Making Changes: Leveraging Digital Resources

Case studies show how the funds made available through the Enhancing Education Through Technology program have affected teaching and learning in each state.

By Christine Fox

Christine Fox *is the director of educational leadership and research at the State Educational Technology Directors Association (SETDA).*

"E-mail is sooo formal. I only use it for school. Just send me a text or message me on Facebook." That was what my cousin Katie, a college freshman, said after I asked for her e-mail address back in 2008. In my head, I wondered when e-mail had been labeled as antiquated. Some people—like my parents and a few of the moms in my daughter's preschool class—had just embraced the concept. I also learned that Katie didn't have a TV in her dorm room because she either downloaded shows or streamed them on her laptop. That news opened my eyes to the vast differences between how young adults and older adults access and exchange information.

As everyone knows, technology can't be avoided: people use it for business transactions, banking, and socializing—it's part of the culture. Being technology literate is no longer a "nice to have" but a requirement for success. Professionals from across the spectrum—artists, attorneys, physicians, and physicists—depend on technology to advertise, interact with clients and colleagues, maintain budgets, and analyze their productivity.

Unfortunately, the shift to modern technologies has typically been delayed in our education system. Many education leaders understand that we must shift gears to align schools with the reality of the 21st century but are still struggling to transform schools because of such issues as budgets, resistant attitudes, and challenges with planning.

In February 2012, the State Educational Technology Directors Association (SETDA) published a series of case studies that highlight the direct impact of educational technology interventions made available through the Enhancing Education Through Technology (EETT) program. The SETDA case studies are illustrative of the many ways that schools and districts are transforming teaching and learning to best meet the needs of 21st century learners and educators. A common theme throughout the case studies was increasing access to information in digital formats. Administrators and teachers integrated various digital materials into their schools' core curricula through the use of technology tools, including digital books, online courses, online collaborative tools, apps, videos, and podcasts.

Following are summaries and examples of how select programs incorporated digital content into the curriculum, several of which include resources that are available at no cost to teachers and students.

Maine: Online Math Lessons

As part of Maine's Open Educational Resources in Mathematics Professional Development Project, teams of teachers and education partners designed resources and activities to connect math topics and curricula to assessment practices and instructional strategies. A series of lesson sets organized by targeted mathematics topics included lesson materials, diagnostic assessment tools, information on analyzing data, classroom implementation resources, and tools to use after the assessments.

The lesson sets were designed for teachers and students and included screencasts—digital recordings of the computer screen—that enabled a demonstration of student thinking and were used as tutorials for implementing the resources. In addition, 15 topic sessions were made available on the project website (http://maine.edc.org/

file.php/1/oer/math_PDResources.html). For example, while studying integers, students participated in an interactive activity that modeled the addition and subtraction of integers by providing a visual representation of a character walking along a number line (http://maine.edc.org/file.php/1/tools/IntegerWalkNumLine2.html).

Virginia: Free Education Apps

As part of Virginia's iLearn project, the Radford University Games, Animation, Modeling, and Simulation Lab worked in conjunction with Pulaski County Schools and other partners to create apps that aligned with Virginia's Standards of Learning. Over the course of the project, 20 apps were developed, and those apps have been downloaded more than 120,000 times by consumers in seven different countries. The apps use emerging technologies to improve fundamental knowledge in core target areas and to increase problem-solving skills.

For example, in Virginia's fifth-grade science curriculum students learn the basic structures of a cell and the functions of those structures. In teaching this unit, iLearn teachers integrated an app that allows each student to see a 3-D view of the parts of a cell on a computer or mobile device. The function of the cell components are explained when students tap on each part. After working through the different parts, the students create their own models of a cell on paper and compare their drawing with the representation provided in the cell app.

Before using the technology, students gather information about cells from a teacher's presentation, their textbooks, and videos. Teachers reported that the addition of the technology tools and apps helped to differentiate the content to better meet the needs of students. Many of the apps have different levels that can be assigned to students on the basis of their abilities. Anecdotally, teachers reported that students were more engaged when their lessons integrated the apps. All educators may explore and download the apps at http://gameslab.radford.edu/iLearn/apps.html.

Nevada: Sharing Resources

Nevada's Pathway Project, which won a Partnership for 21st Century Skills, 21st Century Education Award for best practices, created 21st century learning experiences to spark interest and curiosity in middle school students. Teachers received training and worked collaboratively to develop, implement, and revise standards-based projects for their students. All training was conducted online through a Moodle environment.

Through that process, teachers learned to shift the fundamental structure of their lessons. For example, for an immigration unit in US history, students used to read the textbook and watch a video about immigration through Ellis Island. In the Pathway class, pairs of students chose video segments from the PBS program *Faces of America* and responded to questions posted on the teacher's blog. Students had the opportunity to share and read the various blog posts, which resulted in a better understanding of the immigrant experience and the realization that every immigrating group faced different circumstances yet had similar struggles and dreams. Teacher interviews and classroom video clips are available at http://cpdmoodle.ccsd.net/pathway/teachers/?page_id=307.

Pairs of students chose video segments from the PBS program Faces of America *and responded to questions posted on the teacher's blog. Students had the opportunity to share and read the various blog posts, which resulted in a better understanding of the immigrant experience.*

As education leaders scramble to bring schools up to speed to exploit digital resources, they are giving all students the opportunity to succeed.

Technology Integration Success

The selected examples highlight just a few of the many successful technology integration programs developed through EETT funding. In many cases, the grant programs continue with local or state funding, and in some cases, programs are expanding. Overall, most of the grant managers and teacher leaders interviewed shared their excitement about the ability to personalize instruction with digital curricula. They also identified anecdotal examples of increased student engagement as a key factor to the programs' successes. Data on the success of the programs is available at www.setda.org/web/guest/casestudies2012.

The apps, project-based lesson plans, and online professional learning communities helped support teachers as they integrated digital resources through the use of technology tools. The availability of broadband access, hardware, and software varies, but whether teachers have a traditional computer lab, computer centers in the back of a classrooms, or a one-to-one mobile device or laptop initiative, they can shift their learning models to incorporate the most-effective digital resources to support 21st century learning.

Now that universities have online-only application systems and big-box stores require online applications for entry-level positions, there is no longer room for the "we learned just fine with a notebook and a pencil" attitudes. Technology is at the core of daily life, both private and professional. As education leaders scramble to bring schools up to speed to exploit digital resources, they are giving all students the opportunity to succeed. Even if e-mail is still your school's preferred avenue of communication, you can take small steps to highlight the availability and necessary integration of online digital resources and help move your students' experiences into the 21st century. PL

SETDA Case Studies

Founded in 2001, the State Educational Technology Directors Association (SETDA) is a 501(c)(3) national, nonprofit member association that serves, supports, and represents the interests of the educational technology leadership of state education agencies in all 50 states, the District of Columbia, the Bureau of Indian Affairs, American Samoa, and the US Virgin Islands.

Title II, Part D of the Elementary and Secondary Education Act, commonly known as Enhancing Education Through Technology (EETT), is part of the 2009 American Recovery and Reinvestment Act (ARRA). SETDA published a series of case studies from 28 states to showcase examples of how the ARRA EETT grant funds have affected teaching and learning. SETDA collected data for the case studies through a variety of mechanisms, including a detailed survey of the participating local education agencies, personal interviews with grant managers and teachers, and reviews of state and local program evaluations. The case studies highlight powerful innovations resulting from the federal, state, and local partnerships created by the ARRA EETT program and illustrate what can happen when states, local school districts, and individual schools leverage "seed money" in the form of federal grants. All case studies are available at www.setda.org/web/guest/casestudies2012.