## AN EXPLORATORY STUDY OF FIRST YEAR ELEMENTARY TEACHERS' UTILIZATION OF TECHNOLOGY

## DISSERTATION

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By

Ilknur Kelceoglu, M.A.

\* \* \* \* \*

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Dissertation Committee:

Dr. Terri Bucci, Adviser

Dr. Karen Irving

Dr. Richard Voithofer

Approved by

Adviser College of Education Copyright by Ilknur Kelceoglu 2006

## ABSTRACT

The purpose of this study was to understand how personal and institutional factors influence the ways first year elementary teachers utilize technology, specifically computers and the Internet, in their first years of teaching from an Activity Theory perspective. This study also addressed how first year elementary teachers' personal and institutional factors are related to and interacts with each other in the context of first year teaching activity.

The research data were collected via multiple data collection methods including participant observation, interviews, and document collections to understand the cases in their activity contexts and the meanings in those specific contexts. The data were collected for 14 weeks before the academic year ended in June, 2005. The data analysis was done according to the guidelines of Constructivist Grounded Theory as well as general qualitative data analysis guidelines suggested in the qualitative research literature.

The findings suggest that first year teaching activity is a systemic whole in which all of the elements of the activity have connections and relationships through which the elements of the first year teaching activity are constructed, negotiated, and repositioned in the context of the activity. Therefore, the personal and institutional factors affecting first year elementary teachers' utilization of technology are related to each other and influence each other in the context of first year teaching activity.

The findings of this study have theoretical implications for Activity Theory as a framework for studying teacher education topics in their contexts as well as practical implications for preservice teacher education programs and teacher induction programs. The findings also suggest that further studies are needed for understanding the phenomenon in-depth.

Dedicated to all women with dreams

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# VITA

June 17, 1974	Born – Bursa, Turkey
1998	B.A., Communication, Anadolu University Eskisehir, Turkey
1998 - 1999	Instructor, Anadolu University Eskisehir, Turkey
2001 - 2004	Graduate Associate, Eisenhower National Clearinghouse, The Ohio State University, Columbus, OH
2002	M.A., Education, The Ohio State University, Columbus, OH
2005 – 2006	Graduate Associate, Technology Enhanced Learning and Research, The Ohio State University, Columbus, OH
Present	eLearning Consultant, Technology Enhanced Learning and Research, The Ohio State University, Columbus, OH

## FIELDS OF STUDY

Major Field:	Education (Teaching and Learning)
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## **CHAPTER 1**

## **INTRODUCTION**

Recently, there has been a growing interest in technology in teacher education. As a result, the field of Instructional Technology and Teacher Education (ITTE) has emerged as a discipline in teacher education (Willis, Thompson, & Sadera, 1999). Scholars argue that research on technology and education reveals a need for training teachers on the use of technology in education. Although there has been a general agreement of the need for training teachers to use technology in education, there has been a little agreement on what teachers should be taught or how they should be prepared (Willis & Mehlinger, 1996).

Most of the literature available on technology and teacher education proves that teacher education students are not being adequately taught to employ technology in their teaching, and teacher education students feel that their technology experiences in their teacher education programs are insufficient (Willis & Mehlinger, 1996). Furthermore, O'Dwyer, Russell, and Bebell, (2004) argue that there are disparities among the findings in the studies of preservice and inservice teachers' technology use due to a lack of consensus on what counts as being a technology-using teacher. With various kinds of technology uses emerging continuously, the researchers state that identifying the concept of being a technology-using teacher becomes even more problematic (O'Dwyer et al., 2004).

In 1994, The Office of Technology Assessment (OTA) funded a study to assess the current condition of technology in teacher education (U.S. Congress, 1995; Willis & Mehlinger, 1996). The study involved surveys of teacher educators and recent graduates of teacher education as well as in-depth interviews of teacher education faculty and K-12 school administrators. Many faculty respondents to the survey indicated that the faculty's limited technology knowledge and skills are some of the greatest barriers to integrating technology into their teacher education programs. Moreover, recent graduates of teacher education programs indicated that they had limited technology integration experiences in their programs (U.S. Congress, 1995; Willis & Mehlinger, 1996). In addition to lack of faculty modeling and limited experience with technology, most of the recent graduates reported that use of technology was not a requirement for student teaching in their field placements. While more than half of the recent graduates stated that they were not prepared or poorly prepared to use technology in their teaching, only one fifth of the graduates said that they felt adequately prepared (U.S. Congress, 1995; Willis & Mehlinger, 1996).

In 1998, the Milken Exchange on Educational Technology funded another survey conducted by ISTE, which concentrated on the use of technology in teacher education. Like the OTA survey findings, the results of this survey suggested that teacher education programs usually do not offer sufficient experiences in preparing preservice teachers to employ technology in their classrooms (Moursund & Bielefeldt, 1999; Willis et al., 1999). The Milken Exchange on Educational Technology study recommended that preservice teachers need to complete a well-designed sequence of courses and experiences that will assist their understanding and utilization of technology in their teaching (Moursund & Bielefeldt, 1999). Furthermore, the findings of the study suggested that preservice teachers need to be provided with opportunities to apply technology throughout their field experiences under qualified supervisors or mentor teachers (Moursund & Bielefeldt, 1999; Willis et al., 1999).

In 2002, Darling-Hammond, Chung, and Frelow conducted a survey of 3,000 beginning teachers in New York City on the subject of their preparation for teaching, sense of self-efficacy, and future plans to remain in the profession. They found that teachers who have teaching certification felt better prepared than teachers without certification in all aspects of teaching, except being prepared to teach with technology. Neither certified nor non-certified teachers thought that they were well trained to use technology in their teaching (Darling-Hammond et al., 2002).

In a recent study, Wang, Ertmer, and Newby (2004) studied the effects of preservice teachers' "vicarious learning" and "goal setting" experiences on their selfefficacy beliefs for integrating technology in their teaching (p. 231). The researchers divided participants into eighteen sections and assigned one of four conditions for each section. The four conditions included being exposed to vicarious experiences only, being assigned to specific goals only, experiencing both vicarious learning experiences and specific goal setting, and no treatment. The researchers found that there were significant

effects of vicarious learning experiences and goal setting on preservice teachers' feelings of self-efficacy for technology integration. The findings of the study indicated that preservice teachers, who were exposed to both vicarious learning experiences and goal setting practices, had higher growth in their judgments of self-efficacy for integrating technology into the classroom.

## **Purpose of the Study**

Although considerable research has been devoted to preservice and inservice teachers' attitudes toward technology, the integration of technology into teacher education programs, and barriers to integrate technology into the classroom, less attention has been paid to qualitative studies of teachers' utilization of technology in their first years of teaching. The purpose of this study is to understand how personal and institutional factors influence the ways first year elementary teachers utilize technology, specifically computers and the Internet, in their first years of teaching from an Activity Theory perspective. This study addresses the gap in the literature by employing a collective case study method to explore the phenomenon.

This study focuses on the personal and institutional factors affecting first year elementary teachers' utilization of technology in their first years of teaching. Providing thick descriptions, the study discusses how these personal and institutional factors affect the ways first year elementary teachers use technology in the classroom. Furthermore, this study also addresses how first year elementary teachers' personal and institutional factors are related to and interact with each other in the context of first year teaching activity.

### **Research Questions**

The overarching research question that guided this study was:

How do personal and institutional factors influence the ways first year elementary teachers utilize technology in their teaching? To understand the ways personal and institutional factors affect first year elementary teachers' utilization of technology, the following subordinate questions were addressed during the study:

- What are the personal factors affecting first year teachers' use of technology in their teaching?
- How do these personal factors influence first year teachers' utilization of technology in their teaching?
- What are the institutional factors affecting first year teachers use of technology in their teaching?
- How do these institutional factors influence first year teachers' utilization of technology in their teaching?
  - a) How do first year teachers' technology experiences and instruction in their teacher preparation program influence their use of technology in the first year of their career?
  - b) How do technical and pedagogical support and professional development provided in the employment contexts, school district and school, affect first year teachers' uses of technology in their teaching.

### **Theoretical Framework**

#### Introduction

I conducted and interpreted this study in the context of Activity Theory framework to understand how first year elementary teachers' use of technology is influenced by personal and institutional factors. To grasp the nature of first year teachers' use of technological tools within their first year teaching activity, Activity Theory was used as a tool for understanding and discussing first year elementary teachers' activities (activities, actions, and operations) in their specific contexts.

Activity theory has its roots in the Soviet cultural-historical psychology work of Vygotsky, Leont'ev, and Luria (Kuutti, 1995, Nardi, Packer & Goicoechea, 2000). In their work, Vygotsky and his colleagues formulated "the concept of artifact-mediated and object-oriented action" (University of Helsinki, Center for Activity Theory and Developmental Work Research, 2006). Later, Leont'ev, with his colleagues, worked on "the 'activity approach' in psychology" (Zinchenko, 1995, p.38) which focused on the object oriented human activity in its specific context (Kuutti, 1995).

More contemporary interpretations of Activity Theory emerged as "a multidisciplinary and international community of scientific thought" focusing on the understanding of human activity (Kuutti, 1995, p.23). One of the contemporary interpreters of original Activity Theory ideas, Engeström, created the Activity System Model that is based on the mutual relationships among the elements of an activity (Kuutti, 1995). I used Engeström's Activity System Model to present and discuss the findings of this study. I conducted and discussed this study in the general framework of Activity Theory that includes both earlier and contemporary interpretations of Activity Theory as they together provide better tools for understanding human activities in specific contexts.

### Activity Theory

Activity Theory is a "philosophical and cross-disciplinary framework for studying different forms of human practices as development processes, both individual and social levels interlinked at the same time" (Kuutti, 1995, p. 23). Many scholars argue that Activity Theory is not a theory with a capital "T," but a "set of basic principles" that form a general conceptual framework for understanding human activity in the context (Jonassen & Rohrer-Murphy, 1999; Kuutti, 1995; Kaptelinin & Nardi, 1997). Jonassen and Rohrer-Murphy (1999) describe Activity Theory as "a socio-cultural and a socio-historical lens" through which researchers analyze human activities within their "environmental contexts" (p.62).

#### **Basic Principles of Activity Theory**

Basic principles of Activity Theory include object orientedness, the hierarchical structure of activity, internalization/externalization, tool mediation, and development (Kaptelinin & Nardi, 1997; Kuutti, 1995). In the context of this study, I will mainly focus on the object orientedness, hierarchical structure of activity, internalization/externalization, and tool mediation as the study was informed by these four key principles of Activity Theory.

Object Orientedness: All human activity is "directed toward something that objectively exists in the world, that is, an object" (Kaptelinin, Nardi, & Macaulay, 1999,

p. 28). The principle of object orientedness focuses on the social and cultural environment through which human beings interact. The activity theory accepts that social and cultural assets of the environments are as objective and scientific as physical or biological assets. These social and cultural assets "exist" in an environment "regardless of our feelings about them" and they affect the ways people act in specific contexts (Kaptelinin, 1995, p. 55).

Hierarchical Structure of Activity: In Activity Theory the basic unit of analysis is the human activity that is situated in a context and hierarchical level of an activity including activity, action, and operation (Kuutti, 1995). Activity is a long-term, multistep, and motive oriented formation that includes both individual and cooperative actions. For example, first year teaching is an activity that is interrelated with other activities in the context such as teacher preparation activity, school district management activity, and school management activity. The first year teaching activity is affected by and affects these activities. Action is a short-term, immediate, and goal-oriented formation that can belong to different activities. For instance, a first year teacher's planning for a technology-enhanced instruction is an action in the context of first year teaching activity. An activity can become an action and an action can become an activity depending on the subject and the object of the activity. An action is implemented through a series of automatic operations (Kaptelinin & Nardi, 1997). Operation depends on the conditions under which an action is being performed. Operations with time and practice can become unconscious and routine. For example, a first year teacher's use of an email system for checking her district and school email can be an example of an operation that assists in

implementing first year teaching actions. Actions can become operations as the subjects accustom to them (Kuutti, 1995). The Figure 1.1 provides a visual presentation of the hierarchical structure of an activity within the context of first year teaching activity (Kuutti, 1995).



Figure 1.1: Hierarchical levels of an activity and examples of activity, action, and operation in the context of first year teaching experience.

Internalization/Externalization: Internalization means that an individual transforms an external operation into an internal one as a result of social interaction (Vygotsky, 1978). Externalization is the re-construction of this internal operation into an external one (Kaptelinin & Nardi, 1997). Thus, internal and external operations transform each other and cannot be grasped if they are studied separately from each other (Kaptelinin & Nardi, 1997). An activity has both internal and external aspects (Kuutti, 1995). Looking at the internalized and externalized operations at the same time helps to understand how a first year teacher internalizes her external operations into internal ones and externalizes her internal operations into external ones within the context of the first year teaching activity. Therefore, a first year teacher's internal decision to utilize a tool, a computer, in her first year teaching cannot be analyzed disconnected from the external factors affecting this decision and her interaction with these factors.

Tool Mediation: Tool mediation plays an essential role in an object-directed activity. Human beings, subjects, mediate their object-oriented activities by utilizing tools available in the contexts of their activities. Understanding specific uses of tools within an activity helps understanding the nature of the activity in that specific context (Vygotsky, 1978). Tools utilized in a first year teaching activity can be physical, such as computers, textbook, and overhead projector, and psychological, such as verbal clues, visual signs, and language.

#### Activity System Model

In the following section, I will present and explain the Activity System Model that I used as a tool for understanding and discussing the personal and institutional factors affecting first year teachers' use of technology in their first year teaching. A common reformulation of Vygotsky's artifact-mediated and object-oriented action model includes three main elements: subject, object, and mediating artifact (see Figure 1.2). This model indicates that cultural and historical tools and signs mediate the basic relationship between a subject, human agent, and object.



Figure 1.2: A common reformulation of Vygotsky's model of mediated action (University of Helsinki, Center for Activity Theory and Developmental Work Research, 2006)

The Activity Systems Model (see Figure 1.3), however, presents the possibility of analyzing of large number relationships within the triangular structure of an activity as a "systemic whole" (Engeström, 1987, p. 78).



Figure 1.3: The structure of human activity (Engeström, 1987, p. 78)

In the structure of human activity, subject is the individual or actor "the point of view in the analysis," object is the "raw material" or "problem space" in which the activity is directed, instruments are external and internal mediating tools that can be physical or symbolic, community is the "multiple individuals" sharing "the same general object," division of labor is both "the division of tasks between community members" and "the vertical division of power and status" among community members, and rules are "the explicit and implicit regulations, norms, and conventions that constrain actions and interactions within the activity system" (<u>University of Helsinki, Center for Activity</u> <u>Theory and Developmental Work Research, 2006</u>). An activity's motive is to transform the object into an outcome that may result in both intended and unintended outcomes (Kuutti, 1995). Table 1.1 presents the elements of first year teaching activity in the context of this study.

Elements	First year Teaching Activity
Subject	First year teacher
Object	Students with their learning needs
Instruments	Educational tools that are both physical and symbolic
Community	District administrators and staff, school administrators and staff, and alassroom
	stall, and classicolli
Division of Labor	Tasks and decision making powers distributed among first
	year teacher and her teaching team, principal, and district
	administrators
Rules	Explicit rules set by federal, state, school district, and school
	administration and implicit rules set by the community
	members as a part of general work culture
Outcome	Student learning and development (intended) as well as first
	year professional development (unintended)

Table 1.1: The elements of first year teaching activity

An activity is a systemic whole in which all the elements of the activity have connections to other elements in the activity (Engeström, 1987). In an activity, "the relationship between subject and object is mediated by 'tools,' the relationship between subject and community is mediated by the 'rules,' and the relationship between object and community is mediated by the 'division of labor'" (Kuutti, 1995). The relationships among the elements of an activity are continually constructed, renegotiated, and moved within the activity system. Thus, an element that originally appears as an instrument can morph into an object; afterward it can transform into an outcome (<u>University of Helsinki</u>, Center for Activity Theory and Developmental Work Research, 2006).

Additionally, an activity system acts together with other activity systems. For instance, a first-year teacher can be an outcome of a teacher preparation activity system and a subject of a first year teaching activity system. Elements of an activity can influence or be influenced by the other activity systems (Engeström, 1987). Since an activity is influenced by the other activities in the context, "contradictions" arise (Kuutti, 1995). Engeström (1987) defined and explained four levels of contradictions within the human activity system. "Primary inner contradiction (double nature)" occurs *within* an element of an activity; "secondary contradictions" arise *between* elements of an activity; "tertiary contradictions" take place *between* "the object/motive of the dominant form of the central activity; and "quaternary contradictions" occurs *between* an activity and neighboring activities (p. 72). Engeström (1987) addressed that contradictions of an activity system are "inevitable features … [and] the principle of its self movement" (p.

73). This entails new forms of activity surface as a solution to the earlier activity form.

Table 1.2 presents the four levels of contradictions within the activity system (1987, p.

72) and examples of these levels of contradictions in terms of first year teaching activity.

Levels	Contradictions Within the Activity System	Contradictions Within the First Year Teaching Activity
Level 1	Primary inner contradiction (double nature) within each constituent component of the central activity.	In a first year teaching activity, a first year teacher's object is student learning and at the same time earning money to make a living. The double nature of the object may cause inner contradiction within a first year teaching activity.
Level 2	Secondary contradictions between the constituents of the central activity.	A first year teacher's (subject) available tools and strategies (instruments) for classroom management may not comply with the complex needs of students (object).
Level 3	Tertiary contradictions between the object/motive of the dominant form of the central activity and the object/motive of a culturally more advanced form of the central activity.	School and district administrators (community) demand school teachers to implement a new literacy collaborative approach (instrument) that requires new partnerships (division of labor) for improving literacy education. This approach may be foreign to veteran teachers and familiar to a first year teacher (subject) who studied in a literacy collaborative program. The new literacy collaborative approach may be implemented, but it may be refused within the old form activity.
Level 4	Quaternary contradictions between the central activity and its neighbor activities	A first year teacher (subject) who works at a school valuing individual practice takes a professional development course (neighboring activity) on team teaching and scaffolding.

Table 1.2: Four levels of contradictions within the activity system and within the first year teaching activity system (Engeström, 1987, p. 72)

Since first year teaching activities are situated in their contexts and an activity is "the minimal meaningful context" for understanding first year teachers' individual actions (Kuutti, 1995, p. 25), I employed Activity Theory as a tool for exploring first year teachers' activities embedded in their social contexts. I also used the levels of contradictions within the activity system as tools for explaining how personal and institutional factors affect each other during the activity of first year teaching with technology.

#### **Importance of the Study**

The study contributes to the field of instructional technology and teacher education in terms of its significance for theory, practice, and policy. This study fills the gap in the research literature on first year elementary teachers' utilization of technology by providing insights into the personal and institutional factors influencing first year elementary teachers' use of technology in their teaching. Therefore, this study may enlighten researchers, teacher educators, and administrators on how personal and institutional factors affect utilization of technology in the actual classroom settings. In addition to the current research literature, this study also illustrates how Activity Theory can be used as a framework for studying first year teachers' teaching activities and as a model for explaining complex relationships between these activities simultaneously occurring in the context of first year teaching. Hence, the study may guide researchers and teacher educators in their endeavors to explore and understand first year teachers' experiences in their specific contexts. Furthermore, this study contributes to the preservice teacher education practice by providing in-depth descriptions of how first year teachers' technology experiences and instruction in their preservice teacher education program influence their use of technology during their first year in the teaching career. Thus, this study may offer practical information for teacher educators who are planning to and are involved with technology integration activities in their preservice teacher education programs. Additionally, the study contributes to the beginning teacher support and teacher education practices by presenting detailed accounts of how technological and pedagogical support and professional development provided in the school districts and schools influence first year teachers' utilization of technology in the classroom. Therefore, this study may provide guidance for school district and school administrators and teacher educators in their beginning teacher support program planning and professional development provides.

Finally, this study is also significant in terms of policy. Considering grants have been implemented and studies have been funded since the 1990s, the policy makers have also had a growing interest in technology and teacher education. This study may enlighten the policy makers and school administrators by providing in-depth information on the first year teachers' technology experiences and how these experiences are shaped by policies and rules in their teaching environments.

### **Limitations of the Study**

The researcher of the study acknowledges that there are several limitations of this study. The limitations of the study originate from the research's design and the researcher (Marshall & Rossman, 1999). The first limitation is that the small number of participants selected for the study limits the ability of the researcher to generalize the findings to other first year teachers in different contexts. I utilized the collective case study method for exploring first year elementary teachers' utilization of technology in their first years of teaching. Because of the nature of the collective case study method, the findings and discussions are tentative and may not be generalized to other cases or settings. However, I provided detailed descriptions of the cases and settings allowing the reader to understand the research context and apply the findings to other similar contexts.

The second limitation is that I brought my own biases to the study during data gathering and data analysis by participating in the research settings and interacting with the participants. However, to establish trustworthiness, I employed persistent participant observations and clarified my own biases and subjectivity (Glesne, 1998).
# **CHAPTER 2**

# LITERATURE REVIEW

In light of current research, many scholars and teacher educators have focused on the study of technology integration into teacher education programs including various approaches for technology integration and the issues of student attitudes toward technology integration. Considerable research has been devoted to the integration of technology into teacher education programs, preservice teachers' attitudes toward technology, and barriers to integrate technology; however, less attention has been paid to recent graduates' utilization of technology in their first few years of teaching.

This chapter reviews the current research in technology and teacher education in order to identify the personal and institutional factors that influence the ways new teachers utilize technology in their teaching. Throughout the chapter, I will synthesize research that addresses Instructional Technology and Teacher Education (ITTE) including studies of teacher education programs, teachers' attitudes toward technology, and barriers to implement technology, first year teachers and first year teaching including studies of first year teachers and beginning teacher support, and first year teaching with technology including technology standards for first year teaching and studies of first year teachers' use of technology. I will conclude this literature review with a discussion of findings in the literature.

#### **Studies of Teacher Education Programs**

As I mentioned above, considerable research has been devoted to the integration of technology into teacher education programs. Literature that addresses technology and teacher education programs mainly concentrates on the stand-alone computer courses, the technology infusion across teacher education programs, technology-integrated field experiences, and the faculty's modeling.

### Stand-Alone Computing Course

After a survey study on "the nature and content of the instructional technology preparation of preservice teachers," Hargrave and Hsu (2000) identified that the standalone introductory technology course approach or the single course approach is emerging as a "dominant model" for preservice teacher education programs (p.313). The standalone technology course provides basic technology skills for preservice teachers to assist them in integrating technology in their practices (Brent et al., 2003). The basic assumption in a stand-alone course approach is that providing preservice teachers with the necessary technology skills will help preservice teachers learn and use educational technology in their future classroom (Gillingham & Topper, 1999).

However, the results of the Milken Exchange/ISTE Survey on Information Technology in Teacher Education survey confirm that stand-alone introductory technology courses do not provide sufficient preparation for preservice teachers to integrate technology into their classroom teaching (Willis et al., 1999). Although the single course approach has some positive aspects, including easy faculty planning, easy student enrolment, and visible accomplishment from student transcripts (Gillingham & Topper, 1999), it creates isolation from individual disciplines (Whetstone & Carr-Chellman, 2001), lacks adequate training and practice to effectively integrate technology into subject matter areas (Fulford & Ho, 2002; Gilingham & Topper, 1999; Stuhlman, 1998), and focuses on learning about technology rather than "learning to teach with technology" (Niess, 2001, p.5; Niess, 2005).

Willis and Mehlinger (1996) also state that the stand-alone technology courses do not model how educational technology should be utilized in education. Moreover, the stand-alone technology course might be ineffective when it is isolated from the other courses offered in teacher education (Willis & Mehlinger, 1996). Many researchers who have studied the stand-alone technology courses in teacher education programs advise that one course on technology does not affect student teachers' use of technology in the classroom (Fulford & Ho, 2002; Krueger, Hansen, & Smaldino, 2000; Marra & Carr-Chellman, 1999; Mehlinger & Powers, 2002; Persichitte, Caffarella, & Tharp, 1999; Willis & Mehlinger, 1996; Willis et al., 1999). Nonetheless, stand-alone technology courses might help student teachers expand their technology skills in a variety of ways and might serve as a tool when combined with other approaches to integrate technology in teacher education.

### **Technology Infusion**

The technology infusion approach—integrated technology component—is based on the integration of technology within each content and subject matter course in a preservice teacher education program. The basic assumptions of the technology infusion approach are that technology needs to be experienced "within the context of subject areas" (Gillingham & Topper, 1999, p. 3) and that preservice teachers need to be provided with "models and practice for integrating technology into their teaching practices" by performing technology-based projects during their teacher education program (Stuhlmann, 1998, p. 5).

The technology infusion models and their impact on teacher preparation programs have generated wide interest in the field of teacher education (Dawson & Norris, 2000; Krueger et al., 2000; Niess, 2001; Niess, 2005; Snider, 2002; Wright, Stallworth, & Ray, 2002). Snider (2002) found that preservice teachers who participated in a technology integration project showed enhancement in their technological abilities through coursework and field-based experiences together with their mentor teachers and university instructors. Dawson & Norris (2000) also discovered that a technology infusion project, which provided field-based technology skills for preservice teachers, helped preservice teachers develop positive attitudes toward technology integration and increased their knowledge and skills necessary for integrating technology in their future classrooms.

In a study of recent teacher education graduates, Handler and Pigott (as cited in Willis & Mehlinger, 1996) found that teachers who thought that they were prepared to use technology in their classrooms stated that they saw effective uses of technology modeled in at least one of the methods courses in their programs. Furthermore, teachers who felt prepared to teach with technology stated that they experienced software evaluation in at least one of the methods courses during their teacher education programs. Many researchers have stated that technology must be integrated across the entire teacher education curriculum in order to prepare teachers to teach with technology (Fulford & Ho, 2002; Krueger et al., 2000; Marra & Carr-Chellman, 1999; Willis & Mehlinger, 1996; Willis et al., 1999).

# Field Experiences

Several researchers have focused on the importance of field experiences in terms of the integration of technology into preservice teacher education programs (Clift, Mullen, Levin, & Larson, 2001; Dawson, Pringle, & Adams, 2003; Dexter & Riedel, 2003; Margerum-Leys & Marx, 2002; Pope, Hare, & Howard, 2005; Willis & Montes, 2003). In their exploratory study, Dawson et al. (2003) studied the use of microteaching as complementary to traditional field experiences regarding technology integration within a teacher education program. The researchers found that student teachers use technology themes during their microteaching activities, student teachers' main concern with using technology in their teaching is linked to classroom management issues, and student teachers use technology to reinforce or deliver traditional, instead of constructivist modes of instruction (Dawson et al., 2003). On the other hand, Clift et al. (2001) found that although field experiences provided preservice teachers with the examples of the novel and innovative uses of technology in the classroom, preservice teachers could not adequately utilize student-centered views of teaching with technology when they student taught.

Research indicated that students need to experience technology in their student teaching and need the support of practicing mentor teachers (Willis & Mehlinger, 1996). Margerum-Leys and Marx (2002) found that both student teachers and cooperating teachers provided one another support regarding technology knowledge and skills as well as instructional support. Additionally, Pope, Hare, and Howard (2005) found that preservice teachers felt confident in utilizing technologies that they experiences and observed their supervisor teachers' use in the field.

Furthermore, Dexter and Riedel (2003) studied the contextual issues at the field sites that affect preservice teachers' use of technology in their student teaching. Their findings indicated that teacher preparation programs should set clear expectations for preservice teachers' use of technology, teacher preparation programs should look for the field settings with adequate technology opportunities, and both teacher preparation programs and cooperating teachers should provide instructional support for student teachers (Dexter & Riedel, 2003).

### Faculty Modeling

In addition to introductory technology courses and technology infusion across the programs, many researchers addressed the importance of faculty, university supervisor, and mentor teacher modeling for encouraging preservice teachers to integrate technology into their teaching and learning (Fulford & Ho, 2002; Gunter, 2001; Krueger et al., 2000; Marra & Carr-Chellman, 1999; Persichitte et al., 1999; Willis & Mehlinger, 1996). Willis and Mehlinger (1996) stated that one of the effective technology integration

models in the literature is "integrating it into the college curriculum, with professors modeling its use and training activities centered on the use of the technology" (p. 144).

However, it has been widely argued that the success of the modeling depends on the faculty, supervisor, and mentor teachers' support and modeling and preservice teachers' active participation in the use of technology (Fulford & Ho, 2002; Marra & Carr-Chellman, 1999; Persichitte et al., 1999; Willis & Mehlinger, 1996). In their casebased qualitative study on the best practices of integration of educational technologies in teacher education programs, Persichitte et al. (1999) found that the faculty's modeling and commitment to support and use of educational technologies were the most common characteristics of the best practices of technology integration into teacher education programs.

### Studies of Teachers' Attitudes Toward Technology

Preservice and inservice teachers' attitudes toward the use and integration of technology in teaching and learning have been extensively studied in recent years (Dawson & Norris, 2000; Dawson et al., 2003; Fulford & Ho, 2002; Gunter, 2001; Marra & Carr-Chellman, 1999; Rizza, 2000; Whetstone & Carr-Chellman, 2001; Wright et al., 2002). Some surveys conducted on teachers' attitudes toward technology have disclosed that teachers hold optimistic attitudes about the use of technology in education, but they are not self-assured of their ability to employ technology in their classroom (Willis & Montes, 2003; Willis & Mehlinger, 1996; Willis et al., 1999). On the contrary, some studies have revealed that preservice teachers who experienced technology in their courses are more confident with their technological skills and more ready to integrate

technology into their teaching practices (Dawson & Norris, 2000; Fulford & Ho, 2002; Snider, 2002; Stuhlmann, 1998).

The literature also notes that developing positive attitudes toward the use of technology in teaching and learning help preservice teachers plan their uses of technology in their future classrooms (Marra & Carr-Chellman, 1999; Rizza, 2000; Wright et al., 2002). Preservice teachers who experienced constructivist uses of technology in their courses on classroom technologies developed strong and positive attitudes toward upcoming uses of the same technologies in their future classrooms (Marra & Carr-Chellman, 1999). After engaging preservice teachers in constructivist uses of computers, Marra and Carr-Chellman (1999) observed that preservice teachers developed strong and positive attitudes toward "future uses of that same technology" in their teaching (p.294). In a study focused on the impact of the use of technology in an undergraduate course, Rizza (2000) found that preservice teachers' attitudes positively changed after experiencing technology in the course. Preservice teachers, who experienced instructional technology in their undergraduate educational psychology course, felt their "comfort" and "confidence" increased as students and as future teachers (p.140). Similarly, Wright et al. (2002) found that after experiencing technology in their two methods courses, preservice teachers had more "positive opinions" about the value of teaching and learning with technology (p. 60).

The research has shown that preservice teachers, who had experiences with technology in their teacher preparation programs, were more confident with their technological skills and were more ready to integrate technology into their teaching practices (Dawson & Norris, 2000; Fulford & Ho, 2002; Snider, 2002; Stuhlmann, 1998). In addition to attitudes, some researchers examined the relationship between preservice teachers' experience with technology and their amount of anxiety and found that students' anxiety levels decreased after completing introductory technology courses or after experiencing the uses of technology in their methods courses (Fulford & Ho, 2002; Gunter, 2001; 1992; Wright et al., 2002).

The literature has shown that despite the growth of preservice teachers' positive attitudes toward technology, preservice teachers rarely transfer their technology skills into their own teaching and learning practices (Clift et al., 2001; Dawson & Norris, 2000; Whetstone & Carr-Chellman, 2001). Whetstone and Carr-Chellman (2001) state that although preservice teachers perceive computers as important components of teaching and learning, they are not preparing themselves to integrate them effectively in their future classrooms. In their study, Whetstone and Carr-Chellman (2001) found that only one fifth of the preservice teachers registered and finished a computer course voluntarily. Therefore, they suggest there is a need for some kind of obligatory computer instruction in preservice teacher education to preservice teachers' skills and practices as equal to their confidence and beliefs about using technology.

#### Studies of Barriers to Implement Technology

Mehlinger and Powers (2002) address the barriers to effective use of technology in teacher education. These are lack of vision, lack of planning, inadequate support, weak human and equipment infrastructures, inadequate access to technology, lack of incentives, inadequate professional development, and lack of money. Ertmer (1999) classifies first-order (institutional) and second-order (personal) barriers impeding teachers' technology integration attempts and discusses the connection between these barriers. The first-order barriers (lack of access to technology, inadequate time to plan technology-integrated instruction, and lack of technical and administrative support) are extrinsic to teachers, whereas second-order barriers (beliefs about teaching and learning, ideas about technology, and reluctance to change) are intrinsic to teachers. Ertmer (1999) goes on to say that while first-order barriers can be easily eradicated by providing resources such as equipment, training, and support, second-order barriers present the more critical challenges in terms of challenging teachers' belief systems and established routines of practices.

## **First Year Teachers and Teaching**

### Context of the Issue

Bullough (1987) argues that a beginning teacher's attitude, beliefs, and disposition are the most crucial aspects that affect how the beginning teacher reacts to the teaching context.

We know comparatively little about what transpires during the period between student teaching and teaching mastery, a time when the novice must come to terms with the teaching role. It is during this period of time—the survival stage of teaching—that the beginning teacher either makes a place within the institution or is crushed by it. (Bullough, 1987, p. 222)

Bullough (1989) argues that when a first year teacher enters a school, s/he enters a

new culture. The school is more than a building with founded roles, associations, and

shared understandings already in place. When they are hired in their first teaching

positions, beginning teachers are assumed to know everything that is essential to the

accountabilities of teaching (Bullough, 1987). Beginning teachers immediately discover

that 'real' teaching is different from student teaching in which instructional decisions were already made and classroom management routines were already determined (Bullough, 1987; Gold 1996).

Veenman (1984) identifies the transition from preservice teacher education to first year teaching as 'reality shock' or 'transition shock,' referring to the disintegration of the ideals shaped throughout the teacher education program due to the hard reality of the classroom environment (p. 143). The causes of reality shock might be inadequate training, lack of criteria in teacher education, and generic training of teachers, rather than specific teacher training for grade levels or subject matters (Veenman, 1984). When beginning teachers discover that their experiences have been insufficient for the teaching tasks, they start to experience "the survival stage of teaching" in which they struggle for their professional lives by developing management strategies and methods (Bullough, 1987, p. 222).

### Studies of First Year Teachers

Many scholars have identified the issues and concerns of first year teachers (Bullough, 1987, 1993; Bullough, Knowles, & Crow, 1989; Gold, 1996; Luft & Patterson, 2002; Meister & Jenks, 2000; Meister & Melnick, 2003; No Dream Denied, 2003; Roger & Babinski, 1999; Rolheiser & Schwartz, 2001; Veenman, 1984). These include classroom management, motivating students, dealing with the students' individual differences, assessing student learning, relationship with parents, discontinuity between the reality of teaching and their expectations and preparation (Veenman, 1984), unfamiliarity with the curriculum and the pupils, lack of administrative support and

feedback (Bullough, 1987), the sudden entry into the teaching profession and teaching environment (Gold, 1996), time management, and academic preparation (Meister & Melnick, 2003). Many of these concerns intensify when first year teachers are being expected to teach to the most diverse student population (No Dream Denied, 2003; Olebe, 2001; Stansbury & Zimmerman, 2002), being appointed to some of the most difficult classrooms (Darling-Hammond, 1997; Gold, 1996; Stansbury & Zimmerman, 2002; Tapping the Potential, 2004; Veenman, 1984), being assigned to teach subjects for which they are not trained (Luft & Patterson, 2002; Veenman, 1984) and being expected to plan a new teaching year without actually knowing the prospective students, school culture, available resources, or colleagues (Bullough et al., 1989). The literature also noted that because beginning teachers have more problems with control and classroom management (Bullough, 1987, 1989, 1993; Bullough et al., 1989; Veenman, 1984), preservice teachers' idealistic and progressive attitudes toward teaching and learning shift into more traditional and conservative pedagogies of teaching and learning when they first begin teaching (Russell et al., 2003a, 2003b; Veenman, 1984).

#### **Beginning Teacher Support**

Several researchers have defined beginning teacher support as a continuum (Lieberman & Miller, 2000; Olebe, 2001; Stansbury & Zimmerman, 2002). Huling-Austin (1990) stated that teacher induction is best acknowledged in the larger context of teacher education continuum starting with recruitment and preservice teacher education and continuing with teacher induction and inservice teacher education. A support program assisting beginning teachers with transition from preservice teacher education to the complex context of the teaching profession is necessary for preventing early attrition of qualified teachers from the profession (Gold, 1996; Stansbury & Zimmerman, 2002).

The *No Dream Denied* report stated that "teachers are not 'finished products' when they complete a teacher preparation program...a well-planned, systematic induction program for new teachers is vital to maximize their chances of being successful in any school setting, but is it especially critical in high-need schools" (No Dream Denied, 2003, p. 23). The National Commission on Teaching and America's Future (NCTAF) Report presented that only a small number of teachers have access to sustained professional development about their subject matter or their teaching methods and even if they have access to professional development, it usually is a short course or workshop (No Dream Denied, 2003).

Darling-Hammond (1997) argued for establishing "high-quality" teacher induction programs for first year teachers. The high-quality teacher induction programs focuses on strong leadership, additional support for the less prepared teachers, encouragement for new teachers to engage in induction activities, and stability between professional support, classroom needs, and professional standards (Tapping the Potential, 2004). Darling-Hammond (1997) went on to say that first year teachers provided with expert mentors are unlikely to leave the profession in their early years of teaching. Additionally, because new teachers need continuous support during their first few years of teaching, support programs for new teachers need to last more than a year (Gold, 1996; Luft & Patterson, 2002; Tapping the Potential, 2004). Traumas of first year teachers are well documented in the professional literature (Merseth, 1992). The most often cited personal problems are "physical fatigue, stress, financial worries, loneliness, isolation, and disillusionment" (Gold, 1996, p.562). While first year teachers may feel overwhelmed with their new roles, expectations, and responsibilities that they face in their positions (McEwan, 1996), loneliness and lack of support further increase these problems and concerns of new teachers (Roger & Babinski, 1999). Additionally, new teachers' unwillingness to ask for help because of the fear of seeming insufficient intensifies their personal problems (Roger & Babinski, 1999).

Gold and Roth (1996) identified beginning teachers' needs in three general areas including "emotional-physical," "psychosocial," and "personal-intellectual" needs (p. 522). Two general major types of support provided for first year teachers include "instructional-related support" and "psychological support" (p. 561). In addition to these two, other researchers focused on the personal and emotional support, problem-task related support (Stansbury & Zimmerman, 2002); emotional, social, and intellectual support (Roger & Babinski, 1999); management support, logistical support, instructional support, and philosophical support (Luft & Patterson, 2002). Instructional-related support requires assisting beginning teachers with the necessary pedagogical knowledge, abilities, and instructional strategies to do well in the classroom (Gold, 1996). Although Veenman's (1984) study concluded that the instructional support is the most important need of first year teachers, one of the most frequently cited reasons by first year teachers for leaving the profession is the lack of professional support (Gold, 1996). Many novice teachers perceive the psychological support as their initial need in the beginning of their

careers. The psychological support is also necessary to construct new teachers' sense of self by promoting their self-esteem, assisting them with confidence building, and providing them with the methods for coping with stress that occurs during the transition period (Gold, 1996).

### **First Year Teachers and Technology**

# Technology Standards for First Year Teaching

Funded by the U.S. Department of Education's Preparing Tomorrow's Teachers to Use Technology (PT3) Grant, the International Society for Technology in Education (ISTE) has decisively created the National Educational Technology Standards (NETS) to assist both teacher education schools and school districts in establishing support systems for new teachers. In the NETS, the collaborators identified the necessary conditions for implementing technology in education. Although the essential conditions refer to some personal factors, they mostly signify the institutional factors that influence new teachers' utilization of technology in their teaching. The essential conditions that are "shared vision, access, skilled educators, professional development, technical assistance, content standards and curriculum resources, student-centered teaching, assessment, community support, and support policies" (NETS-Project, 2002, p. 267) allow schools and universities to evaluate the conditions present in their institutions.

"Shared vision" requires "proactive leadership" and "administrative support" in the entire institution (NETS-Project, 2002, p.269; Strudler & Wetzel, 1999). When there is an alignment among schools, school districts, and universities' visions regarding integration of technology, new teachers' use of technology in all institutions can be supported (NETS-Project, 2002). Furthermore, "access" requires the availability of current educational technologies for new teachers' instructional and professional uses. The level of technology knowledge, skill, and use may differ from person to person in an organization, but the existence of a general foundation of technology expertise for modeling or mentoring technology applications affect new teachers' utilization of technology in their school settings (NETS-Project, 2002). "Personal development" requires providing teachers with ongoing professional development to support their integration of technology knowledge and skills in their teaching. Willis and Mehlinger (1996) argue that technology will increase the demand for continuing teacher education, shape its content, and affect its methods of delivery.

Additionally, content standards and curriculum resources are useful for addressing the desired level of technology knowledge and skills during the ongoing personal development of new teachers (NETS-Project, 2002). Like personal development, technical assistance needs to be ongoing, accessible, and timely for all technology resources. Student-centered teaching and performance-based assessment conditions require skilled educators who can utilize technology in balance with the student-centered pedagogies and ongoing authentic assessments. Schools need to provide opportunities for connecting new teachers with the community and modeling efficient utilization of technology resources (NETS-Project, 2002). Finally, school policies, budget allowances, and mentoring appointments need to be frequently examined to ascertain that organizational structures do not impede the implementation of technology by beginning teachers. The NETS Project (2002) for first year teaching and professional development also provide guidance to first year teachers for utilizing technology in their teaching. While technology profiles for preservice teachers mainly focus on planning, implementing, and assessing, technology profiles for first year teaching go beyond those performances and offer assistance for making sound instructional decisions for the effective use of technology.

The NETS Project (2002) addresses some issues regarding new teachers' integration of technology in their teaching, including "the well-trained novice teacher" (p. 271), "the mismatch" (p. 276), and "beginning teacher support" (p. 277). Even the welltrained novice teachers who are confident with their technology knowledge and skills might be anxious about being in the classroom full of students and being in control of their teaching for an entire year. There are always concerns related to the introduction of a new teacher in a school setting regardless of how well educated a beginning teacher might be or how welcoming a school setting might be. Furthermore, even with their best intentions, teacher education programs cannot foresee what beginning teachers will encounter during their first teaching appointment. There might be a mismatch between the knowledge and skills of a beginning teacher and the reality and expectations of a school setting. A beginning teacher with a limited technology experience from her/his teacher education program might be employed by a school occupied with the state-of-theart technology equipment. When a novice teacher is hired by a school that has all the technology resources, the first year teacher needs to be provided with support and professional development opportunities helping her/ him to attain her/his colleagues'

skills (NETS-Project, 2002). On the other hand, a beginning teacher with an extensive technology experience might be hired by a school lacking technology equipment or support, and find her/ himself as the only technology expert in the school setting. Lack of necessary technology knowledge and skills or being the only technology expert in a setting may affect new teachers' experiences that are already problematical in negative ways and can result in additional stress and frustration (NETS-Project, 2002).

The NETS Project (2002) addresses some beginning teacher support programs to prevent new teachers leaving early in their career. Although these support programs are not specifically designed for a beginning teacher's technology needs, they are valuable since they support the new teachers' entire environment. NETS Project (2002) proposes that support of preservice teachers' use of technology is part of a bigger professional development continuum in the induction years. Universities and school districts need to align their knowledge and skill expectations of recent graduates and offer professional growth opportunities regarding teachers' use of technology in order to provide effective transitions from teacher education programs to teaching practices. Universities and school districts, collaboratively, need to prepare and offer professional development in technology for novice teachers together with continuing teachers. As universities and schools create professional development opportunities in technology, they need to take into consideration time, changeable needs, flexibility, continuity, academic stimulation, and administrative support (NETS-Project, 2002).

### Studies of First Year Teachers' Use of Technology

There is little question that preparing future teachers to use technology is a basic concern of preservice teacher educators today. As preservice teachers leave their

teacher preparation programs, they are often faced with the realities that school districts demand they use technology, parents expect them to use it, and students want them to use it. These teachers are also often faced with the cold reality that their teacher education did not prepare them to use technology in their teaching, and the district in which they are employed provides little support of hardware, software, or inservice training. (Norvak & Berger, 1991, p. 89)

The interest in first year teachers' utilization of technology in their first years of teaching started over fifteen years ago. The quote above is excerpted from one of the pioneer studies in the area of first year teachers' use of technology. Norvak and Berger (1991) stated that expected to integrate technology with little training and support, beginning teachers who are already overwhelmed in their first year of teaching may become even more stressed when they encounter computers in their classroom settings. In her qualitative study, Norvak (as cited in Willis & Mehlinger, 1996) researched the means by which beginning teachers, mostly first year teachers, employed computers in their actual classrooms. Norvak pointed out that although participants of the study experienced the overwhelming demands of the classroom at the beginning of their teaching, the participants started to use computers in their teaching by the middle of the school year. She observed that participants' utilization of computers in their teaching did not go beyond the basic computer operations and drill-and-practice activities. New teachers were not acquainted with the various instructional strategies for employing computers for whole-group teaching and the various software packages supporting those strategies. Norvak (as cited in Willis & Mehlinger, 1996) related the problems of first year teachers to what and how they are taught about technology in their teacher education programs.

In another exploratory case study, Norvak and Knowles (1991) found that new teachers expended their beginning teaching experiences by trying to survive as they adapted to their new roles as teachers. They perceived use of computers at the beginning of their teaching career as something 'extra' or 'special.' Norvak and Knowles (1991) observed that beginning teachers' computer uses increased as they gained confidence and experience. Beginning teachers overwhelmingly thought that their process of implementation of computers was hindered by time needed for planning and for access to computers during the school day (Norvak and Knowles, 1991).

In their two-year survey study, Strudler, McKinney, and Jones (1999) investigated first year teachers' needs and concerns in a local school district. The researchers focused on the first year teachers' general concerns, the problems they encountered, the support they needed and were given, and the extent to which they felt trained to implement various teaching and management approaches including the implementation of technology (Strudler et al., 1999). Employing a five-point Likert scale on the possible items, they investigated first year teachers' perceived technology problems that they face during their first year of teaching.

According to the survey results, the first year teachers rated inadequate parent involvement as the most important problem for implementing technology, while they rated adequate access to computers eighth in the first survey and fourth in the second survey (Strudler et al., 1999). Respondents were also asked to rate their preparation to teach with computers by taking into consideration their coursework and student teaching experiences. The first survey results showed that first year teachers rated preparedness to teach with technology as the lowest of the aspects of teaching presented in the survey. In the second survey, first year teachers ranked their readiness to teach with technology as 31<sup>st</sup> out of 40 teaching aspects (Strudler et al., 1999). Respondents denoted a significant difference between the effect of student teaching and the impact of coursework on employing technology in both surveys. Additionally, 93% of the first year teachers rated the importance of technology in teacher education as 'very important,' while 60% of the respondents rated the importance of technology in teaching specific grades and teaching areas (Strudler et al., 1999). Respondents stated different levels of access to technical assistance in their schools. While 40% of the first year teachers rated the level of technical assistance as 'none' or 'poor,' less than 39% chose their access to technical support as 'good.' More than half of the respondents stated that they would 'likely' or 'very likely' use an email system, if it had been offered for mentoring assistance (Strudler et al., 1999).

The results of the study showed that first year teachers have positive attitudes toward technology in education and value technology for supporting teaching and learning (Strudler et al., 1999). By citing previous research that addresses preservice teachers' preparedness to teach with technology, Strudler et al. (1999) argued that their research, consistent with the results of previous studies, revealed a rather low level of feeling prepared to teach with computers. However, they stated that the disparities between one's preparedness to teach with technology and other aspects of teaching seem to be diminishing. One of the most critical findings of the study was the lower value given to student teachers' use of technology in their student teaching. This finding of the study was consistent with the literature on the preservice teachers' technology issues related to their student teaching placements (Strudler et al., 1999). Strudler et al. (1999) concluded that their study provided the same evidence that new teachers are not adequately prepared to teach with technology. As their study showed, the support for first year teachers to use technology differs from one setting to another (Strudler et al., 1999). However, they argued that without sufficient support, even well-prepared first year teachers are not likely to assume effective implementation of technology into their curriculum. They also addressed the importance of telecommunication technologies in the teacher induction programs for assisting and supporting new teachers and argued that first year teachers would benefit from the use of telecommunications for additional mentoring support.

Hunt (as cited in Strudler et al., 1999) found that time was one of the most significant factors hindering new elementary teachers' use of computers in their teaching. Hunt further observed that beginning elementary teachers' use of computers hardly ever went beyond drill-and-practice activities and word processing. After surveying preservice teachers in a small-scale study, Handler (as cited in Strudler et al., 1999) reported the following factors contributing to preservice teachers perceived preparedness to teach with technology: courses taken in educational technology, the extent to which technologies are integrated in methods courses, and the modeling and use of technologies throughout their field experiences and student teaching. Taking into account the importance of preparing preservice and inservice teachers to employ technology, Russell et al. (2003a) conducted a recent survey to investigate the issues that affect teachers' capability to utilize technology in their classrooms. The issues explored in the study involved the means by which teachers employ technology for their professional goals, the relationships between teachers' utilization of technology and their beliefs and attitudes toward technology, and the degree to which new teachers are confident with employing technology in their teaching and professional development (Russell et al., 2003a). The data collected in a three-year study—"the Use, Support, and Effect of Instructional Technology (USEIT)"—were employed to examine the issues related to teachers' use of technology in their teaching. The survey data was collected from a total of 2894 respondents in 22 school districts in Massachusetts for 3 years. More than 26% of the respondents had 5 years or less experience with technology use in teaching (Russell et al., 2003a).

The factor analysis conducted by the researchers revealed six discrete but related factors of teachers' technology use, including "teacher use of technology for preparation, teacher use of technology for delivery, teacher use of technology for special education and accommodation, teacher use of technology for recording grades, teacher-directed student use of technology, [and] teacher use of email" (Russell et al., 2003b, p. 8). The researchers mainly focused on the four categories of teachers' uses of technology throughout the study including, delivery, email, preparation, and student use. Russell et al. (2003b) found that teachers' beliefs about the meaning of technology in teaching and learning were the most powerful predictor of the teachers' use of technology. The beliefs

about the importance of technology were followed by access and confidence. The results indicated that teachers who have access to technology appreciate technology more than those who do not have adequate access to it (Russell et al., 2003b). Additionally, teachers' beliefs about the importance of technology in their teaching develop when they become familiar with the specific technologies in their teaching, especially the new technologies (Russell et al., 2003b).

To examine new teachers' use of technology in their teaching and professional development, Russell et al. (2003a) grouped respondents into three groups according to their years of teaching: teachers who have taught 1-5 years, 6-15 years, and 15+ years. The researchers studied the four categories-delivery, email, preparation, and student use-in terms of teachers' "confidence with technology," "beliefs about the positive impact of technology on students," "beliefs about the negative impact of technology on students," "beliefs about teacher-directed instructional practices," and "beliefs about student-centered instructional practices" (Russell et al., 2003a, p. 12). According to survey results, the researchers found that new teachers who had five years or less experience were more confident employing technology for their professional purposes. Nevertheless, new teachers' beliefs about positive effects of technology on student learning did not differ from the teachers who had been teaching for more than six years. Furthermore, the results indicated that new teachers held stronger beliefs about the negative effects of technology on students. New teachers thought technology had negative effects on students' writing, reading, and studying skills (Russell et al., 2003a). In addition to beliefs about negative effects of technology, the study revealed that new

teachers, like those of veteran teachers, held significantly stronger pedagogical beliefs on teacher-directed instructional practices than those of teachers who had been teaching for six to fifteen years. In terms of pedagogical beliefs about student-centered instructional practices, new teachers had the same beliefs as teachers who had been teaching for more than six years (Russell et al., 2003a). Russell et al. (2003a) argued that although there have been great investments in preparing teachers to teach with technology since the late 1990s, it is mystifying that new teachers who have had experience with technology hold more negative beliefs than teachers who have been teaching for 6-15 years.

Russell et al. (2003b) also examined the use of technology in terms of four categories—preparation, email, delivery, and student use—among three groups of teachers. The examination of the survey responses revealed that new teachers used technology for communicating via email and preparing for teaching significantly more than the other groups did. However, new teachers used less teacher-directed student use of technology than did the teachers who had been in the profession for more than six years. Russell et al. (2003b) concluded that although new teachers were more comfortable and confident with technology and used it more often outside of the classroom, the assumption that a higher level of comfort results in increased use of technology in instruction appeared to be false.

Russell et al. (2003b) argued that new teachers' attitudes and beliefs toward technology are the most significant factors affecting their decision to utilize technology in their classrooms. Thus, Russell et al. (2003b) stated that in order to improve new teachers' use of technology, preservice teachers need to be given opportunities to strengthen their beliefs about technology. Providing preservice teachers with the variety of available technologies and their uses in teaching and learning may result in improved familiarity with technology and increased use of technology for instruction and teacherdirected student use of technology (Russell et al., 2003b). Russell et al. (2003b) proposed that growing up with various different uses of technology, new teachers may be more comfortable with the technology itself, but may still need further education on the value and applications of technology as an instructional tool.

During the USEIT study, Russell et al. (2003b) identified two issues discussed by most school administrators as hindering factors of new teachers' use of technology in their teaching. School administrators stated that although new teachers are familiar and comfortable with technology, they have not experienced the applications of technology in the classroom (Russell et al., 2003b). New teachers who have recently finished their teacher education programs experience technology itself rather than how to teach and learn with technology. Also, school administrators proposed that because the first couple years of teaching are already extremely challenging, new teachers do not have sufficient time to find out how to integrate available technology into their teaching (Russell et al., 2003b). Russell et al. (2003b) maintained that most of the school administrators do not have a sound understanding of the ways in which teachers are utilizing technology or how to assess teachers' uses of technology. Therefore, Russell et al. (2003b) argued for training programs provided for both teachers and school leaders to use in professional development.

In another recent study, Watts-Taffe, Gwinn, Johnson, and Horn (2003) investigated the technology integration processes of three recent graduates of a teacher preparation program during their first year of teaching. As a result of the study, the researchers identified several themes: uses of technology in a variety of ways for multiple purposes, familiarity with technology, motivation to use technology, communication with colleagues, and having a vision for technology integration into teaching (Watts-Taffe et al., 2003).

Watts-Taffe et al. (2003) suggested that preservice teachers need a strong knowledge base in their teaching area in order to be able to make sound decisions regarding utilization of available technology in their future schools. Since available technology resources and support change across schools and school districts, preservice teachers need to experience—as an ongoing professional development—the ways they both learn and think about technology as it becomes available in their settings (Watts-Taffe et al., 2003). Watts-Taffe et al. (2003) also stated that mentorship has a great impact on the motivation, decision making, and performance of a beginning teacher.

### Conclusion

The purpose of the chapter was to review the current research in technology and teacher education in order to identify the personal and institutional factors that influence how new teachers utilize technology in their teaching. Review of the research that addresses the new teachers' experiences with technology during the first few years of their careers has demonstrated that new teachers' utilization of technology in their teaching is a relatively new and underrepresented research subject. The literature notes

various personal and institutional factors in new teachers' uses of technology during both their teaching in the classroom and their education in teacher education programs.

The research supports that new teachers' attitudes, beliefs, dispositions, and the overwhelming demands of the classrooms may hinder new teachers' utilization of computers at the beginning of their teaching. Strudler et al. (1999) rigorously question beginning teachers' effective use of technology in their curriculum, given the demands and concerns of beginning teachers. Once the tough realities of the classroom environments become apparent, first year teachers' optimistic and progressive attitudes toward teaching and learning may transform into more traditional and conservative pedagogies of teaching and learning. Furthermore, new teachers have to take on new roles as teachers in addition to what they imagined during their teacher education.

As noted in this review of literature, one of the most common difficulties that new teachers encounter during their first years of teaching is applying their theoretical knowledge to their classroom practice. Other problems include developing classroom management techniques, becoming accustomed to the curriculum, adapting to the school culture, and becoming accustomed to assessment techniques (Russell et al., 2003a, 2003b). Problems of first year teachers originate from the reality shock due to the complex structure of the classrooms and school settings. Many studies have shown that new teachers' concerns generally concentrate on the management of the class rather than on their particular tasks of teaching.

To a great extent, pedagogical and personal factors affect new teachers' effective use of technology in their teaching. Addressing these barriers to integrate technology in

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the curriculum goes beyond the new teachers' knowledge of technology integration. Strudler et al. (1999) argue that integration of technology depends on sufficient technology resources, faculty professional development, and on-site assistance and support. Preparation of teachers to integrate technology in their teaching needs to be seen as the initial level of a continuum requiring ongoing professional development opportunities and support. In order to support beginning teachers, Strudler et al. (1999) recommend that the quality of the coursework in educational technology needs to be improved; technology needs to be systematically integrated into methods courses and field experiences; utilization of technology in education needs to be modeled by the faculty throughout the program. The integration of technology into field experiences also requires collaboration between universities and local school districts; however, many scholars underscore the importance of ongoing support for beginning teachers provided by the teacher education institutions and by the schools. Collaboration based on formal partnerships between teacher education programs and PreK-12 schools for extended professional development after graduation might address the needs of new teachers' effective use of technology in their classrooms.

This chapter presented a literature review on Instructional Technology and Teacher Education (ITTE) including studies of teacher education programs, teachers' attitudes toward technology, and barriers to implement technology, first year teachers and first year teaching including studies of first year teachers and beginning teacher support, and first year teachers and technology including technology standards for first year teaching and studies of first year teachers' use of technology. Although the current literature sheds some light on personal and institutional factors affecting new teachers' uses of technology during their first year teaching, how these personal and institutional factors affect their utilization of technology remains unknown. The study addresses this gap in the literature by providing in-depth accounts of first year teachers' first year teaching experiences with technology and the factors affecting their experiences.

# **CHAPTER 3**

# METHODOLOGY

### **Restatement of the Purpose and Research Questions**

The purpose of this study was to understand how personal and institutional factors influence the ways first year elementary teachers utilize technology, specifically computers and the Internet, in their first years of teaching from an Activity Theory perspective. The overarching research question that guided this study was:

How do personal and institutional factors influence the ways first year elementary teachers utilize technology in their teaching? To understand the ways personal and institutional factors affect first year elementary teachers' utilization of technology, the following subordinate questions were addressed during the study:

- What are the personal factors affecting first year teachers' use of technology in their teaching?
- How do these personal factors influence first year teachers' utilization of technology in their teaching?
- What are the institutional factors affecting first year teachers' use of technology in their teaching?

- How do these institutional factors influence first year teachers' utilization of technology in their teaching?
  - a) How do first year teachers' technology experiences and instruction in their teacher preparation program influence their use of technology in the first year of their career?
  - b) How do technical and pedagogical support and professional development provided in the employment contexts affect first year teachers' uses of technology in their teaching?

The following section represents the research perspective and research methodologies I employed to answer the research questions that guided the study.

#### **Research Perspective**

### Qualitative Research Methodology

This study was a naturalistic inquiry grounded in the Interpretivist paradigm. Denzin and Lincoln (2000) define qualitative research as a "situated activity" situating the researcher in the world through "a set of interpretative, material practices" making the world observable (p.3). Qualitative research involves studying human beings in their social contexts. Marshall and Rossman (1999) argue that "in qualitative inquiry, initial curiosities for research often come from real-world observations, emerging from the interplay of the researcher's direct experience, tacit theories, political comments, interests in practice, and growing scholarly interests" (p.25). In this study, the interest in the phenomenon originated from the researcher's experience in the observation of the preservice teachers' fieldwork and the introductory technology class and became the researcher's academic interest in the field of Instructional Technology and Teacher Education (ITTE).

A qualitative researcher investigates the phenomenon in its "natural setting, attempting to make sense of" it regarding "the meanings people bring to them" (Denzin & Lincoln, 2000, p.3). In order to understand a specific human action, which is "inherently meaningful," the researcher must understand the meanings forming that action in that specific context (Schwandt, 2000). Therefore, I investigated and described culturally defined meanings of the participants in the light of the Interpretivist paradigm. According to the Interpretivist paradigm, "the world is constructed by each knower/observer according to a set of subjective principles peculiar to that person" (Sipe & Constable, 1996, p.158).

The Interpretivist paradigm considers "reality as intersubjectively constituted and shared within a historical, political, and social context" (Schubert, 1986, p.181) and presumes that in order to understand a specific human action, a researcher must understand the meanings forming that action in that specific context (Schwandt, 2000). In this naturalistic inquiry, I became a research instrument myself by personally participating in the research settings (Ball, 1997; Guba & Lincoln, 1997; Taft, 1997; Zaharlick, 1992).

#### Case Study Method

Yin (1994) described case study as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (p.13). Methods of a case

study entail collecting sufficient information about a specific person or program in the context (Stake, 2000). In order to grasp the insiders' point of view, I employed a case study as a research methodology to collect data for understanding specific meanings constructed and shared in the contexts of the study. Thus, by utilizing the case study methodology I gained an understanding of the personal and institutional factors behind the first year teachers' use of technology in their teaching.

To research how personal and institutional factors influence the ways new elementary teachers utilize technology in their first year of teaching, I utilized a "collective case study" (Stake, 2000, p. 437). The collective case study approach was chosen as the methodology for this qualitative study, because it provides in-depth and indetail data (Marshall & Rossman, 1999). In this collective case study, I studied first year elementary teachers' utilization of technology in their first year of teaching in the context of the Activity Theory framework. The first year teachers participating in the study were "typical cases" representing typical experiences of first year teachers employed under typical circumstances (Yin, 2002). Patton (1990) argues that thick information from a few cases that are "information-rich" could be more valuable for exploring and describing the phenomenon. Therefore, I deliberately selected two cases out of four cases during data collection to study "information-rich cases in depth" (Patton, 1990, p.169). These two cases selected offered the most complete data for the data analysis.

#### **Research Settings**

### Site Selection

Glesne (1998) states that when a researcher enters in a new culture that is different from her own culture, the researcher may be more open to new meanings and understandings. Glesne (1998) further argues that when a researcher is already familiar with the culture in which she is going to conduct her study, the researcher's understandings of that culture may be shaped by her presumptions about the culture without further challenging them (Glesne, 1998). In this study, the research sites in which I conducted my study were different from my own context and culture, since I had never taught or worked in an elementary level school setting. All of my teaching experiences were in higher education settings.

The research design for this study demanded research sites and participants with specific qualifications. Since the focus of the study was first year elementary teachers' utilization of technology, the schools that were selected as research sites had to have both school technology programs implemented and access to instructional technology, specifically computers and Internet in their buildings as well as in the classroom. The research sites also had to have employed first year elementary teachers for the 2004-2005 school year.

To obtain information about possible research sites, I conducted an Internet search to find out detailed information about school districts and school buildings that hired first year elementary teachers. My Internet search did not yield a lucid list of schools and first year teachers employed in those schools. Therefore, I separately searched district websites to gather information on their current technology states and new teacher employees. During my Internet search for possible research sites, I came across with the Biennial Educational Technology Assessment (BETA) Survey reporting current technology states of school districts as well as their teacher employees' years of experience for Fair County (pseudonym) located in Ohio. I reviewed the results of the BETA Survey to list possible research sites that corresponded with my site selection requirements. At the end of my investigation, I created a research-site selection/information database that included school district names and URLs, school names and URLs, contact information and BETA Survey Result URLs for each possible research site.

According to my site selection database, there were many possible research sites that hired first year teachers for the 2004-2005 school year. I selected three of the possible research sites for my study according to their suitability for the study. Multiple sites with different first year teachers not only presented various portraits of technology experiences of first year teachers but also contributed different perspectives to the study.

The research site districts selected for the study not only approved technology implementation programs, but also provided access to technology, specifically computers and Internet, in their buildings. I strived to gather as much information as possible about the sites and the participants, before I contacted or made trips to these possible research sites.
### Gaining Entry

In a qualitative study, gaining access is very important (Glesne, 1998). A qualitative researcher needs to gain access to the key people in the research sites, such as school administrators, participants' colleagues, and secretaries to gain access to research sites and participants. In order to gain access to the research site, I first obtained permission from school administrators and school districts. Knowing that gatekeepers may help with accessing the research sites, I planned to introduce myself to the administrators and the other teachers in the possible research sites and spend some time in their lounges and meetings as long as it was permitted.

After creating the research site database and collecting information on possible research sites, I started contacting prospective schools to meet their principals to explain my research and how I intended to conduct this research in their contexts. At the beginning, I called the contact persons to set up appointments to discuss my research. It was difficult to pass, "secretary protection," and reach principals by phone. I was either told by the secretaries that their principal was currently busy, and directed to fax my research proposal or transferred to a voice mail to leave my message and get a call back. Only a couple of the principals I contacted and left messages with or faxed my research proposal to called back to say "no." Thus, I started to go to the schools in person to meet face-to-face and explain my research purposes. When I showed up in person, most of the school secretaries told me that they were not hiring anyone. I had to explain them that I was not looking for a job, but I was there to talk to the principal about a prospective research

sites and had to summarize my purposes and left "lay summary" letters to be given to the principals (Glesne, 1998). I also continued to call for follow ups with principals. I finally met principals, or at least talked to them on the phone, but they were not very interested in my study and/or explained that their first year teachers were already overwhelmed and would not be interested in participating in my study. Some of the principals were kind enough to call me back after a day or two and say that they talked to their first year teachers and s/he was not interested in my study.

In the meantime, since I knew that many of the new Master of Education (M.Ed.) Program graduates from my research institution were employed in the same school districts that I have been trying to access, I created an email message including a lay summary of my research and asked for their participation in my study. I thought if I could find first year teachers interested in participating in my study, I could also talk to their administrators from schools and school districts for permission to conduct my study in their school districts and buildings. I also contacted our professors and program managers from the M.Ed. program for their input and suggestions for possible research sites and participants since they knew most of the M.Ed. program graduates and their employment sites. With the help of one of our professors, I got a list of our M.Ed. program graduates and their employment addresses. I sent another message to this group of first year teachers and asked for their help with my study while explaining the possible help that I could render with their first year teaching, such as helping them with the daily work and teaching activities. At the end of second month of my "gaining access" attempts, I finally learned that The College of Education has an outreach and engagement office that helps with this kind of paperwork between prospective researchers and prospective research site. I immediately contacted the outreach and engagement personnel to apply for permission to conduct a study in the Fair County Schools. Although, I was told that the office could only contact three school districts for my research permission application, after hearing my distressing story, I was allowed to include six school district names in my application. After the official application, in a week or two, five of the school districts notified me that I was not allowed to conduct my study in their school districts. By the third week, a school district technology coordinator, Highlands School District (pseudonym) Technology Coordinator, sent a letter stating that they were interested in my study and they valued research studies that may inform their practices in the area of teaching and learning with technology. I immediately contacted him to receive a list of first year teachers employed for the 2004-2005 school year.

With the list in my hand, I started to contact schools to meet first year teachers and their principals to find my research participants. In the mean time, I recognized a couple of first year teachers' names from our department professor's list of M.Ed. graduates. Four first year teachers, two of them graduated from our M.Ed. program, showed interest in being participants in my study. Following many phone calls, email messages, faxes, letters, and conversations with gate keepers and key persons for three months, my first participant, Nancy (pseudonym), sent me an email message and agreed to be a participant in my study. She was followed by Mary (pseudonym), Carrie (pseudonym), and Liz (pseudonym). After obtaining permission from the school district and first year teachers, the school principals also approved my study to be conducted in their school buildings. I was so grateful for these four brave first year teachers and their institutions that valued and supported my research endeavors.

#### **Participant Selection**

In qualitative research, sample cases are selected purposefully to study "information rich cases" in depth (Patton, 1990). Because the purposes of this study is to identify how personal and institutional factors influence the ways new teachers utilize technology in their first years of teaching, I selected the participants of my study purposefully according to their willingness to take part in my study and their suitability for the study. Selection of the participants was also done according to "the maximum variation sampling strategy" by which cases were selected across some range of variation including age, experience, training, understanding of technology, and technology use (Patton, 1990).

The participants—Nancy, Mary, Carrie, and Liz—were first year elementary teachers who completed a formal teacher preparation program, were in their first year of independent teaching, were interested in teaching with technology, and were under contract with a school district. Before I started data collection, I had initial interviews with them to verify their suitability for the purposes of my study.

All participants were given a lay summary of the study addressing general information about the researcher, the study, the purpose of the study, the selection of site and sample, possible benefits/risks to participants, data collection methods, and

confidentiality (Glesne, 1998). To increase validity of the research, I focused on my subjectivity as a Ph.D. student in the same department from which three of the participants received their M.Ed. degrees. I also focused on negative cases and looked for disconfirming evidences as well as confirming evidences, conducted multiple-session interviews and follow-up interviews with both participants and their principals, and performed persistent observations in the research contexts (Glesne, 1998).

Once I gained access to the research sites and selected the participants for the study, I made a great effort for gaining the participants and the key people's trust as well as establishing rapport which I was able to achieve quickly. Although I selected four participants to study in my research, I only chose two of the four participants to study indepth and present them as cases. During data collection, while in the field, I created a table to organize and present the data being collected from the participants. Table 3.1 below presents demographic information and data gathered from each participant of this study. Looking at the chart and reflecting on my field experience, I realized that two participants were more "information rich" cases than the others. Therefore, I decided to focus on Nancy and Mary to study further and in-depth in the data analysis.

# **Case Study Selection**

	Mary	Nancy	Carrie	Liz
Gender	Female	Female	Female	Female
Age	Early 20s	Early 20s	Mid 20s	Mid 40s
Grade Taught	1 <sup>st</sup> Grade	1 <sup>st</sup> Grade	Kindergarten	5 <sup>th</sup> Grade
Year Taught	1 <sup>st</sup> Year	1 <sup>st</sup> Year	1 <sup>st</sup> Year	1 <sup>st</sup> Year
Position	Full-time	Full-time	50% Part-time	Full-time
Observations	12	12	6	6
Interviews	4	4	3	3
Reflective Journals	9	7	5	5
Portfolios (Electronic)	1	1	0	0
Other Written Materials	3	3	1	1
Praxis Information	Yes	Yes	No	No
Rapport	Yes	Yes	Yes	Yes
Elementary School information	Yes	Yes	Yes	Yes
Access to Principal	Yes	Yes	Yes	Yes
Access to Mentor	Yes	Yes	Yes	No
Access to Other Teachers	Yes	Yes	Yes	No
M.Ed. information	Yes	Yes	No	No
Access to M.Ed. Professors.	Yes	Yes	No	No
Access to M.Ed. Supervisors	Yes	Yes	No	No
Availability for Research	Yes	Yes	Yes	Yes

Table 3.1: Case study selection

## **Data Collection Methods**

The research design of the study emerges from the research questions. In order to understand the cases in their activity contexts and the meanings in that specific contexts, the research data were collected via multiple data collection methods including participant observation, interviews, and document collections in the naturalistic settings of the research (Jones, 2002). Merriam (2001) states that "understanding the case in its totality, as well as the intensive, holistic description and analysis characteristics of a case study mandates both breadth and depth of data collection" (p.134). Therefore, during my data collection for this case study, I employed all the primary methods of the data collections (Marshall & Rossman, 1999). Table 3.2 below explains the rationale behind my data collection methods to answer my research questions.

#### **Overarching Research Question**

cuchers utilize technology in their teaching.				
Research Questions	Data Collection Method			
1. What are the personal factors affecting	Interviews with participants			
first year teachers' use of technology in	Observations in the classroom			
their teaching?	Document analysis including electronic			
	portfolios, praxis documentation, and			
	reflection journals			
2. How do these personal factors	Interviews with participants			
influence first year teachers' utilization of	Observations in the classroom			
technology in their teaching?	Document analysis			
3. What are the institutional factors	Interviews with participants and their			
affecting first year teachers' use of	principals			
technology in their teaching?	Observations in the classroom, media			
	centers, and computer labs			
	Document analysis including M.Ed.			
	program website, district website, district			
	technology plans, reflection journals, school			
	websites, praxis documentation, newsletters,			
	etc.			
4. How do these institutional factors	Interviews with participants and their			
influence first year teachers' utilization of	principals			
technology in their teaching?	Observations in the classroom, media			
a) How do first year teachers technology	centers, and computer labs			
experiences and instruction in their	Document analysis including reflection			
teacher preparation program influence	journais, M.Ed. program website, district			
their use of technology in the first year of	website, district technology plans, district			

How do personal and institutional factors influence the ways first year elementary teachers utilize technology in their teaching?

Table 3.2: Rationale for data collection

b) How do technical and pedagogical support and professional development

provided in the employment contexts affect first year teachers' uses of technology in their teaching?

their career?

technology professional development workshop documentation, school websites,

classroom websites, and newsletters

Since the social world is socially constructed and its meanings are continually changing, a single research method is not sufficient for capturing all the complex features of the social world (Denzin, 1997). Thus, Denzin (1997) argues for triangulation, which is "the application and combination of several research methodologies in the study of the same phenomenon" to grasp these complexities of the social world (p. 318). To increase trustworthiness of the data and the validity of my study (Glesne, 1998), I employed a data triangulation through use of different research sites, a methodology triangulation by means of different primary data gathering methods, and a member-check triangulation throughout the study. Again, to assure the validity of the research, I elucidated my subjectivity towards the research subject, focused on negative cases, conducted multiple-session interviews, and conducted persistent observations (Glesne, 1998).

Data collection for the study was organized according to the school district's 2004-2005 academic calendar (see Table 3.3). I collected the data for 14 weeks (including 1 week spring break) before the academic year ended in June, 2005. In addition, I conducted follow-up interviews with the participants in the first semester of the 2005-2006 academic year.

<b>Data Collection Plan</b>	
Entry to the Research Sites	March 2005
Initial Interviews	March 2005
Participant Observation	March 2005 - June 2005
Individual Interviews	March 2005 - June 2005
	1 <sup>st</sup> Interviews in March 2005
	2 <sup>nd</sup> Interviews in April 2005
	3 <sup>rd</sup> Interviews in June 2005
Follow-up Interviews	September 2005- December 2005

Table 3.3: Data collection plan

#### **Participant Observation**

Every social circumstance involves a context, actors, and activities and the researcher. In order to explore that social circumstance, the researcher situates herself in the context while observing as a participant of the activities (Spradley, 1980). To understand the activity in the research setting, its participants, and their relations, I observed and interacted with the participants as a participant observer in the research contexts (Glesne, 1998). By being a participant observer, I had opportunities to simultaneously experience the sensation of being both an outsider and an insider of the contexts (Spradley, 1980).

Participant observation requires a researcher to be the primary tool for the data gathering and the face-to-face interaction with the participants in the field. Therefore, gaining "trust" and "cooperation" of participants is essential for the success of the participant observation (Ball, 1997, p.311). In order to gain their trust and cooperation, I informed the participants on how gathered information would be used in my research

report and ensured that their anonymity would be protected by use of pseudonyms and removal of identifiers that may link the research report to them. I also established honest relationships that were based on common concerns and reciprocity with the participants of the study. Furthermore, before the observations, I asked the participants to provide me with their weekly lesson plans to help me observe and make sense of the activities in their teaching and learning contexts. Highland School District had the same curriculum units planned for each grade level. My participant observations took place while both Mary and Nancy were teaching the same unit, the "Ocean Unit," in which students were provided with opportunities to explore ocean animals through a variety of instructional activities.

By the third week of my participant observation, I gained full access to the research sites and established rapport with the participants. Three of my participants gave permission to observe their classroom and their activities anytime I had time to observe or participate during the school day. Mary wanted to know the days and times I would be observing her classroom and activities, so that she could let me know in advance if she had other plans for the day or was taking leave days. Thus, I created a timeline for conducting my participant observations in Mary's classroom and gave this timeline to her. For my other participants, I conducted my observations in altered times, sometimes even unannounced, to see the different and changing moods of the settings (Ladson-Billings, 1994). Furthermore, I also visited research sites for invited me to attend

a "Parent Sharing Night" in which her students exhibited their ocean unit learning activities.

I conducted my participant observations in the classrooms in which the first year teachers were teaching and in the school media centers and computer labs in which teachers performed technology integrated teaching and learning activities. I observed my participants and joined their classroom settings once or twice a week for 14 weeks during the data collection. For my early participant observations, I became "ready" for my participants and their contexts by researching and reading their electronic portfolios and school and classroom websites as well as the district website to gather further information on the contexts and participants.

My participant observations involved descriptive, focused, and selective observations (Spradley, 1980). Descriptive observations require approaching the phenomenon with general questions for understanding the big picture and for becoming familiar with the context, actors and activities in general (Spradley, 1980). Consequently, I conducted descriptive observations during the first couple of observations at the beginning of the first period of the data gathering. On the other hand, focused observations help researchers to narrow the scope of the research through the observation of the domains that need to be explored in-depth (Spradley, 1980). For that reason, after I established a general understanding of the daily schedules, routines, and dynamics of the classroom, I started performing focused observations in the contexts during the midpoint of my observational data gathering period. Finally, selective observations correspond to the smallest focus and emphasize the differences amongst particular cultural categories identified through focused observations (Spradley, 1980).

Accordingly, I was involved in selective observations through the end of the study to explore the cultural meanings regarding participants' technology integrations identified during focused participant observations. Conducting focused and selective observations were challenging in times when the participants did not utilize technology at all during my observations. In these observations, I focused on participants' teaching philosophies and view of teaching and learning in general or school guided activities to understand their complex personal and institutional factors affecting the "lack of technology" in the settings.

I took detailed field notes during my descriptive, focused, and selective participant observations (Spradley, 1980). I made an effort to include as many "direct quotes" as possible in my field notes (Creswell, 2002). There were days, I was not an "active" participant observant. In those days, I sat in the corner next to the computers and focused on taking "concrete notes" during my observations (Pelto & Pelto, 1996). Most of the time, I used an observation protocol for recording my fieldnotes during my observations (see Table 3.4). However, sometimes, I just wrote whatever I could when I participated in the activities in the settings. I also tried to elaborate my rough notes by writing notes next to my fieldnotes and drawing pictures for the duration of observing an activity or watching a conversation.

Since I was also working as a graduate research associate at the Midwestern State University, I had to commute between my home, research sites, and work daily. During those commutes after my observations, I recorded my memos, thoughts, ideas, and emergent questions to a digital tape recorder to listen to and elaborate on later. When I went home after a participant observation in the field, I typed up my fieldnotes or at least re-read them and wrote down more notes to prepare my rough fieldnotes for elaboration. Re-reading fieldnotes and listening to my analytic memos helped greatly to find emergent themes in my observation data and generate emergent research questions for the interviews.

Observation RecordTeacherNancySchoolHamilton ElementaryObservation DateMarch 7, 2005Observation Time9:20 am – 11:30 amClass Activities ObservedMorning Meeting, Center Work, and Writing Workshop

Table 3.4: Observation record

## Interviews

To understand the meanings from first year teachers' point of view, I conducted individual interviews to complement my participant observations (Fontana & Frey, 2000). I performed a total of 20 interviews—4 initial and 12 individual interviews with all participants and 2 follow-up and 2 principal interviews with selected 2 cases—during the 14 weeks of the data collection period (see Table 3.5). Each interview took 50 to 60 minutes to complete excluding initial interviews that were 20 minutes long and was digitally recorded with a digital voice recorder.

Interviews	Interview Protocols			
Initial Interviews	Descriptive Questions on General Information about			
	Participants, Contexts and Teaching and Technology			
	Experiences.			
First Interviews	Descriptive, Structural, Contrast, and Exploratory Questions			
	on Educational Background, Teaching Philosophy, Daily			
	Routines and Activities, Student Demographics, View Of			
	School and School District, First Year Experience, and View			
	of First year Experience.			
Second Interviews	Descriptive, Structural, Contrast, and Exploratory Questions			
	on Technology Background, Confidence with Technology,			
	M.Ed. Program Technology Experience, First Year Teaching			
	with Technology, District and School Technology Resources			
	and Support, and Philosophy of Teaching with Technology.			
Third Interviews	Descriptive, Structural, Contrast, and Exploratory Questions			
	on First year Experience, First year Technology Experience,			
	M.Ed., District, and School Support for Technology,			
	Teaching and Learning with Technology, and Professional			
	Development.			
Principal Interviews	Descriptive and Structural Questions about Participants and			
	Contexts, Beginning Year Teacher Support, Mentorship,			
	Technology Vision, and Technology Resources and Support			
	for First year Teachers.			
Follow-Up Interviews	Descriptive, Structural, Contrast, and Exploratory Questions			
	on Second-Year Teaching Experience, View of First year			
	Teaching Experience, and View of First year Technology			
	Experience.			

Table 3.5: Interview protocol table

Initial interviews were employed at the beginning of the data collection period to gather general information about the contexts, actors, and activities. During initial interviews, I used a guideline to inquire about participants' teaching and technology experiences as well as to talk about purpose and possible benefits of my study.

As one of the primary data collection methods of the study, individual interviews were conducted three times with each participant during the data collection period from March 2005 to June 2005. For individual interviews, I utilized a "semi-structured interviewing" technique for asking questions derived from the participant observations and obtaining in-depth qualitative data from previous interviews (Fontana & Frey, 2000, p. 652). I utilized interview protocols that included semi-structured questions that are created according to interview question types, Descriptive, Structural, Contrast, and Exploratory discussed by Pelto & Pelto (1996).

To complement my participant observations in the contexts and individual interviews with participants, I also interviewed principals of the schools in which I conducted the study. In the principal interviews, the focus was on the general information about participants and their contexts, support provided for first year teachers, mentorship program, school and district technology vision, and technology resources and support for first year teachers. Principal interviews provided in-depth data and a better understanding of the factors affecting first year teachers' utilization of technology.

In addition, I conducted follow-up interviews with selected cases, Nancy and Mary, in October 2005. The follow-up interviews focused on their first year experience from stand points of second year teachers. During follow-up interviews, I also asked questions and requested more clarification on the themes and topics that I had questioned during my data analysis in the summer following the data collection.

Kvale (1996) states that a qualitative researcher needs to interpret and verify her/his interpretations throughout interviews to gather in-depth data. Therefore, I strived to elaborate participants' accounts and phrases by asking further questions on their answers and statements about the phenomenon being researched. This approach greatly advanced the depth and breadth of the data I collected during the interviews. Interpretive interviews not only eased the data analysis process, but also allowed me to do member checks in the course of the interviews. Additionally, when the participants did not provide sufficient answers for the questions or gave brief answers, I re-phrased my interview questions during interviews to elicit enough information (Pelto & Pelto, 1996). This approach was especially useful when the participants, especially Nancy, provided brief responses to vital questions about their first year experience with technology.

During the interviews, I also took some notes about the participants' nonverbal communication, such as their mimics, gestures, and pauses as well as some key words they uttered. However, I realized that it was very hard to be an active listener and take notes at the same time. I tried to keep my eye contact and keep my participants talking by nodding and acquiescing, but it was challenging to take notes about their mimics and gestures at the same time.

All of the interviews were conducted in the participants' classrooms except one interview with Nancy at a local grocery store, because the school was closed for summer and the grocery store was close to her home (see Table 3.6). Since, participants were in their natural contexts, they were calm and relaxed and acted very comfortable during the interviews. Depending on the time of the interviews, participants were tired or energetic. For example, Nancy was very energetic in our first morning interview, while Mary was very tired and could not focus on the questions after a very long and tiresome school day. Table 3.6 below demonstrates the contexts of the individual interviews conducted with two selected participants to be analyzed in-depth.

Mary Individual Interviews	Nancy Individual Interviews
1 <sup>st</sup> : After work, in her classroom, on time	1 <sup>st</sup> : Before work, in her classroom, on time
2 <sup>nd</sup> : After work, in her classroom, on time	2 <sup>nd</sup> : Lunch time, in her classroom, late
3 <sup>rd</sup> : After work, in her classroom, on time	3 <sup>rd</sup> : In the afternoon, in a local grocery store's coffee shop, on time.

Table 3.6: Individual interview table

## **Document Collection**

Merriam (2001) addresses three types of documents, public, personal, and physical artifacts (physical), used in qualitative case studies. To create an in-depth case study of each of the selected first year teachers, I collected and interpreted both public and personal documents as well as physical documents from the research sites. The collection of public documents provided general information and foundation for the study and its participants and contexts, while gathering of personal documents reflected the participants' perspectives and provided insights for the study. Information regarding physical materials—computer, equipment, gathering places, media canter, and computer lab—were also used to supplement the data gathered via observations and interviews (Merriam, 2001, p. 118).

Hodder (2000) argues that "people both experience and read material culture meanings" in social contexts (p.710). The following table presents the documents I collected and interpreted for the study to understand personal and institutional factors influencing the first year teachers' use of technology:

Document Type	Documents Collected
Public Documents	Master of Education (M.Ed.)Program Website
	BETA 2004 Survey Results
	School District Website
	School District Technology Plan
	School District Technology Professional Development
	Workshop Materials
	School Websites
	Classroom Websites
	Newsletters
Personal Documents	M.Ed. Technology Course Syllabus
	E-mail Messages (sent by the participants)
	Post-it Notes (written by participants)
	Electronic Portfolios
	Unit and Lesson Plans
	Reflective Journals (written as a district induction
	program requirement)
	Praxis Exam Documentation
Physical Documents	M.Ed. Technology Resources Information
	BETA 2004 Survey Results for Technology Resources
	School Computer Lab and Media Center Information
	Classroom Computer Use Information

Table 3.7: Document collection

The documents I employed throughout the study proved beneficial before, during, and after the data collection. Utilization of documents helped me gain valuable insights about the participants and their contexts and supplemented the data gathered during my participant observations and interviews in the course of the study.

# **Data Analysis Procedures**

A typical data analysis procedure consists of six phases: "(a) organizing the data;

(b) generating categories, themes, and patterns; (c) coding the data; (d) testing the

emergent understandings; (e) searching for alternative explanations; and (f) writing the

report" (Marshall & Rossman, 1999, p.152). In qualitative research, typically, data collection and data analysis are done simultaneously to construct a sound interpretation of the data gathered throughout the study (Marshall & Rossman, 1999). Accordingly, I elaborated the field notes from the participant observations and listened to and had the interviews transcribed during and after the data collection period.

I employed constructivist grounded theory as a data analysis methodology to analyze the gathered data from the participant observations, the interviews, and the document collection (Charmaz, 2000). In this naturalistic inquiry, I selected constructivist grounded theory for the data analysis, because it was the most suitable methodology to analyze emergent and constructivist elements of this constructivist study (Charmaz, 2000). Utilization of constructivist grounded theory provided me with a set of lucid guidelines to identify relationships amongst concepts emerging throughout the study. The constructivist grounded theory strategies I utilized included coding data, memo writing, theoretical sampling, and computer-assisted analysis (Charmaz, 2000). I also supplemented my data analysis endeavors with strategies suggested by Glesne (1998) and Miles & Huberman (2001) for coding, generating meanings, and confirming and presenting my findings. Additionally, I employed the data analysis steps addressed by Merriam (2001) in the book, *Qualitative Research and Case Study Applications in Education*.

As I mentioned earlier, I used an observation protocol for recording descriptive fieldnotes taken during my participant observations. I typed the fieldnotes following my participant observations. Typing my fieldnotes improved my attempts to organize and prepare participant observation fieldnotes for the data analysis. By re-reading my fieldnotes I was able to see and add missing parts I could not include during my active participation in the observed activities. I also used digital journals in which I recorded my experience, thoughts, ideas, and memos after observations to elaborate my fieldnotes. While working on my elaborated fieldnotes during the data collection, I focused on emerging categories and surprising developments. To investigate emerging categories further, I focused my observations on these categories and asked questions about these in the interviews.

To explore the factors affecting first year teachers' utilization of technology, I conducted interviews with participants and their principals throughout the study. I recorded interviews with a digital voice recorder. After each interview, I listened to the recordings and took notes about emerging concepts and new questions. By listening and re-listening to interview recordings, I was able to create interview outlines in which I presented interview questions, summaries of participants' answers, keywords, and concepts, and a timeline of the interview questions and answers. Creating interview outlines greatly helped me find the parts of the interviews that I needed to focus during the data analysis. I also hired a professional transcriber to transcribe the individual interviews. Although employing a professional transcriber was extremely useful, I had to spend a significant amount of time to check and correct the transcribed interviews. Working with the transcripts of the interviews allowed me to see the data from a different perspective once I took "a break" from the data while waiting for the transcriptions.

After correcting interview transcripts, I distributed them to the participants to complete "member checks" ensuring the trustworthiness of the study (Guba & Lincoln, 1997).

As I mentioned in the data collection section, use of document collection and analysis assisted me greatly before, during, and after the data collection. By analyzing the documents I gathered before and during the data collection period, I was able to gather information on the prospective participants and research sites and became acquainted with the selected participants and research sites before I entered into the field. Once I entered into the field, performing document analysis simultaneously with my fieldwork and interviews enabled me to focus on specific themes and collect in-depth data from my participant observations and semi-structured interviews.

In order to understand the complexity of the social phenomena I was investigating, I simultaneously engaged with the data analysis throughout the data collection. "Early data analysis" allowed me to "focus" and "shape" the study as I carried it out (Glesne, 1998). My early data analysis involved digital journaling, typing up field notes, elaborating fieldnotes, coding and re-coding fieldnotes, observations, and documents, and finding emergent themes and questions. I started coding as soon as I had my first fieldnotes typed up. Although I was preparing an electronic copy of every single data collected throughout my observations and interviews as well as documents, I printed out the data to do my first coding on the hard copies. My first round of coding with the raw data yielded over 350 preliminary codes and pages of annotations throughout the borders of the papers for just one case. After the first round, I read and re-interpreted the coded data to blend some of the related codes into a single code (Glesne, 1998). During the second round of coding, since I was more familiar with the data, I was able to dismiss non-related codes and focus more on developing a better understanding of themes and categories emerging from the data (Charmaz, 2000). After the second round, I uploaded the prepared data texts into the HyperResearch, a computer assisted qualitative data analysis (CAQDA) software, and entered the codes and annotations for the each case separately. The third round of data acquaintance improved my "thinking with the data" and assisted me to put "major code chunks into 'logical' order" (Glesne, 1998, p.137). Table 3.8 presents a selection of codes and annotations for Mary and Nancy.

Case	Code	Frequency	Туре	Reference	Source
Mary	First Year Teaching with Technology	7	TEXT	61180,61697	Mary Case Resources.txt

Source Material:

Yeah I have. Like we went to the zoo and so we took a camera with us and so I printed some off and on my last newsletter I just put those on the back of my newsletter. I just reduced them in size and Xeroxed those. I guess also when we did these T-shirts the kids, the teacher scanned their animal and their fact and used those iron-on T-shirt decals to put them on to their T-shirts. So that was kind of technology related.—She handed me some class pictures that she took when they had a field trip at the zoo—

Source Annotation:

She did this at the end of the ocean animal unit plan. As a part of their unit plan they went to the field trip to the zoo. She took digital pictures at the zoo for documenting their experience. She, school media specialist, and district tech person did scanning and printing.

Mary	Use of	7	TEXT	150539,150742	Mary Case
-	Technology in				Resources.txt
	Teaching				

Source Material:

While the guidance counselor is talking to and role playing with kids about anger, Ms K logs onto the computer and types a mothers' day poem for a project that they have been doing for the mothers' day.

Source Annotation:

She uses computer and Internet for looking at resources online while students are working with the guidance counselor... using internet to find a mother days poem.

Continued

Table 3.8: A selection of codes and annotations for Mary and Nancy

Table 3.8 (continued)

Case	Code	Frequency	Туре	Reference	Source
Nancy	First Year Teaching Experience	15	TEXT	44303,45140	Nancy Case Resources.txt

# Source Material:

I think it's been great. Like I do, but I also - like I - I give a lot of credit to like my friends at Indianola but also Indianola was affiliated with - it no longer is. But when they were literacy collaborative they were affiliated with Midwestern State. Midwestern State did a lot of studies there. So I felt like I learned it through doing it and then I learned it at Midwestern State so I feel like - and I had three years. It was literacy collaborative, the same philosophy basically as Midwestern State. So I felt like I did it and learned it by doing it and then I learned in a book so I feel like - I - So it's like you first practiced it and then you learned the theories about it. (HM) Oh I see. N - So I think that's where it has helped me.

Source Annotation:

She drew on her early teaching experience in the M.Ed program and in her first year as a teacher. She is very confident with her early teaching experience.

Nancy	View of	2	TEXT	68301,69080	Nancy Case
	Technology				Resources.txt
~					

Source Material:

I - And could you tell me how important have computers and internet been in your teaching as a first year teacher. N - I think they're very useful. Like I do - I told you when I plan by hand. Any time I have a sub and like sub plans I have to type out. Like all the stuff that we do - like I don't use like worksheets. Like everything we do I make out myself. I use it all the time. I think now - I use the internet for a lot - like if I need ideas or if I want to find out something I use that a lot. We do everything by e-mail as far as the district and in my school so e-mail is very important. What else? My kids use it a lot. They use it a lot more now. Like they used to do Kid Pix and different things but now they're able to - like type to learn type thing.

Source Annotation:

By employing the HyperResearch software for coding, searching, and sorting the data, I was able to establish codebooks, find themes, label analytical categories, make inferences, and create data representation charts and graphics (Ryan & Bernard, 2000; Miles & Huberman 2001). Following inferences, I started to look for "key linkages" within each case to find "patterns of generalizations within the case" and made assertions that are instanced and warranted with narrative vignettes and direct quotes in the research report (Erickson, 1986).

#### Trustworthiness

Establishing trustworthiness is a big challenge in the naturalistic inquiry (Guba & Lincoln, 1997). A researcher must focus on the questions related to the trustworthiness, such as what counts as knowledge and who decides what counts as knowledge. Guba and Lincoln (1997) address the techniques used for establishing trustworthiness according to criteria of "credibility," "transferability," "dependability," and "confirmability" of the study. For credibility of the study, Guba and Lincoln (1997) focused on the activities including "prolonged engagement," "persistent observation," and "triangulation;" "peer debriefing;" "negative case analysis;" "referential adequacy;" and "member checks" (p. 90).

To assure the trustworthiness of the study, I employed prolonged engagement with the participants and did persistent observations in the contexts. I also used data, methodology, and member-check triangulation. In addition, I asked my peers to review the data during my qualitative research courses, clarified my own biases, engaged in reflective digital journaling during the data collection, and gave thick descriptions allowing the reader to understand the research contexts (Glesne, 1998). To ensure the study's transferability, dependability, and confirmability, I provided thick descriptions for the participant observations by contextualizing teachers' behaviors into their cultural and social contexts. I also supported my assertions with sufficient information about the participants, study contexts, participants' activities, as well as quotes and narrative vignettes from the interviews and participant observations (Lincoln & Guba, 1985).

#### **Ethical and Political Considerations**

Qualitative researchers conduct their qualitative studies in the social and cultural context of their participants. At times, this may cause ethical and political consideration in the context of the qualitative study (Marshall & Rossman, 1999). The issue of the researcher and the researched relationship is related to a researcher's decisions for her role in the study. As Fontana and Frey (2000) address, there are so many ways to approach subjects, do observations, and conduct interviews depending on one's self identification as a researcher. It is essential to gather in-depth information about and from subjects in qualitative studies, but how the data are gathered and used, or will be used, is important in terms of participants' rights of privacy (Glesne, 1998). Therefore, I paid special attention not to harm or violate the participants' privacy, while building relationships with them throughout the study. Accordingly, I strived to establish positive relationships with the participants that were honest, close, and based on common concerns and reciprocity.

Before I started this study, I applied to the Behavioral and Social Sciences Institutional Review Board (IRB) for permission of the use of human beings as research

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participants in the study. After gaining permission, I distributed teacher information letters to the participants and asked them to sign consent forms showing that they received adequate information about the study and were willingly participating in the study. Furthermore, to assume privacy and confidentially, I kept the participants and their contexts anonymous and used pseudo names throughout the study.

Social research is openly political and a researcher's responsibility is to take "explicit value positions and do social research that is honest and fair" by showing "whose interests are served or whose perspectives are being silenced"(Frederick, 1992). Having explicit value positions enabled me to evaluate my own subjectivity and clarify my own biases while my qualitative research was in progress (Peshkin, 1988). I acknowledged that I was an international female graduate student without any elementary teaching experience and studying first year elementary teachers' utilization of technology in their first year teaching. Throughout the study, I tried to be conscious of my standpoint for technology in education which states, when used properly, technology may enhance teaching and learning endeavors. Being aware of my own subjectivity towards education and technology provided me with ways to monitor my "tamed subjectivity" to reach the participants' emic voices during the data collection (Peshkin, 1988).

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# **CHAPTER 4**

## **DATA ANALYSIS**

In the following chapter, I will present the findings of the study according to individual cases. As I mentioned in the Chapter 3, I selected two out of four participants of the study for in-depth information rich cases. This chapter presents findings for the two cases, Mary and Nancy, studied in-depth during the data analysis. Both participants attended the same Master of Education (M.Ed.) Teacher Preparation Program offered at the Midwestern State University. After graduation both of the participants found jobs as first grade teachers in the same school district, but in different buildings. Since the contextual information for the M.Ed. program and the school district is the same for both participants' cases, I will first present the M.Ed. and school district information. Then, I will present cases individually including their backgrounds and personal and institutional factors affecting each case's utilization of technology in first year teaching.

#### M.Ed. Program Context

Participants of this study graduated from the Early Childhood Master of Education (M.Ed.) teacher preparation program leading to initial Ohio teacher licensure for pre-kindergarten through third grade. The Early Childhood M.Ed. program is a full-time graduate program that can be finished in five consecutive quarters. The overarching goal of the program is "to prepare dedicated individuals to apply their knowledge and skills of learning theory, problem solving, critical thinking, creativity, and interpersonal communication in the early childhood school setting" (M.Ed. program website). To achieve its goal to prepare dedicated professionals, the M.Ed. program course work includes a variety of professional courses on child development, pedagogy, technology, diversity, and action research as well as field experiences and masters capstone seminar.

#### M.Ed. Program Technology

#### Introductory Technology Course

To prepare tomorrow's dedicated teachers to teach with technology, the M.Ed. program offers a five-week introductory technology course, Media and Technology in Education, in which preservice teachers "explore some of the possibilities, implications, and challenges of teaching with media and technology" (Course Syllabus). The technology course that participants of this study took was taught in both lecture and lab formats providing opportunities for gaining technical skills in web development, presentation, and spreadsheet software as well as gaining experience with online discussions, website and software evaluations, and lesson plan design and development. As addressed in the course syllabus, the course content and activities were designed parallel to the ISTE (International Society for Technology in Education) NETS (National Educational Technology Standards) including (I) Technology Operations and Concepts, (II) Planning and Designing Learning Environment and Experiences, (III) Teaching, Learning, and the Curriculum, (IV) Assessment and Evaluation, (V) Productivity and Professional Practice, and (VI) Social, Ethical, Legal, and Human Issues. All of the course projects for the introductory technology course were included in electronic portfolios created by preservice teachers. For the technology class, preservice teachers designed a web interface and incorporated their teaching portfolio, website/software evaluations, presentation software projects, spreadsheet projects, and technology-based lesson plans into their web-based electronic portfolios. During this five-week period in the summer quarter, two graduate teaching assistants assisted preservice teachers with their electronic portfolio creations in two computer labs.

## **Electronic Portfolio Requirement**

Throughout the M.Ed. program, preservice teachers were also required to include their teacher preparation course assignments, student teaching experiences, and capstone projects into their electronic portfolio. At the beginning of their second quarter (fall quarter), preservice teachers were distributed an electronic portfolio requirement handout by which they were informed what to include in their electronic portfolios during their program. To assist preservice teachers with their electronic portfolio content developments, two graduate technology assistants held weekly computer clinics, responded to preservice teachers' technology questions via email or phone, and held office hours for one-on-one consultations with preservice teachers. Since preservice teachers were not required to attend weekly computer clinics and technology consultations were voluntary, only a couple of preservice teachers used these opportunities to improve their technical skills and develop their electronic portfolios. Graduate technology assistants also assessed preservice teachers' electronic portfolios and reported their progress to the department throughout the program. At the end of the M.Ed. program, preservice teachers updated their electronic portfolios in the master capstone seminar and presented them to the faculty and students in the department before graduation.

### Final Technology Assessment

During presentations, preservice teachers' electronic portfolios were assessed in terms of educational philosophy and student teaching documentation including statements, examples, and PRAXIS elements. In addition, portfolios were assessed in terms of design, navigation structure, page format, graphics, overall content, organization, and creative use of technology in the electronic portfolios. At the end of their program, preservice teachers were encouraged to publish their electronic portfolios on CDs and submit them with their job applications.

### **School District Context**

Participants of the study were employed by Highlands School District (pseudonym) which was established in late 1800s. As one of the fastest growing school districts in a mid-western state, the district serves 14,760 students in 13 elementary, 2 sixth grade, 3 middle, and 2 high schools. The Highlands School District also includes an administration building, a transportation center, and a resource center. The district employs 1,097 teachers 60.6% of whom have MA or higher degrees. Pupil teacher ratio in the regular classroom is 16:1. Table 4.1 presents student demographics for Highland School District as they are compared to the state average.

Student	Highlands	State
Demographics	<b>School District</b>	Average
White, non-Hispanic	83%	77%
Black, non-Hispanic	6%	17%
Asian or Pacific Islander	5%	1%
Multiracial	3%	3%
Hispanic	3%	2%
American Indian or Alaskan	<104	<104
Native	<170	<170
Economically	1504	2504
disadvantaged students	1 J 70	55%
Disabled students	12%	14%
Gifted students	23%	16%
Migrant students	n/a	<1%
Limited English proficient (LEP) students	5%	2%

Table 4.1: Highlands School District student demographics (GreatSchools.net)

Table 4.2 presents student demographics for Highland School District, Holyoke Elementary, Hamilton Elementary, and the state average to show comparisons of student demographics for the schools participated in this study.

Student Demographics	Highlands School District	Holyoke Elementary	Hamilton Elementary	State Average
White, non- Hispanic	83%	83%	68%	77%
Black, non- Hispanic	6%	3%	13%	17%
Asian or Pacific Islander	5%	8%	8%	1%
Multi-racial	3%	3%	6%	3%
Hispanic	3%	2%	6%	2%
Economically disadvantaged students	15%	10%	33%	35%
Disabled students	12%	8%	17%	14%
Gifted students	23%	13%	9%	16%
Migrant students	n/a	n/a	n/a	<1%
Limited English proficient (LEP) students	5%	4%	11%	2%

Table 4.2: Student demographics of participating schools (GreatSchools.net)

Highlands School District's vision is "to enhance meaningful learning, communication, and collaboration in the school district as well as in our ever-changing society" (District Website). According to the district website, Highlands School District strives to focus on students and student work by creating opportunities for meaningful learning acquisition for both students and community. The district provides ongoing professional development opportunities as well as rich teaching resources and the latest equipment for its teachers. Partnerships among school, community, and home are essential to enduring student development within this district. The district provides a personalized education system in which each student's unique needs are identified and responded to by teachers, tutors, and district support staff. The district also has a "buddy" system through which the district students work with students from different grades to facilitate scaffolding among students.

# **District Technology Vision**

The Highlands School District believes that "the use of technology is vital to the success of our [their] staff and students and will be used to serve as a catalyst for active, collaborative life-long learning for the Highlands community" (District Website). By effectively utilizing technology, the district will "learn and work more effectively, demonstrate capabilities creatively, solve challenging problems, make data-driven decisions, collect and analyze information with more insight, develop higher-level thinking skills through real world experiences, [and] collaborate and communicate with others through a global environment" (District Website).

The Highlands School District's technology vision is based on the beliefs that (District Website);

- Technology must be integrated into the curricular areas.
- Technology is a tool that should be used to enhance teaching and learning.
- We will leave no child behind in his/her developing use of technology.
- Technology is changing the way we do business; therefore, we should assist students and staff to become competent in its use.
- Technology helps teachers and students to create quality work.

- Technology can improve communication and interaction.
- Technology facilitates efficiency.
- The most appropriate technology should be used to achieve the district's goals.

Highlands School District values technology both as an administrative and educational tool. Thus, the district administration sees technology as an effective educational tool that "opens the door to educational opportunities and hands-on experiences never before available in the school setting" (District Website). The availability of technology in the school district goes beyond computers and internet connections in the classroom, other technology include laptop carts, digital cameras, scanners, science probes, midi keyboards, and presentation projectors in the school media centers (District Website). According to the district instructional technology coordinator, district-based exemplary uses of technology for student learning include learning to speak a foreign language via video production, learning to design and publish understandings via text and multimedia, learning to produce daily news shows, and learning to document and reflect on educational experiences via digital cameras.

To achieve its technology vision, Highlands School District also created a website, eSchool, providing links to information resources that are aligned to the district curriculum in all subject matters according to grades. Furthermore, the school district also created "technology summer camps" for its teachers to participate in technology professional development.
#### **District Technology Resources**

According to BETA (Biennial Educational Technology Assessment) 2004 Survey results, Highlands School District employs 1 full-time technology coordinator and 26 full-time technology support personnel. Although Highlands School District has technology standards for its students, it does not have technology standards for its teachers, technology support professionals, or administrators.

The BETA 2004 Teacher Survey results indicated that only 19% of district teachers took more than 10 hours of educational technology professional development classes and 61% of district teachers never took any technology training classes. Most of the district teachers (81%) responded that they would take advantage of professional development opportunities if they were presented as seminars in their school building, while 60% of the district teachers preferred computer-based and web-based training.

In the survey, 32% of district teachers said they use technology daily to support standards-based instruction, while 92% of them said they only use technology daily for sending and receiving email messages. In terms of technology support provided by the district, 97% of district teachers contact building level technology support person and 87% of them contact another teacher when they have problems with their classroom computers. Finally, 59% of the teachers reported that they usually receive technical support within 1 business day, while 37% of teachers reported receiving technical support within 2 to 5 business days.

#### **District Technology Support**

The technology support provided by the Highlands School District and its schools can be discussed under two different titles: technical support and pedagogical (instructional) support. Technical support means technology support given for technical problems, such as when equipment does not work properly, when equipment is broken, or when upgrades or troubleshooting is needed. Technical support is provided by a school building's technology staff, two teachers selected from the same building to provide technical support to the school's teachers. Pedagogical (instructional) support means help and support provided to teachers for integrating computers, internet, and software within instruction, projects, and activities. Pedagogical support is provided by district technology support personnel who are each assigned to different school building within the district.

#### **District Technology Professional Development**

In summer 2005, Highlands School District Technology Department offered a "Technology Camp" through which teachers and administrators can take technology classes and be awarded with one credit hour from Midsize Midwestern University or a District Computer Support Certificate hour for each hour or class taken. The technology courses offered for elementary teachers included: *Technology Toolbox*, Simple *Slide Shows and Movies for Beginners Using iPhoto, iMovie, and iDVD, Open Computer Lab with Technology Teachers, Give Me Five, You Name It, Kids Can Graph It, Integrating Appleworks into Your Daily Routine, Creating Teacher Web Pages, 33 Websites Every*  *Educator Should Know About, eSchool Treasures, and Preparing Parent Presentations* (Technology Camp, Summer 2005, Brochure).

As a beginner course, "Technology Toolbox" involved using digital cameras, editing photos, using timeline software, developing classroom web pages, exploring presentation and productivity software, and integrating technology resources into instruction according to district academic content standards. Also, the "Give Me Five" course provided strategies for utilizing available classroom technology (five computers with Internet connection) to enhance teaching and learning in the district classrooms (Technology Camp, Summer 2005, Brochure).

## Case 1 Mary

#### The Setting: Holyoke Elementary School (pseudonym)

Holyoke Elementary was established in year 2001 as a suburban community school with a mission to connect with family and community to empower students for achieving their fullest potential. As described by one of the teachers in the interview, Holyoke Elementary is a "Basic School" that focuses on four essential characteristics: The School as Community, A Curriculum with Coherence, A Climate for Learning, and A Commitment to Character. Parallel to Highlands School District's vision, Holyoke Elementary teachers strive to create a learning environment in which core virtues of honesty, respect, responsibility, compassion, perseverance, giving, and self discipline are integrated into the curriculum (School Website). The intent is for the school community to become a community of learners provided with opportunities to reach their highest potential. When one enters into the school building, one can see the described core virtues identified throughout the halls and rooms of the school building as well as within the curriculum taught. To create a climate for learning, teachers from Holyoke Elementary are also committed to integration of computer technology to enhance teaching and learning (School Website).

#### School Technology

To address the school's technology resources and support, professional development opportunities, and leadership provided by the principal to integrate technology, I will summarize and discuss BETA (Biennial Educational Technology Assessment) 2004 Survey conducted and published by Ohio SchoolNet. According to BETA 2004 Survey results, Holyoke Elementary School building has two computer labs with Internet and video access, fifteen classrooms that each has five computers with Internet and video access, and one media center with Internet and video access. Every teacher at Holyoke Elementary has Internet access from the school building and email accounts issued by the school district. All classrooms from Grade K through Grade 5 are equipped with Macintosh PPC G3 computers and both computer labs are equipped with both Macintosh PPC G3 and PC Pentium III and Pentium IV.

BETA 2004 Holyoke Elementary Teacher Survey results indicated that 67% of school teachers never took technology training while teaching in the district. Additionally, 78% of Holyoke teachers pointed out that they would be willing to take technology classes if they were offered in the seminar format in their school building. Survey results indicated that 77% of teachers were also interested in computer-based or web-based training for attending technology related professional development offered by the district.

While 88% of the teachers at the Holyoke Elementary agreed that the school principal encourages them to use technology resources in their classroom, only 44% of the teachers saw him as a leader in educational technology in their building. Most of the teachers responded (89%) agreed or strongly agreed that the principal provides adequate professional development opportunities for them to effectively utilize technology in their classrooms. In terms of technology utilization, 44 % of teachers responded used technology daily to support their standards-based instruction, while 56% of the teachers responded they used technology occasionally. All of the Holyoke Elementary teachers participated in the survey indicated that they used email daily to communicate with the administration, their colleagues, and the parents.

All of Holyoke teachers said they could contact building level technology support person and 89% of them said they contact another teacher in their building when they have problems with their classroom computers. More than half of the Holyoke Elementary teachers responded (56%) said they usually receive technical support within 2 to 5 working days, while 37% of them said 1 working day.

#### Classroom Settings

In order to present a complete picture of Mary's first year teaching experience, the following section first presents Mary's student demographics and includes a graphic representation describing Mary's classroom setting. Mary had a very homogenous group of students in her assigned classroom. She had twenty-two students, one of which was an

English as a second language learner and one of which was identified as having exceptionalities including emotional and behavioral disabilities. Mary's classroom was also very homogenous in terms of racial/ethnic group of her students. She had 1 Caucasian/African American and 21 Caucasian students in her classroom.

Figure 4.1 illustrates the classroom plan that may help the reader to visualize the setting in which the study was conducted. See Appendix J for detailed description of Mary's classroom setting.



Figure 4.1: Mary's classroom

# **Daily Routines**

To better represent Mary's first year teaching experience, Mary's daily teaching routines and practices will be demonstrated in a chart (see Table 4.3). The following chart of Mary's day comes from a culmination of participant observations and interviews. See Appendix K for detailed description of Mary's daily routines.

# Mary's Daily Routines

Morning Greeting	Mary greets her students.
	Students take their seats.
	Overhead projector reflects a list of things to do for students.
Literacy Worksheets	Students work on their daily literacy or math exercises.
or Math Boxes	Mary performs her daily "business type stuff."
	Students share their worksheets or math boxes.
Pledge	Students clean up their tables.
	Students stand up and say the pledge.
	Students go and sit on the carpet.
Calendar Time	Mary calls assigned students.
	Assigned students count numbers and tell the weather.
Words of the Week	Mary shows a word to the students.
	Students read, spell, and read the word together.
	A student uses the word in a sentence.
Poem of the Week	Mary reads the poem of the week alone.
	Students read the poem with her second time.
Story Book Read	Mary asks students about their previous story book.
Aloud	Mary reads a new story book.
	Mary asks students' comments about the story book.
Work Centers	Students gather in front of the work board.
	Mary explains their daily center work assignments.
	Mary does a guided reading activity, while other students are
	working in their work centers.
Computer Center	Each student is assigned to the computer center once a week.
	Students type their names and weekly words and print.
	Students log onto yahooligans.com and play games.
Clean Up Time	Mary rings a bell to announce cleaning time.
	Students clean their tables and work centers.
	Mary asks them to go wash their hands and get their snacks.
Chapter Read Aloud	Mary asks what happened in the previous chapter.
and Snack	Mary reads the next chapter.
	Students listen to her and eat their snacks.

Continued

Table 4.3: Mary's daily routines

Table 4.3 (continued)

Writer's Workshop or	Mary asks students write a topic in their journals.
Word Study	Or, Mary does a word study lesson on a literacy concept.
Lunch and Recess	Students leave for lunch and recess.
Math, Specials, and	Mary teaches a math concept or does math exercises.
Math	Students leave for a special (art, music, physical education).
	Mary checks students' homework and prepares their folders.
	Mary checks her email and prepares instructional materials.
	Students return from the specials.
	Mary asks them to play math games with their peers.
End of a School Day	Mary distributes students' homework and finishes the
	paperwork.
	Students leave for their homes.
	Mary organizes her instructional materials, cleans the board,
	tidy ups the computer center and her table.

## Mary's Background

## Family

Mary came from a family of teachers. Her father was a teacher and her mother was a teacher and guidance counselor. Her older sister is also a teacher. Mary grew up in an environment filled with teachers. She had respected the teaching profession since her childhood; thus, teaching always appealed to her as a career. She knew about the teaching profession before entering into it.

# Education

Mary's educational experience as a student from kindergarten to high school was in private Catholic schools. After high school, she went to the Midwestern State University. Mary knew she wanted a career involving helping people, such as teaching or nursing, but she didn't know what that career would be until one day she saw a group of preschoolers walking on the university campus. She decided to go into education and become a teacher. Since there was not an undergraduate education program at the Education College at her university, she received her bachelor's degree with honors from the Human Ecology College. After graduation, Mary went right into the Master of Education program in Early Middle Childhood Education at the Education College.

When she talked about the reasons for choosing teaching as a career, Mary said,

After my freshman year in college I started getting summer jobs at childcare centers and you know it just kind of felt like the right profession and so I just liked it and I liked the type of people that are in the profession. I feel like I kind of blend in well with the type of people who are teachers. (Mary, First Interview) She, then, went on to explain what she meant by "the type of people who are teachers." She believes teachers are people who have, "people values", community sense, "just values", and are honest and family oriented, "down to earth" people. Mary also loves building relationships with children and getting to know them better. Her favorite part of being a teacher is the opportunity to spend the day with children.

## Teaching

#### Early teaching experience.

Mary's early teaching experience began as a summer job at an urban childcare center after her freshmen year at the college. She worked at the same childcare center for two years in the summers. During this experience, she realized that teaching was the right profession for her. When she was a junior at the college, she started to work at a suburban elementary school's after school child care program. Working at the same elementary school for two years, she became familiar with the school, teachers, and students. After her experience in the urban and suburban settings, Mary decided she would prefer to be in a suburban setting. According to Mary, teachers in the urban schools had to focus on classroom management and families were not involved in their children's education. She stated that she did not see any differences academically between the urban and suburban settings. However, parents were more involved in their children's education in the suburban setting.

## Student teaching experience.

When studying in the M.Ed. program, Mary was placed at a pre-school in an urban setting for two quarters. At the end of the second quarter, she did student teaching for two weeks and was solely responsible for all classroom instruction and instructional planning. The following quarter, she was placed at a suburban elementary school in a third grade classroom. She spent the remaining three quarters at the same school by student teaching in the third grade. When talking about her student teaching experience in the third grade classroom, she mentioned that she had a better classroom management experience because "they [students] had three years of school under their belt by the time they started in the classroom that I was in" (Mary, First Interview).

#### First year teaching experience.

After graduating from the M.Ed. program, Mary applied to both urban and suburban school districts in central Ohio. She was hired as a first grade teacher by one of the fastest growing school districts in Ohio just before the school year started. When describing her first year, Mary said "[T]he first year is kind of like survival year. You know you have to do this, this, and this and keep an orderly classroom and then it's kind of like each year you kind of add on to things as you develop." During the first semester, "September through December," Mary felt "nervous" because she didn't have experience with first grade students. She felt like she didn't know what she was doing or "what I [she] was supposed to do all day." She didn't have many ideas for first grade center work, either. According to Mary, when she needed help to figure out what she supposed to do or teach in the first grade, she did not get enough help from her mentor teacher or her first grade teaching team. Thus, she contacted her sister, who had been teaching in another school district, and met with one of the first grade teachers at her sister's school. Additionally, she looked through professional resources that she had gathered during her M.Ed. program and studied district and state standards to see what she needed to teach in the first grade. Although she had difficult days at the beginning of her teaching experience, she also knew that "[T]he first couple of months, no matter how prepared you are they are going to be stressful." Mary also acknowledged that had she had prior experience in the grade that she was teaching, it would have made "a big difference" in her first year of teaching.

After the winter break, Mary started to feel "more comfortable" with her teaching and her "whole experience has been pretty good overall." Around the middle of the year, Mary realized that she had been "kind of naïve to first grade" and she had not known "what to expect as far as behavior and curriculum" in the beginning. With her newly developed confidence, Mary was "more comfortable" with classroom management and discipline strategies. By January, Mary realized that she needed to have "a structure" and "routines" set up and to create "guidelines" for her students' behavior. Since she didn't have adequate experience with the first grade, she didn't know "exactly what was going to work" with her students. Mary felt that classroom management had been "kind a like a trial [and] error type of thing with the first grade." She used "positive reinforcement" by using "other kids as examples" and tried "to be respectful to them," but when students made "inappropriate" choices, she gave them "a consequence." Being in the classroom for almost a year, she also realized that classroom management and discipline are "the hardest areas to master" as a new teacher.

With all the positives and negatives of first year teaching, Mary summarized her first year teaching experience as

You just need to be prepared to work hard and you know ask for help ... I'm happy with it now and it's nice to spend the day with kids. They're just so – you know they drive you crazy sometimes but they're just so innocent and they're fun and they've got great personalities ... I would rather spend the day with kids I think than with room full of adults." (Mary, Third Interview).

## **Technology**

Mary grew up in a house with a computer. Although her family purchased their first computer when she was in the fifth grade, Mary didn't have much experience with computers before high school. She developed basic computer skills at high school and at home. While she was at the high school, Mary used computers for playing Solitaire or typing papers. She also took a computing class in which she learned how to use Microsoft Office Word and a typing class where she learned the correct use of keypad. Mary also mentioned that she is a very good typist and she types really fast.

When she began college, Mary had her first computer in her dorm room. Her college technology experience included emailing, internet search, instant messaging, typing papers, and music downloading. She took another basic computer class in which

she learned basic Microsoft Office programs including Word, Excel, PowerPoint, and Access at the college. Most of the time, Mary learned how to use computers and specific software programs by playing around with them by herself.

In the first quarter of the M.Ed. program, Mary took a core technology course in which she created PowerPoint presentations and Excel spreadsheets and evaluated a website. In that course, she learned how to use Microsoft FrontPage and created an electronic portfolio as a requirement in her M.Ed. program. Mary felt that was a "big learning experience." She had already had some technology knowledge and skills before she entered the masters program, but she gained more knowledge and experience with technology in the M.Ed. program.

Besides the core technology course, Mary's technology experience in the M.Ed. program included writing papers, doing internet search, and using instructional software to study the moon phases in one of her methods courses. Mary thought her technology experience in the other M.Ed. courses "depended on the professor." When a professor was interested in technology, like her science methods course professor, s/he used technology in the classroom. Since other professors were not primarily interested in technology, Mary's technology experience was limited to typing papers and doing internet research in their courses.

In her student teaching, Mary had a mentor teacher who occasionally used technology, especially computers and internet, to guide students to complete "webquest" projects in the classroom and computer labs. The mentor teacher also had students use typing software, Type to Learn, to learn typing and Microsoft Word to type up their activities. Mary thought these kinds of activities were appropriate for third graders, because students knew how to read and write. After assisting her mentor teacher with various technology projects, Mary felt that technology enhanced projects were "easier to do with third grade."

After graduating from the M.Ed. program, Mary applied to many different school districts. She thought that her technology skills and experience might help her to land a teaching job easily. Thus, in her application materials and interviews, she mentioned that she was comfortable with technology and she had designed an electronic portfolio. When she was asked to talk about her use of technology at her new job, Mary replied

I feel very comfortable doing that and then I'm kind of - like on our first grade team if like if something needs to be typed up, like a letter we're going to send out telling the parents or something like that I'm kind of always the one who does the word processing and puts in clip art and that sort of thing just because I feel kind of comfortable doing that. I type really fast! (Mary, Second Interview)

In her first year, Mary used computers and Internet for email communication and

searching for online instructional resources to a great extent. Mary's instructional uses of technology included integrating computer center activities in her students' independent work time during which students used some software including Kid Pix, Apple Works, and TimeLiner, searched on the Internet by using Yahooligans, and played games available in Yahooligans.

Well I have - like during their independent work time they have a computer center. So, since I only have 5 computers, I like to designate time so that they're each – you know they're given a time slot every week where they can be on the computers. Um, and basically like at the beginning of the year. It was more I wanted them to just kind of get familiar with using the computers and with logging in, logging out, and closing things and so I let them do Kid Pix and just kind of designing things and I knew we would use that later in the year... (Mary Second Interview) At the beginning of the year, Mary had her students work on Apple Works and "experiment with changing the font and making letters capitals" Later in the year, Mary chose four words each week and asked her students to type them on MS Word to practice the spelling of those words and get familiar with the keyboard.

During the "Ocean Unit" in which I conducted participant observations, Mary's students researched online for their ocean animals with their "high school buddies," typed their sentences, designed their book covers, and created a short illustrated book on their ocean animals. Mary created a template for her students to fill in while they were typing up their ocean animal facts. Before students typed their sentences on the laptops provided in the media center, they wrote what they were going to type, so that they knew how to spell words in their sentences. With the help of the media center staff, Mary scanned students' ocean animal designs and printed them on tee-shirts for students to wear when they went to the zoo for a field trip. Furthermore, Mary used a digital camera to document their experience during their field trip to the zoo and used pictures in her newsletters to share the ocean unit experience with the parents.

While talking about the lessons that she learned from her first year teaching experience with technology, Mary said,

Oh - I would just say it is difficult to, you know, get ideas. It's hard to get when the computers aren't working it's hard to find people who are willing to come to work on them and once you have a problem then it is kind of hard to get it fixed. So, but I mean I think that kids just kind of naturally gravitate towards computers... It's, you know, it's exciting for them and it gets them interested. (Mary, Third Interview)

Mary mentioned that, in the future, she wants to create a classroom website and do research online for teaching resources and student websites. She also wants to make herself acquainted with Macintosh computers and find better ways to integrate computers and technology in her instruction.

## **Factors Influencing Mary's Utilization of Technology**

The data analyzed for the factors influencing Mary's utilization of technology in her first year teaching came from the interviews, participant observations, and documents collected throughout the study. Due to some last minute schedule changes for the technology projects, I was not able to observe any technology project activity carried out during the study, but I was able to see product results of the technology projects. I was also able to observe students' use of computers during their computer centers.

## **Personal Factors**

The personal factors influencing Mary's utilization of technology are summarized in the Table 4.4.

Personal Factors Affecting Mary's Utilization of Technology		
Knowledge	Lack of Meaningful Technology Integration Knowledge	
	Lack of Grade-Specific Technology Knowledge	
Beliefs	Beliefs about First Grade	
	Beliefs about Technology	
	Beliefs about Technology Integration	
	Beliefs about Technology Support	
Experience	Lack of Macintosh Computer Experience	
	Lack of Software Experience	
	Lack of Grade Experience	

Personal Factors Affecting Mary's Utilization of Technology

Table 4.4: Personal factors affecting Mary's utilization of technology

## Knowledge

## Lack of meaningful technology integration knowledge.

Lack of knowledge for meaningful technology integration affected Mary's

utilization of technology.

Unfortunately, since it's my first year and I was hired so late before the school year started, I haven't really had a whole lot of time to dedicate to finding really purposeful and meaningful things for them to do on the computers. They love using the computers and I let them use them, but, I think I'm still trying to figure out really purposeful things for them to do on the computer. (Mary, Second Interview)

The excerpted quote demonstrates Mary's doubts about her level of meaningful

technology integration. She wanted to integrate computers in her daily teaching and she did integrate them in her work centers, but she struggled to find better ways to integrate available technology in her classroom. She let her students use the computers available in her classroom thinking that students loved using them. She allowed her students to play games after they finished their weekly typing activity; however, she felt that she needed to figure out more meaningful ways of integrating technology so that her students

were engaged in activities that promoted learning and computer literacy.

Now, they can go to Yahooligans and kind of research things. I have only let them go to that website just because I don't really want them kind of surfing the internet at school and I don't know I kind of have mixed feelings about this - but I let them play the games on Yahooligans which I don't think are probably the most educational things but on the other hand, I kind of feel like it's got them using the computer and might get them interested and maybe they can talk to their parents about it and since they can't read a whole lot of what's on Yahooligans, if they do research something it's kind of like that's only going to hold their interests for so long. (Mary, Second Interview)

The excerpted quote presents Mary's dilemma for finding better ways to integrate

technology in the classroom. She utilized computers in the computer work centers by

letting students research Yahooligans for their research subjects and letting students play games online on Yahooligans. Although she had mixed feelings about students' playing games on the internet, she also thought that this experience might help them to get interested in computers and technology which may be helpful for their future.

In our third interview, Mary mentioned that her biggest challenge for integrating technology was "getting ideas of what to do with them [computers]." She also mentioned that next year she wants to dedicate more time to "try to have the kids do more meaningful things on the computers."

#### Lack of grade-specific technology knowledge.

Mary's lack of knowledge for grade appropriate technology integration affected her use of technology. When I asked Mary about the problems that she encountered with integrating technology in her teaching in her first year, she talked about her lack of grade specific technology knowledge.

I guess - not knowing really what is really good purposeful technology things for first graders to do. I think that that would be a good professional development for our building. You know I think that's a little bit frustrating. You've got five computers and you want to use them, but you don't really know anything really good for them to do... Some, I mean, and things that they can do independently without needing an adult over there. Without needing me to explain it for a week. (Mary, Second Interview)

The quote excerpted from the interview with Mary demonstrates that her

utilization of technology was considerably affected by her inadequate knowledge of

grade specific technology integration. In her answer she clearly stated that she wanted to

integrate available technology in her classroom, but she did not have the knowledge to

integrate appropriate technology in a first grade classroom. She went on the say that

"that would be a good professional development" for her school building to assist her with implementing technology in her first grade classroom.

Mary mentioned that "it is difficult to you know get ideas" and find "good purposeful technology things for first graders to do." She also thought that she did not have enough knowledge of "child-friendly software." She said that technology could be utilized better in the classroom "if I [she] knew more about how to use it and if we [they] had equipment like software."

## **Beliefs**

## Beliefs about first grade.

Mary's beliefs about first grade hindered her utilization of technology in her first year teaching.

I kind of feel like in first grade learning to read is the most important thing. So like literacy and math - those are kind of what I focus on but then also you know I think learning about social studies and science concepts is important. So those are kind of trying to get those. (Mary, Third Interview)

The quote excerpted illustrates that Mary believed that learning to read is the most

important aspect in a first grade classroom. Although she focused on social studies and

science concepts together with math, her priority was teaching students to read and write.

Thus, she focused on the topics and activities that fostered her main concerns in her

teaching. In her first year, she was so busy getting the routines set up and literacy topics

addressed, she spent less time on focusing technology utilization in her classroom.

Mary's beliefs about first graders and what first graders are capable of doing were

also very important factors in the ways that she utilized technology in her teaching.

Although Mary's students had attended kindergarten in a half day program the year prior,

she felt that her students were in "their first real school experience." Compared to the third grade students that Mary had in her student teaching experience, the first graders were "just very young" and "very needy." Thus, Mary needed to learn and develop new tactics, "the little tricks of the trade," to handle first graders and manage her classroom.

When discussing the importance of computers and technology in her teaching in the first grade, Mary said,

As far as with the kids, they've been important not as important as I would like. Um, you know, because at the beginning of the year you get these kids straight out of kindergarten and some of them have never used a computer. Most of them, if they went to school here in Highlands, you have used computers, but some of them who are from different districts, or maybe they don't have computers at home, really have never even moved a mouse and so you kind of have to explain the basics and you know a lot of them don't know where the letters are on the keyboard yet and so you have to start very basic. (Mary, Second Interview)

The excerpt illustrates that Mary believed that her first grade students, being just

out of kindergarten, had different computer skills and their access to technology varied at home. Some of them did not have any experience with computers and technology or experience with keyboard. Thus, she thought that she had to start from the basics to integrate technology in her teaching. Therefore, she included computer centers in her work centers to get her first grade students familiar with the keyboard and the Internet. Mary also stated that,

I think it's good, but a lot of times you know if they go to Yahooligans and research whales they can't always read everything that's up there under whales. So, that's kind of a little bit iffy with first grade. (Mary, Second Interview)

The quote demonstrates that Mary believed that integrating technology in

teaching and learning is "iffy" for a first grade classroom. She thought that even though first grade students may go online and do research, they are not always able to read what they find. Thus, when she implemented these kind of online research activities in her teaching, she let her students do these activities with their "high school buddies" in the media center.

## Beliefs about technology.

Mary's beliefs about technology and its importance in our lives influenced her

utilization of technology in her first year.

Well, I think that it's just that our society is basically becoming - we rely on computers and we rely on technology, and so I think the advantage of using it is these kids are going to need, regardless of their occupation they're going to need to know how to use technology. (Mary, Third Interview)

The excerpted quote demonstrates that Mary believed that our society is

becoming more and more dependent upon technology. Therefore, regardless of their

occupation, people need to know how to use technology. Thus, Mary wanted to utilize

technology in her teaching to give her first grade students a better start for their future

education and careers. Mary also believed that children are naturally inclined for

computers.

I think that kids just kind of naturally gravitate towards computers. I mean to them they're really cool and so it's always like the - when it's your turn to get to use the computers since there's obviously not 20 in our room. It's you know it's exciting for them and it gets them interested. (Mary, Third Interview)

Because of this, Mary included computer centers in her work centers. She went

on to say that

I think having kids reinforce their basic skills on computers. Like playing math games or um things like that. But then I think also just having them build their knowledge about computers and learning how to navigate on computers and just operate them alone will give them a good background for when they go to middle school and high school. I don't think I knew how to move a mouse until I was like in 7<sup>th</sup> grade. I think that just having a background with a computer is good. (Mary, Second Interview)

The excerpted quote demonstrates that Mary believed that providing young students with a computer background would help them achieve better in their future education. Therefore, she tried to utilize computers and technology as much as possible in her first year of teaching.

Mary also believed that any type of technology experience is better than no technology experience at all for her students. Although she had doubts about the level and meaningfulness of her technology usage during the work centers, she believed that her students' experiences on Yahooligan games might help them establish a better appreciation for computers and technology in their lives.

The last and the most important belief about technology was the belief that utilization of technology makes teaching easier.

I just think that - I think sometimes using technology makes teaching easier. I mean, being able to get on the computer and create something quickly and print it off and go Xerox it is pretty easy. I mean there's access to all kinds of educational stuff on the web sites on the computer. So, I would say that I think it's got a lot of advantages. (Mary, Third Interview)

The excerpted quote illustrates that Mary believed that utilization of technology

has many advantages for teachers. She believed that being able to use the computer to

create worksheets or search for activities and print them saves time for teachers. Thus,

Mary continuously used computers and the Internet for planning instructions, creating

instructional materials, and finding activities in her first year of teaching.

## Beliefs about technology integration.

Mary's beliefs about technology integration affected her use of technology in her

first year. Mary believed that integrating technology into her teaching requires additional time and effort.

The only disadvantage I can think of is just trying to figure out how to fit it in along with - I mean the content – you know I feel like we teachers have always taught reading and math and writing and social studies and science but now it's sort of like you've got to squeeze in technology, too. Sometimes it's hard to integrate it and I mean I feel like sometimes it's hard to manage it. (Mary, Third Interview)

The quote demonstrates that Mary saw technology as something that she has to

struggle to integrate into her teaching with the other teaching tasks. Instead of seeing

technology as a medium for delivering and constructing the content knowledge, Mary

thought that technology itself had to be taught as content with the other required literacy,

math, science, and social studies contents. Especially with the overwhelming

responsibilities of first year teaching, Mary felt that integration of technology "takes a lot

of kind of your own time and it's just kind of hard to get to it."

I think that like the first year is kind of like survival year. You know you have to do this, this, and this and keep an orderly classroom and then it's kind of like each year you kind of add on to things as you develop so - I'd say that I do. (Mary, Third Interview)

The excerpted quote illustrates that Mary believed that first year is a "survival year" in which she had to juggle various different tasks at the same time while carrying all the responsibilities of classroom teaching. She believed that "being new in the professional world" was "just a big adjustment to make." Although she felt "comfortable with technology," during her first year teaching experience, she could not dedicate adequate time to "find really purposeful and meaningful" technology based activities for students to do on the computers. As a first year teacher, Mary thought "there's not a whole lot of time to figure that out during your first year" and saw that as a major disadvantage of technology integration.

Mary also addressed that there was a lot of information and resources available for meaningful technology integration, but she did not have enough time to search for available resources in her first year of teaching. However, she planned to do research on "good teacher websites and kid websites" in her summer time to become more familiar with the available online resources for effectively integrating technology into her teaching.

## Beliefs about technology support.

Mary's beliefs about available technology resources and support hindered her utilization of technology in her first year of teaching. She had strong beliefs about how technology should be supported by the school and school district to better implement technology into the classroom. When I asked her how technology could be better and more utilized in the classroom, she replied,

I would say first if there were a person just assigned to our school, like a technology teacher who could have classes every once in a while to teach them specific things and then maybe part of the time would be there to support the staff. (Mary, Second Interview)

As the excerpt illustrates, Mary thought that support provided by an in-school technology teacher would be helpful for teachers who want to integrate technology into their teaching. Mary's understanding of "technology support" was to support students by teaching them basic computer and keyboarding skills, so that teachers could focus on curriculum and instruction when they are integrating technology enhanced learning activities into their projects rather than focusing on students' basic computer skills. This approach would allow technology to become a medium for learning rather than becoming a learning object itself.

Mary also thought that the technology teacher would be the same person that teachers would go to for support when they have questions related to technology or they need technology support. She also stated that

I think it would be great to have a technology representative who you know it's their job so maybe go into each class twice a month and teach the kids something about you know whether it's their program or else doing a certain lesson with them on the computers so that it's not just up to the teacher to try to figure out how to come up with things. I mean, I think that if it was kind of someone else's responsibility you could learn from them and the kids could learn from them. (Mary, Third Interview)

The quote demonstrates that a technology teacher would be useful not only for

students to gain basic technology skills for learning technology, but also for teachers to

get ideas and support to teach with technology. Since Mary didn't have much experience

with the grade she was teaching and knowledge of the grade specific technology tools,

she needed someone in the school to ask questions or to get ideas from when she wanted

to implement technology enhanced projects and activities in her teaching.

Mary believed that technology support provided by the school was inadequate and

problems with technology support discouraged her use of technology in her teaching.

Other problems, for example, like all the computers don't print correctly... Something is wrong with the print set up in my classroom and there's only two computers that print the right way and just little technology problems like that are really a big pain and they make you just not want to use them ... whenever there are problems like that you have to fill out a form and then within a week or two a teacher who is like our technology building person will try to come look at it and if they don't know then they'll get someone from the district to come look at it. So it's just kind of you know frustrations with things that don't work right. (Mary, Second Interview)

The excerpt illustrates that Mary was discouraged by the technology support

provided by the school to help her utilize technology. She stated that she would be more

willing to try new things, if she had someone in the school, a technology teacher, to go

and ask whenever she needed help and ideas rather than waiting for a week or two to get

technical and pedagogical support for using technology in her teaching.

## Experience

## Lack of Macintosh computer experience.

Mary's lack of Macintosh computer experience considerably hindered her

utilization of computers in the classroom. Throughout her computer experience, Mary

always worked with PCs. In her new classroom, however, she was given five Macintosh

computers to integrate in her teaching.

All of my experience has been with PCs until I got to my job and everything is Macintosh which doesn't really make much sense because I felt when I was interviewing for this job, for example one of the things I kind of bragged about was how comfortable I felt with technology and I had designed an electronic portfolio and I have five Macintosh in my classroom and I hardly know how to use them and they're very different. (Mary, Second Interview)

Mary went on to say that "even navigating around on the computer (Macintosh) is

very kind of foreign" to her. When she was asked how confident she felt about teaching

and learning with technology, she replied

Uh - I feel pretty comfortable with it. I would feel more comfortable if I didn't have to use Macs. Um, I mean I feel comfortable using it and I would like to use it more. (Mary, Second Interview)

When talking about problems that she encountered for integrating technology in

her first year teaching, Mary said,

I would say first just kind of not being comfortable with the software, the technology or the computers... Like I have mentioned before, I don't feel like you know now all I have to work with is Macintosh computers and I didn't really feel - like I didn't really know a lot about Macintosh computers. (Mary, Second Interview)

Mary also mentioned that although her M.Ed. program helped her develop various

technology skills, "if our technology was a little more geared towards that [Macintosh]

that would be great." She also thought that preservice teachers "should have kind of access to working on Macs" Additionally, Mary said

It would be kind of interesting for someone to do a little study on how many school districts used PCs and how many use Macintosh, because if almost all school districts are using Macintoshes, then in college in education then we should be learning how to use Macintoshes. (Mary, Second Interview)

As illustrated in the quotation, Mary suggested that teacher education programs

should research the available technology resources in the classroom and create a teacher

education technology program that allows prospective teachers to be prepared in a

platform that is widely used in the school districts. Mary also suggested that having a

"few more technology classes" during her M.Ed. program "would be helpful" in her first

year technology integration endeavors.

#### Lack of software experience.

Mary's lack of grade-appropriate software experience impeded her utilization of technology in her first year teaching. While talking about her first year technology use, Mary said

Like I have mentioned before, I don't feel like you know now all I have to work with is Macintosh computers and I didn't really feel - like I didn't really know a lot about Macintosh computers and I don't know a lot about like child-friendly software and I don't. (Mary, Third Interview)

The excerpt demonstrates that Mary felt that she lacked both the ability to choose

developmentally appropriate software and the experience to utilize software effectively in

her first year teaching. She wanted to integrate technology in her teaching, but she

lacked "child-friendly software" knowledge and experience. Although Mary had various

technological skills and experience in using technology in her own education, she had no

experience with the children's software that she is provided with in her school. Thus,

Mary thought

I think that getting us exposed to software that is used in schools. I mean I think first you have to start with finding out what software and what computers are used in schools and then they need to take that data and try to teach us that. (Mary, Second Interview)

Mary also thought that although her M.Ed. preparation helped her gain various

technology skills, she wanted to learn more about and gain experience with software that

is commonly available in the early elementary classroom.

I know that we had to do a Power Point presentation which that was beneficial, but I wish that we would have had some time to get experience using children's software...They [her colleagues] always talk about it, you can download your picture that you take in iPhoto, and just different, I guess, software programs that would have been really helpful to get some experience using those. (Mary, Second Interview)

As illustrated in the excerpted quote, Mary thought her technology experience in

her M.Ed. preparation was "beneficial," but lacked opportunities for experiencing child

friendly software available to use in the classroom as well as production software that

could be used in various technology projects. Although Mary's colleagues at the school

share their technology integration experiences with her, Mary thinks that her software

experience is inadequate to integrate this kind of production software, such as iMovie and

iPhoto in her teaching.

## Lack of grade experience.

Mary's lack of first grade experience hindered her utilization of computers in her

first grade classroom.

In the beginning of the year I just felt pretty overwhelmed with their age group and I didn't have a lot of techniques to deal with first graders under my belt since I had spent the entire last year teaching third grade. You know, I mean what works with third graders is a lot different than what works with first graders. (Mary, Third Interview)

The excerpted quote illustrates that Mary's lack of first grade experience affected her first year teaching experience greatly. Since all of her teaching experience was in the third grade and kindergarten, Mary felt overwhelmed at the beginning of her first year teaching. Mary felt like her student teaching experience was insufficient to manage a first grade classroom. She also thought that she lacked adequate classroom management techniques to "deal with first graders." Thus, Mary spent considerable time learning and seeking ways to manage a first grade classroom in her first year teaching. It was especially hard for Mary at the beginning to figure out "what to expect as far as behavior and curriculum" in the first grade classroom. Therefore, Mary's classroom management experience was "kind'a like a trial [and] error type of thing" until she found what works and what does not work for the first grade. Mary addressed difficulties that she had to face due to her lack of grade experience and said, "if you have experience in the grade that you're teaching it makes a big difference, a really big difference."

In addition to classroom management challenges in the first grade, Mary also thought there are many special responsibilities for a first grade teacher.

I mean especially with younger kids it's a lot of responsibility! You're in charge of making major decisions about whether or not kids are going to repeat first grade next year. And, you know, you know like interventions - kids do need help with reading. I mean, it's a ton of responsibility. I think that I didn't realize exactly how much the responsibility would be. (Mary, First Interview)

At another interview, Mary also said,

When you are in charge of 20 kids and you're in charge of their assessments and parent-teacher conferences and just all of the paper work that goes along with teaching. I mean, just kind of assuming all that responsibility has been, you

know, I didn't really get a whole lot of experience before this year with that stuff. (Mary, Third Interview)

As illustrated in excerpted quotes, Mary thought there were so many gradespecific responsibilities that she had not experience before becoming a first grade teacher. So, she always compared her third grade student teaching experience with her full time first grade teaching experience. Mary also constantly tried to find ways to manage her new responsibilities while enduring her first year of teaching.

Even with these first grade responsibilities, Mary wanted to utilize technology in her teaching. However, Mary's lack of experience with first grade hindered her utilization of technology in meaningful ways. Mary said one of her barriers for integrating technology is not having "good, purposeful technology" integration ideas for first grade classroom. Since, she lacked both curriculum and technology integration ideas for first grade classroom, Mary felt frustrated with her technology integration experience.

## Institutional Factors

The institutional factors affecting Mary's utilization of technology in her first year teaching are summarized in the Table 4.5.

institutional Factors Affecting Mary's Cunzation of Technology		
M.Ed. Program	Inadequate Technology Experience	
	Lack of Macintosh Computer Experience	
	Lack of Software Experience	
	Lack of Connections between Classroom Teaching	
	and E-Portfolio Experience	
	Inadequate Faculty Support for Technology	
School District	Lack of Communication of District and School Technology	
	Vision	
	Lack of Professional Development Opportunities	
	Lack of Proper Technology Support	
School	Inadequate Technology Support	
	Limited Equipment in Her Classroom	
	Overwhelming Responsibilities	

# Institutional Factors Affecting Mary's Utilization of Technology

Table 4.5: Institutional factors affecting Mary's utilization of technology

## M.Ed. Program

## Inadequate technology experience.

Lack of adequate technology experience in the M.Ed. program hindered Mary's

utilization of technology in her first year of teaching. While talking about her M.Ed.

technology experience in the program, Mary said,

I think that maybe having a few more technology classes would be helpful. I can think of a couple of classes that weren't very beneficial that could be replaced by some technology courses. (Mary, Second Interview)

Mary went on to say that

Like one was - I had this class on how to use non-fiction books in teaching. And it was really - it's not that the teacher was bad or anything, but to have a ten week course on how to use non-fiction books was just very - I don't know. I just felt kind of like unnecessary...It was – you know I mean I can think of just other classes that - we could have gotten more out of. (Mary, Second Interview)

Excerpted quote demonstrates that Mary thought having more courses focusing on

the utilization of technology in the classroom would be more beneficial for her than the

other courses that she had already mastered in a couple of classes or before coming to the program. Since Mary graduated from an early childhood development program and completed her honors thesis in reading development and recovery, she already was knowledgeable in some of the reading and literacy courses. Since her previous experience was lacking adequate technology experience, she thought she needed more courses on the use of technology in teaching and learning during her masters program.

Data analysis revealed that Mary's inadequate technology experience in the M.Ed. program resulted in three important factors affecting Mary's utilization of technology in the classroom: Lack of Macintosh computer experience, lack of grade specific software experience, and lack of connections between the classroom and the e-portfolio assignments in the M.Ed.

Lack of Macintosh computer experience: As mentioned in the personal factors, Mary's lack of Macintosh computer experience hindered her use of classroom computers in her first year teaching. Mary did not feel comfortable using Macintosh computers in her classroom.

I felt pretty good about my experience with technology at Midwestern State. I feel comfortable using technology. Like I have mentioned before, I don't feel like you know now all I have to work with is Macintosh computers and I didn't really feel - like I didn't really know a lot about Macintosh computers and I don't know a lot about like child-friendly software and I don't – you know I think that if our technology was a little more geared towards that that would be great. (Mary, Third Interview)

Although Mary felt comfortable with her technology skills and she had

experience with technology, she got discouraged when she was given five Macintosh

computers to use in her classroom. She thought that she should have been given more

opportunities to work on Macintosh computers during her M.Ed. program. Mary also

commented that her M.Ed. program managers should have a survey of available technology resources in the classroom and provide preservice teachers with opportunities to become familiar with these technology resources during the M.Ed. program.

Lack of software experience: As I addressed in the personal factors, Mary's lack of software experience impeded her utilization of computers and software in her teaching. Mary felt that she lacked sufficient child-friendly software experience to utilize software effectively in her first year teaching.

A lot of what we did was little research things and then we posted them on our electronic portfolio. And I know that we had to do a Power Point presentation which that was beneficial but I wish that we would have had some time to get experience using children's software, because for example - like TimeLiner – um you know Kid Pix. (Mary, Second Interview)

As illustrated in the above quote, although the technology course was a good

experience for Mary, she thought that her technology experience in that class was limited to researching some topics and posting them in her web based portfolio. Her technology experience in that class included using Microsoft PowerPoint, Front Page, Word, and Excel in teaching and learning. However, Mary thought she could have been more prepared if she had had related experience with educational software. She expressed that "taking a class on how to use computers in the classroom" would have been more helpful instead of "just designing Power Point" presentations. Mary reflected that her technology experience in the M.Ed. preparation would have been more beneficial if she had experienced child-friendly software as well as productivity software available in early elementary classrooms.

Lack of connections between the classroom teaching and the e-portfolio experience: When talking about the M.Ed. program's approach to technology, Mary stated that she had "a lot of experience with technology" during the M.Ed. program. However, she also mentioned that the technology experience she received in her M.Ed. program was unconnected to her classroom teaching.

Instead of just designing PowerPoint, and I understand that they have to have us make projects so that they can grade us, but, I mean I think that teaching us specific - about specific –you know- I don't know - software applications that are on Macintosh as in PC's are used in school. I think someone needs to get on the phone and call the school districts in Midwestern City and say what kind of computers do you use and what do you use on the computers and then they need to teach us that. I think that's honestly as simple as that. (Mary, Third Interview)

The excerpted quote demonstrates that Mary thought they needed to learn about

using computers in early elementary classroom instead of creating PowerPoint presentations or Excel worksheets as assignments for their electronic portfolios. Then again, the main idea for teaching them how to create presentations or spreadsheets was to teach them how these applications can be integrated in their classroom teaching. According to the Introductory Technology Course Syllabus, one of the purposes of those assignments was to assist preservice teachers "to gain technical competencies" in use of web, presentation, and spreadsheet software as well as promoting reflective practice by collecting and reflecting on their preservice teaching experiences in a web-based portfolio. Furthermore, when Mary was reminded that in the M.Ed. technology course they were required to review either some educational software or an educational website, she did not remember studying educational software in the class.

Mary thought her technology experience in the M.Ed. program was focused solely on electronic portfolio and web development rather than focusing on how to integrate technology in the classroom. We did Power Point and we used Front Page but a lot of our technology was sort of geared towards our um electronic portfolio and I doubt that I'll ever do another electronic portfolio. I mean I might make a website for my classroom, but I don't know that it would even be using Front Page. While I think it was a good project, I just wish maybe we had gotten experience doing a little bit, maybe using different software, different programs, so. (Mary, Second Interview)

As illustrated in the quote above, Mary felt like her technology experience in her

M.Ed. program was "geared towards" the electronic portfolio only. Although she thought creating an electronic portfolio was "a big learning experience" and she "learned a lot that year about designing my own [her] web site," she wished that she had had more experience with children friendly software and Macintosh computers so that she could use her technology knowledge and experience in her first year teaching. As I mentioned above, Mary thought her electronic portfolio experience during her M.Ed. program consisted of researching, creating, and posting assignments rather than reflecting on her practice by collecting and reflecting on her student teaching experience via web based portfolio. Mary needed to see more obvious connections between her electronic portfolio experience and how this experience was related to her teaching practice.

## Inadequate faculty support for technology.

The support provided by the M.Ed. program faculty was inadequate for Mary to experience effective uses of technology in her teaching and learning. While talking about the faculty and department's approach to technology, Mary addressed that support provided by faculty was based upon the faculty's individual interests in technology.

Like in my science class, we did - we used this one software- I don't really remember what it was called. We used this one software to learn about the moon and the phases of the moon. [Researcher: With Dr. Tressel?] So, with Dr. Tressel, yes, I think it also kind of depended on the professor, you know. Like in her class we did use technology. But in some other classes it was more just kind
of researching and writing papers and a lot of the time we used the internet for research, you know but sometimes we didn't. (Mary, Second Interview)

As the excerpted quote demonstrates, technology support provided by faculty depended upon the professor's individual interests. If a faculty was interested in utilization of technology in teaching and learning, s/he created opportunities for preservice teachers to use technology in the methods course to introduce them to available technology and software in that specific subject area. Other than one professor's efforts, Mary's experience with technology in her M.Ed. mostly consisted of "writing papers" and using the internet "for research." Although Mary felt like she was encouraged to use technology for researching and writing papers in her classes, most of her professors did not require her to use technology besides creating her electronic portfolio, which she saw as a graduation requirement.

#### School District

Since Mary's school is situated in the greater context of the school district, most of the institutional factors originating from the school district and school were closely related to each other. Although the school has some unique factors affecting Mary's utilization of technology, most of the school and school district based factors were interwoven with each other.

#### Lack of communication of district and school technology vision.

Lack of communication of district technology vision and guidelines affected Mary's utilization of technology in her teaching. Although the district had a district technology plan and benchmarks for technology integration, the district's vision and guidelines for technology integration were not shared with new teachers, at least in Mary's case. While talking about the districts vision and support for technology integration, Mary said,

I guess we're just, we're not held extremely accountable for using technology so -I mean as a parent that they value technology because - there's things just around our school where technology is used but I don't know how much it's valued because there's no guidelines or there's no - I could probably never turn on a computer all year and I don't know that anyone would have a problem with that. (Mary, Second Interview)

As illustrated in the excerpted quote, Mary thought teachers were not held

accountable for utilization of technology in the classroom. She believed that, although district personnel may value and support technology integration as parents, they did not require teachers to effectively use technology in the classroom. Since the technology guidelines and district vision for technology were not effectively communicated to Mary, she assumed that the school district did not have any guidelines or vision for utilizing technology in the district classrooms. Most importantly, she thinks that integration of technology is not observed by the district personnel and that it is a personal choice of an individual teacher.

Although Mary's school principal stated that he valued technology and supported his teachers in their individual endeavors to use technology, he did not urge his teachers to integrate technology in their teaching.

Really from my experience this year, it seems to be a pretty independent thing. I mean, you know, there is no one who tells us we should have the kids using the computers. There's no kind of guidelines for how to use them. I think it's just more if you choose to do something with them you do it, and if you don't, you don't. So, as far as I know there is no kind of guidelines. (Mary, Second Interview)

The school principal argued that he was very supportive of teachers who would

like to integrate technology in their classroom teaching and implement technology

enhanced projects. However, since there was not any expectation of teachers regarding the use of computers, utilization of technology became a choice of individual teachers. Mary felt that she was "encouraged to use" technology in her teaching, but "when something is wrong or when you can't figure something out" she had a very hard time "to get support."

# Lack of professional development opportunities.

Lack of professional development opportunities for new teachers before entering in the classroom hindered Mary's use of technology in her first year teaching. As discussed in the personal factors section, Mary lacked some necessary technology skills to utilize computers and software available in her classroom. However, Mary was not provided any technology training upon employment by the school district to utilize Macintosh computers and software available in her classroom.

I guess I would say for one thing if I knew more about how to use it and if we had equipment like software. Or if we were even - I think it would be good. Like during - we have this induction week and that's when new people to the district go for a week before school starts to kind of get debriefed on the school district and learn how to do e-mail and learn about the curriculum and I think maybe if they spent a day and kind of explained how to use these programs or something like that that would be really helpful because you kind of - you're thrown into it ... I think even just a couple hours of an introductory course when you're new to the district or something like that would be a good idea. (Mary, Second Interview)

The quote excerpted demonstrates that the school district's orientation program did not provide adequate technology training and support for its first year teachers. Mary thought the school district was "big on professional development." While talking about her district orientation experience, Mary mentioned that they learned how to set up their "e-mail account," "but that was about it". She also addressed that, although they spent at least 1 hour on emailing in the district, after the orientation when she entered in the classroom she forgot how to use it. Thus, Mary stated that week long workshops on how to use district technology resources in the classroom would have been helpful to make the start of her first year teaching easier. During the interviews and observations, Mary also mentioned that, although the school district was devoted to professional development of its teachers, she did not have any professional development course or workshop focusing on available technology resources and support in her school and district during her first year.

The district has a "huge resource" website called e-school in which the district presents available websites according to grade and subject matter. In addition to some other professional development topics, Mary thought that she would like to know and find out more about the e-school website and learn how to utilize it in her teaching. Mary argued that in order to successfully utilize technology in the classroom, institutions need to "educate the teachers on the technology" because "if the teachers don't know how to use the computer they are not going to use them in their classroom." On the other hand, when the school district offered professional development opportunities and workshops focusing on improving teachers' technology skills in the summer following her first year, Mary did not take any technology courses. She, rather, took courses on reading and literacy development.

# Lack of proper technology support.

Lack of adequate technology support hindered Mary's use of technology in the classroom. Although the school district had assigned technology support personnel for

the schools, one technology support person was responsible for supporting three different schools in the district. In order to get technology support from the district, Mary had to plan her instruction and activities ahead of time and set up an appointment with the technology support person during the school hours. When talking about the district technology support, Mary said

I wish that there was kind of a technology teacher at our school or someone who could, I don't know, work with the teachers or work with, um, like we have a lady but she visits tons of schools. I think she's at our school and then maybe 2, 3 other schools in Highlands. She doesn't meet with us on a regular basis or anything like that. She just—yeah, if we need her. If we need her to set something up for us we can call her and she'll do something with our kids but it's kinda, it's a big deal to set it up. (Mary, Second Interview)

As illustrated in the quotation, technology support provided by the school district

was inadequate for the needs of a first year teacher. Since one person was responsible for many teachers and hundreds of students in three different schools, the district technology support staff was quite busy; thus, getting technology support took a long time. Mary thought that it was a "big deal to set up" a technology support appointment. She also mentioned lack of regular meetings with the district technology support personnel. She didn't have close relationships with the district personnel including the district technology support staff. She was also reluctant to ask for help from the district personnel. This affected her involvement in the projects that required technology support provided by the district personnel. Mary stated, if she had had regularly scheduled technology support meetings with the technology support staff, she would have been more willing to ask for help or get an appointment for technology support in a project.

Mary often addressed her wish to have one district technology support person in her building. She thought that "a technology teacher" could help students learn basic technology skills and assist teachers with planning of technology enriched activities for their units. Instead of dealing with each student's different technology skills and abilities in the classroom, Mary could just focus on her teaching and instruction by utilizing technology while getting adequate technology help when she needed it during the school day.

# School

# Inadequate technology support.

Inadequate technical support provided by the school impeded Mary's use of technology in her first year. During her first year of teaching, Mary had a difficult time getting enough support to utilize computers and software in her classroom.

Like, I have some educational games but you put them into the computers and they don't work. I have no idea why. You know even - that's part of the frustrating thing and when something is wrong with your computer, you have to put in a work order and somebody is supposed to come fix it and it's very kind of round about. (Mary, Second Interview)

As illustrated in the quotation, when Mary needed technical help with computers

and software in her classroom, she had to go through a very long process to put in an

order for and receive technical help. Although she had some technology equipment in

her classroom, she could not effectively utilize them due to lack of appropriate

technology support when needed. Getting technology support took a lot of time and

energy and caused frustrations for Mary.

If you have a problem you have to fill out - like that pink sheet I was filling out today was actually a work order for a technology person because I've got one computer that whenever I - you click on Kid Pix it says file not found. It cannot open - so - whenever there are problems like that you have to fill out a form and then within a week or two a teacher who is like our technology building person will try to come look at it and if they don't know then they'll get someone from

the district to come look at it. So it's just kind of you know frustrations with things that don't work right. (Mary, Second Interview)

The excerpted quote demonstrates that the process for technology support is long and bothersome. Mary needed help "right away" in order to effectively utilize five computers in her classroom, but she had to fill out a form and wait for the technology (technical) support teacher from the school to come and look at the computer. However, as Mary stated, a teacher who is assigned as the school technology support teacher comes to her classroom and tries to help her "within a week or two." Even after waiting this long, that person may not be able to help her. That person may need to contact the school district support person for technology help which may result in waiting for one or more weeks. So, getting technical support and solving a technology problem may take two to three weeks. In the mean time, if Mary wants to use a computer or software in the classroom for a project, instruction, or an activity, she has to change her plans or wait until the problem is fixed.

On the other hand, instructional technology support provided by the school district was very beneficial for Mary when she wanted to utilize technology in her teaching. About the school's technology support, Mary said,

I think we're encouraged to use it, but I don't - it just seems like when something is wrong or when you can't figure something out that's when it is hard to get support. Like if you want to do something or create a project, usually someone like our technology person is willing to set up a time to do it or our media specialist but it's more like when something isn't working right. That's when it's hard to get support. (Mary, Second Interview)

As illustrated in the quote above, the school encouraged its teachers to use

technology and provided pedagogical support when teachers needed it. However, the

technical support provided by the school was inadequate and took a lot of time to solve

technical problems that occurred during utilization of technology in the classroom.

#### Limited equipment in the classroom.

Limited technology resources in the classroom hindered Mary's utilization of

technology in her teaching.

Since I only have 5 computers, I like to designate time so that they're each – you know they're given a time slot every week where they can be on the computers. (Mary, Second Interview)

In another interview, Mary said

I mean to them [students] they're really cool and so it's always like the - when it's your turn to get to use the computers since there's obviously not 20 in our room. (Mary, Third Interview)

As the excerption illustrates Mary had only five computers in the classroom. In

order to use them in the work centers and equally engage her students in the computer activities, she had to plan ahead and create a "computer work center". During the work centers, each student group had only one day to work on the computers in a week. When Mary needed her students to work on the computers for a project or research, she had to set up an appointment with the media center staff to reserve media center computer lab

for her class and received help from media center staff.

When Mary's principal was talking about school teachers' utilization of

technology, he mentioned that the teachers in his school use media center computers

more effectively than the computers available in their classroom or the laptop cart

available in the media center. Mary mentioned the same topic and said

Usually there's - we have a big room, in our media center and so I think that most teachers just do it there because they don't have to come in and set it up. They can just have it set up and then you go down there. (Mary, Second Interview)

As demonstrated, most of the teachers including Mary, do not want to spend their time planning special activities for the available five computers in their classroom or spend time setting up laptops in their classroom. They prefer to go to the media center and have media center staff set up laptops for their class use in the media center.

Another limited resource Mary addressed was the software. The classrooms were either lacking software or available software was not working properly. On many occasions, Mary said she had to ask other teachers for available software or for their help to solve problems related to improperly working software. She also stated that improperly working resources discouraged her from using available technology in her classroom during her first year.

# Overwhelming responsibilities.

Overwhelming responsibilities given by the school administration influenced Mary's utilization of technology in her first year of teaching. In Mary's first year there were so much different paperwork to be filled out, meetings to be attended, and reports to be written that affected Mary's first year experience and brought additional responsibilities for her to take on.

I would say that the one thing that I don't think I was prepared for was all the kind of extra work that the school itself kind of puts on you. Like our principal has those duties - bi-monthly reports of - you know like our biggest accomplishments that month and we were having to go to all these extra meetings and you know um you know collect evidence of growth in our classroom. While I think that's very it's good to be reflective, at the same time I think as a new teacher a lot of those types of parts of my job just put more stress and just kind of took away from the time that I could do planning. (Mary, First Interview)

Excerpted quote illustrates that Mary felt overwhelmed with "extra work" and

responsibilities given by the school in her first year teaching. She felt like she had so

many responsibilities in the classroom besides her academic responsibilities such as teaching and facilitating student learning. Mary thought that she was not ready to take on "the kind of extra work that the school itself kind of puts" on her, thus, she had hard time to "juggle everything." She needed to spend more time and support for planning for instruction. However, she was expected to participate and contribute to school based meetings as much as her colleagues who had been teaching for years.

Having these responsibilities put more pressure on Mary and she felt frustrated. In addition to school meetings, Mary had to establish good relations with parents and keep communicating with parents through notes and email and answer their questions related to students, events, activities, meetings, and so on. In the midst of these responsibilities Mary did not have enough time and energy to manage her limited technology resources in the classroom to utilize them effectively in her teaching.

#### Case 2 Nancy

#### The Setting: Hamilton Elementary School (Pseudonym)

Hamilton Elementary is a suburban community school with a mission to create "a learning community" in which community members can believe that they are in the right place and can be successful. Hamilton Elementary School is also in the Highlands School District and thus has a similar vision, the school endeavors to create a learning environment in which creativity and innovation is encouraged in teaching and learning activities. Hamilton Elementary purposefully focuses on team work, each team consisting of one of each grade, to attend to the educational needs of students' in different ages and aptitudes. As defined by the school website, Hamilton Elementary school, as a "Basic School," integrates the core virtues of honesty, respect, responsibility, compassion, perseverance, giving, and self discipline into the curriculum. The curriculum implemented in Hamilton Elementary is developed around themes allowing students to study and learn individually, in small groups, and by scaffolding their peers. To create a learning climate in which students and their teachers establish relationships based on trust and understanding, Hamilton Elementary employs a "looping" approach allowing students to stay with their same teacher for two years.

### School Technology

Hamilton Elementary School created a school improvement plan in which the school administrators addressed their action plans involving integration of technology, specifically computers, kid-friendly software, and the Internet, to achieve their school improvement goals in areas of mathematics and literacy. Some of the action items included "students will improve computation skills due to incorporating Everyday Math games a minimum of 10 or 15 minutes every day" and "District Curriculum Department" will endorse use of "Media Blender, Timeliner, and Kidspiration" in the classroom.

In 2004, Ohio SchoolNet conducted and published a survey, BETA (Biennial Educational Technology Assessment), to present school and district technology resources and applications in the State of Ohio. I will use BETA 2004 Survey results to portray Hamilton Elementary School's technology resources and support, professional development opportunities, and leadership provided by the principal to integrate technology. According to BETA 2004, Hamilton Elementary School has three computer labs with internet and video access; twenty nine classrooms with computers (five), internet, and video access; one media center with internet and video access. All teachers have Internet access from the school building and their email accounts issued by the school district. All classrooms from Grade K through Grade 5 are equipped with Macintosh PPC G3 and Macintosh PPC G4 computers and all computer labs are equipped with both Macintosh PPC G3 and PC Pentium III.

BETA 2004 Hamilton Elementary Teacher Survey results indicated that 55 % of school teachers attended "Integrating Technology into Instruction" training, while 18% of teachers never took technology training during their employment in the district. Three fourth of Hamilton teachers pointed out that they would be willing to take technology classes if they were offered in the seminar format in their school building. Additionally, 64% of teachers were also interested in computer-based training for technology related professional development offered by the district.

While 73% of the Hamilton Elementary teachers agreed that the school principal encourages them to use technology resources in their classroom, only 18% of the teachers saw their principal as a leader of educational technology in their building. Only 55% of the teachers agreed that the principal provides adequate professional development opportunities for them to effectively utilize technology in their classrooms. While 64% of the teachers who responded used technology occasionally to support their instruction, only 36 % of the teachers used technology daily to support their standards-based instruction. All of the Hamilton Elementary teachers who participated in the survey

indicated that they used email daily to communicate with the administration, with their colleagues, and with the parents.

In regards to technology support provided by the school, 91% of the school teachers said they contact a building technology support person or another teacher when they have problems with their classroom computers. Eighty-two percent of the Hamilton Elementary teachers said they usually receive technical support in 2 to 5 business days.

#### **Classroom Information**

In order to provide a comprehensive story of Nancy's first year teaching experience, the following section first addresses Nancy's student demographics and then presents a graphic representation of Nancy's classroom setting. In her first year, Nancy had a diverse group of students in her assigned classroom. Nancy had twenty three students, four of which were "limited English language proficient" and five of whom were identified as having exceptionalities including developmental, emotional and behavioral, and physical disabilities (Praxis Candidate Profile). Nancy's classroom was also diverse in terms of race and ethnicity. She had 1 Asian, 2 Hispanic, 2 Arabic, 3 African-American, and 15 Caucasian students in her classroom.

Figure 4.2 displays Nancy's classroom plan that may assist the reader to visualize the setting in which the study was conducted. See Appendix L for an in-depth description of Nancy's classroom setting.



Figure 4.2: Nancy's classroom

# Daily Routines

In order to provide a complete description of Nancy's first year teaching experience, her daily teaching routines and practices will be demonstrated in a chart (see Table 4.6). The following chart of Nancy's daily routines comes from a culmination of participant observations and interviews in her classroom. See Appendix M for detailed description of Nancy's daily routines.

Morning Greeting	Nancy greets her students.
	Students pick up their journals and take their seats.
Journal writing	Nancy gives "extended response" topics.
	Students write and share their journals.
Literacy Centers	Nancy starts a mini lesson to explain their literacy centers.
	Students work on their literacy centers.
	Nancy does a guided reading activity, while other students are
	working on their literacy center tasks.
Cleaning Time	Nancy asks a student to turn on the sing along music.
	Students sing and clean up their tables.
	Nancy asks them to come and sit on the rug with her.
Writing Workshop or	Nancy guides students to discuss, write, and share during
Book Reading	writing workshop.
	Or, Nancy reads a book chapter from a book.
	Nancy starts reading with a discussion on previous chapters.
Lunch and Recess	Nancy takes students to lunch.
	Nancy returns to the classroom and has her lunch in the
	classroom while working on planning or daily paperwork.
Math	Nancy uses "Everyday Math" textbook to teach math.
	Nancy guides her students to do math activities.
Specials	Students go to their specials.
	Nancy checks student homework and writes notes to parents.
	Nancy checks her email and prepares instructional materials.
SOUIRT	Students do SOUIRT, super quiet uninterrupted reading time
SZOWI	Nancy does a guided reading activity.
Free Choice	Students do a free choice activity.
	Nancy distributes their homework folders.
	Students leave for their homes.
	Nancy organizes her instructional materials

# Nancy's Daily Routines

Table 4.6: Nancy's daily routines

#### Nancy's Background

# Family

Nancy was born and raised in a small-rural town in the Midwest. Although neither of her parents was a teacher, she always wanted to be a teacher since she was a little girl. She always knew she was "born to teach."

# Education

Nancy attended a high school that serves three small towns with 190 students. She noted that although her high school had some diversity in terms of economic status, she never experienced cultural diversity in her schooling experience. After high school, she moved to a big Midwestern city and attended the Midwestern State University.

Nancy started to work as a teacher aide for an alternative and multi-age school while she was studying at the university. Since she never had experience with culturally diverse students in her own schooling, the job provided her with her first diversity experience and she loved it. Thus, Nancy decided to become a teacher and entered into the Masters of Education in Early Middle Childhood Education after receiving her Bachelor of Science degree in Human Development.

When talking about her reasons for wanting to become a teacher, Nancy said,

I started working there [the alternative school] in a K-1 multi-age for two years and then straight first grade my third year and I loved it. So that's when I knew like - and it was also my first like eye-opener diversity because I had never worked with like those type of children and I loved it. So that's when I decided like this is definitely what I need to do because I loved my job. (Nancy, First Interview)

Nancy, later explained, "those type of children" who are "very needy" and "government housed kids" coming from "single family homes if not even living with

somebody else." That was why she wanted to teach in the "inner city" so that she could have an impact on children's lives in good ways.

# Teaching

# Early teaching experience.

As mentioned above, Nancy started working as a teacher's aide in an alternative school in her sophomore year at the college. She worked in a K-1 multi-age classroom for the first two years and then in her third year she worked in a first grade classroom. In this alternative school she had an opportunity to work with a teacher who graduated from the same master's program that Nancy attended and was interested in language and literacy development. Nancy thought of her early teaching experience as a great experience with diversity in an alternative setting. Her teacher's aide experience at Ivy (pseudonym) with the same teacher for three years gave her the confidence to teach in a K-1 classroom with a strong emphasis on literacy. In her conversations, she always referred to her early teaching experience and how she felt better prepared to teach because of this experience.

#### Student teaching experience.

Nancy student taught in a "1-2 multiage informal classroom" in a suburban setting. Although she thought that she "learned a lot from the M.Ed." program, she felt that she did not have enough opportunity to experience different settings since she spent all of her student teaching time in the same setting. While discussing her student teaching experience, Nancy said,

Like I was in a 1-2 multiage in the informal classroom for the entire time and I felt like if it wouldn't have been for my experience at Ivy [the alternative school

she previously worked] I would have learned nothing. I felt like I - I sort of feel that you need like - it would be classroom places they need to look for a little bit better. (Nancy, Third Interview)

Nancy went on to say that

And I also think that we should have been in a couple of different placements for K through 3. It was awesome though - I don't know - I'm kind of pulled in two different directions because it was nice seeing them from the very beginning until the very end, but at the same sense it would have been nice to see other classrooms and other ways of teaching. (Nancy, Third Interview)

Although she appreciated her student teaching experience, Nancy would have

preferred to have had more placements in different settings including urban, suburban, single grade, and multiage classrooms. She also mentioned that if she had been placed in a setting with a teacher who was interested in language and literacy development, her student teaching experience would have been more beneficial to her. However, it was not the case for her and she had a very difficult time student teaching with a teacher who "believed reading and writing wasn't important as in my [her] case."

#### First year teaching experience.

Nancy applied to several different school districts in central Ohio and found a teaching job as a first grade teacher in one of the biggest school districts in the area. When talking about her first year teaching experience, Nancy stated "it's been great." She gave "a lot of credit to my friends at Ivy" for her readiness to teach in her own classroom. She also mentioned that her previous teaching experience at the alternative school in which she first practiced "literacy collaborative" that was also a strong focus area in her masters' degree helped her to be more confident in her first year teaching. Nancy went on to say that "I have a lot to learn but I feel like I'm stronger because of Ivy. I really do… I feel like teaching is sort of like natural to me."

Nancy had a lot of confidence in herself as a "teacher." She knew her "strong points" such as literacy and integrated curriculum as well as her limitations in math. Therefore, in her first year she focused on literacy and integrated curriculum and planned to gain more experience and knowledge in teaching math in the following years through professional development opportunities provided by the school district.

Since her position required "looping," Nancy had to attend both first grade and second grade meetings in her first year of teaching. Although attending different meetings was hard and took considerable time, she thought looping would be "awesome," because it would provide an opportunity to "know" her students and build "great relationships" with them. Nancy also mentioned that she would have to learn a new curriculum for the next year in her second year of teaching. Nevertheless, she explained that she was "the primary teacher" and "if you are a good teacher, you should be able to teach." She went on to say that "I don't look at myself as a first grade teacher, like I look at myself as a primary teacher."

Besides first and second grade looping meetings, there were "a lot of meetings" Nancy had to attend and "a lot of extra work" she was not expecting before starting her first year. For the first twelve weeks, Nancy stayed at the school until "8 o'clock, 9 o'clock" and went home and worked on "stuff" until midnight. Later, with help of a friend, she realized that she "was burning myself [herself] out" and she had to learn to separate work from home. On another occasion while talking about her first year experience, Nancy stated that "the one lesson I learned is you have to separate home and school." After "learning her lesson" she started to leave school before seven o'clock and come in on Sundays to do some planning for the following week.

Nancy had strong support from her boyfriend who was teaching kindergarten in the same school district and her literacy collaborator in the school as well as her teacher friends from her early teaching experience. During our formal interviews and informal meetings, she was always referring to her boyfriend when she was talking about her first year teaching experience and how she came to an understanding that she was doing her best and she "cannot save the world." The second support in her first year teaching was her literacy collaborator who was always helping her with the planning, guided reading activities, and writing workshops, listening to her daily problems, and supporting her with her decisions and actions.

Nancy summarized her first year teaching experience with the following dialogue,

I think that in order to be a good teacher it's very time consuming. I don't know if it's just my first year or because I'm a perfectionist or - I'm not sure, but I felt I worked all the time. [Researcher: Maybe both?] It could be both, but I feel like and it could be like the grade. First grade is one of those like I feel like I worked. I didn't realize I would work as much as I did, but I learned. (Nancy, Third Interview)

#### **Technology**

Nancy encountered computers before she started high school. However, her first "learning" experience with computers was in the high school. In the high school, she took a computer class in which she learned "basic things" including learning the keyboard and typing. She had a computer at home and used it for typing papers, but in college she "really started" using computers to a great extent. She didn't take any "technology" classes in college, but she used computers and Internet for typing papers, email communication, enrolling in her classes, and researching online. Although Nancy used e-mail and the Internet "for everything" in her undergraduate education, she believed that it was her masters degree program in early childhood education in which she learned and experienced "a lot more" technology. In her masters program, she had a computer class and created an electronic portfolio to reflect on her student teaching experience. Nevertheless, she "felt like we [they] were rushed." Thus, she did all technology assignments for finishing up her degree rather than learning to teach with technology.

When Nancy started her first year teaching, she thought that she had support from

her school administration and her school district to integrate technology in her teaching.

However, she felt that, in terms of technology, she was not as good as she should be and

did not feel comfortable teaching with technology. She mentioned that

I'm not like, myself. I mean I'm comfortable but not like - certain things have not - I don't know that much about computers. Like I mean I do like the basic things but as far as - but I'll figure it out. (Nancy, Second Interview)

She also stated that she was not able to use technology as much as she should

because of so many other things going on in her first year teaching. She said,

I feel like I haven't used it as much as I probably should, but like there's just so much going on this first year, but it is really nice. Like now we're starting to do it, but my kids can all like log in and use Kid Pix, but they don't always remember how to log in. (Nancy, First Interview)

In her first year, Nancy frequently used computers and Internet for her

instructional planning. She used Microsoft Word to type up her "sub plans" for her sub

teachers. She also used Internet for searching online for activity ideas or poems to use in

her theme based units. She constantly used email during school days, because "we [they]

do everything by e-mail as far as the district and in my [her] school, so e-mail is very important." Nancy did not integrate computer or Internet activities in her daily classroom routines, but she occasionally created opportunities for her students to be involved in an Internet search or work with Kid Pix. While talking about her instructional uses of technology, Nancy mentioned that her "kids use it [technology] a lot" including Kid Pix and Type to Learn. She also let students use "e-school" website created by the school district to play math games. Once in a while, she gave students "free choices" and some students used these free choices for typing letters for Nancy.

During the "Ocean Unit" in which I conducted participant observations, Nancy's students researched online for their ocean animals alone and with their "fifth-grade buddies." The art teacher and the technology support person helped Nancy and her students to scan students' ocean animal artworks and print them on t-shirts before they went on a field trip to the Zoo. Nancy also wanted them to type up their "ocean animal facts" for their books, but her plans did not work as well as she imagined. When talking about this technology project, Nancy said,

Oh yeah. That didn't work out so well. I mean I tried to have them type their book[s] but part of it was like we have this cart called Publishing Shop where they can illustrate their pictures. They have all kinds of stuff. So I was going to let them do that. Well, so it was really like type the first section and then skip down to the next page. Type the next section. It was way, way too hard. (Nancy, Second Interview)

When talking about the lessons that she learned from her first year teaching

experience with technology, Nancy said, "The computer and I, sometimes we don't get along so well." Nancy believed that she was neither prepared nor ready to integrate technology in her first year. Additionally, she thought she needed to learn more and ask more about implementation of technology in first grade classroom. However, she was hopeful for the second year in which she would be teaching second grade. She believed that she could integrate more technology oriented activities, such as typing reading responses on the computer and involving students in creating a class website, where they could share their learning experiences with others.

# **Factors Influencing Nancy's Utilization of Technology**

The data analyzed for the factors influencing Nancy's utilization of technology in her first year teaching came from the participant observations, interviews, and documents collected throughout the study. Since Nancy always invited me for her technology projects, I was able to observe her technology project activities carried out during the study. Thus, I was able to provide narrative vignettes of factors affecting Nancy's utilization of technology in her first year teaching.

# **Personal Factors**

The personal factors influencing Nancy's utilization of technology are summarized in the Table 4.7.

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Personal Factors Affecting Nancy's Utilization of Technology	
Knowledge	Lack of Grade Specific Technology Knowledge
	Lack of Macintosh Computer Knowledge
Beliefs	Beliefs About First Grade
	Beliefs About First Year Teaching
Experience	Frustrating Technology Integration Experience
Skills	Lack of Necessary Technology Skills

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Table 4.7: Personal factors affecting Nancy's utilization of technology

# Knowledge

# Lack of grade specific technology knowledge.

Lack of grade specific technology integration knowledge hindered Nancy's utilization of technology.

I didn't use it as much as I should have I don't think. But I think I need to know that - I could have done things like TimeLiner – or but that's more like a second grade thing. I mean like if I - I could have like asked but I feel like I needed to ask more. Like okay what are some things that are good for first grade. Because I felt like they could draw on the picture and like wrote a sentence and they could have like used things like okay, space bar is used between my words. (Nancy, Third Interview)

The excerpted quote illustrates that Nancy thought that she did not use computers

and technology "as much as she should." Although she had some ideas for utilizing

technology in her first grade classroom, she had a difficult time implementing them in her

teaching. Since she firmly believed that her students first needed to learn "letters" and

"sounds" to use computers, she focused on activities to improve students' language and

literacy skills rather than integrating and utilizing technology in her teaching. Nancy

thought that without necessary language skills students would not be able to do computer

and internet based activities or use computers. She planned to do more technology

integrated activities in the second grade when her students "know their sounds and

letters."

When reflecting on her technology knowledge that she gained in her masters

program to teach with technology, Nancy said,

I don't even remember - I think it would be helpful - like to have one K-1 oriented and one 2-3. And maybe you could choose but I think if you had one more - K-1 and 2-3 - because there is a big difference. I mean what second and third graders can do – compared to what K-1 kids can do. I think it might be helpful to have more K-1 and 2-3 and maybe make them take a K-1 - maybe like half of the quarter would be K-1 and half would be 2-3 or vice versa. I think that would have been very helpful. (Nancy, Third Interview)

The quote excerpted from the interview with Nancy demonstrates that she thought that having a technology course focused specifically on kindergarten and first grade and another course focused on second and third grade would be better for her preparation to teach with technology. Having a generic technology course for gaining basic technology skills for preservice teachers was not very helpful for Nancy to gain grade specific technology integration knowledge. If she had known how to utilize technology in the first grade classroom, she could have more ideas and find more ways to teach with technology in her first year.

# Lack of Macintosh computer knowledge.

Nancy's lack of Macintosh computer knowledge influenced her utilization of

technology in her first year teaching.

I enter to the classroom while Nancy is explaining their next activity to her classroom and a volunteer is working on a computer in the computer center of the classroom. For this activity, Nancy sends half of her classroom the media room to search on their ocean animals on the internet with their fifth grade buddies and keeps the other half in the classroom to search on their ocean animals in their books in the classroom. The group working in the media room leaves the classroom to meet with their fifth grade buddies. She asks her students to search through their ocean animal books and write down factual notes about them on post-it notes and stick them on a handout she distributed earlier. Most of the students do not understand their task and start asking questions of each other, Nancy, the volunteer, and me, the researcher. Nancy, surrounded by a group of students, tries to explain what they need to be doing. The volunteer, who has been working on a computer, also does not know what students need to be doing in their "post-it task." I do not have a clear understanding of what students need to be doing, since I missed the beginning part of the explanation. Thus, I try to listen to Nancy while she is explaining the task to a group of students a third time. While answering students' question, she sees me across the room and asks me if I could locate the file that she lost this morning. She talks fast and looks very worried. After finishing her explanation of the task, she comes to me and says "I lost our Zoo folder this morning!" She explains that she tried but couldn't locate

it all morning. Since she does not know what to do, she sent an email to the district technology support personnel, Kris, asking for her help. She goes on to say that the folder containing students' ocean animal artworks is really important. She explains that she worked with her art teacher and Kris to scan students' artwork and needs the folder this afternoon to print out transfers for students' zoo trip t-shirts. She tells all of this in ten seconds without a break and she looks very frustrated and anxious about it. Getting this much of information in this short time and seeing her having a small anxiety attack in ten seconds, I get confused and ask her to show me where her files and folders are located on the computer. While I am looking at her folder in the desktop, Kris enters the classroom. Nancy says "I emailed you about the folder this morning!" Kris says, "Yes, I was here and saw your message when I checked my email. Let's go to the media center." While we are walking to the media center, Nancy summarizes the whole event and tells how she desperately needs this folder this afternoon. When we arrive to the media center, Kris sits in front of the computer and enters Nancy's "server folder." She asks the folder name. Scrolls down and finds the folder that has been missing all morning. Then, Kris explains that Nancy may not see the folder because there were so many folders in the dialog box to show everything at once. Thus, Kris tells, she needs to scroll down to see her folder in the screen.

This narrative vignette illustrates that Nancy did not have adequate MAC

knowledge and experience to effectively use the computers available in her classroom.

She did not know how to scroll down or that she needed to scroll down to reach her

folder. She needed district technology support for "scrolling down" to reach her folder.

Having witnessed this event, I asked her and my other participants in our

interviews about their MAC knowledge and if they were comfortable teaching with MAC

computers in the classroom. All participants, except Nancy, addressed and accepted that

they have had some concerns about not being able to use Mac computers effectively.

However, Nancy said,

I mean there's a couple differences but like at first I was whoa! But it took me like a week if not less to get used to it. So it hasn't been that big of a deal to me. (Nancy, Second Interview)

Nancy believed that her lack of MAC knowledge and experience did not make

any difference in her utilization of computers. She also addressed that she easily adjusted

to MAC computers when she started teaching in her classroom. However, as

demonstrated in the above narrative, my prolonged observations in her classroom were

contrary to her interview answers.

# **Beliefs**

#### Beliefs about first grade.

Nancy's beliefs about first grade greatly hindered her utilization of technology in

her first year teaching.

At the beginning of the year my kids didn't know letters. They didn't know sounds. So they even put - was not knowing letters, then put them on the computer. I have to think about okay, what's the best use of my time. They need to learn letters before we go even so I feel like a second grade will be a good time to do that. I mean first grade is but I thought just – one of a kind. (Nancy, First Interview)

As illustrated in the above quote, Nancy believed that her first graders would not

gain much from computers if she integrated them especially at the beginning of the first grade. She strongly believed that in order to effectively use computers in her instruction and involve students in computer rich activities, her students needed to know how to read and write. Since she believed that her students would not be able to use computers and the Internet without necessary reading and writing skills, she made a decision to use "her time" to focus on her students' language and literacy skills rather than focusing on their technology skills.

Nancy's beliefs about her students' age and what they are capable of doing in the first grade also affected her use of technology in her teaching. While talking about the difficulties that she encountered in integrating technology in her teaching, Nancy said,

It's just the age of my children more than anything. I mean you can do a lot - like it motivates them now and they really will try when you use technology I think

but - like I think some things we just can't do because of how old they are. Not really because of how old they are. Like some - things like typing and like I think next year you would be able to do a lot more than this year. (Nancy, Second Interview)

As quoted above, Nancy believed that "the age of my [her] children" was one of the biggest problems she faced in her teaching so far. She knew that her students were motivated by computers and computer rich activities, but she also thought that it would be impractical to provide them with computer activities before they know "their letters and their sounds." Thus, she planned to use computers in various student activities including "reading responses" in her second year, when she would be teaching the second grade.

After an Internet search activity, Nancy distributes her students their center work tasks and starts a guided reading activity. I sit at the computer table and watch her doing her guided reading activity, while helping students with their questions about their literacy center tasks. She comes to me and says "I forgot to log off the Internet Explorer," reaches a computer to log off the Internet Explorer and adds "I'd love to use computers, but I don't know how we could use them at the beginning, when they don't even know the letters, sounds, or words. Now, in the second part of the year they know the letters, sounds, and words and they can type up their words" She goes on to say that she doesn't know how she could integrate computers and the internet without her students knowing how to read and write. Nevertheless, she says, she is happy with the Internet search activity they did today.

This narrative vignette illustrates that although Nancy believed it would be impossible to integrate computers in her students' conditions, she tried to implement some technology and internet enhanced activities in her teaching. Furthermore, she questioned herself regarding the ways that she could be utilizing technology with her students, while talking about her reasons to not utilize technology with her students. Nancy thought that trying to employ the computer and the Internet in her instruction

would be very challenging with her students' reading and writing levels.

#### Beliefs about first year teaching.

Nancy's beliefs about first year teaching influenced her utilization of technology

in her first year of teaching. When talking about her first year of teaching with

technology, she said

I feel like I haven't used it [technology] as much as I probably should but like there's just so much going on this first year but it is really nice. (Nancy, First Interview)

In another interview, Nancy stated

I mean like I don't feel as comfortable as I think some teachers but I would say - I use it more like to get - to help me with my teaching more than I think my kids but – I mean I think it would be fun to do things like classroom website and things together. But I feel that we would have never accomplished that this year. Next year, yeah I think so. This year - no way. There's no way but - I don't know. And it could be my class. (Nancy, Second Interview)

As illustrated in the above quotes, Nancy often addressed that there were "so

much going on" in her classroom in her first year. Since this experience was her first full-time job as a teacher, she had so many new things that she needed to adjust to in her first year. She wanted and spent most of her time planning and getting ready for "the next day." Additionally, she had a variety of weekly and daily meetings that she needed to attend as a first year teacher in addition to her daily teaching responsibilities. Thus, she believed that integrating technology into her teaching would require additional time and effort. As mentioned in the previous section, Nancy also believed that technology implementation would not be viable in the first-grade. Thus, she thought that she did not have adequate time to focus on technology in her first year and decided to implement some technology enhanced activities in her second year while teaching in the second

grade classroom.

# Experience

#### Frustrating technology integration experience.

Today's activity is searching for facts about students ocean animals online or in the books. Nancy tells me that she lets good readers search on the Internet for their ocean animals, while low readers use books to read about their animals.

There are eighteen students and four adults –Nancy, Literacy Coordinator, a volunteer, and me— in the classroom. Every adult in the classroom is doing something, Literacy Coordinator is reading and answering questions, the volunteer is helping with search, Nancy is explaining and giving directions, and I am answering student questions and helping students read the information they find online.

Nancy, the volunteer, me, and seven students are in the computer center which has five computers in the corner of the classroom. Although there are five computers in the computer center, only three of them are used by the students, one them is used by the volunteer, and one of them is turned off. Three students are using computers and the four students are watching over their shoulders and asking different questions about the project they are doing. Nancy sends a student, who is very familiar with computers, to the library to use another computer in the media center. The rest of the class is working on their ocean animals by reading books at their tables. The Literacy Coordinator helps these students read about their animals, because some students cannot read the information available in the books. Overall, students seem to be excited about working on the computers.

Nancy helps students in the computer center to log onto the Internet and type the search words in the Google search. When another student, very hard working and well-behaved student, needed to use a computer, Nancy tells him "why don't you go to the library? Take some post-it notes and all of your stuff." She sends him to the library to search the Internet for his ocean animal.

The volunteer also starts assisting a student, who has ADHD, look for information online for his ocean animal. Some students come to Nancy while she working with other students in the computer center and say that they need to look for their animal, too. Nancy suggests to them to look for books available in the classroom.

Students who are in front of the computers take some notes after reading the facts on the website. While students are reading and taking notes in front of the computers, a student unplugs the cord that distributes electricity to all computers in the computer center. This happens very quickly. Since I am helping some students with their activity, I don't understand what is going on at that moment and start to think they are finished looking at websites and that Nancy asked him to unplug the computers. However, it turns out, Nancy didn't ask him to turn off or unplug the computers. She gets surprised as much as I am when the computers go blank. She finds the student who unplugged the computers and asks him if he did it. The student answers "Yes!" She asks "why did you do it?" The student says "I wanted to." Nancy asks him to plug the cord back. The student plugs the cord back and all computers turn on again. Now, students in front of the computers start asking how to go to the same page that they were on before the incident. Nancy and I help students to login to the school network then go to the Google page and type their animal names into the search boxes again. It takes additional fifteen to twenty minutes to find the pages students were visiting before the incident.

As illustrated in the narrative, Nancy had a very challenging class for her first

year teaching. Her technology project initiative became a "frustration" for Nancy, when students start asking questions from ten different directions and a student pulled out the cord because he wanted to do it. This narrative summarizes the situation in Nancy's classroom when she tried to integrate Internet search activities in her teaching. Her students needed a lot of help with finding resources. Since students were not directed to "grade appropriate resources," they needed help reading those resources they found online. After this frustrating experience, Nancy did not repeat the Internet search activity during that school year.

# Skills

# Lack of necessary technology skills.

Nancy's lack of adequate technology skills affected her utilization of technology in her first year of teaching. She did not feel "comfortable" enough with her technology skills to utilize technology in her everyday teaching activities. In our second interview, when talking about how confident she felt about teaching with technology, Nancy said, I mean, I'm comfortable, but not like certain things have not - I don't know that much about computers. Like, I mean, I do like the basic things but as far as - but I'll figure it out. (Nancy, Second Interview)

Nancy went on to say that

Probably if I knew more [laughs]. Honestly, I do think if I knew more. But I think it's hard as a first year teacher because you have so much going on - like just figuring out - the whole thing in general. I think it's just hard as a first year teacher in general just to do it. Hopefully I'll be better next year than I was this year but it's one of my goals. So we'll see how it goes! (Nancy, Second Interview)

As quoted above, Nancy did not feel comfortable integrating technology in her

teaching. Although she often used computers and the Internet for her own lesson planning and online search, she was not comfortable teaching with computers and the Internet in her classroom. She thought she needed to know and learn more about available technology resources including computers and software in order to utilize technology in her classroom. Even though, at several occasions, she mentioned that she was not "as good as I [she] should" and she thought that the computer and she did not "get along so well," she used "the district support person," Kris (pseudonym), as a technology resource and "learned things" from her to implement available technology in her teaching and learning activities. Thus, Nancy felt that although she did not have necessary technology skills when she first started teaching, she "learned things like through our [her] tech person" throughout her first year.

Toward the end of her first year, Nancy started to feel "sort of comfortable" with her technology skills and initiated a couple of technology enhanced learning activities, including Internet search on students ocean animals and play sessions with Type to Learn software before the school year ended.

# Institutional Factors

The institutional factors affecting Nancy's utilization of technology in her first

year teaching are summarized in the Table 4.8.

Institutional Factors Affecting Nancy's Utilization of Technology		
Inadequate Technology Experience		
Lack of Classroom Technology Experience		
Lack of Grade Specific Technology Knowledge and		
Experience		
Lack of Software Experience		
Unrelated Electronic Portfolio Experience		
Inadequate Faculty Support for Technology		
The District's Approach to Technology		
District Technology Resources		
District Technology Support		
Technology Resources		
Inadequate Technology Support		

Table 4.8: Institutional factors affecting Nancy's utilization of technology

# M.Ed. Program

# Inadequate technology experience.

Inadequate technology experience in her M.Ed. program impeded Nancy's

technology utilization in her first year. Although she thought that she learned most of her

pre-teaching technology skills in her M.Ed. program, the technology skills she used in her

first year teaching were developed in her first year in the profession.

Graduate school is when I learned it all. When we were going to do our masters project and we had to create a website but - they went through step-by-step with us. I felt like we were so rushed that everything technology-wise was for our project. So literally, like, I learned how to do what I needed to do. Because we would have a project to do and it took forever. So I feel like as far as technology

I'm not as good as I should [be]. I tried to learn but actually when I came to Highlands we were very lucky. (Nancy, First Interview)

As illustrated in the quote above, Nancy believed that she developed most of her technology knowledge and skills in her M.Ed. program, but the knowledge and skills she developed during her M.Ed. program were not sufficient for utilizing the technology available in her classroom. Thus, she had to learn and develop new technology skills to implement available technology with the help of district technology support person, Kris. Nancy said, "I've learned, like, this year. I've learned things like through our tech person. I think she's taught me some stuff and like I - and we kind of have to because everything that we deal with, is like computer based."

Data analysis revealed that inadequate technology experience in the M.Ed. program resulted in four important factors for Nancy's utilization of technology in the classroom: lack of classroom technology experience, lack of software experience, lack of grade specific technology experience, and inadequate electronic portfolio experience.

Lack of classroom technology experience: According to Nancy, her technology experience in the M.Ed. program was inadequate for and irrelevant with the real-world technology use in the classroom. While discussing her M.Ed. technology experience, Nancy mentioned,

I think - like, I learned a lot in the MED program but I'm not using that - like when we did the electronic portfolio and stuff, I think - I wish that I could, and to tell you the truth I don't remember how to create a web page. Like, I probably could go to Front Page and maybe figure it out but like - next year I would like to have a web page like for my class. (Nancy, Second Interview)

The excerpted quote illustrates that Nancy thought the M.Ed. technology

experience was not relevant to her real life teaching needs; thus, she did not use her

M.Ed. technology experience in her first year in the classroom. More importantly, she did not remember the technology skills that she gained during her M.Ed. program. She wanted to create a web page for her class, but she did not want to use the software that she learned to use to create her own electronic portfolio homepage in the M.Ed. program. She wished that she had learned technology skills that are "more like applied to the classroom."

Additionally, Nancy's field placement during her M.Ed. program did not include any computer utilization modeling by her mentor teacher in the classroom. Since the M.Ed. program did not assign mentor teachers based on technology expertise, she never experienced the integration of technology into classroom teaching during her field experience in the M.Ed. program.

Lack of grade specific technology knowledge and experience: When reflecting on the technology knowledge and experience that she gained in the M.Ed. program, Nancy addressed that the technology course was not sufficient to gain the knowledge and experience to teach with technology in the first grade. She went on to say that

I don't even remember - I think it would be helpful - like to have one K-1 oriented and one 2-3. And maybe you could choose but I think if you had one more - K-1 and 2-3 - because there is a big difference. I mean what second and third graders can do – compared to what K-1 kids can do. I think it might be helpful to have more K-1 and 2-3 and maybe make them take a K-1 - maybe like half of the quarter would be K-1 and half would be 2-3 or vice versa. I think that would have been very helpful. (Nancy, Third Interview)

The quote excerpted from the interview with Nancy demonstrates that she thought

that having a technology course focused specifically on kindergarten and first grade and another course focused on second and third grade would have prepared her to teach with technology in the first grade. Having a generic technology course for gaining basic technology skills for preservice teachers was not very helpful for Nancy to gain gradespecific technology integration knowledge. She thought if she had different technology courses or opportunities, she could have a better idea to teach with technology in her first year teaching.

Lack of software experience: In addition to technology skills, Nancy thought that her M.Ed. technology experience did not include available software in her teaching area.

I think if we had a technology class that would be like - just goofy things - like how to use like Inspiration to make a web or how do you - how to make a classroom webpage or just things that you might be doing in your classroom or like how you use TimeLiner. Just things like that that you could actually make okay. TimeLiner is a really cool program and I know Kris told me - she helped me it's really easy. So like even if we could use things like that. (Nancy, Second Interview)

As illustrated above, Nancy wanted to learn child and teacher friendly software to

use in her classroom. Since she uses "integrated" curriculum principles for planning her instruction, she wanted to use Inspiration software to create webs that could be used for both planning and teaching. She also wished that she had learned Kid Pix, Time Liner, and Type to Learn software while she was in the program, rather than in her first year with all of the other things that were going on in her classroom. However, she found the help that she needed from the district technology support person when she decided to use the available resources in her classroom.

Unrelated electronic portfolio experience: When talking about her technology experience in the M.Ed. program, Nancy stated that she "did a lot with technology." However, she thought that the technology requirements, especially electronic portfolio requirements, were add-ons to their already busy program schedule.
For the most part, technology courses are a web - our project like our electronic portfolios were like you had like so much going on and so much to do that I felt like I really didn't learn that much. Like, I did it all but it was just like okay, learn it, do it; learn it, do it; learn it, do it; so it was like learn it, forget it; learn it, forget it; like literally. So, I thought like I didn't technology-wise I didn't - like I did a lot but it was so like hmm (chuckles) - I don't remember it. (Nancy, Third Interview)

The excerpted quote illustrates that the electronic portfolio experience was a

program graduation requirement rather than a learning experience for Nancy. She did everything she was required to do technology-wise in her electronic portfolio to finish her program successfully. Thus, she did required assignments to design and maintain her electronic portfolio, but she did not learn how to teach and learn with technology in the real classroom. Her expressions "learn it, do it" and then "learn it, forget it" were excellent articulations of how she felt about her technology experience, specifically the electronic portfolio experience, in her M.Ed. program.

Nancy had doubts about the worthiness of their electronic portfolio requirement

during their preparation to teach in the classroom.

I think that we did a lot with technology. We went through Power Point and stuff. We had to create the webpage. We had to do things on the computer. It was just so fast and so quick. (Chuckles) I don't know, I felt like - I mean sometimes I think that - it might have been - like we created the web page and I think that would have been helpful but like sometimes I think if we could just do stuff that you really are going to be doing. You know what I mean. Why not let us do a paper portfolio. But let's practice doing the web page for your student teaching or doing a web page for the class you are student teaching with. (Nancy, Second Interview)

As illustrated above, although she believed that she had considerable technology

experience while attending her M.Ed. program, she thought that her electronic portfolio

experience was not related to her classroom teaching. She occasionally mentioned that

"it would be helpful if we [preservice teachers] could do things that you [they] really are

going to be using" in the classroom. Since her school district, like many other suburban school districts, had a "template classroom webpage" for its classroom teachers, Nancy thought that her FrontPage knowledge from her electronic portfolio experience was not helpful for her to create a classroom webpage in her first year. She believed that her electronic portfolio experience, although it was "quite interesting," was rushed and irrelevant to her real life teaching tasks and concerns in the classroom.

## Inadequate faculty support for technology.

Inadequate technology modeling and support provided by the M.Ed. faculty affected Nancy's utilization of technology in the classroom. As I mentioned before, Nancy's technology experience during her M.Ed. program included typing, emailing, searching on the Internet, and creating an electronic portfolio.

It was more like either papers that you wrote or, I mean it wasn't really anything too much I don't think. Just papers cause all we had wrote was papers. So ... What I mean - we had to research and I think that was helpful. Like if you found journal articles then maybe - we should probably look on line - it might help. So, instead of going to the library and trying to check through every book there. (Nancy, Second Interview)

The excerpted quote demonstrates that M.Ed. faculty's implementation of

technology was limited to requiring preservice teachers to research online, type their research or assignment papers, and upload their assignments into their electronic portfolios. Although Nancy found online searches and typing opportunities quite helpful, she also realized that the faculty neither advocated nor modeled implementation of technology in the classroom. Consequently, she did not experience grade specific and content specific uses of technology in her methods courses throughout the program.

## School District

Nancy liked her school district and enjoyed working there as a first grade teacher. She often mentioned that the school district personnel were always helpful, reachable, and supportive in her first year at the Highlands School District.

I think Highlands is amazing. I've been in Sullivan, Canterbury and now Highlands and I think it is very different than any other - they're very supportive. They care about you and they care about the kids I think. I think Highlands is amazing. I think they are very supportive...I think they're always willing to help If you email them then they will get right back to you - or you call there they'll get right back to you. (Nancy, Third Interview)

The quote illustrates that Nancy felt she was supported by the district personnel.

She thought she was fortunate to have help and support available to her whenever she needed it in her first year. Because of the support provided by the district, she was able to go and observe language and literacy development activities taught by other veteran teachers as well as participating in professional development courses on Language and

Literacy Development.

When talking about the school district's technology resources and support, Nancy

always mentioned how she felt lucky to be working in a school district that provided

tremendous resources and support for teaching with technology and she did not use them

"as much as I [she] should."

I don't think like - we have the support—so like there are things I know I want to do next year. But all I know is to email Kris and she will help me. So like that's one thing - like I feel like there is no excuse we could do it because we have so much support and we have the computer lab; we have laptop carts and we have video cameras; we have digital cameras. We have everything at our finger tips. So - [Researcher: So, what do you think is the "excuse" if they are not used in the classroom? You said there is no excuse.] Yeah. I think they're like it's just they don't. They don't want to try to find help or they don't, they just don't want to do it basically because I think that we have so many resources that there's and people that will come in and help you so there's like no real [Silence] [Researcher: Obstacle?] Yeah. There isn't. (Nancy, Third Interview)

As illustrated in above quote, there was not a strong school district factor impeding Nancy's utilization of technology in her first year teaching. On the contrary, she thought that she and other teachers had "no excuse" for not using available resources and support provided by the district. She believed she needed to use the district technology support person, Kris, more to learn how to employ available technology resources in her classroom and in the school. She strongly believed that if she needed help with technology, she could "just call" Kris and she would help her "right away." Thus, Nancy thought that the school district provided her with great technology resources, support, and professional development opportunities. She just did not feel comfortable using them. Not in her first year anyway. Nancy said, "We have all of that available to us. I think it's just like your first year is so overwhelming sometimes you're like, whoa! You're pulled in so many different directions." Parallel to her comments, Nancy felt overwhelmed, because she was required to attend various weekly and monthly meetings including team meetings, mentor-mentee meetings, first year teacher meetings, and collaborative meetings and write up weekly and monthly reflection journals in her first year. Nancy thought instead of attending some of the meetings, especially mentormentee meetings from which she believed she did not benefit, she could have been working on her instructional planning in her first year.

Nonetheless, data analysis revealed that the district's approach to technology, technology resources, and technology support provided a positive outlook for Nancy to utilize technology in her classroom.

## District approach to technology.

According to Nancy, the school district valued technology to a great extent. However, the district did not "push" teachers to utilize available technology "by any means."

Like it's definitely valued and I think they definitely want you to use it. But they don't really have, like you need to do this or you need to do that or we would like for you - I mean they want you to use it but it's not something that's pushed by any means - but I mean they give you a lot of support and I think - and I think it's used. (Nancy, Second Interview)

The excerpted quote illustrates that Nancy thought the district valued and

supported use of technology in its classrooms. District teachers were provided with resources and opportunities to integrate technology in the classroom. Although the school district had a vision for technology, the use of technology depended on teachers' personal choices. Nancy considered utilization of technology in the classroom as a "choice" and decided to employ available technology in her second year when she teaches second grade. Additionally, Nancy thought the district used technology, especially email and Internet, greatly to communicate with its teachers and distribute newsletters and provide teacher resources.

## District technology resources.

Nancy felt quite "fortunate" about having all the technology resources available to her in the classroom and school.

I feel fortunate because we have five computers so - and then we also can use the computer lab. We can use the laptop carts. We can use the computers in the library so- I feel like we have I fell like we have a lot of support and I feel like we have computers in the classroom. Like the older grades are always willing to help. So, I think we have a lot of support from other teachers as well as in our building. I think we're lucky that we have five computers in every classroom

because there are a lot of districts who don't have them. And our computers are newer, too. (Nancy, Second Interview)

As demonstrated above, Nancy found district technology resources adequate and

up to date for successfully implementing technology into her teaching. She felt "lucky"

to have all these available to her in her first year. She was confident that if she wanted to

use any technology tool in her teaching she would have access to it whenever she needed

it. However, when she was asked what would make these available resources effectively

used in the classroom, she replied, "if I [she] knew more." During her induction week,

Nancy took a half-day class on how to use district technology resources, specifically

email in the district, but she thought that the technology introduction course was "quick"

and did not focus on a range of technology tools available in her classroom.

## District technology support.

During interviews, Nancy always talked about how much Kris, the district

technology support person, helped her in her first year in the classroom.

You can schedule her any time. She'll come into your classroom. She'll take your kids to the computer lab. So, like, I feel that we have a lot of support in Highlands as far as technology-wise. I feel like I haven't used it as much as I probably should but like there's just so much going on this first year but it is really nice. (Nancy, First Interview)

In another interview when talking about her technology skills, Nancy said

I've learned them. I think I've learned - like this year. I've learned things like through our tech person. I think she's taught me some stuff and like I - and we kind of have to because everything that we deal with, is like computer based. (Nancy, Second Interview)

The excerpted quotes illustrate that the district technology person greatly helped

Nancy in her first year, especially when she lacked the necessary skills to work with

available technology in her classroom. When talking about her projects in which she

included some technology based activities, she always referred to Kris and how she supported her projects by helping her plan and taking kids to the computer lab to do activities.

She often mentioned that she and Kris sat down to figure out how Nancy could utilize software, computers, and Internet in her projects when she was planning her integrated curriculum units. Nancy also felt very comfortable asking for and receiving help from the district technology person whenever she needed it. She always "figured out" a way to get technology help when she needed it in her first year.

## School

### Technology resources.

A variety of technology resources provided in the classroom affected Nancy's use of technology in her classroom. As discussed in the school district factors, Nancy thought she had plenty of technology resources available to her in the classroom and school.

I should take them to the computer lab more and I should do more on the computer but also like the dock computer hooks up to the TV but I don't know how that works...We can also send them to the library at any time and they are like 1, 2, 3, 4, 5, 6 - those are 12 - about 12 computers 13 computers in the library. We can send kids at any time to use those also and we have 5 in every classroom. [Researcher: So, you have access to technology anywhere in the building?] Yeah. We also - like we're allowed to take out like digital cameras, video cameras. Yeah, we do have a lot and we also have a lot of support. You have to like plan ahead for a lot of it - like schedule people but we have a lot of support as far as technology. (Nancy, First Interview)

The excerpted quote demonstrates that Hamilton Elementary school provided its

teachers with resources in the classroom, computer lab, and media center. Although,

Nancy was aware of the resources available to her in the classroom, since utilization of

these technology resources required to "plan ahead" she was not able to employ those resources effectively in her first year. However, she always mentioned that the school provided her with great resources and support for implementing technology in her teaching if she chose to do so. Although the school administration valued and supported technology in the classroom, it did not provide Nancy with any guidelines or set any expectations addressing what was required of her in terms of technology utilization in her first year.

## Inadequate technology support.

Inadequate technology support hindered Nancy's technology utilization in the

classroom. As discussed in Chapter 4, the school based technology support only included

technical support that was provided by the school building's technology staff. Although

the school assigned two technology-support personnel for the school by situating one

support person in each wing of the school building, Nancy "never asked them to help"

her when she had technical problems with the computers in her classroom.

We have two tech people in our building that are - any time we have an issue with the computer you can ask them - or if you need help you can ask them. They're not that good at getting right back to you. It takes a little bit ... (Nancy, First Interview)

In another interview, when talking about school provided technology support,

#### Nancy said

You have to fill out a sheet for them to come and help you. But it's more like helping fix the computers and if something goes wrong. But I mean they'll help you but it's like - it's hard to get them to help you. [Researcher: Why?] I don't know. They're always too busy. [Researcher: Too busy? Did you need any help from them during your first year?] I've never asked them to help. I've always emailed. We have a [district] tech person in K-5 and she's great. (Nancy, Second Interview) As illustrated in above quotes, Nancy did not receive adequate technology support from the school assigned technology personnel. Rather, when she needed help with technology, she emailed or called the district technology support personnel to ask for help. Additionally, when she needed immediate help with computers or printers, instead of filling out forms, applying for technology support, and waiting for the assigned person to come and help her, she asked the school media specialist for help or sent her students to the lab or media center to work on computers available there. Since Nancy felt comfortable to "go to people" when she needed help rather than waiting for help to come to her, she had positive opinions about the technology support in general provided by the school and district personnel.

## **CHAPTER 5**

## DISCUSSION

## Introduction

In this chapter, I will summarize and discuss the findings of the study, address implications of the research, and provide suggestions for future research related to firstyear teaching and technology use. First, I will revisit the Activity Theory framework. Then, I will summarize and discuss the findings in the light of Activity Theory. I will use the research questions as a guideline for presenting and discussing the results of the study according to each case.

#### The Study in the Framework of Activity Theory

As stated in the Chapter 1, I conducted and interpreted this study in the context of Activity Theory framework for understanding how first year elementary teachers' use of technology is influenced by personal and institutional factors. To grasp the nature of first year teachers' use of technological tools within their first year teaching activity, I used Activity Theory as a tool for exploring first-year teachers' interactions embedded within their social contexts and explaining how these personal and institutional factors affect each other during the activity of first year teaching with technology. Activity Theory is a "philosophical and cross-disciplinary framework for studying different forms of human practices as development processes, both individual and social levels interlinked at the same time" (Kuutti, 1995, p. 23). Basic principles of Activity Theory employed in this study included the object orientedness, hierarchical structure of activity, internalization/externalization, and tool mediation.

As demonstrated in Figure 1.1 in Chapter 1, hierarchical levels of an activity include activity, action, and operation (Kuutti, 1995). Activity is a long-term and motive oriented formation. Action is a short-term and goal-oriented formation and operation is based on the conditions under which an action is being performed and can become unconscious and routine with practice (Kuutti, 1995). An activity can become an action and an action can become an activity depending on the subject and the object of the activity (Kuutti, 1995). An activity can emerge at the community and individual level, while actions and operations are at the individual level (Kuutti, 1995).

Based on the definitions above, I will apply the language of Activity Theory to first year teaching activity. First year teaching is an activity motivated by student learning (motive). Planning a technology enhanced lesson plan is an action oriented to enhance student learning (goal) and selecting grade appropriate software is an operation based on goals to enhance student learning (condition).

According to Vygotsky (1978), "the internal reconstruction of an external operation is internalization" (p.56). An activity has both internal and external aspects (Kuutti, 1995) that transform each other and cannot be understood if they are studied separately from each other (Kaptelinin & Nardi, 1997). A first year teacher's actions first

emerge on the social level, then on the individual level (Vygotsky, 1978) during a first year teaching activity. A first year teacher first internalizes her/his actions at the social level and then transforms these internalized actions into external ones through externalization. For instance, a first year teacher's choice of tools used during her/his first year teaching activity is first internalized and then externalized via interactions with both personal and institutional factors. Since internalized and externalized actions constantly shape and transform each other, a first year teacher's utilization of tools during her/his first year teaching activity cannot be grasped if personal and individual factors are studied separately from each other.

Tool mediation plays an essential role in an object-directed activity. Focusing on the specific uses of the tools within the activity helps to understand the nature of the activity in that specific context (Vygotsky, 1978). Therefore, exploring the ways educational tools were used to mediate object-oriented first year teaching activity helped me understand the nature of first year teaching activities with technological tools in their specific contexts.

#### **First Year Teaching Activity System Model**

This section presents the First Year Teaching Activity System Model that I used as a tool for understanding and discussing the personal and institutional factors affecting first year teachers' use of technology. The Activity System Model offers the possibility of analyzing relationships within the triangular structure of an activity as a "systemic whole" (Engeström, 1987, p. 78). The framework of Activity System Model provides an understanding of how individual behavior plays a part in activity systems and how elements of an activity play a role in changes occurring in individuals (Cole, 1995). Hence, studying the personal and institutional factors affecting first year teachers' utilization of technology in this framework facilitates the understanding of how personal and institutional factors are interrelated and affect each other in the context of a first year teaching activity.

In a first year teaching activity, subject is the first year teacher and the standpoint in the analysis; object is the students with their complex learning needs; instruments are educational tools that are both physical (such as computers, TV, and textbooks), and symbolic (such as language and signs). Community is the district administrators, principal, teachers, and other staff focusing on the same object (students with their learning needs). Division of labor is the distribution of tasks and decision making powers among first year teacher, teaching team, colleagues, principal, and district administrators. Rules are explicit rules set by federal, state, school district, and school administration for first year teaching and teaching activity in general and implicit rules set by the community members as a part of general work culture. Outcome is the motive of the activity which is achieving student learning and development as a result of the first year teaching activity (Figure 5.1).

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Figure 5.1: The structure of first year teaching activity

When the first year teaching activity is seen as a systemic whole, it is clear that all of the elements of the first year teaching activity (first year teacher, students, educational tools, school district and school, task distribution among the members of the district and school community, and rules regulating these relations) have connections to and relationships with each other (Engeström, 1987). The relationships among these elements of the first year teaching activity are continually constructed, renegotiated, and moved within the first year teaching activity system (University of Helsinki, Center for Activity Theory and Developmental Work Research, 2006). These constant movements between the elements of the first year activity explain how technology, computers and Internet, as mediating instruments are used or rejected in the context of first year teaching activity.

Additionally, the first year teaching activity system acts together with other activity systems (Engeström, 1987). For instance, a first year teacher can be an outcome

of a teacher preparation activity system and a subject of a first year teaching activity system. Thus, elements of the first year teaching activity can influence or be influenced by the other activity systems such as first year teaching activity subject is influenced by the teacher preparation activity system and this influences the first year teaching activity (Engeström, 1987). This explains how institutional factors originated from the M.Ed. program affect the first year teachers' teaching activities in their first year teaching contexts.

Since the first year teaching activity is influenced by the other activities in the context, "contradictions" arise (Kuutti, 1995). These contradictions can occur within an element of the first year teaching activity, between elements of the first year teaching activity, between the object/motive of the dominant and a culturally more advanced form of first year teaching activity, and between the first year teaching activity and its neighboring activities (Engeström, 1987). These contradictions were apparent during the analysis of the first year teaching activities of the first year teachers presented in Chapter 4.

The following section describes Mary and Nancy's first year teaching activities separately and offers a general discussion of factors, both personal and institutional, influencing their uses of technology within their first year teachings activities.

#### Mary's First Year Teaching Activity

Using the language of Activity Theory, Mary, a first year teacher, was the subject of her first year teaching activity. Thus, her view was the point of view in the analysis of the activity. Although she was the actor of this activity system, she was also an outcome of another activity system, the teacher preparation program in which she constructed knowledge, beliefs, and attitudes toward teaching and learning. The object of her first year teaching activity was her students with their learning needs. The instruments Mary used for mediating her teaching and students' learning were instructional tools (such as textbooks, reading books, worksheets, computers, and TV) and classroom management techniques (such as behavior charts, signs indicating accepted behaviors, and verbal clues). The outcome Mary expected from her first year was her students' learning and development. However, she also had unexpected outcomes from the activity such as developing as a professional and acquiring new classroom management tools for her future teaching.

Mary did not achieve these outcomes without the effects of her school district and school community. She accomplished her first year teaching tasks and was involved in decision making processes with her colleagues and administrators. Through interactions within the community, Mary was supported, encouraged, or hindered in attaining her goals as a first year teacher. Interactions Mary had within the community were regulated by the rules (explicit and implicit) set by the Ohio Department of Education, Highlands School District and Holyoke Elementary School administrations; as well as by her colleagues, team teachers, mentor, and students as a part of the general school culture.

As defined in the paragraphs above, Mary's first year teaching activity was a systemic whole in which all of the elements of first year teaching activity were connected to and affected each other. The personal (knowledge, beliefs, and experience) and institutional (M.Ed. program, school district, and school) factors affecting Mary's utilization of technology were interrelated to each other and their boundaries were blurred. Thus, the discussions of Mary's utilization of technology and the factors affecting her utilization of technology are meaningful when they are discussed in the context of her first year teaching activity.

# Discussion of the Personal Factors Influencing Mary's Utilization of Technology (Questions 1 and 2)

Mary utilized technology, computers and Internet, in her first year teaching by using them for planning instruction, integrating them into her students' work centers, and allowing her students to play computer games after their center tasks. However, she was concerned about the quality of her technology integration since she did not know how to implement technology in her teaching in "purposeful" and "meaningful" ways.

Furthermore, Mary struggled to get ideas and find grade appropriate technology enhanced activities for her first grade students. She often mentioned that she could utilize technology in more meaningful ways if she knew how to use it, particularly in the first grade classroom. Watts-Taffe et al. (2003) stated teachers need a strong knowledge base in their teaching areas and in technology in order to be able to make sound decisions regarding the utilization of technology. Mary needed a strong knowledge base in teaching the first grade in order to make sound decisions regarding her utilization of technology in her first year teaching. Therefore, in her first year teaching activity, Mary's use of educational technology tools was limited to the tools provided by the institutions, but it was also limited to her knowledge of these tools that she constructed during her M.Ed. program. Mary believed that "learning to read is the most important" focus for her first grade classroom. Furthermore, since her first grade students had different levels of computer skills and were "very young," Mary believed that utilization of technology in her first grade classroom would be problematic. Nonetheless, because she believed that technology plays a vital role in our lives and that her students needed to be introduced to technology to provide them with a better start for their future, she attempted to utilize the technology tools available in the context of her first year teaching activity. Furthermore, Mary believed that the utilization of technology makes teaching easier by offering great, time-saving resources for teachers.

Mary also believed that as a first year teacher who was in her "survival year" technology was an addition to her already crowded list of responsibilities and would take a lot of her time to search for available technology resources and implement them effectively into her teaching. Additionally, Mary strongly believed that technology should be supported, both pedagogically and technically, by a full-time technology teacher located in the same building in order to implement technology in the classroom. Thus, when she utilized the technology provided to her classroom, which she believed was inadequate, the support provided by the school and district did not measure up to her expectations set by her beliefs about how technology should be supported in the classroom.

In order to effectively utilize technology as a tool for mediating learning, Mary thought students should first be taught to use technology by technology teachers. Then, she would be able to focus on her students' learning, which was her original motive for wanting to teach, rather than focusing on the technology tool itself. She believed this would help her focus on teaching and learning activities rather than students' varying technology skills and getting just-in-time technology support for her technology enhanced learning activities and projects.

Ertmer (1999) stated that addressing teachers' personal barriers to utilize technology, especially teachers' beliefs, brings more critical challenges since this requires challenging teachers' belief systems and established routines of practice. My findings indicated that Mary had strong beliefs about first grade, technology, technology integration, and technology support. While her beliefs about technology encouraged her to utilize the available technology in her classroom, her beliefs about technology integration and technology support impeded her utilization of technology in her first year teaching.

Mary had no experience with Macintosh computers before starting to teach at Highlands School District as a first grade teacher. Although she was comfortable working with PC computers, she did not feel qualified to teach with Macintosh computers. In addition to her inexperience with Macintosh computers, Mary did not have adequate experience with grade appropriate educational software, such as KidPix and TimeLiner or Macintosh compatible production software, such as iMovie and iPhoto. Even though other teachers in the same building used these programs, Mary did not feel capable of utilizing them effectively in her first year teaching. Although Mary had positive attitudes toward utilization of technology in education (Strudler et al., 1999), she was not confident in her ability to utilize technology in her classroom (Willis & Montes, 2003; Willis et al., 1999).

Furthermore, Mary felt overwhelmed and unprepared to teach first grade students, since she did not have any first grade classroom experience prior to her employment as a full-time teacher. Thus, she spent most of her time trying to find ways to manage her first grade classroom, or trying to find activities to engage first grade students in the classroom. Consequently, finding "purposeful" first grade technology ideas with her lack of first grade experience seemed unattainable to Mary during her first year teaching experience in the first grade classroom.

Mary had basic technology skills and this affected her positive attitudes toward technology. Despite Mary's positive attitudes toward technology, she rarely transferred her technology skills into her own teaching practice (Clift et al., 2001; Dawson & Norris, 2000; Whetstone & Carr-Chellman, 2001). Although Mary used technology, specifically computers and the Internet, for her professional development and preparation of instructional materials, she rarely used technology for teacher-guided student uses in her classroom.

# Discussion of the Institutional Factors Influencing Mary's Utilization of Technology (Questions 3 and 4)

The M.Ed. program's five-week technology course and electronic portfolio requirement were insufficient for Mary to be able to utilize the available technology in the classroom during her first year. Although she felt comfortable with her technology skills and she had some experience with technology during her M.Ed. program, she became discouraged when she was given five Macintosh computers in her classroom, since most of her university coursework was with PC computers.

Moreover, Mary was not introduced to any of the grade-specific educational or production software that was available in the classroom. Although she was required to search and evaluate educational software and a website during her introductory technology course, Mary did not understand the connections between this activity and her future teaching. She thought this experience was no different than the other papers that she was asked to write and post on her electronic portfolio during the M.Ed. program. Neither the software with which she was taught to design and create her electronic portfolio, nor the office suite she utilized during her introductory technology course was transferable or sufficient for her first grade classroom. Therefore, when she was provided with a variety of unfamiliar educational and production software in her classroom, she did not know how to, or if she should implement it into her daily teaching activities.

Even though the electronic portfolio requirement in the M.Ed. preparation program provided Mary with opportunities for implementing various technology applications into her classroom teaching (Brent et al., 2003) and fostered reflective practice by constantly requiring her to reflect on her experiences (Barton & Collins, 1993; Zeichner & Wray, 2001), it did not make connections with the other courses offered in the program (Willis & Mehlinger, 1996) and was seen as a graduation requirement rather than a learning experience (Niess, 2001).

The technology support provided by the M.Ed. program faculty was also inadequate for Mary to experience effective uses of technology in teaching and learning during her M.Ed. program (Willis & Mehlinger, 1996). Her technology experience in the M.Ed. program consisted mostly of typing papers and performing Internet searches, rather than experiencing effective uses of technology in her methods courses. Thus, although Mary felt encouraged to use technology for her own personal development, she did not experience implementation of technology in the courses taught in the M.Ed. program except in the science methods course. Consequently, Mary was not able to translate one faculty's modeling of effective use of technology into practical application in her classroom during her first year teaching.

Highland School District had a variety of technology resources, including technology support personnel, technology implementation workshops, computers with grade specific software, and e-school website to achieve its technology vision in the classroom. However, the district technology vision was not shared with the teachers (NETS-Project, 2002), nor were the teachers provided with guidelines for integrating technology into their classroom teaching. O'Dwyer et al. (2004) found that "emphasis (e.g., pressure) placed on technology" by the district administration was an important factor affecting elementary teachers' use of technology. Since the school district did not communicate any requirement or expectation for technology integration in the classroom, Mary thought that she was not held accountable for utilizing technology in her classroom. It appears that the school district assumed when a first year teacher is provided with technology resources in the classroom and the school media centers, she or he would utilize them in her/his teaching activities and would "transform schooling" (Cuban, 2001). The school district offered an orientation program for its first year teachers and the technology part of the orientation only included how to set up and activate teacher email accounts in the email system. The orientation program also mentioned how to use the district web server, but Mary could not remember how to use it when the orientation was over. The orientation program at the beginning of Mary's first year of teaching was inadequate for effectively utilizing technology in her first year teaching (Russell, 2003a; Strudler et al., 1999). However, when she was offered an optional technology training program in the summer, she did not choose to participate. The school district and the school expected Mary to participate in the training program and to integrate available technology into the classroom, but because the expectations and rules were not communicated clearly to Mary, she did not know what was expected of her and decided not to focus on technology integration during her first year in the profession.

Although the school district expected Mary to utilize technology in the classroom, they did not provide adequate on-site support or allot release time in which she would be able to plan technology enhanced learning activities for her students. If Mary needed technology (pedagogical) support from the district, she was required to set up an appointment with the "busy" district support personnel to plan technology enhanced projects. As a first year teacher, Mary thought she had to focus on what she would be doing "the next day." Therefore, planning ahead of time to get district technology support was not feasible for Mary to accomplish.

In the school, when Mary needed technical help with the computers and software in her classroom, she had to go through a lengthy process of putting in an order for

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technical help and then waiting for it. Although she had some technology equipment available in her classroom, she could not effectively utilize it due to a lack of appropriate and timely technology support. Getting adequate technology (technical) support was impractical and this caused frustrations for Mary when she tried to integrate technology in her first year of teaching.

Also, since Mary was given "only" five computers in her classroom, she had to spend additional time and effort for planning special technology enhanced learning activities for her students. Thus, Mary preferred to set up a media center for these kinds of activities and involved media center staff in her technology enhanced projects. However, Mary thought this approach was not practical since it required additional time and planning as well.

In addition to inadequate technology resources and support in the classroom, Mary, as a first year teacher, was asked to attend various meetings and presentations that took the time she wanted to use for instructional planning or figuring out what to do next in her classroom. As stated in the Strudler et al. (1999) study of new teachers, Mary's utilization of technology was hindered by the time needed for planning. Mary also had to establish good relations with parents and keep communicating with parents through notes and email and answer their questions related to her students. She was overwhelmed with "extra work" and responsibilities given by the school in her first year teaching. Thus, she chose not to focus so much on the utilization of technology in her first year of teaching, since she already thought it was an individual choice for the teachers. There were contradictions in Mary's first year teaching activity that resulted in emergence of new forms of activity as solutions to her earlier first year teaching activity forms. Mary questioned the value of her utilization of technology when she let her students play online games in their work center times. She utilized the computer and the Internet for mediating students' learning, but she realized that the way she was utilizing the tools was not helping her students construct knowledge. Then, she re-negotiated her goals for implementing computer activities within her work centers and decided that providing her students with a background in computers was better than not having any experience with computers and continued with the same work center activities.

Another conflict emerged when Mary wanted to use technology in her classroom, but the software did not work properly or printer did not print out properly. When she did not receive technical support on time, she altered her lesson plans to accommodate the technology available. Tertiary contradictions occurred when the school administration demanded teachers to work within their grade specific teaching teams to plan instruction. Mary wanted to collaborate with her team teachers to plan technology enhanced instructional activities for their first grade classrooms, but her teammates were not interested in collaborative planning. Thus, although they implemented team planned instructions, the team planning approach did not benefit Mary with technology planning. Quaternary contradictions emerged when Mary's first year teaching activity was affected by the other neighboring activities, such as professional development activities and school district management activities. Through internalization and externalization of these emerging contradictions, Mary was able to construct new forms of actions based on the personal and institutional factors during her first year teaching activity.

#### Nancy's First Year Teaching Activity

Nancy, a first year teacher, was the subject of her first year teaching activity. Thus, her view was the point of view in the analysis of the activity. She was not only the actor of her first year teaching activity system, but also an outcome of a teacher preparation program in which she constructed knowledge, beliefs, attitudes toward teaching and learning. The object of Nancy's first year teaching activity was her students with their complex learning needs. Nancy used instruments for mediating her teaching and her students' learning. The instruments Nancy utilized included instructional tools (such as textbooks, reading books, computers, and TV) and classroom management techniques (such as verbal clues, sign clues, and a peace center to help students negotiate disputes). Nancy expected that the outcome of her first year teaching activity would be her students' learning and development. The other outcomes of her first year teaching activity included development as a professional and collaboration with her literacy coordinator.

Nancy's first year teaching activity also included the district and school community from which she received support and encouragement and by which she was sustained and hindered in achieving her first year teaching goals. Nancy participated in the community by sharing tasks as a participant of the community and being involved in decisions as a member of the district and school organization. As a newcomer to the community, Nancy's interaction with the community was mediated by the rules (both explicit and implicit) set by the Ohio Department of Education, Highlands School District, and Hamilton Elementary School administrations; as well as her colleagues, team teachers, mentor, and students as a part of the general school culture.

As a result, Nancy's first year teaching activity was a systemic whole in which all the elements of first year teaching activity connected to and affected each other. The personal (knowledge, beliefs, skills, and experience) and institutional (M.Ed. program, school district, and school) factors affecting Nancy's utilization of technology were interrelated to each other and influenced each other. Therefore, in order to understand Nancy's utilization of technology and the factors affecting her utilization of technology, I needed to situate this discussion in the context of her first year teaching activity.

## Discussion of the Personal Factors Influencing Nancy's Utilization of Technology (Questions 1 and 2)

In her first year teaching, Nancy did not regularly utilize technology in her teaching. Although she had some ideas for technology integration, she did not know how her students would benefit from those technology integration activities without necessary language skills. Her "generic" knowledge of technology integration was not enough for her to utilize the technology available in her first grade classroom. In addition to a lack of grade specific technology knowledge, Nancy did not know how to use the Macintosh computers that she had in her classroom. She was able to search on the internet and use the email system on a Macintosh, but she was not very comfortable trying other activities or software programs available on her Macintosh computers. In her first year teaching activity, Nancy strongly believed that in order to utilize computers in her students learning activities, her students needed to know how to read and write. Thus, she believed that utilizing technology in her instruction would be very challenging with her students' reading and writing levels. Her beliefs about her first grade students and what they were capable of doing strongly influenced her decisions not to implement technology in her first year teaching. Even though she attempted to integrate some technology enhanced activities in her teaching, Nancy thought that her students would not gain much from working with the computers besides being motivated by them. Thus, she strived to focus on her students' language and literacy skills and planned to integrate technology enhanced learning activities in the second grade classroom.

In addition to her beliefs about first grade, Nancy believed that it would not be feasible to utilize technology with the overwhelming responsibilities of first year teaching. Nancy believed that utilizing technology in her first year would require additional time and become an addition to her already overwhelming teaching responsibilities. Thus, she wanted to spend her valuable time planning for the next day or the next activity for her teaching rather than focusing on technology that she did not feel comfortable teaching with.

Cuban (2000) argued teachers "cultural beliefs" about learning and how learning occurs are strong factors affecting teachers' decisions to use or not use technology in their classrooms. The findings revealed that Nancy had strong beliefs about what her

students were capable of and what she needed to teach in the first grade. These beliefs strongly affected her utilization of technology in her first year teaching.

As mentioned before, although Nancy had some reservations about utilizing technology in her first grade classroom and first year of teaching, she made an effort to use computers and software available in some unit projects. However, her use of technology was impeded when she had a frustrating technology utilization experience. Her frustrating experience with technology was mainly due to other challenges she faced in her first year teaching. She was expected to teach to a very diverse student population and was appointed a very difficult classroom of students of which over 50% were below their reading level and seven of them required special education. As a result, since Nancy already believed that utilization of technology was unattainable for her first year teaching, she decided not to use technology as a tool for mediating her students' learning in her first year teaching activity.

Lack of adequate technology knowledge and skills affected Nancy's already problematical first year teaching experience and caused additional stress and frustration (NETS-Project, 2002). Nancy did not feel comfortable teaching with technology during her first year of teaching. She lacked some basic technology knowledge and skills for effectively utilizing technology in her classroom. She also forgot the technology skills she gained during her M.Ed. preparation. Although she utilized computers and the Internet for her own lesson planning and online search (Russell et al., 2003b), she was not comfortable teaching with them in the classroom or integrating them into her curriculum activities. She was certain about her teaching skills and appeared comfortable in her

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early elementary classroom setting, but she was not comfortable enough with her technology skills to utilize technology in her everyday teaching activities. Nevertheless, she wanted to utilize technology tools available in the classroom, when the district administration provided her with technology support. She established good relationships with the district technology support personnel that facilitated her technology utilization endeavors during her first year teaching.

# Discussion of the Personal Factors Influencing Nancy's Utilization of Technology (Questions 3 and 4)

The M.Ed. program's five-week technology course and electronic portfolio requirement were also insufficient for Nancy to utilize technology in her first year teaching. Although she developed some technology knowledge and skills in her M.Ed. program, the skills and knowledge she constructed in her M.Ed. program were not sufficient for her to feel confident with technology utilization. Therefore, she learned what she needed to use in the classroom from the district technology support personnel during her first year in the profession.

For Nancy, the technology experience in the M.Ed. program was not related to her real world teaching experience in her classroom. She used technology in her M.Ed. program in ways that were different than how she used technology in her first year of teaching. She wanted to gain technology skills that were more applied to her current teaching needs and learn educational and production software that was widely available in the classroom, rather than web design software for creating an electronic portfolio that she could not remember how to update. As mentioned in her personal factors, Nancy did not know the ways that she could utilize technology in her first year of teaching in the first grade classroom. The introductory technology course was not sufficient for establishing an understanding of technology integration in early elementary classrooms. Thus, she thought that utilizing technology with first graders would not be viable, because she did not experience it during her teacher preparation program.

To affectively implement portfolios, teacher educators need to share their purposes for creating portfolios and their criteria for evaluating portfolios (Barton & Collins, 1993; Carroll et al., 1996; Pasch, 1995; Tellez, 1996). Since the rationale behind the electronic portfolio production was not adequately shared with pre-service teachers during the M.Ed. program, for Nancy, the M.Ed. electronic portfolio experience was another add-on to her already overwhelming course schedule. Rather than a reflective practice experience, Nancy saw her electronic portfolio as an assignment she had to submit to graduate from the program. Although it was "interesting," technology knowledge and skills gained during the M.Ed. portfolio experience did not translate into practical applications in Nancy's first year of teaching. Furthermore, Nancy did not experience faculty modeling of technology integration into methods courses taught during the M.Ed. program. Additionally, since the M.Ed. program did not have technology criteria for field placements, Nancy did not experience any modeling of technology utilization in her field placements (Dexter & Riedel, 2003; Strudler et al., 1999).

Highland School District's approach to technology, technology resources, and technology support were the factors that affected Nancy's endeavors to utilize technology in her classroom. Although she did not feel comfortable utilizing technology in her first year teaching, she felt encouraged to utilize available technology resources when she was provided with technology resources and supported by the district technology personnel.

The school district approach to technology, which was supportive but not assertive, influenced Nancy to integrate some technology enhanced activities and projects in her first year teaching. She felt well-supported when she received technology help and support from the district technology person whenever she needed it in her first year of teaching. However, after a couple of frustrating experiences, Nancy decided to postpone utilizing technology to the future when she is teaching second grade.

Nancy thought the district's first year teacher orientation program was not sufficient for her to learn how to use technology presented to her, but when she was offered an optional technology training program in the summer, she did not participate in it. Although the participation was voluntarily, the school district and the school administration expected Nancy to participate in the training program. However, since the district and school administration did not explicitly state their rules and expectations, Nancy decided not to attend technology training program.

Nancy thought that the school administration valued technology and provided teachers with a variety of technology resources for utilizing technology in the classroom. Because Nancy had these technology resources available within her reach, she felt encouraged to try to utilize technology in her first year. Although the school

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administration valued and supported technology in the classroom, it did not provide Nancy with technology utilization guidelines or set up expectations for technology utilization in her first year. This finding indicates that the school administration's failure to emphasizing its expectation for technology use affected Nancy's decisions to use technology in her first year (O'Dwyer et al., 2004). Since utilization of these technology resources required additional planning and time and there was no expectation regarding technology utilization, Nancy decided not to focus on technology utilization.

Unlike the district technology support, the school technology support, which mostly provided technical support, was not reliable. The school technical support application was a lengthy process and getting technical help took a long time. Thus, Nancy contacted the district support person whenever she needed technical help as well as pedagogical help for working with the technology resources available in her classroom.

Some contradictions emerged within Nancy's first year teaching activity that resulted in emergence of new forms of activity as solutions to her earlier first year teaching activity forms. A primary inner contradiction arose when Nancy, who strongly believed that her students would not able to use computers without knowing how to read and write, was provided with technology resources and support. She questioned her beliefs about technology in the first grade and with her students and decided to try to facilitate technology-based projects in the classroom. However, a secondary contradiction emerged when Nancy's technology integration efforts were altered by her challenging class. Thus, she decided to postpone her technology integration endeavors until her second grade teaching in the next year.

During Nancy's first year of teaching, the school administration implemented a new literacy collaborative approach that required new partnerships between the literacy collaborator and the teachers for improving literacy education. Since Nancy was familiar with this approach from her early teaching experience, she successfully collaborated with the literacy coordinator. They worked together on many projects and activities during her first year in the building. However, tertiary contradictions arose when veteran teachers who were unfamiliar with the approach were reluctant to participate in the literacy collaborative approach and did not want to collaborate with the literacy coordinator and Nancy. Therefore, although the school implemented the literacy collaborative approach, the participation in the implementation was limited. Quaternary contradictions also emerged regularly when Nancy's first year teaching activity was affected by the other neighboring activities such as professional development activities and school district management activities.

#### **Discussion of First Year Teaching Activity**

Some of the elements (object, instruments, community, and rules) of Mary's and Nancy's first year teaching activities were the same. Both of them graduated from the same M.Ed. program and worked in the same school district with the same explicit rules and instruments available to them to achieve their motive, student learning. Nevertheless, their first year teaching activities had some conflicting aspects. The Center for Activity Theory and Developmental Work Research researchers argued that "different

subjects, due to their different histories and positions in the division of labor, construct the object and other components of the activity in different, partially overlapping, and partially conflicting ways" (University of Helsinki, Center for Activity Theory and Developmental Work Research, 2006). For instance, Mary's first year teaching activity would have different features and interactions, if I took the point view of Mary's principal, her mentor teacher, or the district support personnel. For this reason, Mary's and Nancy's first year teaching activities had varying characteristics that are specific to Mary's and Nancy's personal histories and experiences. Because of their internalization and externalization of these interactions individually, they hold different views about technology, technology support, and technology integration. While their views of first grade students and first grade teaching overlapped, their views of technology resources and technology support provided by the school district contradicted. These overlapping and contradicting views also affected how Mary's and Nancy's utilization of technology was influenced by their personal and institutional factors during their first year of teaching.

A beginning teacher's attitude, beliefs, and dispositions are the most crucial aspects (Bullough, 1987) affecting how the beginning teacher reacts to not only the technology in the classroom but the teaching context in general (Russell et al., 2003b). Mary and Nancy found out that real teaching is different from their student teaching experiences (Bullough, 1987; Gold, 1996). Their feeling of having inadequate experience to teach was not only about their technology knowledge and experience, but also their classroom management and grade specific teaching activities (Bullough, 1987). Both Mary and Nancy had limited experience with technology during their M.Ed program (Moursund and Bielefeldt, 1999; U.S. Congress, 1995; Willis et al., 1999) and felt ill-prepared to teach with technology (U.S. Congress, 1995; Willis & Mehlinger 1996). Although the introductory technology course and electronic portfolio requirement provided some basic technology skills for them (Brent et al., 2003), they were not ready to teach with technology in their first year of teaching practice (Fulford & Ho, 2002; Mehlinger & Powers 2002; Strudler et al., 1999).

Employing the First Response Survey System (FRSS), National Center for Education Statistics (NCES) conducted a survey on teachers' use of computers and the Internet in their teaching (Teachers' Tools for the 21st Century, 2000). The report stated that particular institutional characteristics including equipment, access, time, support, and leadership can function as barriers or catalysts for technology integration. The findings of this study supported the conclusion made by the report about the function of institutional factors as catalyst or barriers to teachers' use of technology in the classroom. The district based institutional factors functioned as barriers to Mary's utilization of technology during her first year teaching, while in Nancy's case, the institutional factors originated from the school district functioned as catalysts for utilizing technology in her first year teaching.

My findings about school based institutional factors indicated that although Mary and Nancy had some knowledge of and experience with technology, they still needed further training on the value and applications of technology as an instructional tool during their induction year in the school (Russell et al., 2003b). Although their beliefs about
teaching and technology varied, their perceived concerns about first year teaching remained the same. Thus, however well or ill-prepared they felt, their endeavors to utilize technology during their first year were interrupted by the schools' failure to provide proper technology support (pedagogical and technical) in a timely manner.

To conclude, first year teaching activity is a systemic whole in which all of the elements of the activity have connections and relationships through which the elements of the first year teaching activity are constructed, negotiated, and repositioned in the context of the activity. In order to understand the ways personal and institutional factors affect first year teachers' utilization of technology in their first year teaching activity, I discussed the findings of the study within the framework of Activity Theory.

#### Implications

The findings of this study have theoretical implications for Activity Theory as a framework for studying teacher education topics in their contexts as well as practical implications for preservice teacher education programs and teacher induction programs. Because of the nature of the case study design, the findings and implications correspond to tentative discussions that may not be generalized to other settings or cases. However, throughout the chapters, I strived to present first year teacher cases and their settings in detail, so the reader can make judgment on the transferability of the findings of this study to their specific contexts. Therefore, this collective case study may assist in understanding the current state of first year teachers' utilization of technology and the factors affecting their utilization of technology in their first year teaching.

#### Activity Theory as a Framework for Studying Teacher Education

From the two cases I studied in-depth, several implications emerge on Activity Theory as a framework for studying teacher education in general. Activity Theory offers a means for studying, explaining, and understanding teacher education issues in their contexts.

Activity as a context: Activity Theory provides a means to study interactions situated in social contexts. For this study, exploring first year teachers' experiences in their social contexts in the framework of Activity Theory was effective for understanding how first year teachers' personal and institutional factors affected their uses of technology and how these personal and institutional factors affected each other in the course of their first year teaching activity. Use of Activity Theory in the context of teacher education studies may be valuable in understanding and explaining activities, actions, and operations embedded in a teacher education activity system.

Activity as growth: Activity Theory offers tools for studying growth that is a result of constant relationships among the elements of an activity. By utilizing Activity Theory as a framework, I was able to see the change and growth in the elements of the first year teaching activity as they occur through continuous interaction with each other. I was able to explore how instruments and community affected a first year teacher's utilization of technology and how this teacher in return changed her view of technology during the course of the study. Implementation of Activity Theory as a framework in teacher education studies may assist studying development and growth occurring during the course of a teacher education activity.

Activity Theory as a multi-perspective lens: Activity Theory gives a multiperspective lens for studying an activity system. It allows a researcher to study the same activity system from different subjects' points of view participating in the same activity. By implementing the multi-perspective lens to this study, I was able to explore the same activities from two subjects' points of view and was able to determine how their understanding of the activity system differed according to their personal stances. Use of Activity Theory as a multi-perspective lens in a teacher education system may help when studying the same activity system from different perspectives and provide a better understanding of how participants of the teacher education system construct their experiences through their participation in the activities.

Activity as a change: The findings of the study also suggest that the activity system model can be used as a model for a change system in teacher education. Teacher education as an area consists of activities affecting each other, such as, preservice teacher education activities, induction year activities, and inservice teacher activities. These activities are affected by and affect other neighboring activities, such as policy making activities and school development activities. Since these activities are neighboring activities they may share some elements and they may interact with each other. Center for Activity Theory and Development Work Research Group researchers suggested a model for studying two interacting activity systems, school and workplace, for better understanding transfer of school learning into workplace (University of Helsinki, Center for Activity Theory and Developmental Work Research, 2006). The findings of the study suggests that the first year teaching activity system had three interacting activity systems including preservice teacher preparation activity system, school district activity system, and school activity system (See Figure P.1). It appears that if these four different activity systems shared the same object, although they may have different ways of accessing that object due to different rules or division of labor in their activity systems, they might be able to achieve the shared object effectively since all affecting activity systems are working toward one object. This object could be student learning and development, teacher preparation and development, or technology integration in the classroom. If all four interacting activity systems motivate toward the same object of technology integration in the classroom, first year teachers can be prepared and supported in four different contexts towards one object.

#### **Preservice Teacher Education Programs**

The findings of this study also have practical implications for preservice teacher education and teacher induction programs. The findings of the study imply that in order to prepare teachers to teach with technology, technology needs to be integrated across the entire preservice teacher education curriculum. The preservice teacher education curriculum should include a series of technology courses helping preservice teachers acquire technology skills and construct technology knowledge as well as implement these skills and knowledge within their student teaching activities. From the results of the study it is apparent that preservice teachers need to gain skills and experience on both PC and Macintosh platforms. Therefore, technology courses taught in the preservice teacher education curriculum should offer occasions for preservice teachers to work with both platforms. The findings suggest that preservice teachers need to be provided with opportunities to utilize their technology knowledge and skills within the context of their methods courses. By experiencing the best practices for implementing technology into their methods courses, preservice teachers may develop an understanding and gather ideas about how they could implement technology enhanced learning activities in their grade level or subject matter. The methods courses should also provide opportunities to survey, evaluate, and work with the educational software as well as the production software that is widely available in the classroom. Hence, preservice teachers can have experience with the widely used software in their grade levels and content areas before starting their first year teaching.

The findings also imply that the preservice teacher education faculty need to model use of educational technologies in the classroom, while encouraging and supporting preservice teachers' use of technology in their pedagogy and methods courses. To achieve this level of implementation, a preservice teacher education program needs to train and support its faculty for integrating technology in their teaching and research and change its policies for faculty release time and tenure award process. The faculty should be supported for integrating technology into their teaching and research by allowing the faculty to have release time to work on their technology enhanced courses and research projects. The faculty member's technology implementation projects also need to be considered when tenure decisions are being made.

The findings suggest that in addition to faculty modeling, technology integration needs to be modeled by mentor teachers in the field. A teacher education program should establish technology criteria for selecting preservice teachers' field placements. In their technology implemented field experience, preservice teachers can experience real world applications of technology by observing mentor teachers, participating in technology integrated activities, collaborating with peers, and by practicing problem-solving when machines do not work properly.

Finally, the findings of the study suggest that preservice teacher educators need to share their purposes for requiring electronic portfolios and their criteria for evaluating these portfolios. Electronic portfolio creation should be a process in which preservice teachers construct their technology knowledge as it relates to their grade level and content area, improve technology skills for implementing various technology applications into their classroom teaching, develop reflective practice by constantly reflecting on their experience, and organize and share their experiences throughout the preservice teacher education program.

#### **Teacher Induction Programs and First Year Teacher Support**

The findings imply that when preservice teachers graduate from a teacher preparation program, they are not finished products. First year teachers need to be provided with a systematic teacher induction program that sustains development in their grade level and subject matter as well as other areas. Teacher induction programs need to offer multifaceted support and training varying from how to set up an email account and how to communicate with parents, to how to fill out a district form online. These induction programs can also be used for communicating and creating shared understandings of the district's and school's rules, expectations, and resources for first year teachers. To achieve this, teacher induction programs need to be redesigned and individualized according to first year teachers' emotional, personal, and instructional needs as well as institutional needs. As the findings suggest, while one first year teacher might need support with grade specific duties, another first year teacher might need support in the utilization of classroom technologies available in the classroom.

The findings also imply that first year teachers need to be provided with ongoing and onsite support. If support is not readily available, some first year teachers may be reluctant to ask for it and might have a difficult time managing the demands of the classroom during their first year. As the findings imply, regardless of their training and confidence, first year teachers need ongoing support and training in technology to transform their technology knowledge and skill into practice while gaining new technology knowledge and skills that are specific to their contexts.

#### **Suggestions for Future Research**

The purpose of this study was to understand how personal and institutional factors influence the ways first year elementary teachers utilize technology, specifically computers and the Internet, in their first years of teaching from an Activity Theory perspective. Since this study was an exploratory study due to a lack of studies conducted in this area, further studies are needed for understanding the phenomenon in-depth. Studies focusing on first year teachers' use of technology at the middle or high school levels would be beneficial for gaining a better understanding of how personal and institutional factors influence first year teachers' technology utilization. Different studies focusing on first year teachers' use of technology in different subject matter areas are also needed for the literature.

This collective case study presented how personal and institutional factors affected the ways two first year elementary teachers used technology in their classrooms. Future studies with more first year teacher participants would be valuable in order to conduct comparative case studies to see similarities and differences among first year teachers in different contexts. Furthermore, this study addressed how first year elementary teachers' personal and institutional factors interact with each other in the context of a first year teaching activity. There is a need for future studies focusing on these interactions to gain a better understanding of the nature of these activities in different contexts.

Finally, a longitudinal study is needed for exploring how personal and institutional factors affect these two elementary teachers' utilization of technology in their teaching. A study focusing on these elementary teachers' use of technology would provide invaluable perspectives for understanding how personal and institutional factors and their effects are changing as first year teachers gain experience and construct their contextual teaching knowledge.

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#### APPENDICES

#### **APPENDIX A**

### INVITATION TO PARTICIPATE IN THE RESEARCH

Dear Madam,

I am planning to conduct a research study in your school about new teachers' utilization of technology. The purpose my study is to understand *how* personal and institutional factors influence the ways new elementary teachers utilize technology specifically computers in their first years of teaching. To identify the personal and institutional factors, I will recruit participants from different grade levels.

I would like to ask you if you would participate in my study. If you agree to participate in the study, I will visit your classroom once or twice a week for the rest of the school year. I will observe classroom activities focusing on your utilization of technology. I will also need to interview with you three times during the course of the study to understand your point of view on the subject and a follow up interview if needed. Each interview will take about an hour in a time period that is the most suitable for you.

I will not intervene during the classroom instruction. However, I am planning to help you with the classroom activities and duties, whenever you need me to assist you. I might also ask some questions to you or engage in informal conversations with you to clarify things that I note in your classroom.

Agreeing to participate in my study does not obligate you to complete the study. You can withdraw from the study at any time or choose to not to respond to questions that you don't feel comfortable. If you agree to participate, I am required to receive signed consent from you. Therefore, I will ask you to sign the consent form for me.

At the end of this study, I am planning to write a dissertation and publish the study findings. However, the information you shared with me will be confidential. I will not use any identifiers or markers that link the information to your identity. In my report, I will use pseudonyms to ensure your anonymity. I would like to give you some time to think about the research so you don't feel obligated to say yes now. You can let me know of your decision by email or you can call me about your decision in the next week.

Thank you four your time, Ilknur Kelceoglu Ph.D. Candidate at the School of Integrated Teaching and Learning 614.XXX.XXXX, <u>kelceoglu.1@osu.edu</u>

# **APPENDIX B**

# **TEACHER CONSENT FORM**

Consent For Participation In Social And Behavioral Research Protocol title: New Elementary Teachers' Utilization of Technology in Their Teaching Protocol number: Principal Investigator: Dr. Terri Teal Bucci Co-Investigator: Ilknur Kelceoglu

I consent to my participation in research being conducted by Principal Investigator, Teri Teal Bucci, and Co-Investigator, Ilknur Kelceoglu of The Ohio State University. The investigators have explained the purpose of the study, the procedures that will be followed, and the amount of time it will take. I understand the possible benefits, if any; of my participation I know that I can choose not to participate without penalty to me. If I agree to participate, I can withdraw from the study at any time, and there will be no penalty.

- I consent to the use of audiotapes. I understand how the tapes will be used for this study.
- I consent to the use of my classroom curriculum materials, daily plans, and schedules.
- I consent to the use of my electronic portfolio, three-way meeting notes, and online discussion board responses.
- I consent to the use of my reflective journals, monthly and weekly reflections, and praxis exam results.

I have had a chance to ask questions and to obtain answers to my questions. I can contact the investigators at 614-XXX-XXXX. If I have questions about my rights as a research participant, I can call the Office of Research Risks Protection at (614) 688-4792.

I have read this form or I have had it read to me. I sign it freely and voluntarily. A copy has been given to me.

Print the name of the participant: \_\_\_\_\_

Signed: \_\_\_\_\_(Participant)

\_\_\_\_\_ Date: \_\_\_\_\_

Signed: \_\_\_

..... (Principal Investigator or Co-Investigator)

## **APPENDIX C**

# PRINCIPAL INFORMATION COVER LETTER

Dear Sir or Madam:

I am a PhD candidate at the Ohio State University, The School of Teaching and Learning. I am planning to conduct a case study focusing on first year elementary teachers' use of technology. According to The Biennial Educational Technology Assessment (BETA) 2004-2005 survey results, you have one or more newly hired teachers with 1 year or less experience. I am currently recruiting participants for my study. I would like to talk to you about your new teacher(s) to find out if they are appropriate candidate(s) for my case study.

I also attach my dissertation prospectus for further information about my study. If you would like to learn more the study, or if you would like to participate in the study, would you please contact me at 614-XXX-XXXX or <u>kelceoglu.1@osu.edu</u>.

Sincerely,

Ilknur Kelceoglu PhD Candidate <u>kelceoglu.1@osu.edu</u> (614)XXX-XXXX 1929 Kenny Road Columbus, OH 43210

# **APPENDIX D**

# LETTER OF INFORMATION FOR PARENTS

Dear Parent:

This letter is intended to inform you about a research project that will take place in your child's school about first year teachers. I, Ilknur Kelceoglu of Ohio State University, will conduct a research project between November 2005 and March 2006. The title of my research is New Elementary Teachers' Utilization of Technology in Their First Years of Teaching. The purpose of my study is 'to understand how personal and institutional factors influence the ways new teachers utilize technology in their first years of teaching.' Findings of my study will help to improve the integration of technology into teaching and learning.

I would like to inform you that I will be doing observations in your child's classroom and doing interviews with your child's teacher about her use of technology in her teaching. I will do classroom observations, interviews with the teacher, and collect classroom artifacts from the teacher.

I will visit your child's classroom once or twice a week to conduct observations. My classroom observations will only focus on the teacher's teaching. Your child is not a participant in this study. Therefore, your child will not be asked questions or be approached by me for the study purposes.

I appreciate your support with the study. If you have questions about my study, you can call me at 614.XXX.XXXX or email me at kelceoglu.1@osu.edu.

Sincerely, Ilknur Kelceoglu, M.A., Investigator

#### **APPENDIX E**

#### **INITIAL INTERVIEW QUESTIONS**

What grade do you teach this year?
What school district do you teach this year?
How many years of teaching experience in private or public K-12 school?
What was your undergraduate degree?
What is your certification area?
When did you graduate from the graduate school?
Did you take any technology classes in high school, undergrad, or masters?
Do you have access to computers? Where (home, school, computer lab, office, media center, etc.)
Do you see yourself as a "Techie"?
To what extent did you plan to use technology in your teaching?
To what extent do you use technology in your teaching?
Does your school have anyone to assist you with technology?
Does your school district provide professional development for technology?
What technologies are you using for teaching?

## **APPENDIX F**

#### FIRST INTERVIEW QUESTIONS

Could you tell me about your educational background? How did you decide to become a teacher? Could you tell me about your teaching experience before this year? Could you talk about your teaching philosophy? Could you describe a typical day for you? Could you tell me about the discipline and guidance in your classroom? Could you explain the student population in your classroom? Could you talk about parental involvement in your classroom? Could you tell me about your teaching experience at Holyoke Elementary? Could you tell me about your teaching experience at Highlands School District? Compared to your expectations before graduation, how do you see your first year experience as a teacher? What are the things that you did not expect before you entered in the classroom/ If you are to be a mentor for a first year teacher, what would you advice the novice teacher about first year teaching?

# **APPENDIX G**

### SECOND INTERVIEW QUESTIONS

Could you describe your experience with technology in high school, college, graduate program, or at home?

Are you a "Mac person" or a "PC person"?

Do you have access to technology from home? If you have, do you have a Mac or PC? Could you tell me how important have computers and the internet been in your teaching as a first year teacher?

Could you tell me how confident you feel about teaching and learning with technology? What kind of technology skills are you using in your first year teaching and do you think these skills that you are using right now in your teaching developed or improved at the M.Ed. program? Could you tell me about your faculty's and departments approach to technology at the M.Ed program?

Could you tell me what could be done at your M.Ed. program to better learn and implement technology in your teaching and learning?

How do you utilize technology in your classroom?

How do your students use computers and the Internet during class time?

How do you use computers and the Internet before, during, and after class time?

Could you tell me what are the problems you may have encountered for integrating technology into teaching and learning?

Have you ever had technology related professional development course or workshop during your first year teaching experience?

How do you utilize technology in your professional development?

Do you join the online teacher groups, search websites for PD, or communicate with your colleagues?

Could you explain your school's access to technology?

Could you tell me how important is using technology to improve classroom instruction in your school's and districts vision?

Do you think that technology is utilized in the classrooms in your school?

Do you feel that you are supported by the school that you are teaching to use technology in your teaching?

Do you think that computers and the Internet could be used for better teaching and learning? How could we achieve that?

As a classroom teacher, could you tell me what would make technology is more and better utilized in the classrooms?

# **APPENDIX H**

#### **THIRD INTERVIEW QUESTIONS**

Could you tell me about your teaching experience this year?

Compared to your expectations before your full time teaching, how do you see your first year experience as a teacher?

Could you explain your daily classroom routines?

Could you tell me how do you manage discipline and guidance in your classroom and how was it at the beginning of the year?

How do you plan your day?

How do you plan your instruction?

Could you tell me what do you think of the curriculum and the curriculum standards that you have been teaching?

Could you tell about your teaching philosophy?

Could you describe the ideal learning environment for you?

Could you describe the ideal classroom for you?

Do you have an assigned mentor?

Could you explain your experience with your mentor this year?

Could you tell me how beneficial your mentor & mentee relationship was?

How this mentorship could be planned to be more beneficial for you in your first year?

If you are to be a mentor for a first year teacher, what would you advice him or her about first year teaching?

How do you see professional development opportunities in your school and school district? Given a chance, what courses or workshops would you like to take or attend for your professional development this year?

Would you say that this year was a busy year in terms of meetings needs to be attended, or paperwork needed to be filled out? Could you give examples and explain them a little bit? Given a chance, what meetings or gatherings would you not like to attend this year?

Could you tell me what do you think of the school in which you are teaching now?

Could you tell me how do you see the learning environment in your school?

How do you see the leadership and support provided by the principal?

How do you see relationships in the school?

How do you see your relationship with the school personnel?

Could you tell me what do you think of the school district in which you are teaching now? How do you see leadership and support provided by the administrators from the school district?

How do you see your relationship with the district personnel?

Could you talk about your M.Ed. experience in detail?

- Courses offered during the program
- Support provided by faculty and supervisors

- Field experiences
- Technology experiences

Could you tell me about your Praxis exam experience this year?

How do you perceive your M.Ed. preparation for your praxis experience this year? Do you think the program you graduated from did assist you to accomplish the Praxis exams?

From your point of view, what are the advantages of integrating technology into teaching and learning?

From your point of view, what are the disadvantages of integrating technology into teaching and learning?

From your point of view, what are the obstacles for integrating technology into teaching and learning?

Could you tell me the lessons that you learned from trying to integrate technology in your teaching?

Could you tell me the lessons that you learned from trying to integrate technology in your learning and professional development?

Do you have any plan for the next year in terms of technology integration?

From your point of view, could you tell me how could we utilize computers and the Internet for better teaching and learning?

Is there a question or questions that you wanted me to ask you during our interviews? Is there anything else you would like to add?

# **APPENDIX I**

### FOLLOW-UP INTERVIEW QUESTIONS

Could you tell me about yourself?

Could you tell me about your teaching experience this year?

Being a second year teacher, how do you see your first year experience from last year? Compared to your experiences last year, how do you see your second year experience as a teacher?

Could you tell me about your teaching experience at H--- Elementary?

How do you see the leadership and support provided by the principal?

Could you tell me about your teaching experience at Highlands School District?

How do you see leadership and support provided by the administrators from the school district? Could you tell me how important have computers and the internet been in your teaching so far? Could you tell me how confident you feel about teaching and learning with technology this year? How do you utilize technology in your classroom?

Do you feel that you are supported by the school that you are teaching to use technology in your teaching?

Do you feel that you are supported by the school district that you are teaching to use technology in your teaching?

Could you tell me the lessons that you learned from trying to integrate technology in your teaching?

Could you tell me the lessons that you learned from trying to integrate technology in your learning and professional development?

Could you tell me what are the problems you may have encountered for integrating technology into teaching and learning?

From your point of view, what are the advantages of integrating technology into teaching and learning?

From your point of view, what are the disadvantages of integrating technology into teaching and learning?

From your point of view, what are the obstacles for integrating technology into teaching and learning?

# **APPENDIX J**

# **PRINCIPAL INTERVIEW QUESTIONS**

Could you tell about your teaching philosophy?

Could you tell me what do you think of the school in which you are teaching now? Could you tell me how do you see the learning environment in your school?

Could you tell me what do you think of the school district in which you are administrating now? How do you see leadership and support provided by the administrators from the school district? Could you tell me about your experience with your new teacher(s) this year?

How do you see first year teaching?

From your point of view, what are the things that make a difficult year for first year teachers? From your point of view, what are the things that make a easy year for first year teachers? Could you tell me about your school's and school district induction policy?

How do you assign mentors to new teachers?

If you are to be a mentor for a first year teacher, what would you advice him or her about first year teaching?

Could you tell me what could be done at M.Ed. programs to better learn and implement technology in new teachers' teaching and learning?

Could you explain your school's access to technology?

Could you tell me how important have computers and the internet been in your schools approach to teaching and learning?

Could you tell me how important is using technology to improve classroom instruction in your school's vision?

Could you tell me how important is using technology to improve classroom instruction in your district's vision?

Do you think that technology is utilized in the classrooms in your school?

Do you think that computers and the Internet could be used for better teaching and learning? As a principal, could you tell me what would make technology is more and better utilized in the classrooms?

From your point of view, what are the advantages of integrating technology into teaching and learning?

What are the disadvantages of integrating technology into teaching and learning?

What are the obstacles for integrating technology into teaching and learning?

Could you tell me the lessons that you learned from trying to integrate technology in teaching and learning so far?

Do you have any plan for the next year in terms of technology integration?

Could you tell me how could we utilize computers and the Internet for better teaching and learning?

Is there anything else you would like to add?

## **APPENDIX K**

## MARY'S CLASSROOM

Mary's classroom is located in the right front side of the school building. When one enters Mary's classroom, one sees a well organized and orderly room with assigned group tables for students. There is a very short entrance hallway in her classroom with a big supply cabinet of which doors used for exhibiting student artwork. Inside the classroom, there is a sink with cupboards located on the right side on the entrance. Next to the sink, there are shelves and hangers on the wall for students to hang their jacket and backpacks and put their browsing boxes filled with grade appropriate books.

In the corner connecting this wall to a shorter wall, there is a rocking chair which Mary uses when she is reading to her classroom or doing math with students. There is one portable mid-size whiteboard located next to the chair that Mary sometimes moves according to her needs when she is explaining a task or giving an instruction on the board. A short wall contains the calendar items are hanged including calendar, straw chart, coin holders, weather chart, and so on. Below the calendar items, there is a media center including one big old tape player with two sides and two personal speakers on the floor. Next to that there is small storage furniture with four shelves filled with building blocks and other math games. Mary also keeps her portable work board in this area. She puts the work board in front of the classroom before explaining their daily tasks in the work centers. Next to the shelves, there is a cabinet behind Mary's desk with her pictures with her family, students, greeting cards, and other student made artwork exhibited on top of it.

Mary's desk is situated cross wise located in front of that cabinet. Mary's table is organized with a couple of file folders or books located on top of it. The next wall has

big windows opening to the front side of the building with sunshine coming in. There are several small shelves below the windows filled with baskets which are named and organized according to topic and reading level contain books. On the other half of the wall there is a "word wall" poster with many first grade words on it.

In the corner connecting this wall to the left wall of the classroom, there is a computer center containing five computers, a printer, and a big TV in the corner. Next to the computer center there is a white board that is used for instructions and announcements. On top of it there is an overhead projector screen that is used in the morning for literacy and math exercises and daily "to do list" that Mary writes in the morning for children. The overhead projector is placed in front of the white board next to a table on which Mary keeps miscellaneous paperwork and supply. Continuing to this wall one sees a storage cabinet in the entrance. On the side of the cabinet, Mary puts student lunch counts and other office work. Students' tables are in the middle of the room organized and named so that there is enough space for them to do their carpet reading. Each table has four students. Students' textbooks and notebooks are located in the baskets next to their tables. Each table has one basket divided into four compartments. There are many student artifacts in the room and on the walls including their art work, poems, stickers, as well as pledge, US flag, months of a year, and school days calendar.

# APPENDIX L

## MARY'S DAILY SCHEDULE

Morning: On a typical day, Mary turns on the overhead projector and provides a list to her students telling what to do in the morning. Students start to come to the classroom one by one and read the directions while settling in on their seats. Mary greets the students as they enter into the classroom.

Hello! 4-18-2005	Good Morning :) 5-4-05	
1-Turn in your blue folder	1. Move your lunch	
2-Move your lunch hand	2. Do math boxes 8, 7 on p. 197	
3-Do 2 DLR's	3. Sharpen a pencil	
5-Do your job	4. Do your job	
6-Read	5. Read a book sitting down	

Literacy Worksheets or Math Boxes: Mary assigns daily math exercises and literacy worksheets for students to go over and answer in the morning. Before students start working on their worksheets or exercises, Mary reads or asks a student to read the instructions aloud. Mary also reads the overhead slide and explains what needs to be done after finishing their assignments.

While students are working on their literacy worksheets or math exercises, Mary does her daily "business type stuff" such as counting students, doing lunch counts, reading notes from parents, and calling the school business office for daily updates. After students finish their assignments, Mary starts reading directions or questions and asks students for their answers. At the end of an exercise, Mary tells students to make corrections they need to make in their answers and put away their math books or literacy worksheets and pencils and stand up for the pledge. Pledge: Students put their math books or literacy worksheets into the book baskets located next to their tables and pencils into the cups on the tables. After cleaning up, students stand up facing the flag and pledge. Mary says "when I call your table you just get your chairs in their place and go and sit on the carpet please table 5, table 6…" Mary calls students table by table when they look ready and sit still. When their table called, students leave their table and go sit on the carpet between their tables and calendar wall.

Calendar Time: When all students are sitting on the carpet quietly, Mary calls weekly counting helper, calendar helper, weather helper, money counter, and straw counter in front of the calendar wall one by one. While counters and helpers are doing their duties, other students watch them closely and sometimes say the words with them. If a student makes noise and disturbs other students by asking questions or telling things during the calendar time, Mary tells him or her to come and sit by her, so she/he can make a better choice there. After each helper and counter does his/her job, they look at Mary as she praise them and thanks them for doing such good jobs.

Words of the Week: After calendar time, Mary starts their daily word exercise in which she picks four high frequency first grade words weekly and has students exercise them. Mary shows a word (those) to the students. Students together read the word out loud "those", spell it "t-h-o-s-e," read the word one more time, and clap their hands on their knees as a class at the end. After that, Mary asks two students use that specific word in a sentence. Mary facilitates them to do the same routine for the second, third and the fourth words.

Poem of the Week: After words of the week activity, Mary starts their poem of the week activity by reading the weekly poem alone at first. Then, she asks students to join her reading the poem for the second time. After reading the poem, students sometimes ask questions and make comments about the poem.

Story Book Read Aloud: Mary reads a different story book every day. Before reading the daily story book, she asks students about the book that they read a day ago. Mary sometimes asks students to comment about the cover illustration of the book or guess the story told in the book. After finishing the book, Mary asks for students' comments on the book and the story and thanks them for being such good listeners. Work Centers: After the story book read aloud, Mary asks students to gather in front of the work board on which each work group organized by colors (yellow, red, orange, blue, and green) and presented with daily work assignment (media center, computer center, ABC center, poem center, 123 math center, buddy reading center, and read alone center). Mary assigns each group with three or four different center daily and students go to the next center when they are finished with their assigned center tasks. Before students leave the work board to join their center groups, Mary explains each task needs to be done in each center. Mary also leaves the work board in front so that students can refer to when they need to start a different work center. When students have questions or problems regarding their work centers, they go to Mary and she answers their questions and reminds their tasks in their work centers. Mary gathers a group of student in her table to do a guided reading activity, while other students are working in their work centers.

Computer Center: As one of the assigned work centers, each student goes to the computer center once a week as a group. When students are working at their computer centers, they type their names at the top of the page and their weekly words and print out the page. Students are also supposed to use those words in sentences as they do in their words of the week activity, but I have not seen this being done during my observations. During their computer center, students rush to type their name and weekly words. If a student cannot log in to the computer or print out his/her typing task, another student in the group helps him/her with the login or printer problem. Students sometimes show each other how they can change color, size, and font of their words.

During my observations, I witnessed students logging onto yahooligans.com and playing games on the computers as soon as they finish their computer center tasks. While most of the girls left the computer center after finish typing their words and join their peers in other work centers, boys stay and play Yahooligans games on the computers. Sometimes, some boys who are not assigned for the computer center on that day sit and play games on the computers after girls leave the computer center. Since Mary does guided reading activities during the work centers, she sometimes misses students leaving their centers and playing on the computers. If she sees a student who is "not making good choices" she tells him/her to return to his/her center and work on his/her tasks.

Clean Up Time: Mary uses a bell to announce that work centers are over and students need to be cleaning their tables. Mary sets up her alarm clock for one minute and students starts cleaning their tables and work centers. After the cleaning, students sit at their table, hold their hands on the table, and wait quietly. Mary announces tables sitting quietly and asks them to go wash their hands, get their snacks from their backpacks, go sit on the carpet, and wait for her.

Chapter Read Aloud and Snack: Since the morning schedule is 3 and ½ hours and students eat their lunch at 12:30 pm, Mary allows them to have their snacks during chapter read aloud time. Before starting reading, Mary asks what happened in the previous chapter. Students start explaining what happened last time in the chapter. Mary reads a chapter by using her voice to speak characters and asking questions about the events and characters in the book.

Writer's Workshop or Word Study Lesson: After chapter read aloud if they have time left, Mary does either a writer's workshop time in which student write in their journals or a word study lesson in which they go over vowels or some other literacy concepts.

Lunch and Recess: At 12:30 pm students leave for lunch and after that they go to recess. When students start returning to the classroom around 1:20 pm, Mary tells them to wash their hands, go to the carpet, and sit.

Math, Specials, and Math: Afternoon schedule starts with a math class. For the math instruction, Mary either teaches a math concept or does math exercises for the math concepts she previously taught. Math class is "interrupted" by a specials class. When students leave for their specials, Mary checks her students' homework and prepares their homework folders for them to take home. She puts various message stickers inside their folders and on their papers. When Mary sees a student didn't do his/her homework, she writes down a note on the homework paper saying "please finish!" Mary also uses this time for checking her email and preparing her instructional materials for the next day.
After the specials, students return to the classroom. Mary asks them to sit on the carpet and start explaining what they are going to do next and what students need to bring for tomorrow. If they have time left, Mary tells them to play some math games with their peers.

End of a School Day: At the end Mary distributes students' homework and finishes up last minute paperwork, while students are getting ready to leave. After students leave, Mary organizes her instructional materials, cleans the board, tidy ups the computer center and her table.

### **APPENDIX M**

#### NANCY'S CLASSROOM

Nancy's first grade classroom is located in the right front side of the main Hamilton Elementary School building. When I first enter to the classroom, I realize that the classroom was filled with student artifacts reflecting the student centered culture of the classroom. The classroom is organized and orderly. Next to the door, the wall has place for holding the daily schedule and specials. A cabinet located on the lavatory stores some snacks and cleaning materials. There are student cabbies located next to the lavatory. All the walls are filled with the spelling words, boards, and papers. Nancy's table is located in front of a word wall next to the cabbies. The teacher's table is filled with books, dictionaries, folders, notes, pictures drew by students, and other artifacts recently used in the classroom or given to the teacher, such as a heart shaped balloon, a postcard, a staple.

"Noise Level Chart" is hanging next to the word board followed by the "Past, Present, and Future" grammar times chart. The wall over the windows has many boards and signs for colors, students' names and initials, and book reviews. Next to the window wall, there is a big and empty bulleting board on the wall. Next to that, "Our Community Promise" is hanged on the wall. The community promise is hand made by students by pressing their hands on the paper and signing their names under each hand. Their promise says "we will be nice to each other; we will be safe; we will help our friends; we will respect each other; we will use nice kind words; we will be honest." There are five Mac computers, a color printer, and a color TV at the "technology corner". The technology corner is separated from the "Peace Center" with a vertically put small book shelf. The Peace Center located between the small book shelf and a big supply cabinet is decorated with two big floor pillows and a throw in rainbow colors and peace signs. The wall in the peace center has feelings chart. The supply cabinet of which doors used for hanging daily lunch meal chart, lunch count, and other miscellaneous announcements is on the right side of the classroom entrance.

Student tables are located far from each other giving enough space for walking among the tables and bookshelves, and working independently or cooperatively at the same time and not disturbing the tables located next to them. Book shelves located amongst student tables are filled with books about oceans, whales, seashells, and dolphins. Bottom levels of the bookshelves contain plastic storage boxes filled with magnet letters, stamp letters, white board and markers, and other drawing and painting materials. Next to the book shelves, plastic totes contains "writing workshop" folders including each student's own writing exercises, drawings, sentences, etc. Some of the center materials or some class folders located on the book shelves on the window side of the classroom. Although the room has a very good lighting structure, when the lights are turned off for "squeeze and freeze," a classroom management routine, the room gets quite dark.

#### **APPENDIX N**

#### NANCY'S DAILY SCHEDULE

Morning Greetings: Around 8:50 am, students start to come to the classroom and hang their coats to the cabbies. They put their lunch clips under their lunch choices, pick up their journals, and take their seats. Nancy greets students with their name as they enter to the classroom.

Journal Writing: When students take their seats they look at the white board located near by Nancy's table to see their daily journal topic. Started as a free writing activity to tell "what ever they want to tell" Nancy, journal writing has become more structured when Nancy started to give "extended response" topics. During the journal writing activity, at 9:00 am, Nancy turns on the TV for students to watch their Hamilton Elementary School news, announcements, poetry, and weather read by older students. While students are working on their journals, Nancy arranges the classroom for a following activity or puts away some books from the tables. Towards the end of the journal writing activity, Nancy turns off the lights off and tells students to finish up their journals, clean up their tables, and come and join her on the rug.

Around 9:30 am, students join Nancy on the rug with their journals. She asks one or two students to read their journals in front of their classmates. After a student shares her/his journal, other students ask questions or make comments on something they heard in the journal.

Literacy Centers: After journal sharing, Nancy starts a word study, a mini lesson, to explain their daily literacy study in their literacy centers. Literacy centers include an ABC task, a poem, a science task, and a writing task. Before students start working on their literacy center tasks, Nancy explains each literacy center work separately by providing examples and says, "Raise your hand if you didn't understand your job." She

sometimes facilitates group discussions to talk about what students could draw about their poem or write about during their writing tasks.

In the ABC center, students work on a word study by gluing different animal and object pictures in alphabetical order or using stamps to write up the words given on their worksheets. Nancy chooses poems according to their topics and their relation to their unit topics. Students study one poem for a week. Nancy first reads a poem. Then, she reads the poem with the students. After being introduced to the poem, students read and illustrate the poem, read it two of their classmates, and work with their poems in their word study. In science and writing center, Nancy asks students to work on some science topics and write about them in their centers. Nancy gathers a group of students for a guided reading activity, while other students are working on their literacy center tasks. Often, her guided reading activity is interrupted by other students who are not in the reading group that ask questions about their literacy center tasks, tell about something happened in the centers, or tell someone is not behaving right in the centers. During my observation, I observed that the literacy counselor, Kathy, helps Nancy to do guided reading activity and guides the reading activity while Nancy is dealing with interruptions. After finishing all the other center tasks, Nancy's students browse their book boxes and find books for reading. Students read their books for ten or fifteen minutes until everybody finishes their center tasks.

Cleaning Time: After the literacy centers, Nancy announces it is a clean up time. She asks a student to turn on the music that is a three minute song that students sing along with. Students sing, laugh, and smile a lot while they are cleaning up their tables and tidying up their folders throughout the song. After the cleaning, students asked to sit at their tables and wait quietly. Nancy calls table names in which students are sitting quietly and asks them to come and sit on the rug with her.

Writing Workshop and/or Book Reading: If Kathy is available, Nancy does a writing workshop after literacy centers. During writing workshops, Nancy guides students to discuss and write about their science and social studies topics. After the writing workshop, students gather on the rug to share their writings with their classmates.

If Kathy is not available or they finish their writing workshop earlier than planned, Nancy gathers her students on the rug and reads them a book chapter from a book they have been reading. She starts with questions about the previous chapter and has some students summarize and remind the previous events in the book.

Lunch and Recess: Following the writing workshop and/or book reading students go to lunch. Nancy sits next to her table and calls students names from a folder containing reduced lunch tickets. A student helps her distribute students' lunch boxes. After distributing all tickets and lunch bags, Nancy takes them to lunch room and returns to the classroom. She has her lunch in the classroom alone and works on some instructional planning or paperwork.

Math: As soon as recess is over, students start to come to the classroom. Nancy uses "Everyday Math" that is "very scripted" unit by unit. For some math activities, Nancy takes her students to the school yard to do "estimates" or "measuring" with real objects.

Specials: After Math, students go to their specials. When students leave for their specials, Nancy checks students' homework, prepares homework folders for the next day, and writes some notes to parents. She also uses this specials time for checking her email and preparing some instructional materials for the next day.

SQUIRT: When students return from their specials, they go to SQUIRT, super quiet uninterrupted reading time. During SQUIRT time, eleven of Nancy's students are out for special programs including reading, learning disability, ADHD, etc. Therefore, Nancy uses this time for finish her daily guided reading groups. While Nancy is doing guided reading activity, remaining students read books and write responses about the books.

Free Choice: Around three o'clock before leaving for home, Nancy gives her students "free choice" time in which she lets them play small games to keep them focus on the game to relax and get ready to leave for home.

#### **APPENDIX O**

#### **SELECTED CODES**

Case Code Frequency Type Reference Source Mary Comfortable with Technology 5 TEXT 35463,35640 MaryCaseResources.txt Source Material:

When I was interviewing for this job, for example one of the things I kind of bragged about was how comfortable I felt with technology and I had designed an electronic portfolio

Mary Comfortable with Technology 5 TEXT 38227,38441 MaryCaseResources.txt Source Material:

Uh - I feel pretty comfortable with it. I would feel more comfortable if I didn't have to use Macs. Um, I mean I feel comfortable using it and I would like to use it more (she stressed the words using and more).

Mary Comfortable with Technology 5 TEXT 38984,39123 MaryCaseResources.txt Source Material:

Um, so yeah, I mean, I feel comfortable with it. It takes a lot of kind of your own time and it's just kind of hard to get to it (UH-HM).

Mary Comfortable with Technology 5 TEXT 39948,40407 MaryCaseResources.txt Source Material:

I you know I feel very comfortable doing that and then I'm kind of - like on our first grade team if like if something needs to be typed up, like a letter we're going to send out telling the parents or something like that I'm kind of always the one who does the word processing and puts in clip art and that sort of thing just because I feel kind of comfortable doing that. I type really fast (OH-smile) so - I did take keyboarding in high school by the way.

Mary Comfortable with Technology 5 TEXT 108184,108292 MaryCaseResources.txt Source Material:

I felt pretty good about my experience with technology at Midwestern State. I feel comfortable using technology.

Case Code Frequency Type Reference Source Mary Email Communication 6 TEXT 18167,18285 MaryCaseResources.txt Source Material:

And it has my e-mail address on it so some of the parents if they have a question or anything like that they e-mail me.

Mary Email Communication 6 TEXT 36208,36567 MaryCaseResources.txt Source Material:

Outside of the classroom I've found it to be a big part of it because for one thing my school relies a lot, very heavily on e-mail. If you don't check your e-mail two times a day you're pretty lost. I mean, the only way - almost the only way that our staff communicates is with e-mail. So, they use First class. I think it's just a - some sort of program.

Mary Email Communication 6 TEXT 33642,34906 MaryCaseResources.txt Source Material:

nd at home we had e-mail but it wasn't very fast or anything like that. And then when I got to college it was kind of more introduced to the internet and everyone e-mails each other to keep in touch and does that instant messaging and so I've learned a lot very, very quickly about computers once I got to college because I got my own computer and I had it in my dorm room. Um, in college I took a class called CIS 100 and it was kind of a basic Microsoft class. We learned how to do - Microsoft Word, was it Access? (UH-HM) The data base, Excel. Was there one other one? (POWER POINT MAYBE?). Yes. And I learned how to do Power Point and I had learned some of that just by kind of playing around by myself but so that's what is needed in that class and I learned a lot from taking that class. I'm glad I took it. Um, but you know just in college, the majority of my experience was just kind of in my dorm room, e-mailing and looking up things on the internet and like downloading music. Um, and then of course writing papers and then when I got to grad school we had to design our own web site and I learned a lot that year about designing my own web site. We used Microsoft Front Page. So - I'm sure you know but - and that was a big learning experience.

Mary Email Communication 6 TEXT 39322,39388 MaryCaseResources.txt Source Material:

I use e-mail a lot to communicate with a lot of different people.

Mary Email Communication 6 TEXT 59607,60252 MaryCaseResources.txt Source Material:

Yes. Not all of the parents but on the bottom of all my newsletters I have my e-mail address and so some parents - I - Do they send e-mail? M - Yeah, some of them do. No one does it like on a regular basis, but for some of them if they have a question or one little boy, Nathan's dad is actually - he works at Central Office in Highlands so he'll just kind of send me a quick e-mail if he needs to tell me anything and vice versus so - there is about I would say - I'd say there is between - I'd say there's about 5 parents who I've e-mailed or they've e-mailed me this year so – I mean if you think about it, that's like 25% of my class so ---

Mary Email Communication 6 TEXT 101289,101439 MaryCaseResources.txt Source Material:

If I had a question about something in the curriculum, I can e-mail one of our administrative curriculum people and they would get to me so - so yeah.

#### Case Code Frequency Type Reference Source

Nancy Comfortable with Technology 4 TEXT 69619,70489

NancyCaseResources.txt Source Material:

I - Could you tell me how confident you feel about teaching and learning with technology? N - I would say - I'm not like, myself. I mean I'm comfortable but not like - certain things have not - I

don't know that much about computers. Like I mean I do like the basic things but as far as - but I'll figure it out. Either I'll ask someone or we have a technology person and she's helped me a lot. Like okay how do I do this or how do I do this. And actually I sit down with her to figure out how to figure out how to make templates and do stuff for next year so they can do reading responses on the computer and - so like I'm sort of comfortable but like I'll go to people. I mean - so. I mean next year hopefully will be a lot different so - and then we have support which is really nice. We have two tech people in our building as well as a district tech person.

Nancy Comfortable with Technology 4 TEXT 90752,91427 NancyCaseResources.txt

Source Material:

I – Uh-hm. So do you think how could we achieve that. How it could be used internet and computers for better teaching and learning? And what are the ways that we can do that? N - --- I'm not really sure. I mean like I don't feel as comfortable as I think some teachers but I would say - I use it more like to get - to help me with my teaching more than I think my kids but – I mean I think it would be fun to do things like classroom (inaudible) and things together but I feel that we would have never accomplished that this year. Next year, yeah I think so. This year - no way. There's no way but - I don't know. And it could be my class. I mean I don't know but –

Nancy Comfortable with Technology 4 TEXT 92211,92634 NancyCaseResources.txt

Source Material:

N - Probably if I knew more (laughs). Honestly I do think if I knew more. But I think it's hard as a first year teacher because you have so much going on - like just figuring out - the whole thing in general. I think it's just hard as a first year teacher in general just to do it. Hopefully I'll be better next year than I was this year but --- it's one of my goals. So we'll see how it goes (Chuckles) (Both laugh).

Nancy Comfortable with Technology 4 TEXT 152725,152897 NancyCaseResources.txt

Source Material:

N - I feel like I don't have enough training to know - I mean but we have the resources available. Like - I have to go to people and ask -but I don't know about that one.

CaseCodeFrequencyTypeReferenceSourceNancyEmail Communication3TEXT61184,62014NancyCaseResources.txtSourceMaterial:

N - And they do everything with e-mail here also. We don't get paper stuff. It's all e-mail and we have like a personal e-mail, Highlands News just for Highlands and then a district e-mail so everything that they - I - So - for all communication you use e-mail? N - Hm. I - In school with other -? N - For mostly yeah. We have a personal e-mail account and then a Highlands News account and Highlands news is anything that's important to Highlands or the entire district is on Highlands News and then your personal e-mail but yeah, everyone communicates by e-mail which is different because I've never been in a school that's been like that. And we still get the

paper stuff. Like newsletters and things like that but they do send everything through e-mail. I - Hm - I see. N - So everything that we communicate with is basically –

Nancy Email Communication 3 TEXT 85761,86445 NancyCaseResources.txt Source Material:

I - And do you use computers to communicate with the parents? N - Hm - I've had like two parents e-mail me. But, I think that's more like the (inaudible) than anything else. I mean I gave every parent my e-mail. I usually get a note if I get anything at all. And now there are some schools where - like parents e-mail a lot. Like Keith - his population is they have like some section 8 housing kids, some middle to high, some higher class. So like he does get a lot of e-mails but I think it's more like - I don't know. I feel like that's why I don't I get notes more than anything. The parents don't really e-mail me. A lot of my kids don't have computers at home either so –

Nancy Email Communication 3 TEXT 136757,137234 NancyCaseResources.txt Source Material:

N - Yeah. Like they come into the schools. Like our assistant superintendent will come in. They'll come into the building, into the rooms, like. I - And when you need help you can get it right away? N - Yeah. If you email them then they will get right back to you - or you call there they'll get right back to you. I - I remember that technology question that you emailed. She was in the building and came- N - Yeah, and she would e-mail - like they are so helpful.

## **APPENDIX P**

# ACTIVITY AS A CHANGE



Figure P.1: Utilization of Activity System Model as a Change Model