachers to Michigan school districts prior to student teaching (Office of Technology Assessment, 1995).

In the Office of Technology Assessment’s (1995) survey, a majority of colleges of education report that they offer a course in educational technology, but slightly more than half report that they required their preservice teachers to take such a course. Another study of teacher education institutions, conducted by Johnson and Harlow (1993), found that approximately eighty-five percent of teacher education institutions offer a computer technology course. However, only fifty percent of those institutions require their students to take such a course.

The results of these studies suggest that in attempting to provide preservice teachers with computer technology skills most colleges of education only offer a computer technology course. Recent graduates of teacher education programs, however, revealed that they did not feel properly prepared to integrate technology into their teaching (Office of Technology Assessment, 1995). One computer technology course may give preservice teachers basic computer knowledge, but that is not enough to develop computer using educators
(Handler and Marshall, 1992). Byrum and Cashman (1993) suggest, "The responsibility of computer instruction should fall to all faculty to model appropriate uses of technology as an instructional tool" (p. 262). Papert (1993) would suggest that modeling teaching in a student centered environment with technology supporting student inquiry as the most appropriate technique.

A finding in Diem's (1989) study of preservice teachers indicated a lack of technology-using teachers as role models in content area classes, and in field experiences for preservice teachers. Additionally, not presenting preservice teachers with examples of teaching content with technology can implicitly tell them that technology does not belong in the content areas (Brownell and Brownell, 1991).

According to Brownell and Brownell (1991) preservice teacher preparation should include: 1) a course on basic computer literacy, 2) experience with instructional strategies using computers in methods courses, 3) opportunities to apply instructional strategies using computers during field experiences. While many colleges of education provide an initial technology course on basic computer literacy, there are few examples of teacher education programs where faculty are modeling instructional methods that integrate computer technology (Handler & Marshall, 1992; Office of Technology Assessment, 1995). Without role models for preservice teachers to observe in methods courses, preservice teachers miss out on an opportunity to witness models for teaching with computers (Fulton, 1989).

In summary, the literature suggests that "the integration of technology into the teacher preparation curriculum...is the single most pervading issue in colleges of education today relative to technology" (Bitter and Yohe, 1989, p. 22).
Therefore, it is important to determine what approaches and factors influence teacher education faculty's integration of technology into their courses.

Statement of the Problem

The lack of training teachers have in using computers effectively as teaching tools has been a major barrier for teachers to use computer technology in their classrooms. Attempts, such as workshops, small group instruction, and mentors for faculty members, have been made at integrating computer technology into teacher education programs. In order for future teachers to effectively use computer related technologies to improve teaching and learning, graduating preservice teachers must be able to operate and apply computer technologies to classroom instruction (Diem, 1989). For that to happen, teacher education faculty must become comfortable, competent computer using educators modeling such instructional techniques.

Teacher education institutions must take the lead in preparing teachers to use computer technology in classrooms. What cannot be ignored in such an endeavor are the needs of faculty members. Faculty members may require assistance in their adoption and planning for technology in their courses. Using college students to mentor college of education faculty has shown promise as a technique for integrating technology into the coursework for preservice teachers (Kortecamp & Croninger, 1995; MacArthur, 1993; Thompson & Schmidt, 1994). Because of the potential one-on-one mentoring has for college faculties a description of the process must be made. The more that is known about the mentoring process and its effects on integration of technology into preservice education courses can potentially improve the amount and effectiveness of computer use at the K-12 level. Thus, the investigation and reporting on the
techniques and factors which influence college of education faculty’s adoption and use of technology in their classrooms is necessary.

**Purpose of the Study**

The purpose of this study is to investigate the approach of mentoring two college of education faculty, by a graduate student majoring in Curriculum and Instructional Technology and an undergraduate student majoring in elementary education. A qualitative case study approach will be used to describe and analyze the mentoring approach, and to identify factors influencing faculty members rejecting or adopting the idea of using technology in their courses. Results from this study could provide information on using students to mentor faculty as a viable technique in providing assistance to faculty members interested in integrating computer technology into their courses.

**Guiding Questions**

Prior to the study several guiding questions were developed to guide the evolution of the research study.

1. What are the faculty members’ views of technology prior to mentoring, and how does the mentoring experience influence those views?
2. How effective is mentoring as a method for assisting faculty members to integrate technology into their courses? Does it break down barriers such as time, access, and knowledge of technologies available?
3. To what level does the faculty member integrate technology into his or her courses?
4. What themes emerge from the mentoring process that impact technology integration by college of education faculty?
Methodology

The research design chosen for this study was a qualitative case study design, as it is well-suited to investigate not only actions of the participants, but also the participants' views, beliefs, and feelings (Merriam, 1988) concerning their mentoring relationship.

Data for this study were collected from journals, observations, and interviews. Journals were kept by each mentor and faculty member throughout the semester of the project. The journals were intended to glean participants' views, beliefs, and feelings (Merriam, 1988). Four interviews were conducted with each participant throughout the semester in order to gain a deeper understanding of the participants' perspectives. Each mentoring pair was observed three times during the course of the study with the intention of gaining a first-hand account of what actually occurred in the mentoring situation.

Limitations

This study was conducted with the acknowledgment of the following limitations:

1. This study only examines the student-faculty relationship over a one semester period.

2. As with most qualitative work, the results of this study are not generalizable. This study is a description and analysis of how the mentoring process can assist university faculty in the use of technology in their courses. Therefore, before any conclusions are made, one must carefully examine the setting, description, and perspectives of the participants and researcher.
Assumptions

1. This research was based on the assumption that providing student mentors for faculty would have a positive impact on the faculty’s use of computer technology, particularly in the faculty members’ classrooms.

2. It was assumed that each mentoring pair would seek to develop student centered technology integration activities for the faculty members’ courses. Such activities would include project based inquiry, information processing and production, and authentic assessment techniques that includes assessing the processes as well as the products. Means (1994) and Papert (1993) suggest that the vision for educational reform include placing the student at the center of the learning process, and that technology can play a large role in supporting such a vision of education.

3. It was assumed that both the faculty members and the students would put forth the effort necessary to be prepared for each mentoring session.

4. It was also assumed that the student mentors had enough experience to teach their faculty protégés how to use the technology, or would put forth the effort to learn unknown technologies.

The Researcher

Qualitative research is influenced by the researcher’s perspectives (Guba and Lincoln, 1981), and so I feel it necessary to share with you what brought me to the conception of this study. These background experiences may give you deeper understanding of this research.

After graduating with a degree in Elementary Education I spent four years teaching fifth grade. During the final three years I was my building’s technology coordinator. Those three years as technology coordinator gave me the desire to study how to effectively integrate computers into the classroom, consequently, I
came to this midwestern Research I university to work on a master’s degree in Curriculum and Instructional Technology. During my graduate program, I had the opportunity to teach courses in educational media, developing multimedia, and an introduction to educational computing.

During the fall 1995 semester I had the opportunity to take a course entitled Technology and Teacher Education. Because of this course, I had the opportunity to work with faculty member on the use of technology in her Multicultural Non-Sexist Education (MCNSE) courses (Thompson, Hanson, Reinhart, 1996). Throughout our semester together, we worked on increasing Dr. Summers’s use of e-mail to provide for diverse learning styles and increased communication, becoming aware of MCNSE instructional software, understanding how to use presentation and tool software for MCNSE class projects, and learning how to gather information via the Internet. Our time together provided Dr. Summers with many ideas to use in her MCNSE course. The following semester Dr. Summers utilized many of the ideas we developed and turned a number of her students on to technology. One group developed a directory of Internet sites related to MCNSE issues, while some students in her class started using technology jargon to ‘butter up’ the teacher because they knew how excited Dr. Summers was about the potential of technology.

The experience of mentoring the faculty member, Dr. Summers, was a very powerful and exciting experience for me, as it allowed me to take action on something in which I believe—the belief that the use of computers in a classroom can enhance the learning that takes place. The experience has made me want to further explore the phenomenon of students mentoring faculty members on the use of technology in their courses. My own experiences convinced me that mentoring can be a very powerful technique in helping
college of education faculty use technology for a more student centered approach to teaching and learning.

**Definition of Terms**

In order to facilitate a clearer understanding, the following definitions of terms were used in this study:

- **Mentor**: Student helping a teacher education faculty member to use computer technology.
- **Protégé**: Teacher education faculty member who is being mentored by a college student on the use of computer technology.
- **Mentoring**: Semester-long process by which faculty members, through weekly interactions with a mentor, learn more about how to use computer technology.

**Overview of the Contents**

Chapter I includes the problem under study, guiding research questions, and a brief introduction to the theoretical background and methodology. Chapter II contains further review of the literature pertaining to the problem. The review contains research on the following topics: issues in training both preservice and inservice teachers in the use of computer technology; barriers in the use of computer technology, especially for teacher education faculty; preservice technology training; what attempts are being made at breaking down those barriers; and mentoring theory and practice. Chapter III describes the components of the research methodology. In Chapter III, the design of the study, a description of setting and population, and data collection methods. Chapters IV and V each provide the story and analysis of one case. Chapter VI summarizes the research study, its implications, and recommendations for future mentoring projects and research.
CHAPTER 2
LITERATURE REVIEW

Many studies have documented the use and integration of technology in K-12 schools (Anderson, 1993; Becker, 1985, 1986, 1990, 1994; Office of Technology Assessment, 1988, 1995; Sheingold & Hadley, 1990). However, the growth of technology in K-12 education has left teacher education institutions behind (Office of Technology Assessment, 1995). The need for technology integration skills among preservice teachers brings additional tasks for teacher education faculty. The purpose of this literature review is to present findings from research in the areas of need for technology training and integration, barriers to technology integration, and levels of technology integration. In addition, two sections on mentoring as an approach for assisting teacher education faculty in the integration of technology will be addressed. These two sections explore mentoring research related to teacher education programs and are titled theoretical implications for mentoring and research on mentoring.

Need for Technology Training and Integration

Researchers (Office of Technology Assessment, 1995; Topp, Thompson, & Schmidt, 1994) have found that many preservice and inservice teachers do not feel comfortable using technology in instruction due to a lack of training. In 1993, Congress requested that the Office of Technology Assessment study several issues related to technology use in American schools. A key finding of the "Teachers and Technology" study revealed that teachers are not adequately trained to integrate technology into their teaching (Office of Technology Assessment, 1995). Due to the need for using computer related technologies in K-12 schools, it is imperative for teacher education programs to provide preservice teachers the training necessary to become competent computer using educators.
A common approach used to prepare preservice teachers to teach with technology is a single educational computing course (Brownell & Brownell, 1991). However, the Office of Technology Assessment’s (1995) study reported that only slightly more than half of the colleges of education surveyed by the require that their students take the course. Similarly, Johnson and Harlow (1993) found approximately 85% of teacher education institutions provided a course in educational technology, but only 50% of these institutions required their students to take such a course. Oftentimes such a course is considered adequate by college of education faculty in preparing preservice teachers to teach with technology. However, some researchers assert that a single course on technology in education does not adequately prepare preservice teachers (Novak & Berger, 1991; Office of Technology Assessment, 1995; Strudler, 1991). One conclusion that was drawn by the Office of Technology Assessment’s (1995) study was that preservice teachers should not only be told about teaching with technology, they should also “see technology used by their instructors, observe uses of technological tools in classrooms, and practice teaching with technologies themselves” (Office of Technology Assessment, 1995, p. 185). Teacher education faculty in all subject areas need to be modeling technology integration for preservice teachers (Brownell & Brownell, 1991). Consequently, teacher education faculty should make computer related technologies an integral part of the overall preservice teacher curriculum.

**Barriers to Technology Integration**

Despite the growing presence of computers in education, many teacher education faculty are not proficient users or comfortable as role models of the use of technology in education. Researchers have found a number of barriers for the use and integration of technology (Office of Technology Assessment, 1995;
Roblyer, 1994; Willis, 1993). In Willis’s (1993) review of the literature, faculty reported a lack of awareness and comfort in using technology in their courses. Similarly, it was found that many teacher education faculty felt that technology was an important part of preservice education, but many presumed that it would be covered elsewhere in the curriculum (Office of Technology Assessment, 1995). In addition, many teacher education faculty members had limited experience teaching with technology in their courses, thus causing their discomfort (Office of Technology Assessment, 1995).

Lack of time was reported as another barrier to the use of technology in teacher education courses (Willis, 1993). Teacher education faculty needed time to learn, practice, and integrate technology into their courses.

Technical and administrative support are needed for faculty to use technology. Roblyer and Barron (1993) reported in their study of the Colleges of Education in Florida, that faculty needed support from their administration in the forms of release time, staff support, and workshops. In Willis’s (1993) review of the literature, it was found that administrative support was imperative to the integration of technology into teacher education courses. Researchers (Office of Technology Assessment 1995; Willis, 1993) reported that faculty felt they needed technical support and that administrators should provided the support needed to be successful technology using educators.

In 1993, 29 teacher education institutions were surveyed to create a model of technology training for preservice teachers (Roblyer, 1994). Information on curriculum and resource needs were gathered, and a lack of resources was found to be a major barrier for technology integration (Roblyer, 1994). Similarly, Roblyer and Barron (1993) found that more resources need to be made available
to teacher education faculty and that long-term planning to acquire technology should be made for adequate integration of technology to take place.

The lack of faculty development was a widely cited barrier to technology integration by college of education faculty (Bitter & Yohe, 1989; Kortecamp & Croninger, 1995; Office of Technology Assessment, 1995; Roblyer, 1994; Roblyer and Barron, 1993). The adage of “we teach how we were taught” also applies to teacher education faculty. Many faculty members were not taught with computers, thus they also need to be trained in the use of and instruction with computers. In the Office of Technology Assessment (1995) study, many teacher education faculty indicated that they needed assistance integrating technology into their courses.

Levels of Technology Integration

The Office of Technology Assessment’s (1995) report *Teachers and Technology: Making the Connection*, provided a basic model for determining levels of technology integration. The levels included in the model also provide a framework for how preservice teachers are prepared to become competent technology using educators. The three levels include: 1) discussion/demonstration, 2) technology practice, and 3) professional practice (Office of Technology Assessment, 1995). Level one use, discussion/demonstration, could be implemented by a faculty member through a discussion or demonstration of how a spreadsheet could be used in an K-6 science class. The second level, technology practice, allows preservice teachers the opportunity to practice using the technology. For example, the preservice teachers could learn the skills necessary to do the spreadsheet activity that the professor talked about in level one. The third and most critical level, professional practice, focuses on the integration of technology into the K-12
classroom. At this level, preservice teachers could observe technology being used in a K-12 setting, or create and implement lessons utilizing technology. An example at this level of integration would be for a preservice teacher to take what he/she learned about spreadsheets and to create, and hopefully teach, a lesson in which students organize their data from an experiment and display the results in a graph created by the spreadsheet. Such a model of the levels of technology integration could serve as a guide for training not only teacher education faculty, but also preservice and inservice teachers.

**Theoretical Implications for Mentoring**

Mentoring literature primarily deals with mentoring in business (Alleman, 1986; Schein, 1978; Zey, 1984), higher education (Merriam, Thomas, & Zeph, 1987), adult development (Levinson, Darrow, Klein, Levinson, & McKee, 1978), and teacher induction, with reviews of the literature being provided by Galvez-Hjornevik (1986) and Merriam (1983). This review of mentoring literature will focus on three main areas: definitions of mentoring, roles played by mentors in the mentoring relationship, and keys to a successful mentoring relationship or program.

**Definitions of Mentoring**

The mentoring process has been described a number of ways in the literature. Parkay (1988) calls mentoring “a complex interpersonal relationship that unfolds and changes over time, mentoring is probably not amenable to a precise, static definition” (p. 195). Mentoring has also been depicted as a process of coaching, advising, teaching and protecting the protégé until they are ready to shoulder criticism on their own (McPartland, 1985). Levinson et al. (1978) define mentor as a teacher, advisor, or sponsor and believes that no one word adequately describes the complex mentoring relationship (Levinson et. al., 1978).
Mentoring has also been defined simply as “an experienced adult who befriends and guides a less experienced adult” (Fagan & Walter, 1982, p. 51). The definition that seems most appropriate is by Anderson (1987), as cited in Anderson & Shannon (1988): “a nurturing process in which a more skilled or more experienced person serving as a role model, teaches, sponsors, encourages, counsels, and befriends a less skilled or less experienced person for the purpose of promoting the latter’s professional and/or personal development” (Anderson, 1987).

**Roles Played by Mentors**

Mentors can play a number of roles during a mentoring relationship as seen by Table 1. According to Daloz (1983) teachers can make a difference in students’ lives by being their mentors (Daloz, 1983). He writes, “education has something to do with development, and that such development may be enhanced as much by a special kind of personal connection as by any particular combination of subjects a student may take” (Daloz, 1983, p. 24). Daloz likens educational growth of students to journeys with teachers/mentors playing such roles as guide, supporter, and challenger along the way. A mentor can guide by asking such questions as, “What is the place of a job in your aspirations for a career?” (Daloz, 1983, p. 26). A supportive mentor can offer both emotional and material assistance, while also challenging by prodding, cajoling, urging, and offering alternative viewpoints (Daloz, 1983, p. 26). Throughout this journey of change for the student/protégé, a teacher/mentor would play such vital roles as guide, supporter, and challenger.
Table 2.1  Mentor Roles from the Literature

<table>
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<th>Mentor roles</th>
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<td>Daloz, 1983</td>
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<tr>
<td>Role Model—Teacher, Sponsor, Encourager, Counselor, Befriender</td>
<td>Anderson &amp; Shannon, 1988</td>
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Using Anderson’s (1987) definition of mentoring, Anderson and Shannon (1988) elaborate on the roles and functions of mentors in their development of a conceptualization of mentoring. These roles include teacher, sponsor, encourager, counselor, and befriender. Playing the role of a teacher is characterized by “modeling, informing, confirming/disconfirming, prescribing, and questioning” (Anderson and Shannon, 1988, p. 40). Through the role of sponsor mentors may protect their protégés from environmental elements or from their own mistakes. The sponsoring role may also find the mentor promoting the protégé in the professional and social systems of their environment, by introducing them to other professionals in their field. The
encourager role plays out in the functions of affirming, inspiring, and challenging. The mentor can affirm by valuing protégé accomplishments, inspire through example, and challenge by pushing the protégé to get involved in experiences that will foster his/her growth. Listening and advising are two key areas of the mentor’s role as counselor. By listening and advising, the mentor can empower the protégé to solve their own problems. Finally, a mentor plays a befriender role by accepting and relating to the protégé. Having a friend for support while learning a new position or talent can be very reassuring to the protégé.

Clemson (1988) provides additional insight into mentoring roles in her summary of mentoring research that suggests characteristics of successful mentoring relationships. One such characteristic is that of a “developmental, multidimensional relationship” (Clemson, 1988, p. 87). The summary of mentoring research provided a long list of mentor roles. She cites Davis and Garrison (1979) referring to the mentoring roles being a parent, guardian, cheerleader, guru, and coach among others (Clemson, 1988, p. 87). She also cites her own study of mentoring in higher education Clemson (1985). While investigating the experiences of department chairs, the following mentor roles were discovered: “role model, friend, advisor, colleague, confidant, sponsor, consultant, guide, supporter, hero, expert, and teammate” (Clemson, 1988, p. 87). The large number of roles cited suggest that the mentoring relationship has the potential of being a multidimensional relationship.

In their study of experienced computer-using teachers mentoring other teachers on the use of computer technology, Mac Arthur et. al. (1995) reported that mentors changed “roles frequently to effectively meet the needs of their protégés” (p. 53). The literature seems to suggest that the more roles assumed by
the mentor would increase the chances of a mentor-protégé relationship being successful. Perhaps this is a major reason that there is not a consensus on the defined role of the mentor (Odell, 1990); however, consensus has been found in identifying primary characteristics of successful mentoring relationships and programs.

**Successful Mentoring Characteristics**

The first characteristic of successful mentoring relationships and programs is “spontaneity and personality fit” (Clemson, 1988, p. 86). Case study research on mentoring relationships has found that most of the successful mentor-protégé pairs were not ‘assigned’ to one another (Levinson et. al., 1978). Clemson (1988) suggests that mentors and protégés have an opportunity to meet informally and then have the opportunity to select a partner. A second characteristic is that the mentor and the protégé should benefit from the relationship (Davis & Garrison, 1979; Clemson, 1985). Protégés gain knowledge, insight, and experience. Mentors have reported enjoying the collaboration with a new colleague. A third key is for the mentor and protégé to have a developmental, multidimensional relationship (Clemson, 1988). Mentors may play a large number of roles while working with a protégé (Table 1). The numerous roles suggest that the relationship has the potential to be quite complex. Therefore, mentoring programs must not be limiting but rather allow the relationship to develop and grow. For example, the mentoring pair should have the freedom to choose meeting sites and be allowed to meet the individual needs of the mentor and protégé (Clemson, 1988). A fourth characteristic for success in mentoring relationships is a sense of mutual respect and trust (Clemson, 1988; MacArthur, et. al., 1995). The protégé must feel comfortable confiding in and making mistakes in front of the mentor (Clemson, 1988). Many protégés have reported
their mentors’ belief and support for them as another important element in successful mentoring relationships (Moore, 1982). A fifth key to mentoring is that of mutual participation (Kay, 1990; Clawson, 1980). The mentor is not the only member of the mentoring relationship taking action. While receiving assistance, the protégé is expected to put forth full effort in becoming self-reliant (Kay, 1990). Reciprocity is a concept that can be included under mutual participation. In order to develop this mutual give and take in the relationship, the protégé may at times take on roles of the mentor by sharing their unique talents, and knowledge (Gehrke, 1988). Lastly, mentoring pairs must have an open dialogue, and be allowed to negotiate the concepts and ideas to be learned (Gehrke, 1988). Through two-way communication the mentor and protégé are able to understand each others’ wants, needs, and desired outcomes of the mentoring relationship. Without this dialogue, the needs of the protégé may not be met, while a mentor’s monologue also decreases the chances of the relationship becoming multidimensional.

Research on Mentoring

Most research on mentoring in education has been on mentoring in a traditional sense: new faculty and teachers mentored by an experienced/senior faculty member. Little research has been done in the area of developing mentoring relationships to foster growth in teaching with technology. The following three studies summarize research conducted on mentoring in education. The first two address mentoring in the traditional sense, while the third study presents mentoring as an approach to help inservice teachers develop the skills necessary to teach with technology.

Fagan and Walter (1982) surveyed one hundred seven school teachers, seventy police officers, and eighty-seven nurses to describe their experiences as
mentors or protégés. The researchers sought to describe the number and frequency of mentoring relationships, how a protégé identifies with a mentor, what is learned, and how having a mentor relates to job satisfaction, burnout, and being a mentor. The surveys showed that the frequency of mentoring was about the same as in nursing and law enforcement. However, the quality of the mentoring relationships among the teachers was not at the level of the other groups, but the difference was not statistically significant (Fagan & Walter, 1982). Beginning teacher protégés were less likely to learn patience, honesty, persistence, tactfulness, and independence, from their mentors than their nursing and law enforcement counterparts (Fagan & Walter, 1982). Although Fagan and Walter found that mentoring in education was not as beneficial as in nursing and law enforcement, the researchers asserted that mentoring could be a viable method for training in education.

Hardcastle (1988) conducted a qualitative study that sought out the reflections of protégés who had been in significant mentoring relationships. To determine whether or not a mentoring relationship was significant, the researcher utilized Clawson's (1980) concepts of comprehensiveness and mutuality, and Gehrke and Kay's (1984) characteristics of informal, interactive, and enduring. Interviews with fourteen protégés produced five main observations about successful mentoring relationships. First, during early stages of the relationship, the mentors were quite receptive and responsive to the needs of their protégés. Protégés also felt that meeting their mentors was a fortuitous occurrence. Thirdly, it seemed that the more people knew about the nature and character of these relationships that more significant mentoring relationships may be developed. Another observation was that protégés appreciated their mentors' high personal values and character traits. Finally, nearly all of the
protégés became mentors themselves. In general, the more knowledgeable the mentors were of their protégés' needs as well as the mentoring process, the more successful the mentoring relationship.

Mac Arthur et. al. (1995) explored mentoring as an approach to provide inservice teachers the education and school-based support necessary to use computers effectively. The approach utilized experienced computer using teachers as mentors for one to five teachers within their own schools. Mentors participated in a semester-long course that addressed mentoring and technology. While enrolled in the course, mentors worked with their protégés. The relationships were structured around "Individualized Mentoring Plans" developed collaboratively between the mentor and protégé (Mac Arthur et. al., 1995, p. 50). The protégés found this approach helpful because their mentor was available in the same school to offer help and answer questions as they arose. Other benefits were having a supportive personal relationship with their mentor and training by someone who was familiar with computer hardware and software in the school. Researchers found this approach to be successful because it avoided common shortcomings of traditional inservice education which is usually time-limited, decontextualized, and does not provide on-site support.

Summary

The need for technology integration has become a critical issue facing educational institutions. This need is particularly great for teacher education institutions that have identified the need to integrate technology into their preservice preparation programs. New teachers must understand the potential of technology as a learning tool in their teaching environments. To see this potential, preservice teachers necessitate an educational program that includes experiences with computer-related technologies as learning tools. For preservice
teachers to have these experiences, teacher education faculty require the skills to provide preservice teachers models of technology use and experiences utilizing technology as a teaching and learning tool. Many teacher education faculty do not have the skills necessary to provide preservice teachers with the experiences and models they need. This study will investigate the novel approach of mentoring to assist teacher education faculty to acquire the skills and comfort level necessary to integrate technology into their teacher education courses.
CHAPTER 3
METHODS AND PROCEDURES

The purpose of this study was to investigate the process of graduate and undergraduate student mentors mentoring college of education faculty members in the use of computer technology. In this chapter, I will discuss the rationale for using qualitative methodology, setting and population, methods of data collection, and data analysis.

Qualitative Methodology

The decision concerning which research design to implement depends upon the nature of the research questions, amount of control, and the desired end product (Merriam, 1988). Qualitative methodology was utilized because I was concerned with describing a process, using the natural setting of my data source, using myself as the instrument, collecting words rather than numbers, and analyzing the data inductively (Bogdan and Biklen, 1992). The case study design is appropriate when the research questions ask “how” and “why” (Merriam, 1988; Yin, 1994). By asking “how” and “why” questions, I examined the process of mentoring, in addition to its outcomes and products (Bogdan and Biklen, 1992). In addition, I strove “to gain an in-depth understanding of the situation and its meaning for those involved” (Merriam, 1988, p. xiii). As for control, this study operated with a flexible design (Marshall & Rossman, 1989) because of the dynamic relationship between me and the context. What was learned from each visit to the site depended upon the unpredictable interaction between the researcher and the site, thus, I allowed the research to “unfold, cascade, roll, and emerge” (Lincoln & Guba, 1985, p.209). As the study unfolded, I was concerned with understanding the meaning of the phenomenon rather than verifying predetermined hypotheses (Merriam, 1988). Due to the types of
research questions, I desired an end product of words and pictures rather than numbers to illustrate my new found understanding of the phenomena (Bogdan & Biklen, 1992; Merriam, 1988). In addition, because the mentoring relationship is dynamic and unfolding, the qualitative design seemed quite appropriate in exploring the meanings and experiences of this relationship (Parkay, 1988).

**Setting and Population**

This study took place in the college of education of a midwestern research university. During the semester of study, Spring 1996, there were approximately 24,000 students attending the university, while other related enrollments were: 2,100 in the College of Education, 850 students in the teacher education program, and 125 in the educational computing minor. The department’s graduate program had approximately 200 students, half of whom were working towards advanced degrees in Curriculum and Instructional Technology.

In 1991, the Department of Curriculum and Instruction undertook a three-year technology integration plan (Thompson, Schmidt, and Hadjiyianni, 1995). This plan included creating a course in computer-related technology, creating opportunities for computer experiences in education coursework and field experiences, and developing an educational computing minor. Year one was highlighted by all faculty receiving office computers, computers being made available for faculty checkout, and voluntary workshops being offered. The second year built upon the first through the creation of a model teaching laboratory for math/science methods classes, and the individual mentoring of faculty members by graduate students for creating computer-based instructional applications. Year three (1993-1994) saw the creation of a graduate course entitled “Technology and Teacher Education” wherein the Ph.D. students reviewed
literature on the use of technology in teacher education and mentored faculty members in the use of technology during the course of the semester. Succeeding years have built upon what was started during the three initial years. The emphasis, of what came to be known as the fourth year, moved to integrating technology into the classes. During this time an additional portable teaching station was acquired. The "Technology and Teacher Education" course was again offered during the fall of year five (1995-1996) with many faculty taking advantage of the opportunity to have some assistance in adding technology to their courses. The emphasis of year five was to update the technology available to faculty, and some thought was being given to having undergraduates mentor faculty on the use of technology.

The cause for consideration of undergraduates as faculty mentors on the use of technology comes from the recent growth of the Educational Computing Minor and the birth of The Educational Computing Club (TECC). The educational computing minor that is offered by the Department of Curriculum and Instruction was created in the 1984. The minor consists of sixteen credit hours, nine of which cannot be used to meet other program requirements. Since its inception, the minor’s courses have changed, not only to meet student needs, but also to stay current with recommended educational practices. At this time, educational computing minor students are required to take an introductory instructional technology course, three upper level technology courses, a computer programming course, and participate in a pre-student teaching technology field experience with area K-12 computer-using educators.

The 1995-1996 school year was the first for the TECC club. The TECC club was created to provide opportunities for the Educational Computing minor students to get to know and learn from each other, while more importantly
gaining experiences with technology. During the first year (1995-1996), twenty-five dues paying members met once a month for business meetings or guest speakers. In addition to the guest speakers, some club members went to the National Educational Computing Conference (NECC) in Minneapolis, and club members took part in the university’s spring festival by sponsoring a booth that created computer-generated caricatures for visitors. The TECC club also provided workshops for faculty and students on a variety of software. Providing workshops was a valuable learning experience for club members. The only goal not achieved by the club was the adoption of a school. In adopting a school the club wants to assist teachers and students in using computer technology by providing workshops, assisting in classroom computer activities, and running a school computer club for K-12 students.

Selection of Participants

The participants in this study were chosen from among faculty members and students of the college of education. Two faculty members from the Department of Curriculum and Instruction were each paired with a student in the department. A purposive sampling technique was employed because the researcher wished to “discover, understand, [and] gain insight” (Merriam, 1988, p. 48). Therefore, purposive sampling allows the researcher to select a sample which will provide her/him with a rich learning environment.

The first mentoring pair, Dr. Crawford, a full professor in the area of reading and language arts, and Richard, a Ph.D. student in the area of curriculum and instructional technology, were initially, going to work together during the fall semester Technology and Teacher Education class. Due to Dr. Crawford’s schedule, they agreed to fulfill the field requirement for the course during the spring semester. Each was then approached about participating in the study
A second mentoring pair was sought because the I was not sure that the first mentoring pair was going to agree to participate in my study. In addition, I wanted a second mentoring pair to add depth to the study of the mentoring process. Thus, the second mentoring pair Chris, a temporary instructor in the social studies methods area, and Jim, an undergraduate majoring in elementary education and vice president of The Educational Computing Club, were brought together not only to add depth to my study, but because of their desire to gain technology experience. Chris had informed the department chair that she was interested in having someone mentor her on the use of technology, while Jim had made it known that he was looking for more ways to get computer technology experience. So Chris and Jim were asked and agreed to work together as a mentoring pair adding an interesting twist to the study, by using an undergraduate student to mentor a faculty member.

Data Collection

A descriptive case-study approach was used to describe and analyze the faculty/student mentoring teams’ progress through Spring semester 1996. Descriptive case studies in education provide detailed accounts of events and often focus on innovative programs and practices (Merriam, 1988). The data collection methods utilized in this descriptive case study to understand the context and the emic perspectives included interviews, observations, and documents such as journals and e-mail correspondence. Four interviews were conducted, one at the beginning, two in the middle, and one at the end of the semester. I observed the mentoring pairs working together on three occasions.

Interviews

Interviewing is a tool of qualitative case study research used to acquire unique information (Merriam, 1988). and to establish what is “in and on
someone else’s mind” (Patton, 1980). Patton (1980) further states that, “We interview people to find out from them those things we cannot directly observe....The purpose of interviewing, then, is to allow us to enter into the other person’s perspective” (p. 196).

Although I had identified specific interview questions to guide the interview process, more questions were added, removed, and altered as the data were collected and analyzed. Questions were added to probe for additional information (Merriam, 1988; Whitt, 1991) and to clarify and/or verify my perceptions as researcher.

Four interviews were conducted with each of the participants, one at the beginning, two in the middle and one at the end of the semester. The initial interview with faculty participants was used to determine: existing views on the use of technology in education, experiences with computer technology, use of computer technology in the courses they teach, perceived barriers to integration of computer technology into their courses, and goals for this experience. The initial student interviews were used to determine existing views on the use of technology in education, perceptions of personal strengths they bring to their mentoring position, and concerns they have about mentoring faculty members. The purposes of the mid-point interviews were to assess how the mentoring process was proceeding, and to gain an understanding of a typical mentoring session. Final interviews took place at the end of the semester to determine how the mentoring process affected faculty participants' attitudes toward the integration of computer technology into their courses. Another overriding purpose of the final interviews was to confirm or deny the validity of themes that emerged from the data.
I began each interview by informing the subject of the purpose of the interview, and the main source of the questions. All interviews were audio taped and transcribed. I also took notes during the interview to remind myself of key information and to write down new questions that emerged from the discussion. The interviews took on characteristics of semi-structured interviews, in that I started with a basic set of questions but was not bound by their order and could add questions as necessary (Merriam, 1988). Oftentimes, a participant’s response to one question would naturally lead into an answer to another question.

Following the interviews I listened to the recordings to analyze what had transpired to develop additional questions to clarify or further probe the participants comment.

Journals

Journals were a major source of data collection as they reflected the events of each mentoring session and revealed participants’ feelings and views about the sessions and mentoring process. I provided the participants with guidelines to assist them in responding in their journals. As personal documents, journals are a dependable source for collecting data on the participants’ views, beliefs, and feelings (Merriam, 1988). As the researcher, I also kept a journal relating not only to the research in general, but also to the two mentoring groups. The process of recording my reflections on observations, interviews, and participant journals assisted me in maintaining the study’s focus as it encouraged the review of data collected, improved data collection techniques, and provided another source of data (Bogdan and Biklen, 1992). Another reason I kept a journal was due to my frequent contact with three of the four participants during our daily routines on the university campus. Occasionally, participants revealed thoughts
or feelings on the mentoring process that did and did not appear in interviews, observations, or their journals. Thus it was key for me to document these informal research opportunities.

**Observations**

In order to verify and experience typical mentoring sessions, I observed the mentoring pairs working together three times each throughout the semester. Observation as a tool for data collection provides the researcher with firsthand experiences in the natural setting of participants in which events and experiences may have become standard for participants, but provide insight into the context for the researcher (Merriam, 1988). Observations also provide an alternative to second-hand accounts of experiences furnished in interviews and journals (Merriam, 1988). During observations I tried to remain a non-participant observer in order to see a typical session in its natural setting. I was looking to clarify participants’ views of the working relationship and to get a firsthand view of what the participants do in their mentoring sessions. Initially observations were going to be videotaped, but due to the constraints of the natural settings, observations were audio taped and transcribed, and field notes were taken. Following the observations the audio tapes and field notes were reviewed and questions developed for clarification.

**Documents**

Documents, an additional source of data for this study, have a number of broad definitions. They have been defined as any communication by participants (Holsti, 1969), written records kept by participants (Goetz and LeCompte, 1984), and any available materials (Riley, 1963). In this study documents took the form of e-mail correspondence and course materials and were solicited by the researcher. Documents ground the investigation in the context, thus lending a
richness and depth to the understanding of the context in which the study takes place (Guba and Lincoln, 1981; Merriam, 1988). The e-mail correspondence was solicited because of its potential for revealing the nature and depth of communication between the participants.

**Data Analysis**

The purpose of this study was to describe and analyze mentoring as an approach to assisting college of education faculty acquire the skills and confidence to use technology in their courses.

Prior to the study several guiding questions were developed to give direction to the data collection process.

1. What are the faculty members' views of technology prior to mentoring, and how does the mentoring experience influence those views?
2. How effective is mentoring as a method for assisting faculty members to integrate technology into their courses? Does it break down barriers such as time, access, and knowledge of technologies available?
3. To what level does the faculty member integrate technology into his or her courses?
4. What themes emerge from the mentoring process that impact technology integration by college of education faculty?

Through the establishment of guiding questions initial data categories were developed: perceptions of technology, activities, and impact of the mentor. Additional categories were added during the analysis: mentor roles, protégé roles, and communication.

This study utilized the constant comparative method of data analysis (Lincoln & Guba, 1985). The constant comparative method of analysis can be
described as a "continuous and simultaneous collection and processing of data" (Lincoln & Guba, 1985, p.335). The constant comparative approach has four main phases; unitizing, categorizing, filling in patterns and member checking (Lincoln & Guba, 1985). Unitizing, the process of extrapolating the smallest pieces of meaningful information from the data, was done by reviewing tapes, transcriptions, documents, and field notes. The second step, categorizing, was employed by placing the units in provisional categories, wherein the researcher assigned properties and then rules for inclusion to the categories. The initial categories came from literature on characteristics of successful mentoring relationships: spontaneity and personality fit (Clemson, 1987, p. 86); mutual benefit (Davis & Garrison, 1979; Philips, 1984; Clemson, 1985); multidimensional relationship (Clemson, 1987); mutual respect and trust (MacArthur, et. al., 1995; Clemson, 1987); mutual participation (Kay, 1990; Clawson, 1980); and communication (Gehrke, 1988). Other categories emerged such as stated goals, expectations, types of meetings, learning styles, and other events. The first group of categories were a portion of the basis of chapter six, while the second group of categories were key in developing chapters four and five.

Categories were then reviewed for overlap, and examined for possible correlation. Step three involved filling in the patterns for categories. This involved the fleshing out of categories and collecting more data that clarified relationships among the categories. The final step, member checking, was taken to provide a means for assessing validity. Member checking involved taking the data and interpretations back to the people who were the source of the data, and asking them if the results are accurate and realistic (Merriam, 1988).
Validity

In any research that is conducted, validity and reliability must be addressed. To ensure valid and reliable findings, I utilized several methods in addressing the question—do the findings match reality? Triangulation of multiple data sources—interviews, observations, participant journals, and researcher journal—was used to reveal various perspectives and thus validate findings. The second method used was member checks. A member check is “taking data and interpretations back to the people from whom they were derived and asking them if the results are plausible” (Merriam, 1988, p. 169). The researcher also collected participant journals on a regular basis to maintain continuous data analysis. When something did not make sense or needed further explanation, the researcher asked the participant to clarify what was meant in their next journal entry or asked them to clarify during an interview. In addition, the researcher has made known his biases and assumptions concerning the research study.

External validity, or generalizability of results, can be somewhat difficult when conducting qualitative research. The research study describes, analyzes, and interprets two unique mentoring situations in education. Whether or not the findings apply to other college of education situations will have to be determined by other interested parties through the reading of a thick description “so that anyone else interested in transferability has a base of information appropriate to the judgment” (Lincoln and Guba, 1985, p. 124-125).

Reliability

Reliability can be problematic for a qualitative research project, due to the fact that reliability refers to being able to replicate one’s findings. Replicating the findings of this study was not the purpose. The purpose of this research was to
describe, analyze and interpret two unique mentoring situations in education. However, the researcher implemented triangulation and an audit trail so that a measure of reliability can be estimated. Triangulation was implemented by having a number of data sources: journals, interviews, observations, and documents from which to base the study’s findings. An audit trail is a detailed description on data collection and decision making processes throughout the study (Goetz and LeCompte, 1984). Essentially, an audit trail allows the reader to see how the study was conducted and how the study’s findings were procured (Merriam, 1988). The researcher has included dates of data collection, forms, and documents utilized and gathered throughout the study in the appendices.
CHAPTER 4

CASE #1: DR. CRAWFORD AND RICHARD

Chapters four and five were developed around the categories: Beginning Perceptions, The Mentoring Process, Final Reactions to Technology, Final Reactions to the Mentoring Process. Chapter Four contains an additional section titled Other Events. These categories were developed from the guiding questions and provide a chronological description of the two mentoring experiences. Throughout the reporting of this study, the symbols were utilized to reference the data (see Table 4.1). The date of collection follows the appropriate symbol, e.g. (FJ: 3/5/96).

Table 4.1  Symbols for Data References

| MI= mentor interview | FI= faculty protégé interview | MJ= mentor journal | FJ= faculty protégé journal | O= observation transcription and notes | E= e-mail correspondence |

Beginning Perceptions

Dr. Crawford, an experienced educator, began her career as an elementary teacher and now is a full professor in the area of reading and language arts. Her educational credentials include Bachelor's and Master's degrees in Elementary Education, and a Ph.D. in Curriculum with a specialization in Reading. Prior to and during this study Dr. Crawford taught reading and language arts courses at the graduate and undergraduate levels. Dr. Crawford has instructed her students
to employ the whole language method of teaching reading; this method utilizes reading and writing to integrate all subject areas.

Dr. Crawford's initial perceptions of technology were positive, yet tempered. She felt that it is important for educators to be able to use computer-related technology, and believes that it can be used to improve learning throughout the curriculum. She also felt that the computer is a valuable instructional tool, while admitting not being as proficient as she would like in terms of utilizing computer technology. She states, "I am not anti-technology. I'm not. I just don't feel like I am up to date on it" (FI: 2/14/96). Other barriers to her use of technology in the classroom included time to learn and become proficient with technology, software differences between university and K-12 institutions, and access. On access to technology she stated, "If they [the college of education] had the stuff [computers, VCRs, and televisions] in the classroom already, that I could just run over and use it, ...then I think I would use it. But for me to have to plan ahead, schedule it, drag it down there, make a big deal of it, it's not worth it to me" (FI: 5/13/96).

Prior to this study having students complete assignments using a word processor was the main technology integration taking place in her classroom. Such assignments included writing a letter to parents with imported graphics or creating a story or character web. As she states, "I don't feel I need it [technology] for what I need to accomplish. Maybe I should do more, for the modeling aspect with the kids. But see, reading to me is reading books and I've got that hang-up....There are all of these beautiful children's books. Why do I want a computer?" (FI: 5/13/96)

When asked how she rated her current proficiency using various instructional technology equipment Dr. Crawford felt moderately proficient
using a computer, while feeling she had a little proficiency using a CD-ROM player and LCD panel (Schmidt, 1995). Camcorders, video editors, distance education systems, and laser disc players were technologies at which she felt no proficiency. In terms of computer-related technologies, Dr. Crawford felt moderately proficient with word processing, instructional software (drill and practice), and local area network communications (e-mail). Areas of little proficiency included desktop publishing, simulations, drawing, presentation software, and the Internet (Schmidt, 1995).

Using technology was not new to Dr. Crawford. At one time she was a leader in the area of technology in the Curriculum and Instruction department, in that she developed a class on Computers in Reading and Language Arts in 1989. In 1992, she reluctantly passed the course on to another faculty member. "And then all of a sudden some horrible thing happened, and I was behind" (FI: 2/14/96).

**Dr. Crawford's Mentor: Richard**

Dr. Crawford's mentor was Richard, a graduate student working towards a Ph.D. in Curriculum and Instructional Technology. Richard started his education career teaching secondary math and computer science courses for two years, with a B. A. in math and a minor in computer science. He then earned his Master's degree in Computer Science.

Richard's perceptions of technology were very positive. He believed that technology could be used to enhance the learning process and that preservice teachers need to be shown ways to use technology to enhance students' learning. Richard was also eager to help Dr. Crawford develop compelling uses of technology for her students.
Richard felt that he brought several things to this mentoring relationship: experience in learning new technologies, patience, and an enjoyment of working with people. Richard especially liked the idea of working one on one. He stated, "You can work with them and address their needs specifically. You can get a lot more accomplished. It's more powerful" (MI: 2/9/96). The only thing that Richard lacked was experience in the area of reading and language arts.

The Mentoring Process

Richard was paired with Dr. Crawford during the fall 1995 semester as a course requirement in Technology in Teacher Education. To guide the mentoring process course members developed ground rules to guide mentoring participants. Other students were also paired with faculty members (see Thompson, Hanson, & Reinhart, 1996). The course ground rules for the mentoring process were:

- Start where the faculty are.
- Define goals.
- Work toward compelling uses.
- Assist in the classroom if necessary.
- Work toward making the faculty member independent.

Due to the nature of their schedules, Richard and Dr. Crawford were unable to work the mentoring into their fall schedules and decided to wait for the spring 1996 semester.

Prior to spring semester 1996, Dr. Crawford and Richard had met once to discuss goals and become acquainted. Dr. Crawford first wanted to learn about the XapShot camera for a class project. Richard's thoughts raced immediately to putting pictures on the Internet so elementary students could write stories about the pictures. The stories could then be e-mailed to Dr. Crawford's preservice
teachers for use in class discussions on writing styles and abilities (MJ: 12/8/95). Richard stated, "We adjourned the meeting, but I never fully communicated my objectives" (MJ: 12/8/95). Later that week Dr. Crawford sent Richard an e-mail message describing her goals in more detail (See Table 4.2). Most of Dr. Crawford’s goals were basic competency goals and she could have been achieved them on her own.

Table 4.2 Dr. Crawford’s Goals

<table>
<thead>
<tr>
<th>1. Learn to use the XapShot camera</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Teach to methods students so they can use it in their practicum</td>
</tr>
<tr>
<td>B. As a future possibility of sending pictures via computer to K-12 students</td>
</tr>
<tr>
<td>2. Learn to use a flatbed scanner</td>
</tr>
<tr>
<td>A. Learn possible ways of using it with students</td>
</tr>
<tr>
<td>3. Become more acquainted with the World Wide Web (WWW)</td>
</tr>
<tr>
<td>A. What is available?</td>
</tr>
<tr>
<td>B. Research possibilities</td>
</tr>
<tr>
<td>C. Incorporation ideas</td>
</tr>
<tr>
<td>4. Learn to better utilize electronic mail.</td>
</tr>
<tr>
<td>A. Send mail off campus</td>
</tr>
<tr>
<td>B. Create mailing list of students for group mailings</td>
</tr>
<tr>
<td>C. In the future, possibly establish pen pals with K-12 classrooms.</td>
</tr>
</tbody>
</table>

What should be noted is that Dr. Crawford and Richard did discuss her goals, but through the first several meetings never discussed Richard’s vision of the mentoring process, or their expectations of each other.
Dr. Crawford had heard of the XapShot camera from a colleague, and had already determined how she would have her students use it. She would teach her students how to take a picture, hook the camera to a computer, download the image to the computer, and print it out. Her students would take the camera to practicum experiences and have K-6 students take a picture to write about during follow-up visits. Since the schools did not have the same equipment as the university, the students would have to take the camera back to the university to print the picture for the K-6 students. What Dr. Crawford needed from Richard was to learn how to do all of these things so she could teach her students.

The first meeting to begin working with the technology went fairly well (MJ: 1/25/96). Richard showed Dr. Crawford how to erase old pictures, take new pictures, connect the camera to the computer, and download the images to the computer (MJ: 1/25/96). "I tried to give her as much 'hands-on' experience as possible, and she didn't seem the least bit reluctant. She was pretty excited after seeing the first picture come up on the computer screen" (MJ: 1/25/96).

Throughout the session questions arose that Richard could not answer so they experimented and Richard tried finding the answers in the manual. Following their session, Dr. Crawford had this to say, "I guess I thought that since these students [Richard] were to mentor us, they would already be proficient in whatever we asked them to teach us. But maybe that is expecting a bit much, for no one knows everything" (FJ: 1/30/96). Dr. Crawford also seemed uncomfortable having to experiment with the equipment to find answers to her questions. To her it was an inefficient use of her time with such a busy schedule.

What was beginning to become evident was that Dr. Crawford was most comfortable learning in a very traditional manner: the teacher (mentor) has the knowledge and gives it to the student (protégé). Dr. Crawford had taken notes
throughout the session, but wished Richard had written out some step by step directions for her to refer to later (FJ: 1/30/96). Richard knew nothing of this expectation.

Dr. Crawford had taken good notes, because early the next week she went to practice her new skills. "Well I feel pretty successful. I checked out the camera, and played around with it myself, taking pictures, saving on disk, and printing" (FJ: 1/30/96). While doing this she also edited her directions to use with her class.

The next couple of meetings found Dr. Crawford and Richard working on their second goal, learning to use the flat bed scanner. These meetings were mutually frustrating due to technical difficulties, such as the computer freezing up and not recognizing that the scanner was connected to it, and to Richard not having all of the answers for Dr. Crawford. Dr. Crawford was pleased to see a set of directions at the scanner, but was disappointed that Richard didn't provide her with additional information on how to use the scanner (FJ: 2/1/96). As for Richard, "Quite often, I am learning or relearning right along with Dr. Crawford. I guess this is OK, but I wish I could give her more information right up front" (MJ: 2/1/96).

Richard was pleased with Dr. Crawford's patience with computer problems, and her willingness to use the mouse, read directions, and use him as a guide. Richard was also pleased to see Dr. Crawford's excitement when her first scanned color picture was printed (MJ: 2/1/96). Richard's moderately positive reflections are countered by Dr. Crawford's comments of frustration. When speaking of Richard not being able to explain all of the scanner's toolbar options she says, "I think you can tell...that I am frustrated about all the time we are wasting because he isn't well prepared to teach me" (FJ: 2/1/96). At this point in
the mentoring relationship, the communication necessary to create a more successful working relationship seemed lacking.

They scheduled their next meeting to take place in Dr. Crawford's class with her teaching her students how to use the XapShot camera, and explaining the assignment. Richard was unsure of how she planned to go about the lesson, and as for his role said, "I'm not quite sure yet what my role will be in this situation" (MJ: 2/1/96). While Dr. Crawford’s journal of 2/1/96 stated, "I talked with him about how he could help me with the XapShot camera in my class" (FJ: 2/1/96).

Meanwhile, Dr. Crawford contacted Dr. Payton, a colleague in the Instructional Resources Center, to reserve the cameras and find out about getting a computer with the correct software up into her classroom. At the time Dr. Crawford also found out that she would need to take the camera batteries home to make sure they were fully charged.

Dr. Payton arrived thirty minutes prior to class to help get the computer set up while Richard, not feeling well, arrived ten minutes prior to class starting (FJ: 2/8/96). According to Richard, he was five minutes late and apologized for his tardiness (MJ: 2/8/96). Dr. Crawford was upset because if Dr. Payton had not been there, she would not have had the support she needed to get it set up (FJ: 2/8/96). Richard took her tone as "talking down" to him (MJ: 2/8/96).

The class went well as Dr. Crawford explained how to use the camera; the students took some pictures, and then they were shown how to get the pictures into the computer and work with them (MJ: 2/8/96). Dr. Crawford was able to answer many of the questions while Dr. Payton and Richard addressed those she could not. What made the situation worse for Richard was that Dr. Crawford
thanked Dr. Payton for her help, while not acknowledging anything that Richard had done for her (MJ: 2/8/96).

Dr. Crawford and Richard were both quite frustrated at this point and each spoke with others for advice and support. Richard did take another step which was to send an e-mail message to her. Richard speaking about the contents of his message said, "We had a good activity, and that I'm looking forward to working with her. We need to iron out specifics of what is expected of me, and I like to work with her activities" (MI: 2/9/96). Richard's e-mail made Dr. Crawford realize that they need to communicate better about the expectations they have for Richard's role as mentor (FJ: 2/8/96).

The classroom activity and its effect seemed to be a turning point in the semester for both Dr. Crawford and Richard. Up until now their meetings were held in the Instructional Resources Center. The remainder of the meetings were generally held in Dr. Crawford's office. The sessions also became more personal productivity in nature rather than trying to work on more technology applications for Dr. Crawford's class. This was also the point that I perceived a mutual commitment to making the best of their remaining time together.

The next task was to work on creating mail lists of Dr. Crawford's classes to send e-mail messages to all of her students. Richard started the session by trying to teach Dr. Crawford to create mailing lists in a command laden manner on the university's e-mail system (MJ: 2/29/96). Dr. Crawford was becoming frustrated and again wished Richard had provided her with structured instructions. She wrote, "I need things written out step by step!" (FJ: 3/7/96). At this point Dr. Crawford suggested that they try creating the list using the college of education's QuickMail system (FJ: 3/7/96; MJ: 2/29/96). Dr. Crawford had gotten some instructions from a colleague, so with the instructions and some
trial and error they were able to create the mailing lists (FJ: 3/7/96; MJ: 2/29/96). Richard had to leave prior to a test mailing, but was on the mailing list, and received a copy of the message Dr. Crawford had sent her students. Upon receiving the message Richard replied to let Dr. Crawford know that it was successful and that she had done a good job (E: 2/29/96).

The next session's task was learning about newsgroups. Dr. Crawford had heard a colleague talking about newsgroups she belonged to, and that she spent hours communicating with them via the Internet (FI: 2/14/96). Richard spent time preparing for their meeting because he had very little experience with newsgroups (MJ: 3/7/96). He spent time using a very technical method of accessing newsgroups, and also using Netscape's newsgroup interface (MJ: 3/7/96). Netscape's version was considerably more user friendly so that is the one he showed Dr. Crawford. The session seemed to go fairly well except that Dr. Crawford was unable to find any newsgroups that interested her (FJ: 3/7/96).

The session concluded with Dr. Crawford asking Richard to show her "how to do forms with lines, boxes, and headings" (3/25/96). Richard understood this as using Microsoft Word to create documents similar to those of her students and colleagues (MJ: 3/25/96).

The desktop publishing session was not in the original goals but was a desire of Dr. Crawford's so it was the next topic addressed. This session brought forth another time in which Dr. Crawford was frustrated with Richard for not knowing or being prepared to answer all of her questions (FI: 4/17/96; FJ: 3/25/96) Richard’s frustration stemmed from Dr. Crawford not being ready or willing at times to create compelling uses of technology for her classes.

Richard being familiar with the basics of Microsoft Word had to explore with Dr. Crawford to learn about how to use tables to create the type of document
requested by her (FJ: 3/25/96; MJ: 3/25/96). Dr. Crawford's reaction to the session, "I guess I still feel this is a waste of my time. I probably could have done that kind of exploring without Richard" (FJ: 3/25/96). While Richard is experiencing frustration of his own. "I am coming to the realization that Dr. Crawford just wants to explore different forms of technology this semester. We, unfortunately, haven't touched much on classroom integration and learning--except for the XapShot activity" (MJ: 3/25/96).

Dr. Crawford and Richard spent the semester's remaining sessions working with homepages on the Internet. Richard started by showing Dr. Crawford how some courses use the Internet to accomplish much of their coursework, as a place to display course materials, and some personal web pages (O: 4/4/96). Richard had done a nice job showing Dr. Crawford how to navigate the Internet using Netscape, but Dr. Crawford did not seem too enthusiastic about the session (O: 4/4/96). "I think he was just trying to show me the possibilities of what you could do....I didn't find it relevant." (FI: 4/17/96). But what happened between sessions sparked new life into the mentoring relationship and brought some relevancy of the Internet to Dr. Crawford.

Dr. Crawford was on a search committee, and while reading an application letter, found out that the applicant had researched the university via the Internet (FI: 4/17/96). The applicant had found the web site quite informative (FI: 4/17/96). "Isn't that neat? I mean he is from Syracuse, New York, and he found us [the university] on the web" (FI: 4/17/96). Dr. Crawford had found some relevancy for creating her own web page.

Their next meeting started with a "where do we go from here" discussion (FJ: 4/11/96). Richard stated "This was one of the best meetings that we have had in a while. Dr. Crawford was pretty upbeat and initially asked me what my goals
were. This had never happened before” (MJ: 4/11/96). Richard then shared what his initial goals were, but at this point he wanted to continue to give her a feel for different kinds of technology (MJ: 4/11/96). So with Dr. Crawford’s newly found interest in web pages, they decided to create a Reading and Language Arts homepage with information about the graduate program and its courses. (FJ: 4/11/96; MJ: 4/11/96). Richard felt this was a good idea because they could review other things they had learned throughout the semester, such as the scanner (MJ: 4/11/96).

Reflecting on their decision to create a homepage, Dr. Crawford said, “I kind of chuckled to myself when I said to him last week that I would like to put the courses that we teach on the homepage and so he said OK, but you need to learn to walk before you can run. Meaning that you have to learn some of these basic commands first. And that’s fine. We may never get it done, but at least it gives us something to work toward” (F1: 4/11/96).

Richard provided Dr. Crawford with a set of directions for creating a homepage. They began learning Hypertext Mark-Up Language (HTML) by putting information about Dr. Crawford onto the homepage. She had hoped to get more done on the homepage prior to the next session, but was unable to find the time (FJ: 4/11/96).

The next meeting was spent continuing the homepage project, by listing courses, adding descriptions, and revising previous information (FJ: 4/18/96; MJ: 4/18/96). Plans were then made to try and incorporate a scanned image into the homepage in next week’s meeting (FJ: 4/18/96; MJ: 4/18/96).

At this point Dr. Crawford and Richard were both feeling more positive about their mentoring sessions. Dr. Crawford writes, “It seemed like things went a bit better this time because we both knew what we were working on. I operate
better with a goal in mind. He is also teaching me things he knew how to do" (FJ: 4/18/96). While Richard wrote, "Dr. Crawford was once again very up-beat. This is much more of a motivating situation for me. I think some of her positiveness may be due to an increased confidence in what she is doing. Plus, I think she really feels that progress is being made" (MJ: 4/18/96).

Their second to last session was somewhat of a letdown for both Dr. Crawford and Richard. They used the scanner to get the image they wanted, but due to network difficulties, were unable to get the image into the homepage (MJ: 4/23/96). Richard was able to get it to work later on his own, but Dr. Crawford had difficulty understanding what it all meant (FJ: 4/23/96).

Their last session of the semester was probably their best. It had fun, excitement, and accomplishment all rolled into one (O: 5/2/96). Dr. Crawford and Richard first discussed copyright issues related to the scanned image that was now on the homepage. Dr. Crawford decided to add a "credit line" while she tried to obtain permission to use it (FJ: 5/2/96).

Dr. Crawford was then introduced to hypertext links. She and Richard created another page with some basic information about Dr. Crawford, and linked that page to the Reading and Language Arts page. Witnessing Dr. Crawford's reaction to the successful completion of her hypertext link was great. She threw her hands in the air and clapped (O: 5/2/96). Richard reacted to Dr. Crawford's excitement by saying, "Dr. Crawford really started getting a feel for some things and was amazed at the blue and purple hypertext. I think she was even more amazed that she had actually created them herself and could actually now move around the web" (MJ: 5/2/96).

Richard also showed Dr. Crawford how to print out her homepages with the HTML code included so she could use them for future references (O: 5/2/96).
Dr. Crawford was pleased with that suggestion. The session ended with Dr. Crawford and Richard thanking each other. "Thank you Richard for all the education this semester." Richard replied, "Well, Thank you" (O: 5/2/96). Richard also felt that "This meeting was a great way to end the semester!" (MJ: 5/5/96).

Following the words of gratitude, a friendly conversation ensued with Dr. Crawford asking Richard what type of degree he was working on and what he planned on doing upon its completion (O: 5/2/96). It was as if Richard had been a student of Dr. Crawford's and the semester had concluded and now Dr. Crawford could allow some personal interaction between them.

Other Events

Richard was not Dr. Crawford's only mentor of the semester. Dr. Payton, who had assisted with the XapShot camera activity, met with Dr. Crawford to show her how to create and use a database of her collection of children's literature books. Knowing this was going to happen, I asked Dr. Crawford to also include these sessions in her journal. What should be noted about Dr. Payton is that she was an elementary teacher prior to getting her Ph.D. in Curriculum and Instructional Technology. In addition, she has conducted many inservice workshop on technology, as well as, presented on technology related issues on the local and national level.

Dr. Crawford felt that their first meeting was successful because they had a goal, and she had wanted to learn this program for a long time (FJ: 4/19/96). Other factors that made this a meaningful and successful experience was that Dr. Payton had a personal history with Dr. Crawford, and had a similar background (FJ: 4/18/96). Dr. Payton came with a written set of directions, and explained what to do in a step by step manner (FJ: 4/18/96). Throughout the process Dr.
Payton was able to note alternatives as well as things for which to watch (FJ: 4/18/96). By the end of the session, Dr. Crawford had created one record and was to create more in time for their next session.

By the next session Dr. Crawford had created a total of twelve records so Dr. Payton was able to teach her how to sort and find data. Dr. Payton also showed Dr. Crawford how to change the format of the database to create a bibliography (FJ: 4/26/96). Dr. Crawford wrote, "I asked her a lot of questions and she easily showed me what to do. So it was a good give and take" (FJ: 4/26/96).

When asked to compare working with Richard to working with Dr. Payton, Dr. Crawford had this to say, "I just feel more, one thing, we're more of an equal. She knew my needs. She knew what I wanted to accomplish...and what I needed to know in order to do that and she almost anticipated my questions" (FI: 5/13/96). I then asked Dr. Crawford to explain what "more of an equal" meant to her. "Well, we're both faculty members. I don't feel like I am treading on toes if I say things, you know. With Richard, I felt like I had to, I don't know, I just felt like, like I had to not hurt his feelings, and give him support as a student" (FI: 5/13/96).

In Richard's defense, he never knew of Dr. Crawford's desire to learn about databases. Even so, Dr. Crawford's comments say a great deal about what was missing in her mentoring relationship with Richard.

**Final Reactions to Technology**

One of my guiding questions was: What are the faculty member's view of technology prior to mentoring, and how does the mentoring experience influence those views. When asked about influence Dr. Crawford replied, "I've taught this course for many, many years. I've got it worked out until it works well with what I do. I don't feel a need for technology. Therefore, it's not that I
am anti-technology, I just don't feel a need for it" (FI: 5/13/96). Dr. Crawford agreed that at this time she does not see a compelling use for technology. (FI: 5/13/96). She went on to repeat, "I've said before, if they had the stuff in the classroom, already set up, so that I could just run over and use it...then I think I would use it (FI: 5/13/96).

Final Reactions to Mentoring

I also wanted to elicit reactions from the participants about the mentoring process as a method for assisting faculty members to integrate technology into their courses. Having a personal mentor made Dr. Crawford set aside time each week to learn technology. She likened it to taking piano lessons and knowing each week you would be playing for the piano teacher (FI: 5/13/96). So in this instance, time became less of an obstacle since Dr. Crawford had to make time for Richard's mentoring in her schedule.

Another effect of having a mentor was that Dr. Crawford had someone to help her out with the technology (FI: 5/13/96). Richard characterized this function as "helping her through the stuff and introducing her to the pieces of software" (MI: 5/28/96).

The issue that continued to come forth when asked about their mentoring experience was that they were both unclear about their overall goals and expectations of each other. Dr. Crawford commenting on the process, "I wasn't really sure what we were supposed to be doing. It's my fault. It's not Richard's fault. I just feel like I didn't know what my goals were and what I wanted to learn (FI: 5/13/96). She went on to say, "I probably should have never signed up with somebody to start with, since I didn't have anything definite in mind" (FI: 5/13/96).
These feelings perhaps explain a couple of things. First, Richard's perception that Dr. Crawford just wanted to explore different forms of technology and that he was training instead of mentoring. Secondly, the success and accomplishment Dr. Crawford both got from the weeks of homepage development perhaps stemmed from having an overall goal in which they both saw relevance, and they worked towards it (MI: 5/28/96).

Overall, Dr. Crawford and Richard were, for the most part, able to accomplish all of Dr. Crawford's initial goals. In addition, they learned to create tables in Microsoft Word and created a homepage for the graduate Reading and Language Arts program. In terms of achieving Dr. Crawford's goals they were successful. As for Richard's goal of developing ways to use technology as a learning tool never came to fruition. This was in large part due to him not being more assertive in making his feelings heard, and that it is a process that takes some time to develop.

Further analysis of this mentoring relationship is included in chapter six as well as its relation to the mentoring literature.
CHAPTER 5
CASE #2: CHRIS AND JIM

Similar to Chapter 4, Chapter 5 is developed around the categories: Beginning Perceptions, The Mentoring Process, Final Reactions to Technology, Final Reactions to the Mentoring Process and provides a chronological description of the second mentoring pair.

Beginning Perceptions

Chris, began her career in education as a third grade teacher and now is an instructor in the area of Elementary Social Studies methods. Her educational credentials include a Bachelor's degree in Elementary Education, and a Master's degree in Counseling Education with an emphasis in elementary. Chris is also active in Gifted Education, as well as Service Learning Projects. During this study Chris taught courses in elementary social studies methods.

Chris's beginning perceptions of technology relate closely with her teaching philosophies which are: the teacher is a learner; treat students how you would like to be treated; and every student is different and have different needs that need to be met (FI: 1/24/96). Chris felt that computer technology had the potential to help her model her teacher as learner belief, as well as aid in creating more individualized instruction for her students (FI: 1/24/96). What Chris did not want was for computers to be an "add-on", or something for the students to get their work done, "What I see as important is to use it in conjunction with your discipline" (FI: 1/24/96).

When asked how she rated her current proficiency using various instructional technology equipment Chris reported feeling highly proficient using computers, camcorders, word processing, drawing programs, problem solving software, drill and practice software, and local area network
communication (e-mail). She felt moderately proficient using modems, laser
disc players, desktop publishing, and Internet use. Chris also reported having
little proficiency with LCD panels, scanners, distance education systems, database,
spreadsheet, and simulation software. Presentation software and hypermedia
programs were areas she reported having no proficiency (Schmidt, 1995). Chris
was asked what she felt were barriers to her fully integrating technology into her
courses, and she felt they were time, access to equipment, and training (FI:
1/24/96).

Chris had demonstrated computer technologies in her courses, but she
joined this mentoring experience to not only become more accomplished, but
also help her "students to maximize what they can do" (FI: 1/24/96). She
continued by saying, "I feel like I can do that better if I have an idea where they
are coming from. What they can do. What I should expect of them. I can't
expect the best of them unless I have some insight, experience, or expertise in
what I can have them do" (FI: 1/24/96).

Chris's Mentor: Jim

Chris's mentor was Jim, an undergraduate student working towards a
Bachelor's degree in Elementary Education. Jim was an active member and vice-
president of The Educational Computing Club, a club for undergraduates. Jim, in
addition to taking a number of the courses required for the computing minor
offered to undergraduates, had also taken a couple of graduate level computing
courses. When he completes his undergraduate degree, Jim intends to pursue a
Master's degree in Curriculum and Instructional Technology. In addition to his
coursework Jim had gained technology experience working as a student assistant
in the College of Education's Instructional Resources Center and Technology
Support Team. These experiences allowed him to experience a great deal of
different software packages, an array of troubleshooting situations, and meet most of the faculty in the college.

Having a solid background in computer technology, Jim believed that technology can be a valuable educational tool for the classroom (MI: 2/7/96). In his classes many faculty were starting to incorporate technology into their courses, but Jim felt that much more thought is needed on how college students are instructed to teach K-12 students with technology (MI: 2/7/96). He stated, "I think the methods professors need to use technology in a way that reflects how they want their students to use technology, in a meaningful way that actually engages the learner and involves the learner, but that is difficult" (MI: 3/4/96).

Jim felt that he brought several things to this mentoring relationship with Chris: patience, background knowledge, willingness to learn, and a desire to learn. That willingness and desire showed through when Jim was asked what the deciding factor was in agreeing to participate in this mentoring experience. "There was no deciding factor. There was no hesitation. It is going to benefit me in the future. It's just a great experience for an undergraduate" (MI: 2/7/96).

The Mentoring Process

Prior to spring semester 1996, Jim had taken Chris's social studies methods course and had been allowed to do an alternative assignment involving technology to meet one of the course requirements. That alternative assignment grew into not only an independent study with Chris to further develop his project, but also the partnership to participate in this technology mentoring project.

To begin the mentoring phase of their relationship, Chris set about listing questions and goals she would like to answer and accomplish during her time with Jim (see Table 5.1). These goals primarily dealt with developing personal
competencies with different computer applications. However, by first gaining personal competency and confidence, Chris quickly moved from personal productivity goals to trying to incorporate technology into her courses. Jim, on the other hand, had his goals set towards gaining experience helping a faculty member to become more technologically literate. He felt this would give him valuable experience in gaining a job as a technology coordinator for a school district (MI: 2/7/96). Other goals for Jim were to work on technology integration projects, and for Chris to gain independence through the ability to do her own troubleshooting (MI: 2/7/96).

Their first meeting, like several others, covered many topics. They discussed Chris’s goals and Jim started out by working through the items and diverting whenever Chris had further questions or needed clarification (FJ: 1/23/96). Ultimately, the goals were grouped and organized in preparation for their semester of working together.

During their first hour and a half together, Chris and Jim began working on Chris’s questions about the e-mail systems available to her, the university’s e-mail system and the college of education’s QuickMail system. Jim was able to show Chris a few things with her QuickMail system, but since it was only available to staff and not students, he needed to take the manual home to study (MJ: 1/23/96).

They also worked on using Netscape to do searches. Jim started by reviewing some of the basics such as hyperlinks, bookmarks, and menu items (MJ: 1/23/96). Chris said, “I was thrilled to use Netscape to find out about Washington, DC for my family to make travel plans over spring break (FJ: 1/23/96).
Table 5.1 Chris’s Goals (FJ: 1/18/96)

<table>
<thead>
<tr>
<th>Goal</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to surf the World Wide Web at school and home for information and</td>
<td></td>
</tr>
<tr>
<td>resources (home visit required)</td>
<td></td>
</tr>
<tr>
<td>Rudimentary aspects of my word processing programs</td>
<td></td>
</tr>
<tr>
<td>How to listen to music while working on my computer</td>
<td></td>
</tr>
<tr>
<td>How to align student names, grades, and assignments to calculate</td>
<td></td>
</tr>
<tr>
<td>midterm and final grades more efficiently</td>
<td></td>
</tr>
<tr>
<td>How to use my e-mail better: setting up directories, and distinguish</td>
<td></td>
</tr>
<tr>
<td>e-mail from QuickMail</td>
<td></td>
</tr>
<tr>
<td>I want to give class material and demonstrations using the LCD</td>
<td></td>
</tr>
<tr>
<td>panel (and look like I know what to do!)</td>
<td></td>
</tr>
<tr>
<td>How about learning PowerPoint?</td>
<td></td>
</tr>
<tr>
<td>Think with me about what I have the students doing in technology and</td>
<td></td>
</tr>
<tr>
<td>social studies. Is it relevant? Am I differentiating for students</td>
<td></td>
</tr>
<tr>
<td>who can move quicker?</td>
<td></td>
</tr>
<tr>
<td>What exactly is hypercard studio? How can I use this in my</td>
<td></td>
</tr>
<tr>
<td>coursework?</td>
<td></td>
</tr>
<tr>
<td>How about increasing my skills in database and spreadsheet.</td>
<td></td>
</tr>
<tr>
<td>Pen pals on WWW.</td>
<td></td>
</tr>
<tr>
<td>Mailing labels.</td>
<td></td>
</tr>
<tr>
<td>How to e-mail whole sections of my classes.</td>
<td></td>
</tr>
<tr>
<td>Gain confidence and impress myself (FI: 1/24/97)</td>
<td></td>
</tr>
</tbody>
</table>

Their first session together seemed to agree with both Jim and Chris.

Chris reported, “Working together with Jim was the highlight of my week” (FJ: 1/23/96). While Jim said, “Overall, things went really well. Chris is anxious and very excited to learn (MJ: 1/23/96).
However, as Jim stated in an e-mail message to Chris, the session was not over, “Good news! The lesson is not over. I will try to provide just a brief overview of what we did. Hopefully it helps” (E: 1/23/96). When asked what prompted him to send her the e-mail message reviewing their session Jim replied, “We covered a lot of material and I was just thinking about how she was going to retain that. So I decided to send her an e-mail message with some of the things we had done, and some of the basic functions that we covered” (MI: 3/4/96).

The next meeting’s goals were to finish up with Netscape and QuickMail and move on to PowerPoint. Their hour and a half was spent working on sending e-mail off campus, creating address books, and reviewing and searching on the Internet (MJ: 1/31/96; FJ: 1/31/96). Jim, keeping his own goals in mind, “...offered time to discuss technology not to just concentrate on the ‘Bells and Whistles’ (FJ: 1/31/96). Reflecting on this meeting Jim stated, “I thought that everything went real well today. I am hoping that as Chris becomes comfortable with different applications she will be more apt to explore and discover things on her own” (MJ: 1/31/96).

PowerPoint was the topic of their next meeting, and as usual time was spent clearing up questions from previous meetings (MJ: 2/2/96). Chris’s computer had PowerPoint 4.0 and Jim was more familiar with version 3.0, so they got through some of the basics OK, but had to spend some of their time exploring and figuring things out together (FJ: 2/2/96; MJ: 2/2/96). Chris enjoyed the “mutually-engaging learning process” (FJ: 2/2/96), plus Jim was pleased to see Chris explore without so much instruction (MJ: 2/2/96). For their next meeting they planned on Chris creating a rough draft of a presentation she would use to present course material to her class and then getting an LCD panel
to go through the presentation process (MJ: 2/2/96). In addition, they made plans for Jim to go to Chris’s home to help her connect to the Internet from home.

The home visit did not go as planned, but as usual Chris and Jim made the most of their time together. The software they needed on Chris’s home computer was copied on IBM formatted disks that could not be read by her computer (MJ: 2/5/96). So they spent time exploring Chris’s home computer and worked with her connection to the local public library (FJ: 2/5/96). The exploration helped Chris become acquainted with her computer, something she had not done before (FJ: 2/5/96). It was also a chance for Jim to show Chris some computer basics that were at the time stumbling blocks for Chris, such as, closing a window versus quitting the application and using the finder to see what programs are currently running (MJ: 2/5/96). The knowledge that Chris remembered most was that Jim “used what he NEEDED and WANTED from the programs and applications available, and doesn’t worry about functions that he doesn’t know! He is efficient with what he wants to use and doesn’t worry about the rest, like I do” (FJ: 2/5/96).

Prior to their next meeting, Jim had e-mailed Chris telling her how to access and use PowerPoint 3.0 through the college’s network. Jim felt that 3.0 was easier and that Chris would find it more user friendly (MJ: 2/9/96). "I was very encouraged by the fact that Chris was able to access PowerPoint through the network. I could tell she was very proud that she was able to do it on her own" (MJ: 2/9/96). Chris and Jim also took a computer on a cart and a LCD panel into an empty classroom for Chris to set it up to display a PowerPoint presentation (MJ: 2/9/96). Jim had to go, but Chris stayed behind to work on her slide show (MJ: 2/9/96).
Jim went over to Chris's home to try to establish an Internet connection for their next meeting. Jim remarked, "I am glad that our first attempt did not work because Chris went home and tried to install PPP all by herself. ... She did an awesome job! And I was very proud that she was able to accomplish this" (MJ: 2/12/96).

Learning the database application was the goal for the next meeting. Chris wanted to use the database to keep track of addresses and to make address labels for Christmas mailings (MJ: 2/13/96). Despite the distraction of losing a credit card, Chris was able to learn how to use a database enough to add sixty records to the database she had created with Jim (FJ: 2/17/96). Chris reported other accomplishments she was able to achieve on her own that week such as: register for a conference via the Internet; provide her students with a four page handout on WWW sites to help in building lesson plans; and she continued to develop her Service Learning presentation using PowerPoint (FJ: 2/17/96).

Chris and Jim had an informal meeting in which Chris had another chance to set up the equipment for her PowerPoint presentation (MJ: 2/26/96). Jim felt that she again had done a nice job (MJ: 2/26/96). They had covered a lot of material so far during the semester, and Jim sent Chris a message asking if they should spend some time discussing different ways to use technology in the classroom (MJ: 2/26/96). Chris was excited and wanted to learn more. Jim had mixed feelings about this as he was still hoping to spend more time with technology integration ideas, although he was buoyed by her enthusiasm (MJ: 2/26/96).

The next meeting was two hours in length and covered PowerPoint and HyperStudio. Chris wanted to practice the set up one more time, and then they worked on editing the presentation (MJ: 2/29/96). Working from Chris's
computer which did not have HyperStudio, was frustrating because they had to work through the network (MJ: 2/29/96). Jim noted that "Chris was becoming frustrated with the waiting involved. She is a 'mouse clicker' when she has to wait. I had noticed this in all previous sessions so I finally explained why you don't want to continue to click when the computer is still processing the last input" (MJ: 2/29/96). Chris had made a similar mistake with a printing problem, by continuing to send a print message after the first message did not print out (MJ: 2/29/96). Jim took this opportunity to explain these situations and what to do when they arise.

Jim was disappointed in himself in how he introduced HyperStudio to Chris (MJ: 2/29/96). Instead of starting by creating a stack, he wished that he would have shown her a stack that had already been made and demonstrated HyperStudio's capabilities first (MJ: 2/29/96). The session ended with Jim answering some questions that Chris had about QuickMail. Jim tried a different technique in that he took over the computer and tried having Chris take the role of teacher (MJ: 2/29/96). Jim felt that she did pretty well, but that he had difficulty pretending that he did not know what to do (MJ: 2/29/96).

Before they met again Chris made some good progress on her own. Chris made her Service Learning presentation with PowerPoint and an LCD panel. She had to do some trouble shooting to get things working, but as Chris stated, "IT WAS TERRIFIC!!!!!!! It looked so professional, helped me to organize, and personalize my presentation. I was elated with the results [presentation]" (FJ: 3/4/96). Chris also had the opportunity to take advantage of the mailing directories that she created to send a message to a section of her methods students concerning an urgent issue (FJ: 3/4/96).
After spring break, Chris and Jim again began working with HyperStudio with a discussion of how it could be used with her classes (FJ: 3/22/96; MJ: 3/22/96). They began work on a Differentiating the Curriculum for Geography Skills stack (FJ: 3/22/96; MJ: 3/22/96). Due to software problems they were unable to save the work they had completed. "It is frustrating when the work you need to do is inhibited by the hardware or software you need to complete it. But it is also helpful to realize the best of minds have to keep working and trying to figure out what to do and try Plan B" (FJ: 3/22/96).

Chris was more than ready to get started for the next session, “I was anxious to have HyperStudio up and running for the lesson” (FJ: 3/25/96). She noted, “I am appreciative of Jim’s constant attention to the programs we work with. He is always ready with the applications, is prompt and prepared for our sessions, and is responsive and patient with whatever I am working on that day” (FJ: 3/25/96).

The session began with Jim showing Chris how to print out address labels from her database, and then they moved onto HyperStudio (O: 3/25/96). Chris and Jim had spent some time before this meeting informally talking about how HyperStudio could be used in a classroom which encouraged Jim (MJ: 3/25/96). “I am very pleased with Chris’s thought process concerning the use of multimedia in the classroom. I think that HyperStudio helped Chris see how important integration is. I am hoping that she continues to place an emphasis on critically thinking about the integration” (MJ: 3/25/96). Before the two hours were up, Chris and Jim also dabbled with beginnings of a homepage for Chris’s work with Service Learning (O: 3/25/96).

Chris and Jim both seemed to be quite reflective about how they were doing individually; Chris wished that she was more accurate with her
keyboarding (FJ: 3/25/96), while Jim was concerned with his teaching. Jim wrote, "I have been very pleased with our progress. I still need to improve in many areas. I need to question 'why' more often...even when Chris makes a mistake or decision about something. I need to dig a little deeper" (MJ: 3/25/96). Another development in the relationship was that Chris had begun talk of continuing the mentoring sessions into the Summers (MJ: 3/25/96).

Prior to their next meeting, Chris again had a number of successes to share. First, she was able to help another faculty member and student troubleshoot a problem with an LCD panel (FJ: 4/4/96). She commented, "I actually figured something out for someone else! It was great. Now I feel comfortable taking the laptop and LCD panel out into the schools for presentations" (FJ: 4/4/96). Secondly, a student whom she had helped learn PowerPoint stopped by to show her the presentation he had made, and again she felt great for being able to help him (FJ: 4/4/96). Chris also successfully loaded HyperStudio on her computer at home which was regularly being used for searching on the Internet (FJ: 4/4/96). Chris, unbeknownst to Jim, also took one her sections of social studies methods students down to the computer lab to show them how to use Netscape to search for information dealing with course topics (FJ: 4/4/96; MJ: 4/4/96). When Jim found out he said, "Her comfort level with computers and with the Internet has increased to the point where she is able to do this lesson without any help from me...without even discussing it!" (MJ: 4/4/96). Finally, Chris attended a homepage development workshop that The Educational Computing Club was sponsoring with Jim as the lead instructor. Chris began her homepage on differentiating the curriculum (FJ: 4/4/96). Reflecting on this experience, Chris said, "It was awesome! The only difficulty was now that I had it built, I couldn't remember HOW to access it!" (FJ: 4/4/96).
During their next meeting Jim helped Chris with the questions she had concerning her homepage and continued to help her learn the basics of homepage construction (MJ: 4/4/96). Chris was also able to provide feedback to Jim on how he did as the workshop leader. Chris suggested that he provide a help sheet for the workshop participants, and Jim agreed with her suggestion (MJ: 4/4/96). Jim, always wanting to improve, appreciated the feedback (MJ: 4/4/96).

At this point in the relationship, Jim was noticing a change in Chris in that as she progressed and began to use the technology more both personally and professionally the more questions and concerns that arose (MJ: 4/4/96). He said, “We discussed today that some of the stuff we are taught, we do not learn because it is not relevant to us at the time. I think Chris is beginning to have a need for some of the information that we have already covered” (MJ: 4/4/96). Meanwhile, Chris continued to heap the praise for Jim’s presence in her life. “He is always so patient and supportive when I have questions or try something new! This is such a neat relationship. I have the privilege of risk-taking without fear of failure. I have the support of a knowledgeable and encouraging mentor” (FJ: 4/4/96).

Chris’s next technology experience was quite frustrating and disappointing for her. Chris was going to give her Service Learning presentation to about one hundred people including some of her students with her PowerPoint presentation when she could not get the LCD panel to work (FJ: 4/9/96). The original laptop she had checked out had a hard drive problem, but she was able to call the Instructional Resources Center and they had another laptop on the way in minutes (FJ: 4/9/96). “NOW all seemed well, BUT I couldn’t find the video mirror imaging! I had been so ready to use this and was confident that I
could figure it out” (FJ: 4/9/96). Chris had planned ahead and did have transparencies ready so the presentation went well except for the fact that Chris was disappointed that she was unable to use her new-found skills (FJ: 4/9/96). The laptop that had been sent over was a newer model that had the setting she needed in a different location (O: 4/10/96). Chris relayed what had happened to Dr. Payton, a faculty member in the Instructional Resources Center, and Jim. They both agreed that Chris had done a good job of troubleshooting in that she tried a number of logical troubleshooting steps (O: 4/10/96). Chris was able to pass her new found knowledge on to a colleague that was going to use the same computer/LCD setup later that day so that she would not have the same difficulty Chris did (FJ: 4/9/96). Of the experience Chris said, “On one hand I felt mad. On the other hand, I learned, again, the value of troubleshooting” (FJ: 4/9/96).

The next day Chris was back hard at work with technology with her social studies methods classes. She had reserved the lab for her students to work on a number of technology related projects (FJ: 4/10/96). During this time students could: explore CDs and programs on geography and history; search the Internet for more information for course projects; work on their position paper on how they would use technology in their classrooms; or work on their individualized technology project (FJ: 4/10/96). Chris’s role was to circulate, troubleshoot, interact, and provide support to her students in their preparing their assignments (FJ: 4/10/96).

Later in the day Chris had a student come in to learn about Service Learning. She utilized her PowerPoint presentation on Service Learning to give him the overview (FJ: 4/10/96). “He was impressed and interested in creating his own presentation using PowerPoint in order to present in class. Literally, I
demonstrated to him and he went off with new strategies! ... Do you have any idea how great I feel when this conversion happens to me!!??!!" (FJ: 4/10/96).

Jim invited a guest, Dr. Payton, to discuss the activities and strategies that Chris and Jim had been working on in their mentoring relationship, as well as other issues in learning and teaching with technology (FJ: 4/12/96). The issues included: Jim’s faculty workshop on homepage development, Chris’s use of technology in her classes, troubleshooting, learning applications versus learning the internal workings of a computer (FJ: 4/12/96).

Chris was pleased to be affirmed by Dr. Payton for the classroom activities she has used. Chris noted about her technology integration, “I am empowering my students to access, process, and communicate information in such a way that they are better prepared for the field of teaching....I feel instrumental and affirming. I don’t think this would occur without the mentoring experience I have had with Jim this semester. How powerful” (FJ: 4/12/96). Chris’s comments reflect more on how her mentoring experience with Jim was able to meet her needs as a learner and as a teacher than where she is at in the evolutionary process of becoming an effective technology using teacher.

The conversation was also good for Chris in that she realized that even experienced computer users have times when the equipment does not work like they hope, thus needing to troubleshoot the problem (FJ: 4/12/96). She also came away from the discussion with a deeper understanding of how valuable doing the troubleshooting yourself versus having someone come and fix it for you (FJ: 4/12/96). “The agonizing experience of having to fix it yourself increases the retention of that problem-solving effort for future use!” (FJ: 4/12/96).

Chris, Jim, and Dr. Payton talked non-stop for ninety minutes, it was a great experience for Chris. “I know that Jim and Dr. Payton made me feel
competent and effective in my work with integrating technology in my teaching" (FJ: 4/12/96).

The next meeting found Chris and Jim discussing a rubric developed by Chris for her technology assignment and working on her homepage. According to Jim the rubric was very complete (MJ: 4/18/96). "A student would have to include a lot of information to get all of the points if she were to grade strictly to her rubric. Her expectations might even be too high" (MJ: 4/18/96). Next they reviewed some of the basics of building a homepage and looked at a few other pages for ideas (O: 4/18/96). Reflecting on the session Jim commented "Chris is very excited about her homepage, but then she is always excited" (MJ: 4/18/96).

Prior to their next meeting Chris presented her Service Learning presentation to a Kiwanis group. After setting up her equipment and fielding a number of questions about her equipment, Chris was able to make her presentation (FJ: 4/20/96). "The presentation was AWESOME!" (FJ: 4/20/96). The audience of seventy-five men then inundated her with questions about teaching with technology (FJ: 4/20/96). The questions included: What do you do when the equipment does not work? Does technology help the learning process? Does the technology distract the learner? (FJ: 4/20/96). Chris was definitely in her element speaking about education and technology. "It was simply fabulous. They made me feel great. They clapped heartily and thanked me over and over" (FJ: 4/20/96).

Chris and Jim's second to last session again dealt with homepage development with Chris asking questions about integrating graphics into her homepage (MJ: 5/1/96). They were able to get an image onto her homepage and Chris was quite pleased with the accomplishment (MJ: 5/1/96). "I LOVED WORKING on this agenda and noted that at the end of the time, I was
completely mystified that we had been working for two hours. The time just flew so quickly" (FJ: 5/1/96).

The final meeting was really a chance for both Chris and Jim to debrief. Chris, who was never just the protégé in this relationship, asked Jim what he had learned about himself and his teaching styles during their time together (FJ: 5/7/96). Jim felt that he had gained valuable experience working with someone that would help him in future jobs (MJ: 5/7/96). He felt good about summarizing the meetings via e-mail, and being flexible enough to answer questions that arose during meetings that were not on the agenda (FJ: 5/7/96). The last thing he mentioned was not to assume too much about the learner's background knowledge (FJ: 5/7/96; MJ: 5/7/96). Overall, Jim said, "I am very pleased with Chris's progress. She is much more confident and willing to explore than before. I think she is really beginning to think about how she might integrate technology into her classroom" (MJ: 5/7/96). For Chris's part of the debriefing she commented on the mentoring experience and working with Jim. Chris told Jim how wonderful it was working with him, that she felt good about the relationship that had developed and that she had learned a great deal (MJ: 5/7/96). Jim said, "I would agree. I think we developed a good working and personal relationship. I would imagine that we would remain in contact via e-mail for years to come" (MJ: 5/7/96).

Chris ended the semester-long sessions by turning the tables on Jim by e-mailing him a summary of their last meeting and another thanks. Chris wrote, "I was very pleased to have this opportunity to learn, to explore, to feel like I could apply new skills, to share my new experiences with others (including my two kids) and to make a lasting friend. I thank you for your undaunting
patience, your analytical mind, your constant and reliable attention, your expedient feedback and your boundless encouragement" (E: 5/7/96).

Final Reactions to Technology

One of the guiding questions in this study was: What are the faculty member's views of technology prior to mentoring, and how does the mentoring experience influence those views. At the beginning of this mentoring experience Chris had a positive outlook toward computers being integrated into the classroom due to their potential to individualize instruction and promote the learning process. Following the mentoring experience, Chris was even more excited about the possibilities of technology in the classroom as she was now putting more thought into how to use technology in her courses (FI: 5/23/96). She understood that it was important for her to model technology use for her students and to expose them to the technology and the skills necessary to successfully teach with technology in the classroom (FI: 5/23/96). She stated, “I am inviting students to be more participatory in using technology to build their lessons and units” (FI: 5/23/96). Chris also realized that she was not where she wanted to be in terms of how technology was integrated into her course, but that she is on her way. “Well, I just think it makes my students feel good that I’m on target. I’m not ahead of the game, but I’m on target. I think they appreciate that” (FI: 5/23/96). Chris also began to search out research journals and articles about technology to enable informed uses and decisions about technology. (FI: 5/23/96).

Final Reactions to Mentoring

I was also interested in Chris and Jim's reactions about the mentoring process as a method for assisting faculty members to integrate technology into their courses. When asked what role Jim played in the attainment of her goals Chris responded, the “Ultimate role!” (FI: 5/23/96). Jim was able to be the key to
Chris's growth as a technology using teacher because he answered questions with immediacy, demonstrated troubleshooting skills, affirmed, explained, and allowed Chris the opportunity to learn what she needed to learn in a very efficient manner (FI: 5/23/96). Efficiency was an integral ingredient in this relationship since both Chris and Jim had extremely busy schedules so that when they set aside time to meet they worked only on what they needed to achieve their goals. One factor that set the stage for their work ethic, was that after their second meeting Jim started giving Chris “assignments” to do between meetings (FI: 5/23/96). Chris responded, “I was on to this, and hey, I am not here to take a nap. I'm in here for the training. I have to move some muscles” (FI: 5/23/96).

Jim felt that the one-on-one mentoring process was a successful method for assisting faculty members to integrate technology into their courses. “I think just having a person that you become comfortable with, feel comfortable asking questions and being able to admit not knowing the answer. Feeling comfortable with that person to do that” (MI: 5/28/96).

Participating in this research project also influenced Chris and Jim’s mentoring relationship. According to Chris, the interviews and journaling process promoted reflection which helped give form to some of her thinking (FI: 5/23/96). While Jim liked having someone to talk to about the mentoring (MI: 5/28/96). “You [researcher] listened to me every time I wanted to talk...basically we could get together any time to discuss it [mentoring]” (MI: 5/28/96). In addition, Jim seemed to enjoy being involved in the research process because it was one more thing he could experience and learn about.

Overall, Chris and Jim’s met all of Chris’s goals and then some. Chris said, “The best part is that I just appreciate the competence that I’ve been able to build. ... I set up my goals, and then went way beyond” (FI: 5/23/96). Jim’s goals were
also met, but he still would have liked to have spent more time working with Chris’s curriculum (MI: 5/28/96). I believe that both Chris and Jim realize that technology integration, as with any part of teaching, is an evolutionary process, and that if they had had more time together Chris’s use of technology would have evolved further.

Further analysis of this mentoring relationship is included in chapter 6, as well as its relation to the mentoring literature.
CHAPTER 6
DISCUSSION AND CONCLUSIONS

The purpose of this semester-long qualitative case study was to investigate mentoring as a method of assisting college faculty members interested in integrating computer technology into their courses. The study took place at a midwestern research I university during the spring 1996 semester. Two mentoring groups were established. One faculty member worked with a graduate student, while another worked with an undergraduate student. Each mentoring pair was asked to meet for one hour each week of the semester. Participants were interviewed, observed, and asked to keep a journal on their mentoring experiences. Due to the individualized nature of the one on one mentoring technique, the faculty members were able to establish their own goals for the mentoring experience.

Chapter Six will discuss findings related to previous literature and research on the mentoring, and guiding questions. In addition, recommendations for future mentoring projects and future research will be discussed.

Successful Mentoring Characteristics

Although not all successful mentoring characteristics existed in each mentoring pair, the impact of these characteristics on each mentoring pair will be discussed.
Case #1: Dr. Crawford and Richard

The first mentoring pair included Dr. Crawford, a full professor in the area of reading and language arts, and Richard, a Ph.D. student in the area of Curriculum and Instructional Technology. As you will see, Dr. Crawford and Richard were only able to partially fulfill the successful mentoring characteristics.

The first key to successful mentoring is communication (Gehrke, 1988). Communication is a key to the development of any relationship, and the lack of communication had the most impact on this relationship. During their first meeting, Richard was unable to fully communicate his overall goal of wanting to play a role in integrating technology into Dr. Crawford’s instruction for that semester (MJ: 2/1/96). In addition, he was not able to communicate his idea for improving Dr. Crawford’s XapShot camera activity. His idea was to create a WWW homepage with pictures on it for K-6 students to write about. The elementary students could then send their stories via the homepage or e-mail to the preservice teachers, who could then respond to the elementary students. In addition, the stories would be available for the preservice teachers to evaluate and discuss in class (MJ: 12/8/95). Although Richard’s idea could have been a more compelling learning experience for Dr. Crawford’s students, he was unable to fully communicate his idea to Dr. Crawford. Another example of their lack of communication was when expectations were not clearly defined for Richard who was to join Dr. Crawford in the classroom for the XapShot activity. Dr. Crawford did not feel that Richard was there early enough to help her get set up (FJ: 2/8/96). The result was that both Dr. Crawford and Richard were frustrated with
one another. An additional example was that Dr. Crawford had not informed Richard of her desire to learn how to create and use a database, instead Dr. Crawford had a colleague, Dr. Payton, teach her about databases. Thus, Richard was unable to assist her because he was unaware of that desire. A lack of communication was also present in the area of personal and professional background. For example, Dr. Crawford was under the assumption that Richard only had experience in the area of computer science, and had never done anything in education. Richard actually had taught high school math for a number of years. In addition, Richard was not aware that Dr. Crawford had at one point in her career developed a technology in a reading and language arts class. Overall, if both parties would have been willing to share more of their thoughts and feelings, I believe that all activities would have had deeper meaning for both Dr. Crawford and Richard; in addition, they could have made more efficient use of their time. Consequently, their lack of communication affected all other areas of their mentoring relationship.

The second characteristic of successful mentoring is the development of a multidimensional relationship (Clemson, 1987). Dr. Crawford and Richard’s relationship did not evolve into this multidimensional relationship, in which each person plays a variety of roles, thus making the relationship more complex. Neither Dr. Crawford nor Richard, took on many mentor/protégé roles, and the relationship had a professional tone. Dr. Crawford and Richard agreed that Richard was a teacher, guide, coach, consultant, and expert. The only exception was that Richard felt he also played the role of supporter/encourager through the
use of encouraging phrases and supportive messages sent via e-mail (MJ: 3/21/97). They both agreed that Dr. Crawford played the role of student who was open to new ideas and willing to learn. Dr. Crawford seemed to have signed up for a mentor without truly knowing what she wanted a mentor to help her accomplish. At one point Dr. Crawford said, "I wasn't real sure what we were supposed to be doing. It's my fault. It's not Richard's. I just feel like I didn't know what my goals were and what I wanted to learn" (FI: 5/13/96). While at times Richard felt that Dr. Crawford "wanted to know the answers right up front. Just give me the steps that I need to get this done" (MI: 5/28/96). In terms of a multidimensional relationship, Dr. Crawford and Richard's relationship was unable to grow beyond that of a teacher and student.

Another key to a successful mentoring relationship is spontaneity and personal fit (Clemson, 1987). Dr. Crawford and Richard, for a number of reasons, did not seem to fit together as a mentoring team. They were to have worked with one another a semester earlier, fall 1995, as part of Technology in Teacher Education course in which Richard was enrolled. But due to scheduling conflicts they had to postpone their mentoring efforts until spring 1996. Students were offered the chance to choose a faculty member to work with, but few of the students knew the faculty members very well. Dr. Crawford and Richard did not know each other prior to their mentoring relationship, and their time together did not bring them closer. Another reason for the lack of personal fit was that Richard had no previous experience in the elementary reading and language arts area. Because of this, he was at a disadvantage for offering insightful integration
ideas for Dr. Crawford’s curriculum. Their relationship did not seem to ever grow beyond that of a workshop leader and workshop participant.

Mutual benefit (Davis & Garrison, 1979; Philips, 1984; Clemson, 1985) had a positive effect on the relationship between Dr. Crawford and Richard, because each were able to gain something from their experience together. Yet both experienced some confusion about their goals as well as the extent that those goals were accomplished. When I asked Dr. Crawford if she had accomplished her goals for the semester her reply was, “Good question, since I didn’t know what they were. I guess. It’s hard to say” (FI: 5/13/96). According to the goals from an e-mail message she sent to Richard they were able to accomplish almost all of Dr. Crawford’s goals (E: 12/15/95). Richard felt that they were able to accomplish all of those goals and more (MJ: 5/28/96). As for Richard’s goals, he was not able to play a large role in developing classroom integration ideas with Dr. Crawford as he had wished. One factor impeding that goal was that he was not familiar with elementary education. Another reason was that Richard felt that Dr. Crawford was not ready for that step, and that it was not her primary goal in their mentoring relationship (MJ: 5/28/96). However, Richard did learn about himself and gained experience working to help someone acquire technology experience. He stated, “I learned that I am not very patient with slow technology anymore....I was also not aware of the huge gap that may exist between experienced and non-experienced users of technology. I had forgotten what I take for granted” (MJ: 5/5/96). Of the successful mentoring characteristics, this was the one in which Dr. Crawford and Richard demonstrated the most.
Mutual respect and trust was another area that inhibited the growth of this mentoring relationship. During the first interview with Richard, he mentioned that he was concerned about being treated as an equal, in that he was not sure that Dr. Crawford would respect his ideas (MI: 2/9/96). The fact that Richard was not at all familiar with the area of reading and language arts further separated the mentor and protégé. At one point in the semester a colleague, Dr. Payton, helped Dr. Crawford to learn how to use a database. Dr. Crawford was much more comfortable in this learning situation than with Richard, because as she put it "I just feel,...we're more of an equal....she knew my needs. Dr. Payton knew what I wanted to accomplish and what I needed to know in order to do that" (FI: 5/13/96). Dr. Crawford went on to further discuss Dr. Payton, "Well, we're both faculty members. I don't feel like I am treading on toes if I say things, you know. With Richard, I felt like I had to...to not hurt his feelings, and give him support as a student" (FI: 5/13/96). Because Dr. Payton was familiar with Dr. Crawford and what she needed to know to use databases, she was able to help her more efficiently and comfortably. Plus, with the lack of communication, Dr. Crawford and Richard were unable to move beyond the traditional student/teacher roles, consequently they were unable to arrive at the level of trust and respect needed to make their relationship more successful.

Mutual participation (Kay, 1990; Clawson, 1980) was a key to mentoring success that came in moderation for Dr. Crawford and Richard. During the mentoring relationship, Dr. Crawford was frustrated with Richard’s inability to have answers for all of her questions (FJ: 1/30/96), not providing step by step
directions (FJ: 3/7/96), and feeling like she did not really know what she wanted to accomplish (FI: 5/13/96). Richard, on the other hand, was frustrated that he was not able to play more of a role in developing classroom integration ideas (MJ: 2/1/96), and felt like he had to know everything (MI: 2/9/96). With the relationship not developing, frustrations growing, and busy schedules it seemed that as the semester moved along Dr. Crawford and Richard found it easier to put off practicing and preparing for upcoming mentoring sessions. Because all of their goals were not completely shared and openly discussed, they were working on separate agendas and not using each others’ strengths to optimize the mentoring relationship.

Overall, Dr. Crawford and Richard were able to accomplish most of the goals originally set by Dr. Crawford. However, by only partially fulfilling the successful mentoring characteristics they were unable to take full advantage of their mentoring relationship.

**Case #2: Chris and Jim**

The second mentoring pair was Chris, an instructor in the social studies methods area, and Jim, an undergraduate majoring in elementary education. Chris and Jim exhibited many of the characteristics of a successful mentoring relationship.

Communication played a major role in the development and success in Chris and Jim’s mentoring relationship. Their ability to communicate was immediately visible, as they spent time during their first meeting discussing each other’s goals and expectations. Chris shared a list of competencies she wished to
acquire, and through further clarification of those competencies Jim helped her arrange them in a logical sequence (FJ: 1/23/96). Then they went to work on the list. The communication continued immediately after the session when Jim e-mailed Chris to summarize their first meeting and also to remind her of some of the pitfalls of working with the programs with which they had been working (E: 1/23/97). Jim stayed in constant contact with Chris via e-mail. His messages would summarize sessions, give step by step instructions, give trouble shooting tips, schedule meeting times, and most importantly give Chris praise and positive reinforcement. For example, "Congratulations again on the super job with your presentation! You are making tremendous progress! You look like you are really beginning to feel comfortable with technology" (E: 3/4/96). Chris's messages generally gave Jim updates on how her "assignments" were going, asked questions, shared triumphs and tribulations, and gave Jim praise and positive reinforcement. Here is an excerpt from one of Chris' e-mail messages, "I have Power Point 3.0 on my computer!! Isn't that wonderful!! I feel great!" (2/7/96). Chris and Jim's e-mail correspondence kept the mentoring going between sessions (see Appendix E). Chris and Jim's ability to communicate with one another laid the foundation to a productive and meaningful mentoring relationship.

Chris and Jim were also able to develop a rich, multidimensional relationship. They both felt that their mentoring relationship was successful. When asked why, Jim's first response was "our relationship/friendship" (MJ: 11/26/96). He stated, "Going into the project, Chris and I had a good professional
relationship. As the project evolved, we began to develop more of a friendship" (MJ: 11/26/96). Chris's thoughts echoed those of Jim's, "We had a fantastic working relationship! It was professional and personal--I felt completely at ease as we worked together" (FJ: 6/26/96). Within this rich relationship the participants displayed many roles. Chris felt Jim took on such roles as mentor, teacher, coach, guide, encourager, supporter, role model, colleague, and teacher, just to name a few (FJ: 6/26/96). In describing Jim as a teacher Chris said, "He was prepared, knew his material, observed a role to guide instruction, created interest through the instructional process and made connections to apply the knowledge to the experience base of the learner....He was a master teacher in that he made me do the thinking! (FJ: 6/26/96). As for Jim's role as coach Chris said, "Just as an athletic coach, he had me in training--first the basics, then the development of basic skills, the tantalizing vision of what CAN be accomplished and the affirmation of current growth and status" FJ: 6/26/96). Jim felt Chris played more than just the role of student, "Chris was an excellent student. She made a huge commitment and she stuck to it! She was always ready to learn new things" (MJ: 7/2/96). Jim also listed Chris as a role model, fan, teacher, colleague, and assistant in their mentoring relationship (MJ: 7/2/96). When Jim described Chris as a role model he said, "Chris is an excellent role model of a teacher. She brought her teacher personality to the sessions as a student. She was enthusiastic, warm, caring, encouraging, and excited about success" (MJ: 7/2/96). Chris was also a fan of Jim's. He said, "Chris was a big fan, a big booster. She would always 'bring me up' and would say very nice things
about me to the other faculty” (MJ: 7/2/96). By assuming so many roles within this mentoring project Chris and Jim were able to develop a rich multidimensional relationship.

The successful mentoring characteristic of "spontaneity and personal fit” (Clemson, 1987) deals with mentoring pairs being able to choose one another and not having external constraints. Chris and Jim met this characteristic in a variety of fashions. Prior to agreeing to work on the mentoring project Chris and Jim were already planning on an independent study together which continued a project Jim had started in Chris' class the prior semester. So going into this project they had already decided to work together. Aside from being asked to meet weekly, be interviewed and observed, there were no other constraints placed upon their relationship. Their meetings varied from chance meetings in the hallway, e-mail correspondence, to meetings that were occasionally over two and a half hours in length. The location of meetings varied as much as duration and type. They met in Chris' office, Chris' home, one of the College of Education’s labs, and the Instructional Resource (media) Center. Their relationship was spontaneous and they worked together in places, times, and durations that best fit their needs.

The successful mentoring characteristic of the relationship being mutually beneficial was one of the reasons that Chris and Jim joined the study in the first place. Chris stated, “I saw this as a way to learn crucial skills and to increase my effectiveness as an instructor at the university” (FJ: 6/26/96). Another benefit of this experience for Chris was, “Every skill I learned, I had an immediate use to
apply that skill!” (FJ: 6/26/96). As for Jim, he joined this mentoring project to
gain experience in helping others acquire technology experience and that is what
he found. He said, “It was a tremendous experience ‘teaching’ a teacher. I think
that when I work with faculty in my own school district, I will have a lot of
experience to draw upon” (MJ: 5/7/96). Overall their experience together and the
development of a lifelong friendship seemed to be Chris and Jim’s greatest
benefit. Jim reflected on their final meeting, “Chris talked about how wonderful
the experience was and how much she learned. She felt real good about our
working relationship and even mentioned that she would expect that we would
remain in contact years from now. I would agree. I think we developed a good
working and personal relationship (MJ: 5/7/96). The mentoring experience was
mutually beneficial for Chris and Jim.

Mutual respect and trust was the next characteristic that Chris and Jim
exhibited. Chris and Jim definitely respected and trusted each other. Chris
reported in her journal, “I feel thrilled. I am certain that the
mentoring/collaboration process is worth the effort. I know that there is
someone with whom I can discuss my mundane questions, someone with
whom I can admit and/or figure out the gaps in my understanding, and feel
encouraged to quest for more. That rather typifies optimal teaching and learning
to me” (FJ: 1/23/96). Another example of trust was found in Chris’s explanation
of Jim’s role as an opener of doors, “I did not know some applications or skills
and didn’t KNOW that I didn’t know it! Jim would make suggestions which I
accepted and was able to learn so much that I didn’t realize existed before” (FJ:
A testament to Chris and Jim's respect and trust for each other was that their mentoring relationship was the beginning of a life-long friendship.

Mutual participation was another key to the success of Chris and Jim's mentoring experience. Both Chris and Jim put forth the energy needed to make their relationship a success. They were expected to meet for an hour each week, yet on many occasions they met for more than two hours. In addition, they sometimes met a couple times a week. Between sessions each worked on their respective "assignments". Here Chris is relaying to Jim her day's accomplishments, "I have installed the Mac TCP on my computer as you indicated...BUT I STILL don't have a connection. What do I do next??" (E: 2/7/96). While the following is an example of how Jim kept them both working between sessions, "Good News!...the lesson is not over. I will try to provide just a brief overview of what we did. Hopefully it helps....When working with Word 6.0 you do a save as and then save it as a 5.1 document" (E: 1/23/96). Jim felt that their motivation and initiative was a key to the overall success of their relationship. He said, "We were both motivated and we both took a lot of initiative with this mentorship" (MJ: 6/26/96). Both Chris and Jim put extra effort into making this project meaningful and successful for each other.

Overall Chris and Jim had a very successful mentoring experience. Chris mentioned authenticity and applicability as two keys to their success. She said, "We both saw our work as meaningful—to be continued in life. I think he [Jim] was happy with his role as mentor and will apply it to another teaching role someday" (FJ: 6/26/96). As for applicability, Chris was able to put every skill to
immediate and relevant use (FJ: 6/26/96). Jim felt that commitment, motivation, initiative, and their relationship were the keys to their success. He said, “We were both committed to the project... We would occasionally work an extra half hour or hour, depending on our schedules” (MJ: 11/26/96). Both Chris and Jim were motivated and displayed initiative in their partnership through their preparation for each meeting and their work between meetings (MJ: 11/26/96). Speaking about initiative Chris said, “I think the time and energy spent in meetings and working between meetings was important” (FJ: 6/26/96). As for their relationship, Jim said, “Going into the project Chris and I had a good professional relationship. As the project evolved, we began to develop more of a friendship, and... we were always supportive of each other” (MJ: 11/26/96). As a result of their initiative, motivation, and commitment to the project and each other, as well as the authenticity and applicability of their work, Chris and Jim had a highly successful mentoring experience.

Guiding Questions

While understanding the connections between this study and previous research provides greater insight into the mentoring process, further discussion is necessary to address the guiding questions specific to this study.

Guiding Question 1

What were the faculty members’ views of technology prior to mentoring, and how does the mentoring experience influence those views? To provide a base line for this study faculty members were asked to describe how they felt about using technology in their courses. Dr. Crawford’s view of technology did
not seem to change at all. During the project she made self-deprecating comments about not feeling a need for technology in her courses, and not really knowing what she wanted to gain from this mentoring experience. Her comments made it seem like she was trying to simply gain some knowledge for her personal use of computer technology. In addition, Dr. Crawford seemed to be participating because so many of her peers had participated in the past.

In case two, Chris’s views of technology remained positive, yet her excitement over the possibilities of technology in her courses and the lives of her students grew immensely. One change Chris mentioned was that she is now inviting her students to use technology more (FI: 5/23/96). The change came about because of her increased confidence in using and troubleshooting technology that she gained from the mentoring project. Based on this study, change may be more likely to occur if the faculty member perceives the experience of having a mentor as a chance to grow professionally.

**Guiding Question 2**

How effective is mentoring as a method for assisting faculty members to integrate technology into their courses? Does it break down barriers such as time, access, and knowledge of technologies available? Both Dr. Crawford and Chris had an idea of ways they wanted to integrate technology into their courses. In Dr. Crawford’s case, Richard provided her with the background knowledge and experience necessary to teach the necessary skills to her class. Could she have done this without Richard’s help? Probably, but Richard’s presence as a mentor seemed to provide an impetus to actually carry through on her idea. As
for Chris, she already had different technology activities that she did in her courses. However, with Jim’s insight from having taken her class and his knowledge and ideas for technology integration, Chris was able to make her technology activities more compelling and applicable for her students. In conclusion, I believe that having a mentor can be an effective method for assisting faculty members to integrate technology into their courses.

Does mentoring break down barriers such as time, access, and knowledge of what technologies can offer? In terms of access probably not, except in a case where the mentor can inform a faculty member of where one might find equipment that is needed. The mentoring process does not provide more time. However, it does prompt the faculty to set aside time in their schedules to work with their mentor. For example, Chris’s experience was very authentic and applicable so she and Jim occasionally spent extra time together (MJ: 11/26/96). By setting aside time to participate in a project of this nature, the faculty member is in essence solving the lack of time issue.

As far as knowledge of what technologies can offer, having a mentor can help. Dr. Crawford, even though she did not remember her initial goals, learned what the XapShot camera, flatbed scanner, WWW, and e-mail could do for her. The next step for her would be to work on compelling uses of these technologies for her courses, but she did learn how to use them and what they could do for her. Chris, at the beginning of the mentoring process admitted that she did not know what she did not know. Chris said, “I did not know some applications or skills and didn’t KNOW that I didn’t know it! Jim would make suggestions
which I accepted and was able to learn so much that I didn’t realize before” (FJ: 6/26/96). In this study, having a mentor helped two faculty members gain knowledge of what different technologies could do for them and their students.

Guiding Question 3

To what level does the faculty member integrate technology into his or her courses? The Office of Technology Assessment (1995) divided teaching with and about technology into three categories: discussion/demonstration, technology practice, and professional practice (for further discussion see Chapter Two). These levels of integration guide the following discussion that evaluates each faculty member’s level of integration.

When Dr. Crawford taught the Computers in Reading and Language Arts course earlier in her career, she was integrating technology at the technology practice level. During that time Dr. Crawford had students exploring different types of software: computer assisted instruction (CAI), drill and practice, simulations, and assistive writing programs (FJ: 2/14/96). Most recently, the only technology that Dr. Crawford integrated was requiring that assignments were to be word processed. During her mentoring relationship with Richard, Dr. Crawford maintained the requirement of word processed assignments. The only change came when Dr. Crawford wanted her preservice teachers to use a digital camera to take pictures with elementary students and place the pictures into a word processed document about which the elementary students would write. The activity reached the level of professional practice, where preservice teachers observe or engage in teaching with technology. However, from what was
observed and reported, this was the only technology integration that took place all semester, and its level of significance could be questioned, because the activity seemed to be using technology for technology's sake rather than a compelling use of technology at the professional practice level. Richard agreed, "The kids are just using it to take a picture. You can go take a picture out of a magazine if you wanted to" have a picture to write about (MI: 2/9/96).

Overall, Dr. Crawford's level of integration increased slightly, but not significantly. One technology integration activity per semester does not give preservice teachers the experience with technology they need.

Chris's level of technology integration has been that of technology practice, where preservice teachers examine and try different technology. In recent years, Chris would take her students on technology field trips complete with permission slips that needed to be signed (Fl: 1/24/96). She would divide the class into groups, and the groups would rotate through stations learning about laser disks, interactive software programs, Internet searches, and different social studies related CDs. Now Chris allows students to individualize their field trips. Instead of making students go over technology with which they are already familiar, students chose stations and activities that were most beneficial to them. Some students even took the opportunity to develop an alternative technology project to work on, pending Chris's approval. Another change in the field trip was that students were required go beyond evaluating different pieces of software. Students had to choose a piece of software and develop a plan for using it with students (FJ: 3/22/96). This added requirement increased the
sophistication of the technology integration activity. Chris also placed a stronger focus on the Internet search activity by expecting students to use the Internet to find pertinent information as well as lesson plans to use for models in the development of their technology lessons. Another manner in which the level of technology integration was increased in Chris's course was that she started to teach with technology more through PowerPoint presentations. However, this newly learned skill did not stop with Chris. She has shown a number of students how to create presentations for her class, as well as other courses. During the mentoring process, Chris's level of confidence, competence, and technology use increased. Along with that came an increased use of technology in her course at the technology practice level, and the beginning use at the level of professional practice.

Although Case Two with Chris and Jim showed a larger increase in the level and amount of technology integration than Case One with Dr. Crawford and Richard, both mentoring cases demonstrated that mentoring can have a positive impact on the level of technology integration.

Guiding Question 4

What themes emerge from the mentoring process that impact technology integration by college of education faculty? Two primary themes emerged from the study of one on one mentoring of college faculty by college students: mentor and protégé should have similar backgrounds or interests; and the mentoring pair, especially the protégé, should have the desire to learn, and have a clear goal in order to begin a successful mentoring partnership.
The first theme that emerged was that pairing students and faculty with similar backgrounds or interests increased the effectiveness of the mentorship. For Dr. Crawford and Richard, the fact that Richard was not familiar with the area of elementary education or reading and language arts further limited what they were able to accomplish. Richard suggested that future mentoring projects should pair mentors and protégés based on subject area (MJ: 5/5/96). He said, "If I were paired with someone in mathematics or a related field, I would have more suggestions for classroom activities, more ideas about which technology would be most beneficial, and increased motivation to learn or search for new technology in the area...."I think Dr. Crawford would have benefited more by working with someone in her area" (MJ: 5/5/96).

Chris and Jim had similar interests and backgrounds that helped them have a successful mentoring experience. The first was that both Chris and Jim were attracted to this mentoring project because of the experience they could gain. Since they were both looking at the mentoring as a great learning experience, they shared a similar level of commitment, motivation, and initiative. In addition, Jim had taken Chris's social studies methods course a semester earlier which also proved to be beneficial to their relationship. Because of that course, Chris and Jim already knew each other on a professional level so their mentoring relationship was able to develop quickly. With his knowledge of technology and experience with Chris's course, Jim was able to provide Chris with new methods of technology integration and improvements for the current
technology activities. Most of all, Jim knew firsthand what Chris wanted to accomplish in her course and could provide suggestions that met her objectives. Overall, the lack of similar backgrounds or interests can inhibit the growth and level of success of a mentoring relationship. Furthermore, the likelihood of success in a mentoring relationship is increased if the mentor and protégé have similar interests or backgrounds.

The other theme to emerge from this study was that a successful mentoring pair, especially the protégé, should have the desire to learn and have clearly defined goals. In the case of Dr. Crawford and Richard, Dr. Crawford admitted that she really did not have a clear plan of what she wanted to gain from the mentoring experience. Chris, on the other hand, had a plan. She saw this opportunity as a way that she could improve her skills to make her a better teacher and role model for her students. She said, "I took my role seriously as the student because I believe in my professional tenet as an educator that the greatest teacher is a learner" (FJ: 6/26/96). Because of this philosophy Chris realized, "As I was willing to learn, open to ask questions, to make connections to my professional disciplines, I helped him [Jim] teach me more effectively. He knew I needed to know what he had to share and I was willing to accomplish all that I could" (MJ: 6/26/96). Chris had the desire and the goal to become a better technology using teacher. Without the desire or at least a clear goal in mind, a mentoring group is unlikely to find much success.
Recommendations for Future Mentoring Projects

There are two recommendations that I have for future mentoring projects: pair students and faculty members based on similar areas of interest or study; and provide an arena for dialogue between the student mentors. The first recommendation (also discussed in the previous section), pairing students and faculty on the basis of similar areas of interest or study, comes from the frustration encountered by Dr. Crawford and Richard, and the success found by Chris and Jim. The fact that Richard did not have experience or interest in elementary reading and language arts hampered his ability to provide Dr. Crawford with technology integration ideas for her courses. In addition, if Dr. Crawford and Richard would have had a similar area of interest, I believe their professional relationship would have had more growth. On the other hand, Jim, an elementary education major, who had taken a course from Chris, was able to provide Chris with applicable technology integration ideas. The researcher had a similar experience when he mentored a faculty member from whom he took a course (see Thompson, Hanson, & Reinhart, 1996). The experience of having taken a course from the faculty member and having similar interests provided me with a number of technology integration ideas. When pairing students with faculty for a mentoring program one should take into consideration placing students with faculty members that have similar areas of interest or study. By doing so, one increases the chance for a successful mentoring experience for both the student and faculty member.
The second recommendation for future mentoring projects is to provide an arena for dialogue among the student mentors. All of the participants made positive comments about how they enjoyed the interviews. Due to the fact that the teacher-student role is reversed, with faculty members becoming the students and the students becoming the teachers, complexity is inherent in the relationship. The mentors, Richard and Jim, especially enjoyed having someone to talk to about the mentoring process. For Richard, the graduate student, he found the interviews helpful because my questions allowed him to pick up on the things he was or was not doing to help the mentoring process (MI: 5/28/96). In addition, I believe that Richard enjoyed our time in the interviews because he had a chance to share his successes and frustrations in working with Dr. Crawford. Dr. Crawford also picked up on the need for mentors to have a dialogue. She wondered if their mentorship would have been different if she and Richard would have been able to work together in the fall when all of the other faculty and students worked together. She said, "I don't know if that would have been an advantage because then he could have gone back to the class and said, 'Dr. Crawford doesn't really know what she's doing. What would the rest of you suggest I bring to share with her?' " (FI: 5/13/96). I believe it would have been an advantage, because of my experience as a mentor in the Technology and Teacher Education course. During the class sessions we provided support to each other in the form of suggestions and encouragement.

Meanwhile, Jim seemed to enjoy talking about the mentoring experience with me not only for the chance to share successes and frustrations, but also to
continue his evolution as a teacher and learner. Jim said, "You've listened to me every time I wanted to talk. You put up with me! ... Basically, we could get together any time to discuss it [the mentoring]. I think the interviews have always been interesting" (MI: 5/28/96). Since the conclusion of this study I have often wondered how these two mentoring cases would have been different if I would have had Richard and Jim meeting on a regular basis throughout the semester to discuss their mentoring. My feeling is that it may have improved both situations, especially for Richard.

Overall, I feel that it would be in the best interest of future mentoring groups to consider pairing students and faculty members based on similar areas of interest or study, and provide an arena for dialogue between the student mentors. These two recommendations would increase the likelihood of successful mentoring relationships.

Recommendations for Future Research

Creating a mentoring program like the one in this study is a recently developed technique with little research done to improve upon or validate it. The study adds to our understanding of mentoring, offers practical ideas for future research.

Future research should examine the effect of the mentoring over an extended period of time. Do faculty protégés continue to use technology after the mentoring project is over? One could determine how effective mentoring is as a method for assisting faculty to integrate technology into their courses. By taking an extended look at what evolves from the mentoring process, one could
observe how the mentor/protégé relationship continues to develop. A longer study of the mentoring relationship would allow the researcher to make a better determination about whether or not a developmental, multidimensional relationship grew during their time together.

Future research should also examine the roles that the mentor and protégé take on during the mentoring relationship and the impact each role has on the success of the mentoring process. The examination would allow more insight into the dynamics of the mentoring relationship, especially the role reversal that is experienced. Richard noticed the dynamism of his role as mentor and had this to say, "The mentoring role is dynamic. Sometimes you're going to give explicit directions, sometimes you're a guide, sometimes you're a cheerleader or supporter. I mean you take so many different roles it's incredible" (MI: 5/28/96). Understanding the roles experienced in the mentoring relationship is imperative to developing successful mentoring programs.

Another area that future research could address is the effect of a year-long mentoring project. Chris had mentioned that she would have liked to have spent a year working with Jim (MJ: 6/26/96). Would findings from a year-long mentoring program be similar to those of the semester-long program?

The mentoring project is aimed at helping the faculty members gain technology competencies, but the students mentoring may also be impacted in some manner. What impact does the mentoring project have on the mentors? Further research should seek to learn what the student mentors gain from the mentoring experience.
Many colleges of education do not have a graduate program from which to draw mentors for faculty, thus more research needs to be conducted on the use of undergraduates as mentors for faculty. This project involved using an undergraduate to mentor a faculty member, but it is only one case. Included in this research could be an examination of what traits an undergraduate needs in order to be a successful mentor.

A final suggestion would be to provide student mentors with an arena to gather and discuss their mentoring relationships and observe these group sessions for more data on the mentoring process. By providing the arena for discussion and support, the likelihood of success in the mentoring relationships could be increased. In addition, the group session would be an opportunity to gain further insight into what each mentor is experiencing during the mentoring process and what it takes to be a successful mentor.

Graduating preservice teachers should be able to operate and apply computer technologies to classroom instruction (Diem, 1989), so teacher education institutions should take the lead in preparing teachers to use computer technology in the classrooms. However, not all education faculty have the skills necessary to develop competent computer using educators, they too need assistance in their growth. One method to help education faculty is one-on-one mentoring by college students to help faculty develop the basic competencies and skills to become model technology using teachers. The small body of research in the area of college students mentoring faculty on the use of technology shows promise, but more research must be done to improve and
validate the process. Mentoring has the potential to improve college faculty's use and modeling for future teachers. If successful, preservice courses could potentially improve the amount and effectiveness of computer use at the K-12 level.
APPENDIX A

ETHICS AND CONSENT PROTOCOL

Technology Mentoring Research Project: Consent Form
A Case Study by Paul Reinhart

The purpose of this research is to describe the mentoring process between a faculty member and a student. I will also be looking for themes that emerge that will help improve the level of integration of computer technology by faculty into their courses.

As a participant in this case study, you will be interviewed, observed, and asked to record thoughts and reactions in journal. The information gained from the interviews, observations, and journal will be used in the written report of the case study. The following are the terms of participating in the case study.

I want you to get together once a week for about an hour. I understand situations arise that interfere with meeting each week, but meet as many weeks as possible until the end of the semester.

Interviews will last no longer than one hour. The observation will take place during one of your regular weekly meeting times. The estimated time for interviews, journaling, and weekly mentoring meetings will be between 20-27 hours for the semester.

Real names will not be used during data collection nor in the written case study.

The data collected during this study will be owned by the researcher and participant. Audio tapes of interviews and observations will be destroyed at the conclusion of the study.

The participant has the right to withdraw from the study at anytime, and the data will be returned to the participant upon request.

Any time that I have questions about participating in this study, I may contact the following people:

Paul Reinhart, Researcher
294-0228 (w)
264-0306 (h)

Dr. Ann Thompson, Major Professor
294-5287

Signature of Participant __________________________ Date ____________________

Signature of Researcher __________________________ Date ____________________
MEMO TO PARTICIPANTS

Date: 1/10/96
To: Prospective Technology Case Study Participants
From: Paul Reinhart

RE: Expectations of Potential Participants

The following is a list of things I would ask of you and provide you if you agree to participate in my case study.

I will want to interview you at the beginning, middle, and end of the semester.

I would ask that you try to meet with your mentoring partner once a week.

I will want you to keep a journal of your thoughts, feelings, actions, and reactions. The journal would be the key data source for data in my study, and I would like to collect it once every two to three weeks.

I will want to come and observe you and your partner working together one, possibly two times.

Your identity will remain anonymous

I will provide you with guidelines for your journal.

I will be on time to the meetings we have.

Thanks for considering the possibility of participating in my Master's Thesis study.

Paul
## APPENDIX C

### DATA COLLECTION DATES

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<th>Case #2: Chris and Jim</th>
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APPENDIX D
INTERVIEW QUESTIONS

Initial Interview Questions for Faculty Participants

1. Degrees earned:
2. How was computer technology incorporated into the coursework for your degrees?
3. Number of years teaching/Years teaching in teacher education program:
4. Subject Area/Courses taught:
5. How would you characterize your teaching?
6. What is your philosophy on teaching?
7. How do you feel about the use of computer technology in preservice teachers’ coursework?
8. With the different experiences teaching have you used computers in the education of your students?
9. How have you used computers in those classes/activities?
10. How has computer technology changed your teaching?
11. What have been the obstacles to your use of computer technology?
12. What has assisted you in your use of computer technology?
13. What has prompted you to want to learn more about computer technology?
14. What do you hope to gain from this experience?
15. What are your goals for this mentoring experience?
16. What was the deciding factor in joining this study?

Initial Interview Questions for Student Participants

1. What degrees do you currently hold or are you working toward?
2. What role should computer technology should play in preservice teachers’ education, if any?
3. How has computer technology been incorporated into your coursework?
4. What strengths do you possess that will help make this a positive experience for your faculty protégé?
5. What concerns do you have about the mentoring process?
6. What do you hope to gain from this experience?
7. What was the deciding factor in joining this study?

Midterm Faculty Interview Questions

1. How is the mentoring process going?
2. What have you been doing in your sessions with your mentor?
3. Describe a typical mentoring session.
4. What have you done with your classes that you learned from your mentor?
5. What was your instructional objective?
6. How did the class go? What did you learn from the experience?

Midterm Student Interview Questions

1) How is the mentoring process going?
2) What have you been doing in your sessions with your protégé?
3. Describe a typical mentoring session.
3) What have you taught your protégé that they have used with their classes?
4) What was the instructional objective?
5) How did the class go? What was learned from the experience?

Final Interview Questions for Faculty Interview

1. Were you able to accomplish your goals for the semester? If not, why?
2. What role did having a personal mentor play in the attainment of your goals?
3. How do you feel about using computer technology in your courses?
4. Are you planning to use computer technology in future courses? How?
5. Has the mentoring experience helped overcome obstacles in your use of computer technology? How?
6. How have your experiences this semester affected your perceptions of what role should computer technology should play in preservice teachers' education, if any?
7. Did using computer technology change the way you taught your courses?
   How?
8. What suggestions do you have for future mentoring experiences such as this?
9. Comments on this mentoring experience.

**Final Interview Questions for Student Interview**
1. Were you able to accomplish the goals for the semester? If not, why?
2. What affect did your role have on the attainment of the goals?
3. How did this mentoring experience affect your protégé’s view of computer technology’s role in preservice teacher courses?
4. What are the strengths and weaknesses of a mentoring experience in helping faculty members integrate computer technology into their courses?
5. What did you gain from this experience?
6. What suggestions do you have for future mentoring experiences such as this?
7. Comments on this mentoring experience.
To: Chris
From: Jim
Subject: the lesson is not over :)
Date: 1/23/96

Good News! ...the lesson is not over. I will try to provide just a brief overview of what we did. Hopefully it helps.
Your Microsoft Office programs, Word, PowerPoint, Excel, and Works can be opened from the icon in the top right hand corner of the screen. When you are trying to run Netscape, quit other applications.
When working with Word 6.0 you do a SAVE AS and then save it as a 5.1 document. All the computers in the labs have 5.1. (Hopefully we will get 6.0 soon!)
When working with Netscape you may click and hold while your cursor is on a graphic and you can save it or copy it. Then you can put it in a document. An endless supply of clip art!
Most of the menu bars are self-explanatory...don't be afraid to try something. You click “open” to type in an address you know. “Net search” will take you to the search engines. We used WebCrawler, which is a favorite of mine. Try the others to see what you like. All search engines are slightly different. It is kinda like accessing 15 different libraries....you will have different methods of searching and will have different search queries. (sp?)
You only have to click once on the colored text on Netscape. The colored text is called “hypertext” or “hot text” or “hyperlink”.
We did not get far with QuickMail. But you can drag names into the right hand column to send something to a lot of people. We will work on putting together directories next time.
I can’t think of anything else right now. And I need to get ready for class. I wouldn’t want to be late for my 8 o’clock class!
I’ll stop in to make an appointment sometime today.

Jim
To: Jim
From: Chris
Subject: Chris
Date: 2/1/96

Jim

Thanks for your help yesterday. You make such a difference. Did you know that Dr. T refers to mentors as "LIVEWARE?" Anyway, I am learning more about hardware and software from you than I did from any manual and having never actually had a course in any tech area, I'm glad I've advance from the Apple IIe which was my first computer! I feel so excited about hooking up Internet at home. I'm about to log into vincent to get hooked to a ppp acct. (I phone the # you provided and instructions were given)....Assuming that we'll be up and running by MON, you'll need directions to my house... which is north of campus...south side of the street w/grn door.

See you Fri. then Mon. THANKS for EVERYTHING

Chris
REFERENCES


