

A Model for Technology Integration

C·R·E·A·T·E FOR MISSISSIPPI'S SCHOOL MENTOR PROGRAM



PHOTO CREDIT: AMANDA HOLDER, C·R·E·A·T·E FOR MISSISSIPPI

Figure 1. Educational technologists and student techno teams provide on-site technical support for teachers in the core schools, essential to helping teachers integrate technology.

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Subject: Technology integration, mentoring

Audience: Tech coordinators, administrators, library/media specialists

Grade Level: K–12 (Ages 5–18)

Standards: Addresses the essential conditions to meet the NETS•S, NETS•T, and NETS•A (www.iste.org/standards)

In September 2001, ISTE announced proposed NCATE standards for a Technology Facilitator, a school-level position designed “to help teachers apply technology to support student learning.”

Grant writers for the C·R·E·A·T·E for Mississippi project had just such a position in mind when they sought funding for a Technology Innovation Challenge Grant in 1998. (*Editor’s note:* For the program site and other URLs, see Resources on p. 55.) They called the position the educational technologist (Figure 1), part of the overall

School Mentor Model designed to bring about greater technology integration in the schools in Mississippi and ultimately increase student achievement. (See Characteristics of a Successful Educational Technologist on p. 52.)

C·R·E·A·T·E (which stands for Challenging Regional Educators to Advance Technology in Education) leverages the benefits of technology in preparing students for success beyond the classroom in a state where, according to Mississippi’s Title I Director Johnny Thornton, 93% of the 152 school districts have poverty rates that

exceed 50%, and every school district is eligible for Title I funding. The program was piloted in four core schools during the 2000–01 school year. By August 2002, 13 schools in the state were participating in the project. In September 2002, the Mississippi Department of Education listed C·R·E·A·T·E as one of the approved professional development options available to schools who qualify for funding under the Enhancing Education through Technology program. This will significantly enlarge the number of schools implementing C·R·E·A·T·E's School Mentor Model for technology integration.

The School Mentor Model includes ongoing professional development and support focusing on integration, use, and application of technology in the curriculum. Grant writers understood the traditional barriers to technology integration and incorporated four major components of the model represented in Figure 2 that address these barriers in a coherent and connected way (Byrom, 1998; Easdown, 1995; National Center for Educational Statistics [NCES], 2000; U.S. Congress, Office of Technology Assessment, 1995):

1. administrative participation and support
2. access to equipment
3. professional development opportunities
4. technical and instructional support for teachers

Administrator Participation and Support

Research literature about technology integration frequently mentions the need for administrative support for teachers to be successful (Foa, Schwab, & Johnson, 1996). To be part of C·R·E·A·T·E, school administrators had to commit their districts' support and agree that they and one school

board representative would attend professional development sessions and consortium meetings.

Attendance at these meetings has proved beneficial because administrators have learned from each other's experiences and witnessed the successes the core teachers, student techno teams, and educational technologists have experienced. (For definitions of these positions and other vocabulary associated with the program, see Terms on p. 53.)

Although C·R·E·A·T·E staff members work primarily with the four core teachers at each school, staff members also have assisted administrators in assessing the technology skill levels of all their teachers through the use of the Profiler Online Collaboration Tool developed by SCR-TEC (now the High Plains Regional Technology in Education Consortium, or HPR*TEC). Some of the professional development sessions with administrators focused on how they can use Profiler results in

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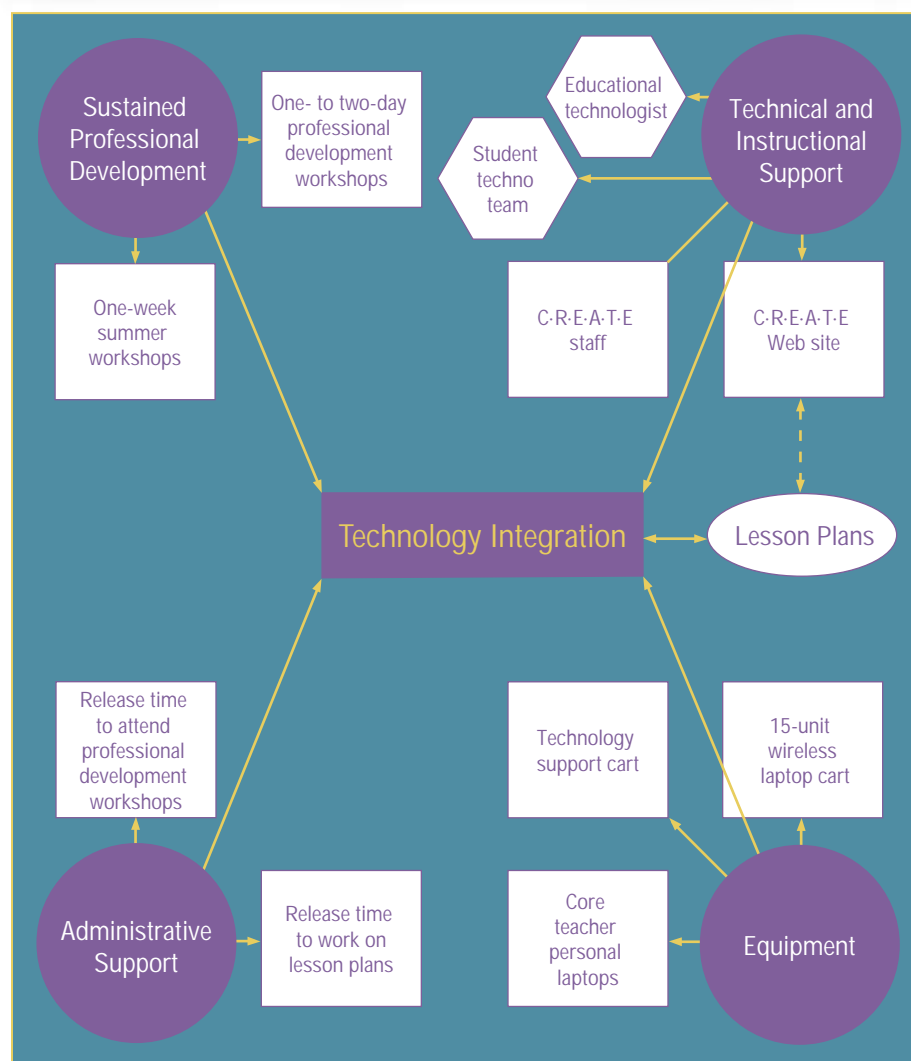


Figure 2. The School Mentor Model provides ongoing technology-integration training and support to teachers.

Characteristics of a Successful Educational Technologist

No individual educational technologist will have all of the qualities listed below, but the greater the combination of them in one person, the more successful that person will be in the position. The educational technologist should be:

- Innovative, someone who tries new things and is open to change
- Experienced (with at least three years of classroom experience)
- A “technophile” who loves to use technology in teaching
- A “people person” who has good interpersonal skills, is able to work with adults and students well, and has a calm and reassuring personality
- Flexible, realizing that no two days will be the same and able to go from A to B or A to Z on a moment’s notice
- Fearless, with a “can do” attitude
- Creative, finding ways to overcome problems with technology and to involve reluctant teachers
- Organized, able to keep a lot of things going at the same time

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planning for and supporting technology integration in their schools.

Another way administrators can show support is by allocating time for teachers to learn technology. The President’s Committee of Advisors on Science and Technology (1997) reported that teachers averaged 10 scheduled minutes of preparation time for each hour taught, and they spend several additional hours per week in planning, leaving little time to learn to use technology. C·R·E·A·T·E addresses this barrier by paying for time equal to one class period a day for 180 school days for each core teacher. In addition, administrators allow the core teachers time off to attend professional development sessions and to attend state, regional, and national professional meetings where they can enhance their skills.

Hiring substitute teachers for the core teachers while they are away from their classrooms is not an incidental expense in some Mississippi school dis-

tricts; allowing the teachers to participate reflects a true commitment on the part of the administrators.

A final way C·R·E·A·T·E addresses the barrier of time is through the teachers’ access to personal laptops provided by the grant. Having these laptops means that the core teachers have the flexibility to work anytime, anywhere on lesson plans and technology skills enhancement.

Access to Equipment

To address the need for accessible technology to use with students, each core school received 15 wireless laptops and a technology cart that can be used in any classroom (Figure 3).

The technology cart includes a large-screen monitor, digital projector, scanner, color inkjet printer, digital camera, FlexCam, and desktop computer. Software loaded on the technology cart’s desktop computer includes video editing, word processing, presentation, spreadsheet, and database packages. The hardware and software items on this cart were selected because grant writers felt these products would offer a good variety of options for using technology in the classroom.

Professional Development Opportunities

Professional development opportunities for teachers often are hit or miss or have limited immediate application to what they are doing in their classrooms. By the time the teachers have an opportunity to apply the skills they have learned, too much time has passed for them to remember how to complete tasks using technology. C·R·E·A·T·E’s goal is to avoid these and similar pitfalls.



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Figure 3. Educational technologists and teachers can use the mobile laptop lab in any classroom.

Workshops. Core teachers participate in one-week workshops at Mississippi State University during the summer (Figure 4). Four one-day professional development sessions are offered during the school year, two per semester. The real key to the success of a professional development workshop is to see whether the skills taught are actually used in the classroom. We are seeing this happen.

Lesson Plans McKenzie (2001) discusses the need for professional development to be *generative*, “meaning that behaviors and daily practice will be changed for the better as a consequence of the professional development experience.” One of the ways C·R·E·A·T·E staff has gauged the growth of the core teachers is through their written lesson plans. Completion of the lesson plans becomes a collaborative effort in which teachers provide the content knowledge and the C·R·E·A·T·E staff makes suggestions regarding how technology could be used to further enhance a lesson. Alternative methods for accomplishing a task, successful strategies used by others, and extensions to lessons are some of the most frequent suggestions made. From the start, C·R·E·A·T·E

staff members encouraged the teachers to use lessons that had worked well for them in the past but would be enhanced by the addition of a technology component, placing the emphasis on finding ways to use technology rather than on creating new and untried lesson plans.

Mentoring The School Mentor Model was designed to build a human infrastructure to support necessary changes for using and applying technology extensively to enhance student instruction. Mentoring is involved at many levels with a web of connections among the C·R·E·A·T·E staff members, core school administrators, school board members, educational technologists, core teachers, and student teams. In establishing this infrastructure of support and help, C·R·E·A·T·E is applying what is known about teachers and how they learn from each other. Foa et al. (1996) found in their research that, “Teachers are often most effective because they are trusted by their colleagues to understand the realities of the classroom” (p. 1).

Second-year core teachers have served as mentors for the new core teachers in Congressional District 2,

or they conducted professional development sessions at the local, district, or state levels. Riel and Becker (2000) pointed out that teacher leaders frequently attend conferences and workshops as presenters. A major finding of Riel and Becker is that those teachers who become teacher leaders are 10 times more likely to be highly active computer users. By requiring the second-year core teachers to move beyond their own classrooms in either of the required capacities, C·R·E·A·T·E is creating further opportunities for growth on the part of these teachers.

Terms

Core School: Middle school with a commitment to technology as a part of a comprehensive plan for school improvement

Core School Administrator: Principal of the core school who must support the use of technology in academic areas as well as in the day-to-day operation of the school

Core School Board Member: Member of the district school board who participates in project activities and supports and promotes C·R·E·A·T·E for Mississippi within the district

Core Teacher: Teacher selected from one of the four basic academic areas: language arts, mathematics, science, and social studies. This teacher must have enthusiasm for using and exploring the opportunities technology offers for instruction

Educational Technologist: A full-time educator who provides on-site, just-in-time curriculum support and technical assistance to teachers as they implement technology-infused instructional units

School Mentor Model: Model of on going professional development and support focusing on integration of technology in curriculum

Student Techno Team: Students in Grades 5–8 trained to solve technology problems and assist teachers and students in the integration of technology



Figure 4. C·R·E·A·T·E staff member Sean Owen demonstrates the use of equipment provided on core schools' technology carts.

PHOTO CREDIT: JENNY BOONE, C·R·E·A·T·E FOR MISSISSIPPI

Make the Model Work for Your School

Make on-site technology support for teachers a priority.

- Hire or re-assign a teacher to be a full-time, on-site educational technologist.
- Maintain the position as a building-level position to stimulate frequent interaction between the educational technologist and teachers and for ready access and technology support.
- Establish a techno team, either as an extracurricular organization or an elective class, and support its activities.

Demonstrate administrative support for technology use on a daily basis.

- Use technology yourself. For example, correspond with faculty through e-mail.
- Require teachers to use technology in their lesson plans—and check to see that they do.
- Protect the educational technologist from being pulled in other directions—no district responsibilities or club sponsorships!
- Schedule regular times for the educational technologist to deliver technology professional development to the staff.
- Allow teachers to attend professional meetings and workshops that emphasize technology integration.

Plan for technology use in your school.

- Develop a technology plan and implement it.
- Determine the skills of the teaching staff and work toward improving them.
- Use online resources such as the C·R·E·A·T·E for Mississippi Web site.
- Apply for grants for funding the educational technologist position to provide sustained, on-site professional development for staff members.

Technical and Instructional Support Educational Technologist. The educational technologist's position does not exist in most schools today (McKenzie, 2001), but research has shown a need for such on-site support (Foa et al., 1996; Roblyer, Edwards, & Havriluk, 1997). Unlike a technology coordinator whose time is spread throughout a school district, the educational technologist works at the building level, primarily with the four participating core teachers at each school, helping them develop technology-infused lesson plans and providing technical support and training when needed. In some cases, the educational technologist's presence in the classroom has been enough support to encourage a teacher to try to use technology with a lesson. Foa et al. found that, "a great deal of emotional support comes from a visit by a live body who uses clear, nontechnical language, and who has the social skills to make teachers feel good about their forays into this strange new land" (p. 2). The educational technologist also is available to work in a similar manner with other teachers in the building as time allows. The majority of the educational technologists working with C·R·E·A·T·E are former classroom teachers, so they understand the instructional problems teachers face on a daily basis. If there are technical or pedagogical questions that the educational technologists cannot answer, they have the full support of C·R·E·A·T·E through e-mail, telephone, or fax, as well as through how-to documents posted to the C·R·E·A·T·E Web site.

Student Techno Team. One of the requirements for the core schools is the establishment of a student technology team. The educational technologists are in charge of selecting, training, and working with these students, who are

able to provide additional technical support on a timely basis. The core schools have chosen to implement their teams in different ways. Some teams were formed as extracurricular clubs, some team members work during regular elective technology classes, some are selected to work in their homerooms, some have designated times to work, and others volunteer before school. One school established monitored student e-mail accounts through Goggle.net so that faculty members could contact team members directly for technical assistance. Students in this school designed their own badges using a Microsoft Word template into which they inserted their digital photographs. When printed out and put into commercial pin-backed holders, the badges served as hall passes for the students who also created personal business cards to leave with teachers.

Student team members in all core schools have supported the teachers in many ways, from creating PowerPoint presentations for teachers to conducting online searches to routine troubleshooting. The teachers in the core schools know that the student team members have received training and can be counted on to solve problems, not cause them. The teams are viewed as one of the major assets to come out of the grant project.

C·R·E·A·T·E Web Site. All materials generated through this project are available at the C·R·E·A·T·E Web site, including lesson plans, procedures manuals, workshop materials, and technology "how-to" documents.

Summary

The School Mentor Model reflects what research has shown about teachers and technology integration. Schoolwide technology integration requires com-

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mitment from administrators, particularly for providing teachers with opportunities for professional development and time to learn to use the technology (NCES, 2000). (See *Make the Model Work in Your School* on p. 54 for more on the commitment necessary.)

Professional development efforts need to be ongoing, with sessions related to each other as well as to what takes place in the classrooms. Administrators must become aware of their teachers' technology skills and plan ways to increase those skills.

An on-site, building-level educational technologist who can provide both technical and pedagogical support and who is assisted by a group of trained and supervised students will enable teachers to venture outside their comfort zones and begin using technology more. The person staffing that position must be protected from intrusions on his or her time that take away from assisting the teachers in integrating technology.

Equipment is essential. Administrators must find ways to provide adequate equipment and to optimize the use of that equipment on a daily basis.

Because of the three-to-five year average for implementing full integration of technology in the curriculum, the full effects of the C-R-E-A-T-E project may not be obvious for some time. During the first two years of this project, equipment purchased through the grant and professional development for the teachers affected 2,533 teachers and 43,221 students in the 12 core schools in the three congressional

districts. Continuation of the grant through the succeeding years will allow the effects of technology to spread even further in Mississippi, and dissemination through the Web site makes the project's effects even more profound.

C-R-E-A-T-E has much the same goal as the No Child Left Behind Act, and the school administrators, school board members, educational technologists, and teachers involved in the project are helping make that goal a reality.

Resources

C-R-E-A-T-E for Mississippi Web site:

www.create4ms.org

Profiler: <http://profiler.hprtec.org>

School Mentor Model: www.create4ms.org/model

References

Byrom, E. (1998). *Review of the professional literature on the integration of technology into educational programs* [Online]. Durham, NC: SouthEast Initiatives Regional Technology in Education Consortium. Available: www.seirtec.org/publications/litreview.html.

Easdown, G. (1995). *Encouraging teachers to explore educational computing and to integrate the use of computers and allied technology into their teaching practice: A British perspective* [Online]. Available: www.educationau.edu.au/archives/oltpd/docs/inv06.htm.

Foa, L., Schwab, R., & Johnson, M. (1996). Upgrading school technology. *Education Week*, 15(32), 52.

ISTE. (2001). *Educational computing and technology programs: Technology facilitation initial endorsement* [Online]. Eugene, OR: Author. Available: http://cnets.iste.org/ncate/Technology_Facilitation_S.doc.

McKenzie, J. (2001). How teachers learn technology best. *From Now On: The Educational Technology Journal* [Online], 10(6). Available: <http://fno.org/mar01/howlearn.html>.

National Center for Education Statistics. (2000). *Teachers' tools for the 21st century: A report on teachers' use of technology*. Washington, DC: Author.

President's Committee of Advisors on Science and Technology. (1997). *Report to the President on the use of technology to strengthen K-12 education in the United States* [Online]. Available: www.ostp.gov/PCAST/k-12ed.html.

Riel, M., & Becker, H. (2000, April). *The beliefs, practices, and computer use of teacher leaders*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA. Available: www.crito.uci.edu/TLC/findings/aera/aera.htm.

Roblyer, M. D., Edwards, J., & Havriluk, M. A. (1997). *Integrating educational technology into teaching*. Upper Saddle River, NJ: Prentice-Hall, Inc.

U.S. Congress, Office of Technology Assessment. (1995). *Teachers and technology: Making the connection* (OTA-HER-616). Washington, DC: U.S. Government Printing Office.



Cheryl M. Whitfield, curriculum specialist and instructional technologist with the Center for Educational and Training Technology at Mississippi State University (MSU), is a former teacher and K-12 librarian.

She is completing her PhD in instructional technology at MSU. Thirty years ago, the highest level of technology Cheryl used was a Smith-Corona portable electric typewriter. She has progressed to working on computers most of the day using a variety of software. It was implementing Winnebago's library software that truly brought Cheryl into the age of technology.



Betty Latimer, project manager for C-R-E-A-T-E, has a PhD from MSU in instructional technology. This former elementary teacher and college instructor as well as a professional development trainer was one of

the original grant writers for the project. Thirty years ago, Betty was director for a pilot project for Mississippi to develop standards for the education, development, health, and safety for children ages 2-5 in day care. There was no technology as we know it involved.

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What creative techniques are you trying to integrate technology?

Would your administrators support an effort similar to Mississippi's program?

Share your thoughts, ideas, and experiences with your fellow L&L readers.

Send letters to letters@iste.org.

