



# Building Curriculum with Digital Materials

A good digital system can create a flexible and productive learning environment.

Craig K. Mills

**T**raditional classroom materials, particularly for science and social studies, may not adequately balance the complexity of their content with young students' reading levels, leaving teachers to search for other resources or even create their own. B. M. Williams Primary School in Virginia faced this problem when we had to address new state standards in math, English, science, and social studies. The new requirements left us scrambling to find supplementary materials because there were no available textbooks aligned with the state standards. As a result, our school did not meet the adequate yearly progress (AYP) requirements of the No Child Left Behind Act.

We decided to try a new approach and in 2002 became the first school in Virginia to implement a digital learning system for reading/language arts, math, science, and social studies. The KnowledgeBox system we selected allows teachers to easily integrate standards-based digital media, such as video, interactive software, pre-screened Internet links, electronic text resources, and instructional tools into their daily instruction. Because many of these materials are visually oriented, they attract and hold students' attention, simplify difficult-to-understand information, and give some learners a chance to comprehend visually what they might miss verbally (Heinich *et al.* 1999). The system also has the flexibility to add customized content and updated material in far less time than it would take to update and republish a textbook.

#### Training the Trainers

Professional development is the key to any successful technology implementation, and we initiated a "train the trainer" model for our school. We provided 10 of our most computer-literate teachers with a full day of in-depth training while the other teachers received a half-day of more general training. For the rest of the year, the more intensively trained teachers provided additional training as needed. As our teachers began to implement the system in their classrooms, they appreciated knowing that there was a trainer two or three doors down the hall.

#### IN BRIEF

The author describes how changing from a textbook-driven to a digital learning system impacted teaching and learning at his school after it failed to meet adequate yearly progress (AYP) requirements. By training some teachers to train other teachers, and requiring all teachers to use the system's many tools, the school has seen test scores rise and now meets all AYP indicators.

To ensure that the system would be effectively implemented, I asked teachers to incorporate the technology immediately into their instruction, required them to use it at least weekly, and monitored each teacher's use. During the first quarter of the year, I also required every teacher to create at least one digital lesson and to post it on the system. Rather than being a burden, this requirement made the system quite popular as teachers quickly realized they now had the lessons of other teachers in their grade level instantly available to them.

#### Delivering Digital Learning

Students work on digital learning for approximately 30 minutes each week in the school's 30-station computer lab, in their classrooms—each of which has two or three computer stations—and in our library, which has 12 stations. We also have two mobile labs, each with a dozen laptop computers, which teachers can roll into their classrooms. Teachers also can project items from the learning system onto one of our SMART boards, or a large computer or TV screen, to introduce or review concepts.

We strive to differentiate instruction to address each student's academic needs, and the digital learning system allows teachers to customize existing lessons or build their own lessons to deliver targeted instruction to each student in accordance with that student's abilities.

#### Saving Time

Using the system's instructional tools, teachers can search for a particular theme or standard, click on items addressing that area, and incorporate them into their lesson plans. Having resources available at the click of a mouse means that teachers no longer have to spend hours scouring the Internet and libraries for age-appropriate resources for young students.

The system also encourages collaboration. When teachers create lessons, they can post them in the system to allow other teachers access to them. We have more than a dozen teachers per

grade level, so if each one posts only five lessons a year, every teacher would have more than 60 lessons from which to choose.

In addition, the learning system's materials give teachers more time for direct instruction. Instead of showing a 30-minute video from the library to illustrate a concept, teachers now can use a two- or three-minute video from the system to illustrate the same concept in a fraction of the time. For example, one of our teachers recently began a social studies lesson on Egypt by using the system to show students a short video about ancient Egypt. Following a classroom discussion about what life was like in ancient Egypt, he then showed a video of present-day Cairo and asked students to compare and contrast ancient Egypt with the bustling Egyptian city of today.

While our textbooks are now aligned with state standards, we have a different perspective on how to use them. Instead of starting at page 1 and continuing straight through to the last page, teachers now have students access specific parts of their textbooks as supplements to more hands-on, authentic learning. Teachers also now take care to match reading books with the reading levels of individual students.

#### The Road to Success

Since adopting the digital learning system four years ago, we have seen a steady rise in third-grade state test scores, and in 2004 we met all the AYP indicators for the first time. Since then, we have made remarkable progress across all subject areas—with double-digit gains in science and social studies.

I firmly believe that if we are not using computers as teaching tools in our schools, we are not preparing students for success in school and in life. However, technology integration is not a "one-size-fits-all" process, so schools should look for software that best suits their needs and principals should consider their teachers' existing knowledge base when deciding on the amount and type of technology training needed.

Principals should model the concept

of technology as a practical and useful tool. I keep emphasizing that concept to my staff and make sure they see me using laptops and Palm Pilots during my presentations and when walking around the school.

Because of our extensive use of the digital learning system throughout our curriculum, we have gained a reputation as being a "technology school." However, we don't treat technology as something special or separate. We regard it simply as one of several tools we use to help improve teaching and learning. Our digital lessons use the same format and components as traditional ones.

A good lesson is still a good lesson. 

#### Reference

Heinich, R., M. Molenda, J. D. Russell, and S. E. Smaldino. *Instructional Media and Technologies for Learning, 6th Ed.* Upper Saddle River, N.J.: Prentice-Hall, 1999.

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#### WEB RESOURCES

The Center for Implementing Technology in Education provides a wide range of tools and resources to infuse technology into instruction. [www.cited.org](http://www.cited.org)

The International Society for Technology in Education's National Educational Technology Standards site presents an ongoing initiative to define technology standards for students. [www.cnets.iste.org](http://www.cnets.iste.org)

The Technology in Education Resource Center operates the Regional Technology in Education Consortia, a network focused on meeting the technology needs of students and educators in 10 regions of the United States. [www.rtec.org](http://www.rtec.org)