Novice Teacher Case Studies: Technology Reality during Induction Years

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Key Words: induction, integration, case studies

Abstract: In search of an understanding of what it means to learn to teach and to use technology in the 21st century, this longitudinal research project has chronicled the technology use of novice teachers as they moved from teacher preparation into the classroom. The participants described in the present paper had just completed their first year of teaching. Qualitative case study methods were used to analyze data, and several assertions have emerged that help to characterize these teachers' developing visions of teaching with technology as this very formative entree to the teaching profession played out.

By all accounts, the first year of teaching is complex, exhausting, professionally confirming, and perhaps even life-altering. The initial formative year in the classroom challenges all that new teachers thought they knew about teaching and believed about themselves as teachers. Teaching in the 21st Century also comes with the expectation that teachers integrate technology with their newly practiced teaching strategies.

The U.S. Department of Education speculated 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). Unfortunately, although many novice teachers possess confidence with using technology for personal reasons, they lack sufficient resources and the luxury of time to explore ways

to integrate technology (Russell, et. al., 2003). School systems now offer an abundant amount of technologies, but have not structured opportunities to fully support the integration of technology during instruction (Cuban, 2001). Schools simply have not made technology convenient for teachers, resulting in complaints from teachers about 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 make pedagogical decisions regarding technology use.

Higher confidence levels in younger teachers also may not translate into higher levels of use of technology in the classroom if teachers have not been exposed to applications of technology in their own classroom (Russell, et. al., 2003). Thus, the majority of technology that is used happens behind the scenes with lesson preparation, grading and professional email use with which teachers are more comfortable (Cuban, 2001; Bebell, D., Russell, M., & O'Dwyer, L., 2004; Becker, 1999).

Complicating the proposition of technology use is the unique set of challenges the first few years of teaching presents, including developing behavior management techniques, gaining familiarity with the curriculum, adapting to the school culture, and becoming familiar with assessment systems. These factors combine to threaten the naturally positive attitudes with which fresh-faced teachers enter the profession, meaning they often lose their positive attitudes about being successful in their classroom in general, let alone with technology (Bahr, D.L., et al., 2004). With the intent of clarifying the role technology plays in the

development of prospective teachers from initial teacher education experiences through the induction years of teaching, this longitudinal study is now situated in the context of the entrée to the teaching profession, the first year.

Research Design

An initial set of research questions prompted and continues to guide this research:

- To what extent do novice teachers in this study see technology as an integrated part of the teaching knowledge and skills they are developing?
- To what extent do technology-use strategies develop simultaneously with or independently from pedagogical practice and understanding?
- In what ways do novice teachers in this study consider the use of technology tools when they plan learning experiences?
- How do these novice teachers' attitudes, understandings, and skills related to educational technology use 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 undergraduate educational technology series in Spring 2003. The present paper reports on the progress of the four participants who have completed their first year of teaching in Houston-area elementary schools. One of the four participants not included in the present account had taken a break from participation in the study; two others were completing preservice preparation; and the final participant had also just completed her first year teaching, however she was employed as a computer lab teacher rather than in a self-contained classroom. Although data were collected on these latter three, the experiences of the four who were teaching in regular, self-contained classrooms were found to be most comparable and best suited to responding to the research questions (for clarity, these four

will hereafter be referred to as the "participants.") The four participants taught grades Kindergarten, second, third, and fourth, respectively. Their school sites represented a range of socioeconomic and otherwise diverse environments.

Once participants were employed as practicing teachers, I met with them in their classrooms rather than on the university campus. The primary data were collected through face-to-face interviews, supplemented through some observation of classrooms, personal journaling, 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. Interviews were audio-recorded and transcribed. Two of the four participants were able to attend a focus group dinner in the last weeks of their first year teaching in May 2005. The dinner was arranged to allow participants a chance to reflect on their impressions of their first year teaching, as well as to consider and elaborate on the relevance of the emerging themes of the study. The conversation at this dinner was audio-recorded, however it was not transcribed due to the difficulty presented by overlapping comments and ambient restaurant noise. A follow-up email asking participants to reflect once again on the emerging themes was sent to all four following the focus group to verify the most recent iterations of the discussion, and the two participants who were not able to attend the dinner responded through email.

I have analyzed the data qualitatively, by coding transcripts and field notes through a process of repeated readings. I 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 four novice teachers (Maxwell, 1996). An action research stance toward this work has allowed the telling of others' stories to be 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 all four participants grew up with computers as a normal part of their personal and educational lives, and became even more competent users through their educational technology classes taken as part of their teacher preparation experience, they still struggled to create effective technology-rich learning opportunities during their first year teaching (Russell et al., 2003). As preservice teachers, our participants were able to envision the use of technology by themselves and their students, as well as emphatically communicate their confidence that technology would be a commonly used tool in their future classrooms (Pierson & Cozart, 2005). Immersed in the reality of the very challenging demands their new teaching careers presented, their immediate focus understandably shifted to surviving this first year. Technology became just one among many challenges they hoped to tackle, and it frequently found itself in line behind more pressing issues of adjusting to a new job, learning the idiosyncrasies of their students, and forming relationships among colleagues.

Taken together, the words these teachers led to the development of some broad assertions that helped to make sense, from their perspectives, of the challenges they found with implementing technology.

Barriers

At first glance, it appeared that the key factor underlying many of the roadblocks these first-year teachers faced was the sheer fact that they were first-year teachers.

> I think the biggest barrier is being a first-year teacher and trying to overcome all the other obstacles, like the classroom management, the understanding all the rules, the getting to understand your curriculum, and teaching and crating lesson plans. You're so infatuated with that, that you tend to forget all the other resources you have available out there. I know that I didn't use as much technology as I hoped to . . . .

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 worked or what the process was to check out digital cameras were often vague and uncertain.

An expected challenge met by these novice teachers was the sheer management of technology. One teacher admitted, "We go to the computer lab once a day. It's stressful, though, to be in a computer lab with all these computers and these kids and you're having questions asked every minute. It can get overwhelming."

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 was missing a television entirely:

> I didn't get to use much technology. I don't have a TV, I asked for a TV and they said they would have to purchase one and they weren't going to do that. So, I could borrow one from the librarian, who never used it but the second I had it, needed it back. So, there was nothing to hook my computer up to and no one to help me with it.

An unusual barrier seemed to have arisen from a source that should otherwise have been a great benefit to these teachers. 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 commented 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 I have so I can use it.

Clearly, opportunities were lost when students were not capitalizing on precious time in the computer lab to support and extend what they were learning in the classroom. In some cases, by the teachers' own admission, they had not asked for help, or perhaps they were 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 and built 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 technology 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, and it is the topic of the next section.

Inconsistent School Vision

From their own accounts, all of the participants in this study worked in schools that were 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.

> I know I use it as a teacher all the time. We communicate completely through email, I do my lesson plans online, I pull up all kinds of things from our staff common site, so I personally use it every single day.

This is consistent with other research findings that show the majority of teachers' use of technology goes on behind the scenes rather than for instructional use or teacher-directed student use (Cuban, 2001; Bebell, Russell, O'Dwyer, & O'Connor, 2003; Becker, 1999).

I found, however, that even at schools with an outward commitment to technology, these participants perceived little or no 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). 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 merely exist on paper and not be shared by all teachers. One participant summarized the vision at her school:

> It's a free-for-all at my school. They write out our goals for us at the beginning of the year and have us sign them. And then at the end of the year, they ask if we've met our goals. They wanted us to use technology in three or four lessons and have them be observed, and at the end of the year they lowered it to one because no on had done that. Instead of expecting you to do it, they lowered their standards.

In fact, data from three of the four cases reported here led to the hypothesis that without a shared and widely-known school vision for technology use, the school administration and staff may tend to reach for whatever strong technology leadership force exists, even if that meant these first-year teachers were rushed into leadership roles with just a few months of teaching under their belts. These three participants reported being asked by colleagues for help with software, using email, fixing technical problems, and ideas for incorporating technology into lessons. At their early developmental states, these novices lacked 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 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 felt she had a good rapport with her principal and shared other concerns often with her. However, 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 had 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 have been an exemplary model of a novice technology-using teacher, yet because of this inconsistent vision at the school level, even she had not found adequate success. This finding underscores the importance of context and the necessary presence of essential elements for the successful implementation of educational technology.

Inconsistent Individual Vision

When interviewed, these four participants were asked to describe the ways they used technology. At first, they mentioned just a handful of uses of technology, yet they seemed able to list more when prompted and as the conversation continued. It was as if these teachers were having trouble recognizing just how often they were using technology. In fact, I was surprised at the almost universal pronouncements of guilt they 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 lamented, "I don't feel like I'm always doing it, I want to do it as much as 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 was scheduled that there was no technology being used in her classroom so perhaps the interview should not even be conducted.

At first glance, this guilt could simply have been a personal response to me as author and interviewer because in the past, I had also been an instructor of these students for one of their technology courses. Participants were aware of the technology focus of the study and knew I would ask about their progress, so perhaps this brought forth emotions of guilt when they met with me. However, two other conflicting reasons are also plausible explanations for these guilty feelings. First, our teacher education program may have succeeded so well in preparing these teachers with ideas to use technology so that it was truly a part of their vision of teaching, that anything short of that vision made them feel like failures. Their guilt would then stem from the fact that they were not, in essence, making that vision become a reality.

The counter explanation is that participants in fact received an incomplete preparation during our undergraduate educational technology courses. Although I and other instructors made conscious efforts to present multiple examples of contextualized technology use, these teachers' comments may indicate that we did not give them ample

teaching options, leaving them with a sort of a limited tunnel vision of what technology can do. One characterized her mental struggle this way: "I keep telling my tech, I feel like a horrible teacher, I'm never using technology, and she's like, you use it all the time, you just don't realize it. But, I want to do a technology lesson . . ." 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. These had, in fact, been presented as one example of a technology-rich lesson, however the tools made such an impact on students that often that is all they remembered.

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 were 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 this range of possibilities may strengthen them to succeed in whatever school environment they find themselves in.

Technology: Integrated or Added On?

Interviews with these four participants during this first year of teaching were largely dominated by talk of the trials and tribulations of first-year survival. As an interviewer, I let them reflect openly and for as long as they liked about their teaching experiences in general, only pushing the real technology agenda of the study once their initial need to vent to a familiar university face had been satisfied. I allowed this departure in scope in part because I truly was concerned about them as educators, not just technology-using educators, and they so desperately need to talk share their thoughts. As an ulterior motive, however, I let the talk of technology develop naturally and place itself in importance within their other teaching concerns because I wanted to answer my second research question "To what extent do technology-use strategies develop simultaneously with or independently from pedagogical practice and understanding?" Put simply, I was curious to see if our repeated attempts at demonstrating the integration of technology throughout their teacher preparation programs were successful, and whether our confidence that these novice teachers would be better off than their more seasoned colleagues who were struggling to learn to use technology after their teaching careers had begun, was rightly placed. If taken at their own words, these participants would indicate that no, technology had not been integrated, and that they, much like their experienced colleagues, were in fact adding technology on once they solved the initial mysteries of teaching:

- I think my thing is now being comfortable now with my curriculum. And, that's what I was hoping for next year, OK, now I'm good with the curriculum, now I can involve my technology. That's what I was hoping for. I find that once you get that classroom in, put your curriculum and you're done. Then, you slowly start working in the technology.
- My first year was my warm-up and now I have one year under my belt and have a little knowledge of what to expect next year. I would like to integrate technology more into my curriculum and know that this would engage my students into the lesson.
- I feel better going into my second year about the use of technology in my class and the lab. I am hoping to get my principal to institute open lab times for us to use the lab so that it is not being wasted.

Using the totality of their comments and analyzing the meaning behind their words, though, it was clear that these teachers were indeed making many developmentally appropriate and meaningful attempts to use technology, despite challenges both in their environments and in their learning curves. And, when guided to see what she was capable of, one even appeared open to releasing those feelings of guilt at not living up to her expectations of using technology pervasively and understanding that she was using technology when it made sense for her students' learning:

> I can say one thing though. I think technology prepared me a lot more than I thought it did. When I was in the classes, I thought, why am I doing this, this is ridiculous. But when I got into the classroom, I mean, just the little things, I can do this and this, and just remembering that it was not, Oh, I HAVE to use technology . . . but, this is going to make my lesson this much better.

Conclusion

Time should favor these new teachers, and all have expressed plans and goals for technology uses they would like to incorporate in the future (Rice, Wilson, & Babley, 2001). This study will continue to follow these participants as they move into their second year teaching. The findings of this ongoing study suggest the following working

recommendations that may guide other teacher education and induction year support programs:

1. **Novice teachers struggle to find access to resources and equipment.** Although this finding should not have surprised us, it frankly frustrated us because a major assignment in the third of our educational technology courses was a scavenger hunt in which students were required to 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 for these teachers.
2. **Even schools with adequate technology support staff may not provide a nurturing environment for novice teachers.** In the case of these teachers, the technology support staff was not an asset and sometimes proved a hindrance to the enthusiasm of a new teacher. Further, individuals in these positions often operated at odds with other competing visions of technology use in each school. It is clear that schools with inconsistent or incomplete operating visions of technology use 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 which technology presents for their work can secure more confident overall growth of new technology-using teachers who

can stand up to the pressures of unpredictable school environments and inconsistent technology visions.

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