

Beginning Teachers' Technology Use: First-Year Teacher Development and the Institutional Context's Affect on New Teachers' Instructional Technology Use with Students

Jon M. Clausen
Ball State University

Abstract

This empirical research study addresses the issues of new teacher development and the role of the institutional context on new teachers' instructional technology use. The study examines two first year teachers, their development during their initial year of classroom experience, and how the institutional context they entered affected their instructional decisions about technology use with students. Results underscore the challenges many beginning teachers face and how those challenges affect instructional decisions of beginning teachers. Results also stress the importance of the institutional context in valuing beginning teachers' instructional decisions about technology use with students. (Keywords: beginning teacher development, institutional context, technology use.)

INTRODUCTION

Increased exposure to technology by beginning teachers is part of an ongoing effort to improve teachers' instructional technology use. Preparing Tomorrow's Teachers to use Technology (PT3) grant projects and development of National Technology Standards (NETS) along with other initiatives focused on improving teacher quality have reshaped teacher education programs so that new teachers have been ostensibly prepared to begin their careers able to integrate technology effectively into their instructional practice. The first year of teaching however, is characteristically difficult, and beginning teachers may enter school contexts that support or contradict reforms advocated within their teacher education programs. This study examines two first-year teachers' development and how their school contexts affected their instructional technology use. Two questions guide this study.

1. How did the first year development of two beginning teachers affect their technology use with students?
2. How did the existing institutional context affect technology use with students?

RELATED LITERATURE

Since 1999, the PT3 program has invested \$337.5 million in more than 400 grant projects designed to help teacher education programs develop faculty training, restructure curriculum, change certification requirements, and develop models that help facilitate technology use throughout teacher education (U.S. Department of Education, 2005). PT3 leaders envisioned that new teachers prepared in

transformed teacher education programs would bring about instructional change by advocating effective technology use (Preparing Tomorrow's Teachers to use Technology, 2002). New teachers' skills and pedagogical knowledge would allow them to act as change agents within schools once they entered their own classrooms (Carroll, 2000). First-year teachers however, begin their careers with a host of developmental and contextual issues that create potential challenges and may affect whether they use technology with their students.

First-Year Teaching

A teacher's developmental process includes their own K–12 experience, teacher education coursework, practica and student teaching experiences, and continues through their induction as they begin their careers (Feiman-Nemser, 2001). The transition from teacher education into the first year of teaching has frequently been characterized as a period of survival, discovery, adaptation, and learning (Nemser, 1983). For some, the first year is simply a period where new teachers make trial and error decisions about instruction, classroom management, and curriculum development, then continue to rely on those decisions even though they do not represent best practices (Lortie, 1975; Veenman, 1984). Others describe beginning teachers as being concerned with personal conflicts related to acceptance, control, and adequacy (Bullough, 1989; Kagan, 1992). Research related to first-year teachers' technology use recognizes that development during their first year in the classroom also affects how new teachers use technology.

New teacher development following the completion of their formal teacher preparation has received little emphasis in the technology adoption literature. Similar to research concerning existing teachers, new teachers are beginning their careers with improved technology skills and use for their own professional practice, but they continue to express difficulty incorporating technology into the curriculum (Becker, 2001; National Center for Education Statistics, 2000; Russell, Bebell, O'Dwyer, & O'Connor, 2003). Research exploring new teachers' instructional technology use has concluded that new teachers' beliefs and status as novices lead them to question technology's effectiveness in student learning and that technology use with students added to classroom management problems (Novak & Knowles, 1991; Russell et al., 2003). Beginning teachers in these studies considered instructional technology use as an additional element to their regular instructional practice and that they had to take extra steps in order to accommodate technology use with their students. Recent efforts to prepare new teachers have attempted to change these conceptions; however, there is currently a lack of research examining how graduates of PT3 programs actually use technology within their instructional practice as new teachers. Contextual factors affecting new teacher technology use have had a greater presence within the literature.

Context and Support

Contextual factors within the school affect beginning teachers' transition from preservice to practice (Bullough, 1989; Bullough & Baughman, 1997; Grossman, 1990; Zeickner, Tabachnick, & Densmore, 1987). Existing research on beginning teachers' technology use emphasizes access, preparation, and support for technology

integration as important factors in new teachers' technology use (Moursund & Bielefeldt, 1999; Office of Technology Assessment, 1988, 1995; Oliver, 1994; Strudler, McKinney, Jones, & Quinn, 1999). The International Society for Technology in Education (ISTE) has identified essential conditions for teacher education and the school context so that beginning teachers will use technology effectively. These conditions include; a shared vision, access, skilled educators, professional development, technical assistance, content standards and curriculum resources, student-centered teaching, assessment, community support, and supportive policies. While there have been marked improvements in technology access and efforts to improve new teacher preparation to use technology effectively, questions remain about how the contexts these new teachers enter support or negate efforts to improve their instructional technology use.

Support new teachers receive during their first years in the classroom affects their development (Gold, 1996; Grossman, 1990). Developmental and instructional support have been major components of policy recommendations concerning teacher education and retention (National Commission on Teaching & America's Future, 2003). Literature on new teachers' instructional technology use also emphasizes support within the teacher's new school context as a vital component in whether they use technology with students (Novak & Knowles, 1991; Sandholtz, 2001; Strudler, Falba, & Herrington, 2001). Sandholtz (2001) specifically claimed, "...without appropriate technical, collegial, and administrative support, teachers may abandon even well-developed plans for integrating technology into their classroom instruction" (pp. 372-373). Another recommendation includes additional planning time for new teachers. Time provided by the district can offer beginning teachers opportunities to become comfortable in their new context, plan activities, organize, reflect on their professional development, and how they may use the computer in instruction (Novak & Knowles, 1991).

Many new teachers have been prepared in teacher education programs that have adopted recommendations to increase teacher education students' exposure and use of technology. National Educational Technology (NETS), and Preparing Tomorrow's Teachers to use Technology (PT3) grants have served as catalysts in preparing new teachers to use technology. PT3 leaders envisioned that new teachers prepared in PT3-reformed teacher education programs would bring about instructional change and act as change agents within the teaching contexts they entered (Carroll, 2000). Exploration of the development of these new teachers and how the new school context affects their instructional technology use are the next step for researchers and reformers interested in improving teachers' instructional technology use. Leaders within the technology and teacher education research community have recently advocated a greater emphasis on research methodologies that focus on teachers' actual practice using technology with their students within the rich contexts of schools and classrooms (Cuban, 2006; Roblyer & Knezek, 2003; Schrum, Thompson, Sprague, Maddux, McAnear, & Bell, 2005). The present study begins this process by using case study methodology to examine two first-year teachers' development and how the teaching context affected their technology use with students.

METHOD

This study employs case study methodology in an attempt to understand how two first-year teachers' development and teaching context affected their technology use with students. The case study approach represents an "all-encompassing method covering the logic of design, data collection techniques, and specific approaches to data analysis" (Yin, 2003, p. 14).

Data Sources

Data sources included semi-structured interviews, direct observations, field notes, classroom and teacher documents, and technology artifacts. These multiple data sources allowed for data triangulation (Lincoln & Guba, 1985; Yin, 2003). Interviews with each first-year teacher and her building principal took place at the beginning, middle, and end of the school year. Interviews with other participants who had knowledge of the beginning teachers' preparation, development, and technology use with students took place in April after the first-year teacher had taught most of the year. Over 32 hours of classroom observations took place within each of the teacher's classrooms, school computer labs, or other locations in the school building during the regularly scheduled school day throughout the year. Field notes documented classroom activities and captured the researcher's thoughts and perspectives in regard to interviews and observations conducted throughout the year. Documents collected during the year included written and e-mail communication, lesson plans, classroom rules and procedures, district information, first-year teacher journals and portfolios, and other documents related to the teacher's technology use with students. Technology artifacts included technology products created by the teacher or students during the teacher's instructional practice with students.

Data Management and Analysis

All interviews were recorded, transcribed, and then analyzed using Qualrus qualitative analysis software. Data analysis in qualitative research is a recursive process in which data collection and analysis happen simultaneously (Merriam, 1998). Using constant comparative method (Strauss, 1987) analysis of data took place prior, during, and after observations, interviews, and review of documents. This process continued throughout data collection. Triangulation of the data identified major themes throughout the data analysis process (Yin, 2003).

Participants

Patricia. Patricia grew up in a rural community, was the daughter of a teacher, and attended public schools. She was a graduate of a large Midwestern university's general teacher education program. Patricia took the traditional elementary education core classes that included child development, a special education course, and a course in instructional technology. She took all methods courses, participated in practicum experiences, and completed two eight-week student teaching experiences to complete the typical elementary education major. Following graduation, Patricia substitute taught and continued to take courses related to earning a reading specialist certification during the spring and summer before accepting her first fulltime teaching position. She began her career at Pine

Tree Elementary, in a rural Midwestern district that had partnered with Patricia's graduating institution on a PT3 grant project, and had approximately 275 PK–fifth grade students. Patricia was the only first-year teacher in the building.

Pine Tree Elementary had a staff of 28 with two teachers per grade level. The school had received support from university faculty and staff to develop a technology-rich context for technology integration that supported teaching and learning during the project funding. Support from the university included professional development, restructuring, and improvement of the technology access and capabilities within the school. Technology access included the school's computer lab, a laptop cart, wireless network, and a minimum of two computers in each teacher's classroom. The school also had a fulltime technology coordinator, who split her time between the two elementary schools in the district.

Patricia taught third grade and had 21 students (8 females, 13 males). Students in Patricia's classroom came from diverse socioeconomic backgrounds. All students were Caucasian. There was a variety of academic abilities within the room including two male students identified as having attention disorders. Technology access within Patricia's classroom included an overhead projector, four networked computers, and access to the schools wireless network.

Courtney. Courtney grew up in a rural community, lived on her family's dairy farm, and attended public schools. Entering college, Courtney participated in the PT3 grant project as a member of a student cohort. She and other cohort members took all their methods courses together, had an opportunity to purchase a laptop computer at a reduced price, participated in practicum and student teaching experiences in technology-rich contexts, and participated in a capstone course her final semester in the program. Courtney also worked at the College of Education's Center for Technology in Learning and Teaching (CTLT), for America Reads America Counts, and as a student assistant for faculty. She completed her degree and began her teaching career at Trade Wind Elementary.

Trade Wind Elementary was one of seven elementary schools in a large rural district with approximately 180 students K–sixth grade. Courtney was the only first-year teacher in the building. Technology access within the building included a TV, VCR, and computer within each classroom, and the computer lab located in the school library.

Courtney taught second grade and had 29 students (17 females, 12 males). Students in Courtney's classroom came from diverse socioeconomic backgrounds. All students were Caucasian with the exception of one student of Hispanic descent. The students varied in their development and academic abilities. The group included two students who received special services for behavior disorders, two others who received instructional support for reading, and one who received English as a Second Language (ESL) support for word recognition. Courtney made her personal digital camera and laptop available to students in addition to the classroom computer, overhead projector, TV, and VCR provided by the district.

Other participants. Other participants included individuals who had knowledge of each first-year teacher's preparation to use technology and each teacher's development and technology use with students. These participants included two principle investigators from the university's PT3 grant project, the principal from

each building, mentors of the first-year teachers, a building technology coordinator, teacher associates, special education teachers, and a fulltime teacher aide. These participants provided data regarding the PT3 grant project, preservice teacher preparation to use technology, the institutional context of each school to support teachers' technology use with students, the classroom context, and each beginning teacher's technology use with students throughout the year.

RESULTS

Classroom organization, curriculum planning and classroom management were issues for both teachers. Each teacher interpreted her unique school and classroom context differently, and as each developed throughout the year, existing institutional contexts affected their technology use with students.

Patricia's First Year

Patricia began the year excited about the opportunity to have her own classroom and to work with students (personal communication, September 2004). She soon realized that even though she had expected to work hard her first year, she was unprepared for the challenges she would face. "... I was pretty aware of how tired I was going to be, and how much kids can frustrate you sometimes. ... but as much as I thought I knew how challenging it would be, it's been even more challenging" (personal communication, September 2004). Patricia was prepared to work hard and knew the first year required her to learn about curriculum, scheduling, and her students. The amount of time that she devoted to thinking about her class and whether or not she met her students' needs surprised her.

I didn't realize that it never stops. You never get a break, even when you are eating lunch, even when you don't have recess duty, it's not like free time, there is always something to think about or something that you can do, and basically... your role as a teacher only stops when you want it to (personal communication, September 2004).

Patricia spent a lot of time as the year began planning lessons and trying to set up routines. Routines included typical age appropriate expectations such as lining up for recess and following certain steps to complete common activities. Student behavior, however, created challenges for Patricia throughout the year.

Finding effective classroom management strategies challenged Patricia. "I did have some ideas, but I exhausted those. Everything that I had been taught... was exhausted fairly fast. I found that, for whatever reason, they didn't work for the group of students I had this year" (personal communication, May 2005). Students frequently did not follow routines, were out of their seats at inappropriate times, and disrupted others. Patricia sought advice from her mentor and other colleagues early in the year, but after the semester break she turned to the building assistance team and Area Education Association (AEA) to help her identify whether particular students needed special services and to manage general student behavior (researcher field notes, Fall 2004, Spring 2005). Student behavior still troubled her at the end of the year. "I got closer towards the end but I still don't think that I hit on something that was truly working for every single one of them, to teach them

self control” (personal communication, May 2005). Her challenge in managing student behaviors absorbed much of her time and limited her perspective about the students’ ability to do independent or collaborative work.

The reality is ... there are about five students that can handle that kind of instruction every day. The other sixteen, are somewhere in between needing so much structure, needing me to constantly be on top of them, telling them what to do, and when to do it. If I turn away for a second, they are just off task, looking around the room (personal communication, September 2004).

Patricia focused on providing structure within the classroom and continually reminded students of behavior expectations the rest of the year. These challenges with time and classroom management shaped her perspective about technology use with her students.

Patricia was still learning how to develop long range plans, and at the beginning of the year, was unsure whether technology fit into those plans.

...it’s been a real challenge for me to plan very far in advance... I haven’t done anything [with technology] yet. Honestly, technology this year, I’m going to try it, but I have a feeling it might be limited just because I’m not really able, right now, to plan too much, a month in advance (personal communication, September 2004).

Her challenges with student behavior and apprehension about their ability to work collaboratively also affected her instructional decisions about technology use.

...They are not very self-directed learners. It [using technology] would really depend on what I thought they could handle with technology ... I guess that’s kind of a concern right now... I’d like to [use technology], but finding the time to do it, and knowing that they could work in small groups to do an iMovie or something is a little scary right now. (personal communication, September 2004)

Challenges as a beginning teacher influenced Patricia’s perspectives about whether she would use technology with her students early in the year. Technology use was dependent on Patricia making instructional decisions regarding its use, and she questioned whether her students were capable of using technology appropriately.

For Patricia, technology use with her students was an added component to her daily schedule that required additional planning and served as an opportunity for students to misbehave. She compartmentalized its eventual use with students to specific times and existing curricular expectations. She scheduled instructional technology use with students for the school’s computer lab well in advance of its use, and where there was additional supervision and instructional support (research field notes, Fall 2004, Spring 2005). Existing curricular expectations for students included a keyboarding unit, development of Internet search strategies, and learning about software applications to complete various projects. Projects included the creation of an inventor trading card, a report on Native American tribes, and slide

shows on Dr. Martin Luther King Jr. and the water cycle. The class also went to the lab to research information, word process, and draw pictures that related to classroom activities or stories they had read (researcher field notes, Fall 2004, Spring 2005). The support provided by existing school structures helped Patricia use technology with her students as the year progressed.

Patricia's Context and Support

Existing curriculum, the mentoring program for new teachers, and the presence of a building technology coordinator provided important institutional structures to help Patricia use technology with her students. Pine Tree Elementary provides mentors for all beginning teachers in the building. Patricia's mentor was the other third-grade teacher, and a veteran teacher with 30 years of experience in the district. She had an excellent knowledge of district policies, the school organization, the community, and the students (Principal, personal communication, January 2005). Patricia's mentor participated in a PT3 program to develop her own technical skills and to develop curriculum that integrated technology (Mentor, personal communication, April 2005). Patricia felt fortunate to have a mentor with so much experience. "I really went in with the attitude that I could have so much to learn from her, because she was a veteran teacher.... She had so much knowledge to share" (personal communication, May 2005). Patricia's room was located directly across the hall from her mentor. This close proximity made it easy for Patricia and her mentor to talk between classes, during recess, and before or after school. School administration also supported technology use by providing opportunities to develop the mentoring relationship.

School administration provided Patricia and her mentor shared planning time for collaboration to develop lessons or unit ideas. The school also scheduled planning days into the calendar, in which Patricia and her mentor could work with other third-grade teachers in the district on areas that were of interest to all. They used these days to observe other teachers, to attend workshops, to develop units and lessons, and to try out new software or other technology the district had purchased.

The collaboration between Patricia and her mentor helped Patricia understand that student technology use was important and a part of larger curriculum goals. Patricia's mentor provided examples of student work that utilized technology so that Patricia could make connections between the written curriculum and what students could produce.

We really worked together a lot on curriculum...which was wonderful. Sometimes ...we'd sit down and talk about it and I pretty much understood the idea and we'd maybe make modifications to it, but then I would ask her if I could see an example so I can see what we're really talking about. ...it was so beneficial that she had those years and had examples of work to show me (Patricia, personal communication, May 2005).

Similarly, Patricia's mentor recognized Patricia had knowledge of how to work with technology and valued the knowledge Patricia brought with her to the classroom. "I see new ideas from her.... She's had new and different things that I've

tried. So it's been a real rewarding experience for me" (personal communication, April 2005). In reflecting about their relationship throughout the year, Patricia's mentor commented, "I think it's been nice for her, too, because she always knows that she can come over here and talk to me, and I can help her with something" (personal communication, April 2005). Patricia brought in additional resources that added new information to many of the technology projects. At the end of the year Patricia commented, "I would say overall, my biggest supporter was my mentor" (personal communication, May 2005). The school's technology coordinator was another important structural component that assisted Patricia's development and technology use with students.

The existence of a fulltime technology coordinator played an important role in helping Patricia overcome her concerns about classroom management and her students' ability to use technology. The technology coordinator worked with teachers to plan activities that met both instructional objectives and National Educational Technology Standards for Students (NETS•S) (Principal, personal communication, September 2004). Patricia primarily used the computer lab throughout the year even though she had four networked computers in the classroom and access to the school's laptop cart. She did this so that all students could work simultaneously on a project, and because the technology coordinator could provide additional supervision and instructional support.

I am hesitant anymore to go into the lab if the technology coordinator is not there, just because my group of kids is such that it's very helpful to have two people in there. They just get really excited and sometimes just.... don't behave appropriately in the lab. So, if we're doing something more interactive like that, I really try to go when she will also be there, just to have another adult, another pair of hands (Patricia, personal communication, January 2005).

The technology coordinator's assistance with planning and supervision provided Patricia with a supportive structure that helped her overcome her apprehension about technology use with her students.

Patricia began her career in a school that provided considerable support for new teachers and their instructional technology use with students. Her concerns early in the year about planning and student behavior affected whether she thought her students were capable of using technology. The collaborative relationships between her mentor and the school technology coordinator provided Patricia with opportunities to overcome her apprehension about student technology use. Consultation with her mentor provided support, curriculum ideas, and examples of student work, while the technology coordinator provided instructional support and additional supervision that helped Patricia feel comfortable enough to use technology with her students.

Courtney's First Year

Courtney was excited and anxious with her career choice as she began her first year; however, she quickly became inundated by classroom realities. A large class size, warnings about student behavior, and additional adults present in her classroom heightened her anxiety.

I have 29 kids and the teacher who had them last year (a veteran teacher) tells me she had a breakdown and was sick for 45 days to get away from them. How do I get started? I'm supposed to organize my days and weeks and I don't know how to begin! (first year teaching journal, August 16, 2004).

Courtney felt unprepared for how much planning she needed to do. She had previously relied on existing plans from cooperating teachers or plans she had spent time developing as guides for what she needed to teach. It was now up to her to make decisions about daily schedules and plan lessons for the entire day, week, and month.

I had no idea, what order of the day I wanted. I wanted someone to organize my days for me, to already have a plan, and all I would have to do was go to work. Instead, it's me organizing it, and me figuring out which ways work best (personal communication, January 2005).

Courtney also had to learn how to manage adults in her classroom.

Other adults in the classroom added to Courtney's concerns. The school provided Courtney with one fulltime teacher's aide, special education teachers, and other teaching associates to assist her with instruction. Professionals from the Area Education Association (AEA) and social workers from the State Child Welfare department were present to evaluate special needs students, the English as a Second Language (ESL) student, and children under protective services. Parents also volunteered to assist Courtney as the year began (personal communication, September 2004). Courtney spent most of her time early in the year trying to organize a schedule and plan lessons for students because of her concerns about student behavior and how parents and others might judge her teaching.

Courtney began the year focused on the textbook and the lesson or activity instead of looking at broad instructional goals, concepts or themes (personal communication, January 2005). She attempted to plan for every possible contingency, and by her own admission, ended up getting lost in the details. Courtney became frustrated with how much time it took her to plan and try to meet student needs early in year. "Teaching sucks! It is totally day by day. I'm always trying to reach the high and low and plan" (first year teaching journal, August 16, 2004). She spent late nights at the school planning lessons and activities, and was unsure about whether she was being effective.

I froze up...I just did the day to day and turn the page stuff, because there were so many people in the room. I didn't want to, I knew what I was doing, but you are unsure if you know what you are doing or not, when you have these professional educators who are now AEA staff in there all the time, evaluating your kids, you think, is my lesson going well? (personal communication, May 2005).

Planning, scheduling, and other adults in her classroom flustered Courtney as she started the year. She was concerned about meeting immediate needs and unsure if she was having an affect on student learning. These behaviors negatively affected Courtney's perceptions about her job; however, in November she began to think differently about the situation.

I just thought to myself one day, why am I doing this... I knew from the beginning what I should be doing was to think about the big picture. ... I knew that I should be doing that, but I just didn't (personal communication, January 2005).

Courtney's transformation a few months into the first semester helped her move beyond immediate needs and concerns about acceptance. She reviewed standards and benchmarks for the district and for her grade level during the Thanksgiving break. She then developed activities that focused on larger learning objectives and goals for her grade level, challenging herself to create activities that interested her students (personal communication, January 2005). These changes allowed Courtney to become more flexible in her planning and helped her to use other adults in the room more effectively. The changes also provided her an opportunity to use technology with her students as a tool in reaching those goals.

Courtney believed technology could be a catalyst for student learning. "I really do believe that technology does help get the children excited and motivated, but also can be a great problem-solving tool, that promotes higher level thinking... which is what all teachers want" (personal communication, May 2005). She utilized technology with her students throughout the year and did not differentiate between her teaching and when she would use technology. "I just learned how to teach, and I really don't separate technology from my teaching" (personal communication, May 2005). During "centers," students composed plays using her personal laptop, and used reading and math software. She also developed technology-rich activities that utilized digital cameras to reach math objectives and WebQuests about various subjects that built on student interests and expanded the existing curriculum (first year teacher lesson plans, Fall 2004, researcher field notes, Spring 2005). The institutional context within the school supported Courtney's technology use with her students.

Courtney's Context and Support

The institutional context and autonomy to make instructional decisions helped Courtney develop in ways that supported her instructional technology use with students. As mentioned earlier, school administration provided a fulltime teacher aide and other adults to give Courtney instructional support throughout the year. Although the number of adults in the room initially heightened her anxiety as she began the year, she was eventually able to utilize these resources to help her with instruction. Courtney interpreted the institutional context of the school as one that supported teacher initiative and student learning.

Courtney described the teaching culture of the building as out of the ordinary from other schools she had experienced. "...this is an atypical building because

everyone is so into the modern [methods] and what is the best way for the kids to learn” (personal communication, January 2005). Veteran teachers in the school were willing to try new instructional methods and were excited to learn from beginning teachers (Principal, personal communication, September 2004). Teachers in the building worked with students to develop group learning activities, multi-grade level projects, and service learning activities. Courtney was encouraged to be part of a staff that focused on student learning. “I never ever in a billion years would have guessed there would be this many teachers doing the best that they can do to become better teachers” (personal communication, January 2005). She believed that the institutional context supported her beliefs about teaching and learning. When asked how she fit in with the school culture Courtney responded, “As long as it’s for the good of the kids... and everything I want to do is, they are behind me” (personal communication, January 2005). Trade Wind Elementary supported teachers’ instructional decisions concerning student learning; however, the support for technology use in instruction was limited.

Autonomy given to the teachers regarding instruction was also evident in teachers’ instructional technology use with students. Trade Wind Elementary provided teachers with a variety of technology, but each teacher determined whether they used it (Principal, personal communication, September 2004). The district technology coordinator and school media specialist did not facilitate instructional technology use by teachers. While the local Area Education Association (AEA) did provide some training to develop teachers’ technical skills, teachers’ technology use with students was not required by the district and was dependent on whether the teacher chose to use the technology available to them in the building (Principal, personal communication, September 2004). For Courtney, this meant that she had the freedom to develop curriculum that integrated technology as a tool in reaching instructional objectives.

Courtney began her career in a school that provided her with resources and gave her freedom to determine how she would use technology. Her concerns about other adults in the classroom and how to deal with a large class of diverse learners stifled what she believed to be good instructional practice early in the year. Her developmental transition in November shifted her perspective from day-to-day practice to how she would meet larger instructional objectives. Courtney’s interpretation that the institutional context would support her instructional decisions helped her feel more confident during this transition. The autonomy in deciding how she would use technology also supported her beliefs about good instructional practice.

DISCUSSION

Research Question 1: How did the first-year development of two beginning teachers affect their technology use with students?

Patricia and Courtney experienced many of the same challenges as other beginning teachers. The realities of the classroom surprised both teachers as the year began. This reality shock and period of survival exhausted and frustrated both first-year teachers as they worked to manage time, set up routines within their classrooms, plan, and learn about their school and students (Fuller, 1969; Nemsar,

1983; Veenman, 1984). This period affected each teacher's instructional decisions about technology use with her students.

Similar to the teachers studied by Novak and Knowles (1991), time and status as a first-year teacher affected Patricia's technology use with students. The beginning of the year was a time when Patricia was trying to learn about the school and her students. Patricia's development during her first year focused primarily on classroom management and establishing routines within her classroom. Student behavior shaped her conceptions about appropriate instructional practices within the classroom. She was busy trying to plan and develop lessons that would be effective, but she did not consider technology to be an integral part of that planning and was concerned that its use would create opportunities for student misbehavior. It was not until she had time to work with her mentor and school technology coordinator that she understood contextual expectations regarding student technology use.

The large number of students and adults in Courtney's classroom flustered her as she began the year. Similar to the teacher studied by Bullough (1989), Courtney felt inadequate as AEA staff, parents, and administrators frequently visited her classroom. By November, however, Courtney recognized that she "froze up" at the beginning of the year, but knew all along what she should have been doing. Courtney viewed technology use with students as inseparable from her instructional practice and therefore integrated technology into the curriculum and instructional activities she developed. Her use of technology as a means to focus student's attention and to engage them in their own learning served as a tool for her as she settled into her new career.

Transitional factors for new teachers such as planning, classroom management, and insecurity affected the professional development of both of these first-year teachers; however, questions remain concerning why each of them thought differently about technology use with their students during this period. Why was it that Courtney had difficulty distinguishing her technology use with students from her instructional practice and why did Patricia separate the two, and conceive technology use as something needing additional planning and supervision before it could be included within her instructional practice?

Although this study is limited due to the small sample size, comparison of each teacher's conceptual understanding of instructional technology use raises further questions regarding the conceptual development of new teachers to integrate technology into their instructional practice. Have efforts to prepare new teachers to use technology also developed teachers' conceptual perspectives about instruction that make technology an integral part of their instructional practice? Results from these case studies call for greater study of teacher education programs, and their efforts to shape new teachers' conceptual understanding of instructional technology use and how to effectively integrate technology into their instruction. They also emphasize the need for further exploration to examine the development of new teachers prepared within PT3 and other programs that have advocated increased exposure to technology.

Research Question 2: How did the existing institutional and classroom context affect instructional practices and technology use of these beginning teachers?

Results from these case studies suggest that the institutional and classroom context affected how Courtney and Patricia used technology with their students. The institutional context of each school supported both Patricia's and Courtney's technology use with students during their first year of teaching. Technology access and support for instructional technology use have been cited as important factors for teachers' technology use with students (Office of Technology Assessment, 1988, 1995; Web-based Education Commission, 2000). While technology access did not play an important role in either Patricia's or Courtney's technology use with students, the support they received from their institutional context facilitated their technology use with students.

Support provided to the new teachers made a difference in how they used technology with their students. As has been suggested, schools and the support they provide to new teachers are important factors in changing or developing new teachers' instructional practices (Fullan, 2001; McLaughlin & Talbert, 2001). Technology support is also an important factor in helping teachers use technology (Ringstaff & Kelly, 2002; Sandholtz, Ringstaff, & Dwyer, 1997; Strudler, Falba, & HERRINGTON, 2001). The issue of support affected each case in different ways.

Patricia began her career at a school that had worked hard to develop teachers' technology skills and to help teachers integrate technology in meaningful ways into the school curriculum. Patricia's mentor had worked with university faculty and staff as a cooperating teacher during a PT3 project and had developed instructional units that integrated technology. The school's technology coordinator had also played an important role during the PT3 project and collaborated with many of the teachers to link technology skills to content area curriculum. This existing curriculum and support structure within the school helped Patricia use technology with her students.

Shared planning time and other opportunities to work with teachers in the district helped Patricia build relationships and understand that technology integration was an expected part of the curriculum. Collaboration with her mentor helped her to modify existing technology projects and determine if new applications were appropriate for their students. In addition, support from the building technology coordinator facilitated technology projects and provided additional supervision of students so that Patricia felt comfortable allowing her students to use technology. Questions remain however about whether the technology-rich institutional context where Patricia began her career will eventually help her to expand her technology use with students throughout her instructional practice.

Courtney did not have the same kinds of supportive structures in place as she began the year. The school had no organized or comprehensive effort to integrate technology into the instructional practices of teachers, and therefore left it up to individual teachers to determine how they would use technology. The institutional context did however, support teachers' instructional development. In contrast to other beginning teachers described by Russell et al. (2003), Courtney interpreted this as freedom to integrate technology into her instructional practice as frequently as possible. The school's lack of structured support for instructional technology use gave Courtney a level of autonomy that allowed her to take the initiative and use technology with her students.

Support within the institutional context where new teachers begin their careers continues to be an important factor as they transition from student to teaching professional. Even though each context was unique, results from these case studies provides further evidence of the importance of support in helping new teachers use technology (Ringstaff & Kelly, 2002; Strudler, Falba, & Herrington, 2001; White, Ringstaff, & Kelly, 2002). Differences between these first-year teachers reveal that contextual support for teachers' instructional decisions played an important role in how each teacher used technology with students. Institutional support that acknowledges new teachers abilities, and provides them avenues for professional growth, may help new teachers use technology more effectively within their instruction practice.

CONCLUSION

PT3 leaders envisioned that changes in teacher education would bring about instructional change from new teachers and improvements in how these teachers would use technology as they began their careers. Teacher development, however, is a process that continues beyond a teacher education program, and includes the institutional contexts new teachers enter. Results highlight this process of development, underscoring the challenges beginning teachers face and how these challenges affect their instructional decisions about technology use with students. Results also raise questions about beginning teachers' conceptual development toward instructional technology use. Finally, these case studies provide important evidence concerning the value institutional contexts place on beginning teachers' instructional decisions and how beginning teachers interpret the support they receive. While more research is needed, these results suggest that an institutional context that supports and values beginning teachers' instructional decisions, skills, and abilities may assist beginning teachers in overcoming the challenges they face. These institutional contexts may also improve chances that teachers who were prepared to use technology in their teacher education programs will increase their instructional technology use with students once they begin their careers.

Contributor

Jon M. Clausen is an assistant professor in the Department of Educational Studies at Ball State University. His research interests include teacher development and technology integration into teachers' instructional practice. Current projects involve examination of how institutional contexts within teacher education and K-12 schools affect teachers' conceptual development toward technology integration. (Address: Jon M. Clausen, PhD, Ball State University, Teachers College, Department of Educational Studies, TC 820, Muncie, IN 47306.)

References

- Becker, H. J. (2001). *How are teachers using computers in instruction* [Electronic version], Paper presented at the Annual meeting of the American Educational Research Association. Seattle, WA
- Bullough, R. V. (1989). *First-year teacher: A case study*. New York: Teachers College Press.

Bullough, R. V., & Baughman, K. (1997). *"First-year teacher" Eight years later: An inquiry into teacher development*. New York: Teachers College Press.

Carroll, T. G. (2000). If we didn't have the schools we have today, would we create the schools we have today?, *Contemporary Issues in Technology and Teacher Education* (Vol. 1).

Cuban, L. (2006). Prepared remarks from the technology as an agent of change in teaching and learning special interest group business meeting, American Educational Research Association Annual Meeting. San Francisco, CA.

Feiman-Nemser, S. (2001). From preparation to practice: Designing a continuum to strengthen and sustain teaching. *Teachers College Record*, 103(6), 1013–1055.

Fullan, M. (2001). *The new meaning of educational change* (3rd ed.). New York: Teachers College Press.

Fuller, F. F. (1969). Concerns of teachers: A developmental conceptualization. *American Educational Research Journal*, 6, 207–226.

Gold, Y. (1996). Beginning teacher support. In J. P. Sikula (Ed.), *Handbook of research on teacher education: A project of the association of teacher educators* (2nd ed., pp. 548–594). New York: Macmillan Library Reference, USA.

Grossman, P. L. (1990). *The making of a teacher: Teacher knowledge and teacher education*. New York: Teachers College Press, Teachers College, Columbia University.

Kagan, D. M. (1992). Professional growth among preservice and beginning teachers. *Review of Educational Research*, 62(2), 129–169.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalist inquiry*. Thousand Oaks, CA: Sage.

Lortie, D. C. (1975). *Schoolteacher: A sociological study*. Chicago,: University of Chicago Press.

McLaughlin, M., & Talbert, J. (2001). *Professional communities and the work of high school teaching*. Chicago: University of Chicago Press.

Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass.

Moursund, D., & Bielefeldt, T. (1999). *Will new teachers be prepared to teach in a digital age? A national survey on information technology in teacher education*. Santa Monica, CA: Milken Exchange on Education Technology.

National Center for Education Statistics. (2000). *Teachers' tools for the 21st century: A report on teachers' use of technology* (No. NCES 2000-102). Washington DC: U.S. Department of Education.

National Commission on Teaching & America's Future. (2003). *No dream denied: A pledge to America's children*. Washington DC: National Commission on Teaching & America's Future.

Nemser, S. (1983). Learning to teach. In L. Shulman & G. Sykes (Eds.), *Handbook of teaching and policy* (pp. 150–170). White Plains, New York: Longman.

Novak, D. I., & Knowles, J. G. (1991). Beginning teachers' use of computers in classroom instruction. *Action in Teacher Education*, 13(2), 43–51.

Office of Technology Assessment. (1988). *Power on! New tools for teaching and learning*. Washington DC: U.S. Government Printing Office.

Office of Technology Assessment. (1995). *Teachers and technology: Making a connection*. Washington DC: U.S. Government Printing Office.

- Oliver, R. (1994). Factors influencing beginning teachers' uptake of computers. *Journal of Technology and Teacher Education*, 2(1), 71-89.
- Preparing Tomorrow's Teachers to use Technology. (2002). *Transforming teacher education through technology infusion*. Retrieved June 10, 2005, from <http://pt3.org/>
- Ringstaff, C., & Kelly, L. (2002). *The learning return on our educational technology investment*. Retrieved May 10, 2004, from <http://www.ecs.org/html/IssueSection.asp?issueid=132&ts=Selected+Research+%26+Readings>
- Roblyer, M. D., & Knezek, G. A. (2003). New millennium research for educational technology: A call for a national research agenda. *Journal of Research on Technology in Education*, 36(1), 60-71.
- Russell, M., Bebell, D., O'Dwyer, L., & O'Connor, K. (2003). Examining teacher technology use: Implications for preservice and inservice teacher preparation. *Journal of Teacher Education*, 54(4), 297-310.
- Sandholtz, J. H. (2001). Learning to teach with technology: A comparison of teacher development programs. *Journal of Technology and Teacher Education*, 9(3), 349-374.
- Sandholtz, J. H., Ringstaff, C., & Dwyer, D. C. (1997). *Teaching with technology: Creating student-centered classrooms*. New York: Teachers College Press.
- Schrum, L., Thompson, A., Sprague, D., Maddux, C., McAnear, A., Bell, L., et al. (2005). Advancing the field: Considering acceptable evidence in educational technology research. *Contemporary Issues in Technology and Teacher Education*, 5(3/4), 202-209.
- Strauss, A. (1987). *Qualitative analysis for social scientists*. New York: Cambridge University Press.
- Strudler, N. B., Falba, C., & Herrington, D. (2001). The evolving role of school-based technology coordinators in elementary programs. Paper presented at the *National Educational Computing Conference*. Chicago, IL.
- Strudler, N. B., McKinney, M. O., Jones, W. P., & Quinn, I. F. (1999). First-year teachers' use of technology: Preparation, expectations, and realities. *Journal of Technology and Teacher Education*, 7(2), 115-129.
- U.S. Department of Education. (2005). *Preparing tomorrow's teachers to use technology program*. Retrieved January 15, 2005, from <http://www.ed.gov/programs/teachtech/performance.html>
- Veenman, S. (1984). Perceived problems of beginning teachers. *Journal of Educational Research*, 54(2), 143-178.
- Web-based Education Commission. (2000). *The power of the internet for learning: Moving from promise to practice*. Washington DC: U. S. Senate.
- White, N., Ringstaff, C., & Kelley, L. (2002). *Getting the most from technology in schools*. Retrieved January 2003, 2003, from <http://www.wested.org/cs/we/view/rs/665>
- Yin, R. K. (2003). *Case study research: Design and methods* (3rd ed., Vol. 5). Thousand Oaks, London, New Delhi: SAGE Publications.
- Zeickner, K. M., Tabachnick, B. R., & Densmore, K. (1987). Individual, institutional, and cultural influences on the development of teachers' craft knowledge. In J. Calderhead (Ed.), *Exploring teachers' thinking* (pp. 21-59). Eastbourne, East Sussex: Philadelphia, PA: Cassell Educational.