

Teacher Candidates and Technology: Making Integration Happen

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ABSTRACT

The integration of technology into the education courses of teacher candidates must be a priority for teacher education programs in order to ensure that these future educators will be ready to meet the demands of our technological world. Teacher candidates were given opportunities to see technology modeled and were given opportunities to use it in their practices with elementary students. The modeling and using of the technology increased the teacher candidates' confidence in integrating it into their classroom teaching methods. Participating in the various technology activities, enabled the teacher candidates to have a better understanding of the importance of how the modeling and the use of technology in the areas of teacher productivity, gathering information, communicating with others, and enhancing the mode of instruction can increase the integration of technology throughout all aspects of the educational experience.

Introduction

Many new teachers enter the profession with basic technology skills; however, few are prepared to implement technology with integrated lessons in the classroom. It is imperative that teacher education programs provide opportunities for teacher candidates to see technology modeled by university faculty and offer instruction on ways to integrate the technology into the instructional methods.

This study discusses the results of technology training sessions provided for a faculty member who had an interest in using technology in teaching practices. Faculty

members across disciplines were given the opportunity to learn about new programs that would assist them in integrating technology into their courses through workshops offered by the university. The technology workshops featured the use of WebCT, which is supported for course management by the university, technology programs, which included presentation software and test generating programs, Internet search engine use for integration of course assignments, and differing hardware use including scanners and digital/video cameras. A proactive stance in implementing technology into the education courses was achieved by offering teacher candidates an opportunity to observe the modeling of its uses and requiring them to use the technology and software in completing course assignments.

Purpose of Article

The purpose of the article was to discuss the results of a study that focused on the integration of technology into the curriculum relative to increasing teacher productivity, gathering information, communicating with others, and, enhancing the mode of instruction.

Background Research

The importance of a comprehensive approach to technology integration in a teacher preparation program must be underscored. As Gerald and Williams (1998) predicted a decade ago, approximately two million new teachers have been hired. Many of these teachers are in classrooms that have been equipped with the newest technologies to enhance the learning experiences of K-12 students. Technology must be integrated into teacher education programs in order to ensure that new teachers are ready to use technology in their own classrooms. The inclusion of technology integration instruction, in the courses the faculty teach, will provide teacher candidates opportunities to practice with various types of media that can be used to enhance the elementary curriculum (Banister & Vannatta 2006; Hatfield 1996; Watts-Taffe et al. 2003).

Recent studies have indicated that teacher education programs are exposing teacher candidates to technology through the modeling of its use by university faculty and the integration of its use in required course assignments. A study on the effects of technology integration into the method courses of these pre-service teachers found that the teacher candidates' high anxiety levels toward technology lessened and they became more confident in their ability to use various technologies when they were provided opportunities to see the technology modeled by the faculty and as they were allowed to use the technologies in an educational setting (Pope, Hare, & Howard, 2002, 2004). "The university faculty taught the (Senior) block method courses by modeling the use of the

technology for the pre-service teachers what they expected from the pre-service teachers. That is, the pre-service teachers were taught the way they were expected to teach” (p. 202).

Participants

The participants in this study included 44 teacher candidates admitted to an elementary teacher education program at a four-year public university in the South. The teacher candidates were enrolled in a literacy course required for their program of study. The course provided instruction on middle level literacy strategies. The teacher candidates self-selected the course section, and therefore were not randomly assigned for this study.

Methodology/Research Questions

The research question for the study was: “What does the integration of technology into the curriculum mean to educators in relation to: increasing teacher productivity, gathering information, communicating with others, and, enhancing the mode of instruction?” All 44 teacher candidates were provided opportunities to take advantage of instruction in technologies that addressed this question. Technology was integrated into the courses in several ways. First, WebCT was used to make available the PowerPoint presentations, assignments, links to educational websites, and other needed course documents. Communication tools were used for discussions and email assignments. Secondly, the Internet was used to complete multiple assignments for class. Teacher candidates located an interactive website of children’s books and used Internet sites with science and/or social studies content to develop an integrated lesson plan. Thirdly, interactive PowerPoint lessons were created and modeled by faculty and then teacher candidates. These lessons were showcased and used to guide the teacher candidates in creating their own interactive lessons. Finally, other types of software and digital/video cameras were demonstrated for K -12 classroom use. Responses to the Teacher candidate, Technology, and Literacy (TTL) survey developed by the researcher/instructor to address the specific technologies and assignments used during the semester and the narrative responses of the teacher candidates were examined.

Analysis

In order to gain a greater understanding of the effects of the technology modeled and used with teacher candidates, information provided through the TTL survey and reflective responses gathered at the end of the semester were analyzed. A description of the aggregate results and means of each question across participants on the TTL is reported (see Table 1).

Table 1. Technology, teacher candidate and literacy (TTL) survey

| | Very Confident | Confident | Somewhat Confident | Neutral | Not Very Confident |
|---|-----------------------|------------------|---------------------------|----------------|---------------------------|
| Teacher Productivity | | | | | |
| 1. Web CT / Website Class Notes | 15 | 19 | 7 | 3 | 0 |
| 2. Resources Provided Website | 14 | 21 | 9 | 0 | 0 |
| 3. Word Processing Document | 40 | 4 | 0 | 0 | 0 |
| 4. Create Power Point Presentation | 4 | 2 | 9 | 10 | 19 |
| 5. Present Power Point Presentation | 2 | 2 | 16 | 7 | 17 |
| 6. Manipulate document info. in Databases | 3 | 4 | 13 | 8 | 16 |
| Gathering Information | | | | | |
| 7. Univ. Resources Complete Assignments | 12 | 8 | 13 | 9 | 2 |
| 8. Locate Literacy Websites | 18 | 13 | 9 | 2 | 2 |
| 9. Eval. Literacy Websites | 16 | 14 | 9 | 4 | 1 |
| 10. Content / Lit. Website | 19 | 12 | 12 | 0 | 1 |
| 11. Content Lit. Integration / Lesson Plans | 13 | 9 | 16 | 5 | 1 |
| 12. Ethical / Legal Use | 33 | 10 | 1 | 0 | 0 |
| Communication Tools | | | | | |
| 13. Send Email | 44 | 0 | 0 | 0 | 0 |
| 14. Email Attachments | 39 | 4 | 1 | 0 | 0 |
| 15. Elec. Communication / Assign. Revision | 23 | 8 | 6 | 5 | 2 |
| 16. Elec. Communications / Provide Assign. | 32 | 5 | 5 | 1 | 1 |
| 17. Discussion Board Assignments | 21 | 8 | 8 | 4 | 3 |
| 18. Email Authors | 34 | 7 | 2 | 0 | 1 |

| Enhancing the Mode of Instruction | | | | | |
|--|----|----|----|----|----|
| 19. Power Point / Interactive Lessons | 4 | 2 | 3 | 11 | 24 |
| 20. Teach Power Point / Students | 3 | 1 | 3 | 8 | 29 |
| 21. Design / Deliver Tech / Lit Lessons | 16 | 14 | 9 | 3 | 2 |
| 22. Evaluate Interactive Software | 19 | 11 | 9 | 3 | 2 |
| 23. Demonstrate Interactive Software | 24 | 11 | 5 | 2 | 2 |
| 24. Use Other Technology Resources | 13 | 11 | 11 | 4 | 5 |

Teacher Productivity

One program modeled and used extensively throughout the course was WebCT. In order to increase teacher productivity, WebCT was used as an online communication tool for the teacher candidates. WebCT was used to upload PowerPoint presentation notes and assignments, provide links to educational websites, and provide other needed course documents. The provision of the class notes changed the dynamics of the class atmosphere by freeing the students' attention from note taking, so that they could participate in class discussions and demonstrations. TTL results reported that 34.1 percent of the teacher candidates were very confident and 43.2 percent were confident in providing class notes for their students to use through some type of program like WebCT or a class website (see Table 1). The teacher candidates were able to see the benefit of having these notes (PowerPoint slides) as a tool to guide their own reading and studying of the information that would be discussed in class. Data on the TTL survey revealed that 31.8 percent were very confident and 47.7 percent of the teacher candidates were confident in using the resources provided on WebCT to prepare assignments for class; and therefore, were confident in providing a means for their students to access these materials electronically (see Table 1).

The use of the WebCT and the PowerPoint presentations were both well received by the teacher candidates. In fact, many of the teacher candidates reported that if the instructor changed anything about the course, to make sure the WebCT and PowerPoint notes were kept in the course outline. One teacher candidate reported,

I am really not an organized person. I know that as a teacher, I will need to be. I liked getting the PowerPoint notes and having them in a notebook before I came to class, because then I just made my other notes directly on them. I didn't just write notes on paper any which way and stick them in my notebook. I can see where this will help my students in the classroom

who are not very organized. I may not have something like WebCT at the school where I will teach, but I can have a class website and put notes on there for the students (personal communication).

The highest area reported for the Teacher Productivity category on the TTL was in using some type of word processing program to complete assignments. Forty teacher candidates reported being very confident and four reported being confident in creating word processing documents. Teacher candidates also could see the advantage of having an electronic outlet to “publish” class materials such as a newsletter or homework updates for parents.

Gathering Information

The teacher candidates were given an opportunity to use technology as an information tool by using the Internet to complete several assignments for class. One assignment included locating websites created by authors of children books to critique and share with their peers. The teacher candidates used the technology in their classes to discuss the pros and cons of using the websites in actual classrooms. They went through the websites and gave suggestions for using the activities in the classroom to enhance literacy learning for elementary students. One teacher candidate commented, “I never knew there were so many reading resources for teachers. I especially liked the websites that had the interactive books on them. I think they will be especially useful for my students who are not motivated to read”. The TTL survey (see Table 1) revealed that 40.9 percent and 29.5 percent of the teacher candidates were confident in locating websites that contain literacy activities for children’s books that they could use in their future classrooms.

A second assignment involved locating a science or social studies education site to integrate into a literacy/content area lesson plan. Because many of the teacher candidates used the Internet primarily for email and general searches, these assignments allowed them to see how their technology knowledge could be integrated in actual classroom settings. The teacher candidates used the content area information found on the websites to complete lesson plans for the elementary students. Many of the teacher candidates reported positive comments made by the elementary students after completion of the lessons. This positive learning experience was created when the teacher candidates not only used technology to create lesson plans, but also incorporated technology into the lessons that the elementary students completed. After receiving instruction on completing science WebQuests, one teacher candidate designed a science lesson for her student (Abruscato, 2004). The elementary student she worked with told her, “I never really liked learning about science, but being able to find my own information about the different habitats and use what I found to answer the challenge was fun!” The TTL survey data indicated a high area of confidence for the teacher candidates, with 19 reporting very confident, 12 reporting confident, and 12 reporting somewhat confident in locating

content related information that could be incorporated into literacy assignments (see Table 1). The instructor also demonstrated how to access the many lesson plans that are available on the Internet. Sample lesson plans provided through teacher Internet websites were modeled in order that the teacher candidates could see how the lessons could be modified to address their personal teaching needs.

Communication Tools

The teacher candidates used technology as a communication tool by emailing their peers and the instructor. They sent copies of their assignments to their instructor electronically in order to receive feedback before final drafts were turned in for assessment. Several of the teacher candidates stated that many times they turned in written assignments and just got a grade. They felt that not having the opportunity to make corrections and resubmit had been a hindrance in their learning process. When teacher candidates were allowed to submit, receive feedback, and then revise assignments, they experienced teaching that did not just use didactic methods of instruction, such as, giving directions for an assignment and then assigning a grade. Teacher candidates indicated that their learning experiences were enhanced by using these teaching processes that engaged them as learners. They, in turn, provided opportunities for their students in the classrooms to interact with them or their peers, to reflect on their work, and to make revisions.

The hands-on process the teacher candidates used in submitting their assignments for revision could account for the high numbers reported on the TTL survey in the communication tool's category of feeling confident providing a submission, feedback, and revision process through an electronic communication venue (very confident, 23; confident, 8) and the category of feeling confident in using email and other communication tools to provide assignments for students to complete (very confident, 32; confident, 5) (see Table 1).

The discussion thread through WebCT also provided great input for teacher candidates to receive feedback from their peers as they completed various assignments. Sandy reported that, "I was able to get to know my classmates in a more personal way by using the discussion thread. When one person responded to a question or concern we all were able to share our answers or feelings". The teacher candidates also used the discussion threads as a way to respond to reflections posted by their classmates.

Another area in the communication tools section of the TTL that the teacher candidates responded very positively to was in emailing children's book authors. Thirty-four teacher candidates responded that they were very confident and seven were confident in providing guidance in emailing favorite authors and corresponding with the authors to gather information for literacy assignments (see Table 1). The author review assignment was the assignment that most teacher candidates chose to do as their technology/literacy activity with a student. The teacher candidates located children book author websites that provided information about the author and information about the

books written by the author. The teacher candidates then worked with their students to write critiques of the books read, and emailed them to the author.

Enhancing the Mode of Instruction

Finally, in order to enhance instruction, PowerPoint was used to share information that was being taught with the teacher candidates. It was used as an interactive tool to demonstrate how the teacher candidates could use the features of PowerPoint to create interactive lessons for their students. The teacher candidates then used PowerPoint to develop and present collaborative projects. These two areas received the highest level of not being confident on the TTL survey. The teacher candidates reported they were not very confident in leading students in the process of developing and presenting collaborative projects using PowerPoint. In examining the reflections of the teacher candidates, one overall theme that emerged in reference to these activities was that the teacher candidates had very little technical knowledge of PowerPoint. PowerPoint was not a program that many teacher candidates used before they participated in this education course. This lack of knowledge increased the teacher candidate's frustration in developing the presentations. They liked the lessons created, but felt that it took too much time. Teacher candidates did feel more confidence in designing and delivering integrated technology/literacy lessons (very confident, 16; confident, 14) and in demonstrating interactive software/Internet resources that could be integrated with literacy instruction (very confident, 24; confident, 11) (see Table 1). Varying types of interactive software and online literacy technology sites were demonstrated for the teacher candidates. The teacher candidates were then able to write mini-lessons to integrate these technologies.

Concluding Remarks

This was one of the first education courses and in many cases the only education course in which the teacher candidates were being exposed to this much use of technology. Technology assignments, which are important for the teacher candidates in order to give them exposure to the ways that technology can be incorporated into the lessons they teach, encouraged the constructivist approach to instruction for teaching and learning. These instructional assignments provided opportunities to scaffold the teacher candidates' pedagogy toward authentic, learning-centered activities (Doering, Hughes and Huffman, 2003). Teacher candidates were more confident in integrating technology into their classroom teaching methods. After participating in the various technology activities, teacher candidates had a better understanding of the importance of how modeling and use of technology positively impacted teacher productivity, gathering of information, communication with others, and enhancing the mode of instruction.

Throughout the whole experience, it was impressed upon the teacher candidates that technology in and of itself is just technology, but in the hands of a teacher who has been trained to integrate its use into the curriculum, it can become a very powerful, educational tool that will benefit all students.

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