

Wright, V.H., Wilson, E.K., Gordon, W., & Stallworth, J.B. (2002). Master technology teacher: A partnership between preservice and inservice teachers and teacher educators. *Contemporary Issues in Technology and Teacher Education*, 2(3), 353-362.

Master Technology Teacher: A Partnership Between Preservice and Inservice Teachers and Teacher Educators

VIVIAN H. WRIGHT AND ELIZABETH K. WILSON
University of Alabama, USA

WESLEY GORDON
Alabama School of Fine Arts, USA

JOYCE B. STALLWORTH
The University of Alabama, USA

Technology has permeated our educational experiences from electronic mail to virtual field trips by way of the Internet. As educators seek viable ways to use technology to enhance teaching and learning experiences, colleges must also prepare future teachers to plan for effective technology use. Teacher preparation programs should not only integrate technology throughout the curriculum, but should also provide opportunities for the students to manage problems within the actual school setting as they integrate various tools of technology.

During the last two decades, researchers have asserted the importance of addressing technology in the training of preservice teachers. As colleges of education attempted to ensure that preservice teachers could master certain technology skills, it became apparent that the successful use of technology in pedagogy involved more than skill mastery; equally important were the perceptions and beliefs about technology that preservice teachers take from their teacher preparation programs (Byrum & Cashman, 1993). Consequently,

for computers to make a difference in how students experience schooling will require teachers and administrators to modify their concepts of appropriate and inappropriate teaching behaviors, to reprioritize the value of different types of instructional content, and to change habits and assumptions that guide their classroom and school management strategies (Becker, 1991, p. 8).

Such notions have important implications for teacher education programs that are already confronted with obstacles to preparing new teachers. Specifically, the research literature has established that teachers often teach as they were taught (Bennett, 1991). In addition, preservice teachers often perceive the knowledge and practice of the school-based teachers in their field experiences as more reliable to that of their teacher educators (Britzman, 1991). For instance, when discrepancies occur between the perspectives of the cooperating teacher and the university faculty, in many cases, the pedagogical knowledge of the university faculty is supplanted by that of the cooperating teacher (Palonsky & Jacobson, 1988). The practical application of theory to the student teaching experience is often lost during the internship. This is due not only to divergent opinions related to the application of theory but also to a lack of focus and direction toward specific applications of that theory. Subsequently, teacher educators must not only model technology practices; they must ensure that preservice teachers are provided with opportunities to observe and participate in appropriate technology practices in their field experiences and student teaching experience.

Technology Integration in Teacher Education

With the development of National Educational Technology Standards for Students and Teachers (see NETS website, <http://cnets.iste.org/>) many states are integrating these technology standards for teachers and students within schools and teacher education programs. In the state of Alabama, State Department of Education professionals are collaborating with university and K-12 educators throughout the state in a Preparing Tomorrow's Teachers to Use Technology (PT3) grant consortia effort. Goals of that effort include assessing technology use, determining needs, and developing state technology certification standards. The national accrediting body for teacher education, National Council for Accreditation of Teacher Education (NCATE), in its 2000 Unit Standards, has included various elements related to a program's commitment to technology. Specifically, NCATE requires that programs prepare candidates who are able to use educational technology to help all students learn (NCATE, 2001). Programs must show how "...knowledge, skills, and dispositions related to educational and information technology are integrated throughout the curriculum, instruction, field experiences, clinical practice, assessments, and evaluations" (NCATE, 2001 p. 13).

Several factors affect teachers' use of technology in K-12 classrooms including access to technologies, time, training, and administrative support (Laffey & Musser, 1998; Myrhe, 1998; Niedhauser & Stoddart, 1994; U.S. Congress, Office of Technology Assessment, 1995). For those teachers who have not recently been through teacher education programs, additional training and support may be needed (Fitzgerald, 1999). According to McKenzie (1999), only 20% of teachers report feeling very well prepared to integrate educational technology into classroom instruction.

The National Center for Education Statistics (NCES) commissioned a survey using the Fast Response Survey System (FRSS) in the spring of 1999 to assess teacher use of computers and the Internet in K-12 public schools. The survey found that 99% of full-time regular public school teachers reported they had access to computers or the Internet somewhere in their schools; however, 39% of the public school teachers indicated they used computers or the Internet to create instructional materials. Less than 10% of teachers reported using computers or the Internet to access model lesson plans or to access research and best practices. Teachers are more likely to integrate computers and the Internet into classroom instruction if they have access to adequate equipment, connections, and the proper amount of preparation and training (NCES, 2000).

PARTNERING

According to the Office of Technology Assessment (OTA, 1995), "helping teachers use technology well may be the most important step to helping students" (p. 95).

Hornung and Bronack (2000) noted the need for technology modeling to preservice teachers in both the university classroom and in practical experiences. In a project conducted by Balli and Diggs (1996), preservice teachers were placed in field experiences where they incorporated technology experiences into a practice lesson. Balli and Diggs contended "if preservice teachers used their newly acquired technology skills in an authentic classroom situation, the experience could enhance their understanding of how technology can support teaching and learning" (p. 57). Wang (2000) asserted that preservice teachers should be provided with effective models of effective technology teaching that are situated, not only in the university

setting, but in the field-based setting as well “so that future teachers can be equipped with appropriate teaching styles to function effectively in the classroom with computers.” (p. 7)

There is a need to specifically define the technology related objectives among the stakeholders in teacher education. The responsibility for developing and implementing those objectives must be shared among the university, inservice, and preservice teachers. In the U.S. Congress’ Web-Based Education Commission’s report (Fulton, 2001), professional development was identified as an area of need with time as a barrier to the teacher’s development of computer integration skills for the classroom. Partnering and modeling efforts can assist with this need, along with other common teacher needs such as access to appropriate equipment.

THE MTT PROGRAM

The Master Technology Teacher (MTT) Program at The University of Alabama (UA) encourages collaboration among educators (preservice teachers, inservice teachers, and university faculty) to integrate technology into the secondary education content classroom. The program was initiated as one of UA’s Project Integrating Technology (Project I.T.) contributions to a Preparing Tomorrow’s Teachers to Use Technology (PT3) consortia effort in the state of Alabama (see website <http://projectit.ua.edu>). The Integrating Technology Project at the UA has focused on innovative and traditional best practices for infusing technology in its teacher education preparation programs. The overall goal of Project I.T. is to enable preservice teachers to fully use instructional technologies and to prepare them for classroom best practices to enhance teaching and learning. The NETS standards for students and teachers form the framework of Project I.T. The UA College of Education (COE) is focusing on secondary education courses in an effort to ensure that (a) NETS are implemented, (b) teacher preparation courses will integrate I.T. throughout the teacher education curriculum, (c) field experiences for preservice teachers include opportunities for I.T. applications, and (d) professional development occurs for all educational partners.

Planning and selection

While the UA secondary education faculty looked for ways to ensure that field experiences for preservice teachers, particularly student teachers, have opportunities for I.T. applications, the faculty noted that many of the field experience locations had limited equipment and teacher professional development opportunities. Therefore, the MTT program was developed, which included an equipment program designated as Technology on Wheels (TOW). Each TOW bundle consists of a laptop with productivity and presentation software, projector, external zip drive, and microphone.

The secondary education faculty partners at the university met during late spring, 2000 to discuss the MTT concept and to discuss likely inservice candidates for the debut group. Two inservice teachers in each of the five content areas, social studies, language arts, math, science, and foreign language, were selected. MTTs were selected for their desire to learn new ways of using technology to enhance teaching and learning. In some cases, the MTTs were not currently infusing technology but had the desire to do so.

Letters were mailed to the teachers asking of their interest to participate in the MTT program. All 10 teachers agreed to participate. During summer, 2000, two MTT workshops were held to review the secondary education goals for the MTT program and to demonstrate current and emerging technologies. Possible ideas specific to content areas were also discussed at the workshop.

Implementation/Mentoring

UA students placed with MTT teachers were encouraged to work with their MTT to seek new ways to integrate technology. UA students were also encouraged to check out TOW bundles to bring additional hardware and software to the classroom experience.

Each UA content faculty member and the technology faculty member worked closely with the preservice/inservice partners to discuss potential MTT projects that could meet the needs of the individual classrooms and classroom teachers. The technology faculty member met with the preservice/inservice partner to discuss the technology hardware/software options and

to demonstrate TOW use. Additionally, tutorials were developed for common software and TOW usage (<http://www.bamaed.ua.edu/cse489>). E-mail lists were formed to encourage ongoing dialog between all members.

Experiences

Experiences varied during the first year effort, depending on the content and the inservice/preservice match. Projects included interactive *PowerPoint* presentations, virtual field trips, and electronic scrapbooks. The foreign language partners developed an interactive *PowerPoint* in which Spanish II students researched and gathered photos on the Barcelona culture and then worked with the preservice teacher to insert them into classroom presentation. The science partners gathered still photos throughout the semester of inclass and field work and demonstrated the wide range of classroom experiences through an online electronic scrapbook.

One math teacher assigned an online web builder student created site. The project was a semester long project that replaced a previous project with an oral presentation as the culminating activity. Using a web page forum for reporting required the students to develop a proficiency in Internet research, word processing skills, and graphic design. The project itself was to connect mathematics to another disciplinary topic and to support the connection using the lives and work of specific mathematicians, artists, poets, and scientists. The inservice partner provided the framework for the project and the preservice partner was required to provide the technological support for the project. Using the TOW bundle and his own experience gained through coursework, the preservice teacher instructed the students in the use of a web builder program and gave instruction on using text and graphics from other web sites to enhance the student web sites. Students were instructed to correspond to the preservice teacher by way of e-mail when questions or problems developed with the technology component of the project. The assessment of the project was divided into two parts: the written content of the project and the visual display of the web site. The inservice partner assigned the grades based on the written content. However, the preservice teacher contributed to the assigning of the second part of the grade. The preservice teacher was able to experience the full cycle of technology-integrated instruction from the development of a project to instruction and then to assessment.

REFLECTIONS

After one year of implementation, all partners admit both triumphs and trials related to the project. One UA faculty member noted, “The most important benefit was the opportunity for our preservice teachers to enhance their teaching through technology. Many of them commented to me that their students appreciated a different way to receive information.” Admitting that inservice teachers should learn more about using the equipment, an inservice partner noted, “The preservice teachers are providing the inservice teachers with technology related professional development by using the equipment in the classroom. The hesitancy to use technology and the fear related to technology is diminished because the preservice teachers are not as threatening as a formal professional development learning forum would be.” The preservice teachers were well trained in the use of the TOW bundles and entered the MTT project with a high level of enthusiasm even though it meant that there were more requirements on them because of their placement with a MTT. One inservice partner commented,

The MTT project was a welcome challenge to me because it made me rethink what I teach and how I teach it and how I could streamline my objectives to include a technology component. If not given the opportunity to think about technology and how it can specifically relate to how I help the preservice teacher learn to teach, I would not have attempted my personal project.

A preservice teacher noted that although she had limited technological resources in the classroom, she felt more prepared to seek creative ways to implement technology in her lesson plans.

CONCLUSIONS

The partnership between the university and the secondary school faculties helps to encourage collaboration and collegiality between university faculty and preservice and inservice teachers and further helps to close the gap between the potential of technology and the reality of classroom use. Such partnerships help to further the UA COE’s goal of more effectively preparing tomorrow’s teachers to use technology and enhance the preservice teacher’s ability to apply the technology instruction received at the university to

the classroom in the school setting. The MTT program has enhanced the inservice teacher's ability to create an environment for preservice teachers in the classroom that correlates more closely with the technology instruction preservice teachers receive in the university setting and to expand his or her own awareness of the technology tools available for instructional use.

Further, professional development has occurred in an unplanned and informal forum. At the MTT's school where the math project was implemented, the successes of the web project were shared informally with other teachers in the school. An English teacher at the school used the same framework the next semester in his senior English class, replacing the traditional research paper. Many of the students in the English classroom were students who had completed the project in the math classroom the previous semester. These students were then able to focus more on the content of the project because they had already learned and applied the technology of the project in a previous course. This domino effect of professional development is invaluable to the process of teacher education and the benefits can be seen and shared immediately with the students of those teachers. As inservice teachers use more technology in their instruction, sharing between colleagues will begin to include the application of technology and the gap between the use of technology and the availability of technology will begin to close.

Opportunities through programs such as the *Master Technology Teacher* provide excellent partnering opportunities for the faculties at the university, in the K-12 school, and the preservice teacher. Collaboration and the creation of a comfortable learning environment for all partners has been a key component of the MTT project. The continued goal of the project is that all partners will value the importance of technology instruction in the classroom and that technology instruction will become an integral part of the entire secondary school program.

References

- Balli, S., & Diggs, L. (1996). Learning to teach with technology: A pilot project with pre-service teachers. *Educational Technology, 36*(1), 56-61.
- Becker, H. (1991, May). When powerful tools meet conventional beliefs and instructional constraints. *The Computing Teacher, 18*(8), 6-9.

- Bennett, C. (1991). The teacher as decision maker program. *Journal of Teacher Education*, 42, 119-131.
- Britzman, D. (1991). *Practice makes practice: A critical study of learning to teach*. Albany State University of New York.
- Byrum, D., & Cashman, C. (1993). Preservice teacher training in educational computing: Problems, perceptions, and preparation. *Journal of Technology and Teacher Education*, 1(3), 259-274.
- Fitzgerald, S. (1999). Technology's real cost. *Electronic School*, 57-59.
- Fulton, K. (2001). From promise to practice: Enhancing student internet learning. *MultiMedia schools*. [Online]. Available: <http://www.infotoday.com/MMSchools/mar01/fulton.htm>
- Hornung, C., & Bronack, S. (2000). Preparing technology-based teachers: Professional lessons from a K-12/University collaborative. *TechTrends*, 44(4), 17-20.
- Laffey, J., & Musser, D. (1998). Attitudes of preservice teachers about using technology in teaching. *Journal of Technology and Teacher Education*, 6(4), 223-241.
- McKenzie, J. (1999). *Reaching the reluctant teacher*. [Online]. Available: <http://www.fno.org/sum99/reluctant.html>
- Myhre, O. R. (1998). I think this will keep them busy: Computers in a teacher's thought and practice. *Journal of Technology and Teacher Education*, 6(2/3), 93-103.
- National Center for Education Statistics. (2000). Fast response survey system, *Survey on Public School Teachers Use of Computers and the Internet*, FRSS 70, 1999.
- National Council for Accreditation of Teacher Education. (2001). *Professional Standards for the accreditation of schools, colleges, and departments of Education*. Washington, DC: Author.
- Niederhauser, D.S., & Stoddart, T. (1994, April). *Teacher' perspectives on computer-assisted instruction: Transmission versus construction of knowledge*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans. (ERIC Document Reproduction Service No. ED 374 116)
- Office of Technology Assessment (1995). *Education and technology: Future visions, (OTA-BP-HER-169)*. Washington, DC: U.S. Government Printing Office.
- Palonsky, S., & Jacobson, M. (1988, April). *Student teacher perceptions of elementary social studies: The social studies construction of curriculum*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.
- Wang, Y. (2000). Preservice teachers' perceptions of the teachers' role in the classroom with computers. *Society for Information Technology and Teacher Education International Conference: Proceedings of SITE 2000*. Charlottesville, VA: Association for the Advancement of Computing in Education.

Contact Information:

Vivian H. Wright and Elizabeth K. Wilson
The University of Alabama
Tuscaloosa, AL 35487 USA
vwright@bamaed.ua.edu

Wesley Gordon
Alabama School of Fine Arts
Birmingham, AL USA

Joyce B. Stallworth
The University of Alabama
Tuscaloosa, AL 35487 USA