Novice Teacher Case Studies:
A Changing Perspective on Technology during Induction Years

Melissa E. Pierson
Curriculum and Instruction
University of Houston
United States
mpierson@uh.edu

Alysa Cozart
Curriculum and Instruction
University of Houston
United Sates
acozart@mail.coe.uh.edu

Abstract: This work reports on the progress of a longitudinal study that focuses on the technology use of novice teachers in search of an understanding of what it means to learn to teach and to use technology in the 21st century. The study is in its third year, and the subset of participants discussed in the present paper, who have been followed from their first educational technology course, are now in their first year of teaching. Qualitative methods were used to analyze data, and several assertions have emerged on these teachers's developing vision of teaching with technology.

Introduction

By all accounts, the first year of teaching is challenging, exhausting, and in many ways life-changing. This first formative year tests everything a new teacher has learned, and it is in this first year context in which this longitudinal study is now placed. This study has the intent of clarifying the role technology plays in the development of prospective teachers from initial teacher education experiences through the induction years.

Writing in the field of technology and teacher education has shed light on our understanding of the transition from preservice to first year teacher and the role technology plays. Specifically, findings in the areas of the logistics of technology, technology practice, and first year teaching barriers inform our work.

Technology Logistics

The U.S. Department of Education reported that as new teachers who have grown up in a technology-rich environment enter the profession, their comfort and skills with technology will lead to an increased use of computers for instruction (2000). Many novice teachers have confidence in using technology but lack resources and time to develop technology rich curriculum. Although there are an abundant amount of technologies available to the teachers, the school systems have not been restructured to fully support the integration of technology during instruction (Cuban, 2001). Put simply, schools have not made technology convenient for teachers. Although schools have exciting new innovations, there are often complaints from teachers about inaccessibility and incompatibility that darkens the innovation. Examples of inaccessibility and incompatibility include a lack of consistent procedures and policies for teachers to check out equipment, software not installed on laptops or desktops, and administrative dilemmas with giving teachers the power to decide on activities used with the technology to name a few.

Technology Practice

The majority of teachers' use of technology goes on behind the scenes with lesson preparation, grading and professional email use rather than instructional use or teacher-directed student use (Cuban, 2001; Bebell,

D., Russell, M., & O'Dwyer, L., 2004; Becker, 1999). When the computer is used in the classroom, it is often for completing assignments, playing games, exploring CD-ROMs to find information, and conducting Internet searches. On rare occasions, students use the computer for participating in online curriculum and creating multimedia projects (Cuban, 2001). This lack of classroom use is disconcerting considering that the current generation of teachers have higher confidence levels of using technology. However, as one research study suggests, higher confidence levels does not translate into higher levels of use of technology in the classroom; although newer teachers are generally more comfortable with technology, they have not been exposed to applications of technology in their own classroom (Russell, et. al., 2003). Therefore, they often revert back to the more traditional uses of technology such as for classroom preparation.

First Year Barriers

The first few years of teaching are so challenging with teachers having to develop behavior management techniques, gain familiarity with the curriculum, adapt to the school culture, and become familiar with assessment systems, they do not have time to explore ways to integrate the technology available to them(Russell, et. al., 2003). First year teachers often struggle with keeping their attitudes positive. If teacher attitudes play an important factor in educational progress(Bahr, D.L., et al., 2004), then it makes sense that these first year teachers might not be progressing with their use of technology. Even though they have positive attitudes toward incorporating technology into instruction, they lack, on a whole, positive attitudes about being successful in their classroom. Even with all of the first year struggles and technological barriers, many teachers are aware that change will occur in their instructional practice and look forward to that time (Rice, Wilson, & Babley, 2001).

The Study

An initial set of research questions has guided this work:

- Do these novice teachers see technology as integrated with the teaching knowledge and skills they are learning?
- Do technology-use strategies develop simultaneously with or independently from pedagogical practice and understanding?
- Do novice teachers consider technology tools when planning for teaching?
- How do these attitudes, understandings, and skills change and mature over time, throughout the teacher preparation program and into the induction years of teaching?

The eight original participants in this study began in the first course of a three-course educational technology series in Spring 2003. The present paper reports on the progress of the four participants who are now in their first year of teaching in local school districts. Of these four, three are participating in an internship program, whereby they can be employed without student teaching but receive additional university and district support. One of the four participants not reported on here has taken a break from participation in the study, two others are at various stages of preservice preparation, and one is also in her first year teaching, but in a computer lab setting rather than a classroom. Although data was collected on these latter three, the experiences of the four who are teaching in regular classrooms were found to be most comparable. The four participants teach grades Kindergarten, second, third, and fourth, respectively. Their school sites represent a range of socioeconomic and diverse environments.

Now that participants are employed as practicing teachers, we have met with them in their classrooms rather than on the university campus. The primary data were collected through face-to-face interviews, supplemented through observation of classrooms, personal journaling, occasional email communication, and teacher reflections. At least one interview per semester was conducted, lasting between 45 and 75 minutes. These interviews were semi-structured, loosely guided by an interview protocol but allowing for redirection according to the participants' inclination to share information and ask questions.

We have analyzed the data qualitatively, by coding transcripts and field notes through a process of repeated readings. We attempted to understand the meaning of the data in context by connecting interesting ideas

into broad themes that then were translated into assertions about meaning in the teaching preparation for these five novice teachers (Maxwell, 1996). We have embraced an action research stance toward our work so that the telling of others' stories is richer, more accurate, and ultimately more meaningful because the "others" have a role in the telling. Manuscripts have been shared with participants as member checks to ensure that the writing reflects participants' intended meanings.

Discussion of Emerging Themes

While the participants have grown up with computers as a normal part of their lives and have become even more competent users through their educational technology classes, they still struggle to create effective technology-rich classrooms (Russell et al., 2003). As preservice teachers, our participants were able to envision the use of technology in their future classroom. Now that they are actual teachers in their classroom, their primary vision is surviving their first semester. In fact, the majority of our participants were mostly overwhelmed with becoming adapted to their new environment as most first year teachers are. Technology is just one area that they hope to tackle, but in their first semester of teaching it is one among many. These teachers are in survival mode. They are adjusting to a new job, getting to know their students, and also forming new relationships among colleagues. We report here some broad assertions aimed at understanding, from the participants' perspectives, the issues of what has inhibited their technology use.

Barriers/Roadblocks

At first glance, it appeared that the key factor underlying many of the roadblocks these new teachers faced was the sheer fact that they were new. Many commented on how they did not know who to ask for help or where to look for resources. Their answers to questions about how the computer lab schedule works or what the process is to check out digital cameras were often vague and uncertain. Compounding this newness factor is the fact that three of these four are not only first year teachers, but also participating in an internship program, facing the daunting obstacle of first year teaching without the very formative and sheltered student teaching semester.

One of the most common barriers to the use of technology for these new teachers was the inability to access or make work very simple technologies. Two of the four simply could not use their television monitors to project their computer screens to their students, one because she was missing a basic adapter and the other because the monitors had not been installed at the brand new school. Another student had planned to use a CD-ROM, but could not locate a CD player.

An unusual barrier appears to have arisen from a source that should otherwise have been a great benefit. All of the schools at which these participants were employed had computer labs with designated computer lab teachers, as well as at least one person in the role of technology integration support. However, in most cases, but for a variety of apparent reasons, these individuals were not a support and at times hindered the technology integration efforts of these new teachers. In all cases, the computer lab classes were taught in complete isolation from learning taking place in the classroom. The computer lab teachers appeared, from the perspective of the participants, to have their own lesson plans and agendas, and were not interested in either hearing what the current learning goals in the classroom were or sharing many details of what students were learning in the computer lab. One participant comments on her fourth-graders' experience in the computer lab.

> I walked in there before, and I know she was teaching them home row keys and she was telling them about position. And they learned more about the mouse and stuff like that. I don't think they've done word processing yet.

Thus, connections to the classroom learning were few. Another teacher felt that the school technology resources were guarded too closely.

> So you've got to become really good friends with her to go and find out what's going on which is kind of upsetting because I wish they would . . . throw it at me and tell me what we have so I can use it.

Clearly, opportunities are lost when students are not capitalizing on precious time in the computer lab to support and extend what they are learning in the classroom. In some cases, by the students' own admission, they have not asked for help, and perhaps they are not asking for the right kind of help.

In one case in particular, the technology liaison in fact impeded the attempts of one new teacher to meaningfully connect technology to learning. This teacher sought out a job in a brand new school, where the principal was known for her commitment to technology use. The school was designed with wiring and computer placement in mind. From her conversations with the principal, this teacher had determined that they shared beliefs about the uses of technology in teaching and learning. The hitch in this ideal scenario was the unwillingness of the computer lab teacher to collaborate on a shared plan for the weekly time students spend in the lab. This teacher lamented, "I want to do a lot of things and our IT person is not really that helpful . . . our principal wants us using it and integrating it." When she mentioned a project she had planned for her second-graders to create a class book using PowerPoint to the computer lab teacher, the lab teacher told her, "Your kids are not there. Your kids cannot do it." This participant was frustrated that a perception that her students were lower-academically-performing would stunt their computer opportunities.

This discrepancy in vision in what students should be spending their time appears to have a great deal of importance for the work of new teachers.

Inconsistent School Vision

From their own accounts, all of the participants in this study worked in schools that are adequately resourced with technology. Every school had at least one and typically more than one computer lab, and all classrooms had at least one computer. The schools had also sanctioned certain uses of technology for such administrative purposes as online grade books and attendance through email, and all had some types of subscriptions to online curriculum resources. Interestingly, when the schools in the present study required one of these technology uses, it became a priority for these novice teachers, and they completed the tasks effortlessly. This is consistent with other research findings that show the majority of teachers' use of technology goes on behind the scenes with lesson preparation, grading and professional email use rather than instructional use or teacher-directed student use (Cuban, 2001; Bebell, Russell, O'Dwyer, & O'Connor, 2003; Becker, 1999).

We found in the schools in which these participants were employed, however, that even with an outward commitment to technology, there appeared to be an absence of a clear vision for what technology should be used for teaching and learning. A vision for the future and a strategy to make it happen at the state, district, and even school levels is vital (Solomon, 2004). In 2005, most districts and schools have some type of technology plan. On paper these plans might include objectives, implementation strategies, and a calendar of professional development activities. However, our data show that these plans may not always be operationalized; visions may only be on paper and are not shared by all teachers..

Further, data from three of the four cases reported here lead us to hypothesize that without a shared and widerly-known school vision for technology use, the school administration and staff may tend to reach for whatever strong force exists, even if that means these first-year teachers are rushed into leadership roles with just a few months of teaching under their belts. At their early developmental states, they lack the general pedagogical understanding, the sense of their own confidence with using technology for teaching, the localized information of procedures and expectations, as well as the collegial respect necessary to operate in the demanding capacity of school technology leader.

The previously mentioned case of the participant who struggled with an uncooperative computer lab teacher is particularly illustrative of this inconsistent vision and assumption of leadership. She questioned at least three times in a single interview the thought of mentioning the situation to her principal. "I know that

if my principal knew she would do something about it, but then I thought, do I really want to bring it up?" She has a good rapport with her principal and shares other concerns often with her. Howerver, in this particular instance, this new teacher questioned the importance of her problem.

> But as far as real technology help I don't know what at this point really could help me, because it doesn't matter what I bring up or what I suggest, it's stopped at that person. And so I think the best thing for me is just to bite the bullet and just go sit down and have a meeting with my principal and try and get it worked out.

This school clearly has an inconsistently enacted vision for technology use. Given her placement in a brand new school with sufficient and powerful new technology, coupled with her own advanced technology skills and enthusiasm, this teacher should be an exemplary model of a novice technology-using teacher, yet because of this inconsistent vision at the school level, even she has not found success.

Inconsistent Individual Vision

When interviewed, these four participants mentioned just a handful of uses of technology at first, yet they seemed able to list more when prompted and as the conversation continued. It is as if these teachers were having trouble recognizing just how often they were using technology. In fact, we were surprised at the almost universal pronouncements of guilt these new teachers expressed for not using technology in their classroom. One teacher said, "so far I've only done one newsletter and I feel terrible, like, I have not been keeping up with it, and another, "I don't feel like I'm always doing it, I want to do it as much as a I can but I know I'm not always doing it, I know I'm not-- and sometimes I feel like I'm failing them." Another participant even warned the first author before the interview that there was no technology being used so perhaps the interview should not even be conducted.

At first glance, this guilt could simply have been a personal response to the lead author, who was an instructor of these students for one of their technology courses. Participants were aware of the technology focus of the study, so perhaps this brought forth emotions of guilt. However, we speculate two other conflicting reasons for these guilty feelings. First, our program may have succeeded in preparing these teachers with ideas to use technology so that it was truly a part of their vision of teaching. Their guilt would then stem from the fact that they were not making that vision happen. The counter explanation is that students in fact received an incomplete preparation during our undergraduate educational technology courses. Although we have made a conscious effort to present multiple examples of contextualized technology use, these teachers' comments may indicate that we did not give them ample teaching options. Two participants mentioned in particular that they either intended to use or had not successfully used an "edugame," a non-linear PowerPoint presentation format that had been taught in one of our educational technology courses. Their guilty feelings seemed to originate from the fact that they were not implementing sophisticated technology products such as these; so in their minds, these edugames were the only "right" way to use technology.

In the first semester of their first year teaching, these teachers were merely attempting to survive, with countless other practical matters demanding their daily attention. They lacked the time necessary to create complex technology-rich lessons. Even though all four of these ladies are using multiple administrative applications, they discounted these practices. While it is true that teacher education programs must disseminate examples of effective technology integration if teachers are to be prepared to teach in the digital age (Moursund & Bielefeldt, 1999), young teachers must also be made aware of the larger picture, of the myriad ways that technology extends what they are able to do as teachers. Coaching them to understand these possibilities may strengthen them to weather whatever school environment they find themselves in. Time should also favor these teachers, and all have expressed plans and goals for technology uses they would like to incorporate.

Conclusion

Our study will continue to follow these participants as they progress through their first years teaching. Based on the findings of this ongoing study, we propose the following working recommendations for other teacher education and induction year support programs to consider:

1. **Novice teachers struggle to find access to resources and equipment.** This finding frankly frustrated us as a major assignment in the third of our educational technology courses is a scavenger hunt in which students search their placement schools in order to become skilled at locating technology tools and resources. Even with our anticipation of this finding, being new to a school barred easy access to technology.
2. **Even schools with adequate technology support staff may not provide a strong environment for novice teachers.** In the case of these teachers, the technology support staff was not an asset and sometimes proved a hindrance to enthusiasm of a new teacher. Further, individuals in these positions often operated at odds with other visions of technology use in the school. It is clear that schools with inconsistent or incomplete operating visions of technology are tricky places in which new teachers must negotiate their new professional identities.
3. **Novice teachers should be prepared to enter their profession with a varied and strong repertoire of technology uses.** Assisting new teachers in developing individual visions of the wide potential of technology can secure more confident overall growth of new technology-using teachers who can stand up to the pressures of unpredictable school environments and technology visions.

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