Building Technology Literacy Into the Curriculum

To teach and assess technology literacy, ensure that it goes hand-in-hand with the curriculum.

By Kathy Boone

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Teaching and assessing student computer literacy was once straightforward: Develop an introduction to computer applications class and register middle school students into it on rotating semester or nine-week terms. Teach students to keyboard, create a document, run spell check, enter a column of numbers in a spreadsheet, run a few calculations, create a slideshow presentation, and use a few Internet search techniques. At semester's end, give a test on objective and clearly observable items to verify student learning and give teachers some assurance that students had achieved a satisfactory level of computer literacy.

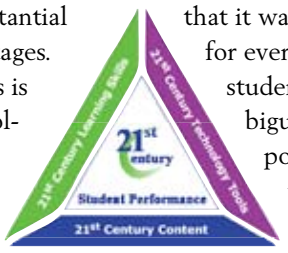
But computer literacy is no longer enough. Today's students face a world where revolutionary changes in technology; the global marketplace; and significant social, political, and environment issues dramatically affect what they must learn. "At a time when less-fortunate nations are investing in their educational systems, it is more important than ever that West Virginia and other states make educational technology a top priority," said West Virginia Superintendent of Schools Steve Paine.

Teaching students to think and act critically, creatively, and ethically—and to use technology to this end—will endow them with substantial economic and social advantages. The challenge for educators is to develop students' technology literacy in a way that supports academic rigor and prepares students to use technology to think critically, solve problems, work in teams, and create and implement useful innovations. Schools must ensure that all students are using technology as an integral part of their learning across all subject areas. By doing so, students will not only acquire information technology skills but will also be able to draw on those skills to think, research, and learn.

This challenge is reinforced by the No Child Left Behind Act, which mandates that each student be technologically literate by the eighth grade and requires states to report proficiency levels to the federal government. In West Virginia, this mandate raised fundamental questions: How should students be taught technology literacy, and how can that literacy be reliably measured and reported?

Innovation and Accountability

West Virginia recognized early that creating a culture of innovation and accountability is essential to providing students with equitable access to rich technology experiences. If teachers are to oversee such dynamic learning environments, the school environment must encourage responsible risk taking. Without accountability, however, the goal of equity for students would not be realized. To balance innovation and accountability, districts in West Virginia designed curriculum plans in which teachers would be required to complete certain technology integration activities with the understanding that it was a learning experience for everyone involved. To help students learn to deal with ambiguity, teachers had to model positive coping strategies themselves.



Knowing that what gets tested gets taught, West Virginia developed an assessment model to drive rather than suppress innovative teaching practices and to encourage formative

classroom assessment for learning. To support this approach, West Virginia implemented the West Virginia K–8 techSteps Technology Literacy Initiative, a custom version of SchoolKiT's techSteps product and implementation processes. It is an innovative approach to technology literacy that is authentic, integrated, and project based and that systematically introduces technology skills while preserving the integrity and rigor of the curriculum content.

The WV techSteps iniative also aligns with the National Educational Technology Standards for Students (NETS*S) and with the West Virginia Content Standards and Objectives for technology tools. The techSteps curriculum comprises six open-ended technology integration activities per grade level. The activities provide strong scaffolds to ensure teacher success, are flexible so that they can be integrated into local curriculum programs, and are developmentally sequenced so that students build and consolidate information and technology skills while working in meaningful contexts.

The activities are part of a framework in which educators first determine the rigorous core subject standards to be taught. Teachers then consider how students might grapple with those concepts in a modern context and develop lifelong learning skills, such as self-direction, collaboration, critical thinking, and problem solving. The final step is to consider how technologies, including new Web 2.0 tools, can be employed to amplify this learning. The result is that students engage in rigorous and relevant learning using the tools of their time to access, analyze, create, and innovate.

For example, using the techSteps guidance, all eighth-grade students create digital stories. While one teacher may incorporate the digital story activity into an English class to have students learn about personal narrative, another may incorporate the activity into a history unit to have students learn about American Indian cultures. In both cases, the students will employ skills to build on their previous experiences. These activities are aligned to specific grade-level and subject-matter standards and objectives, as well as learning skills and technology tools objectives. In this model, academic content, learning skills, and technological proficiency are being developed together.

During the task, students use assessment rubrics to monitor their own learning, and teachers use them to provide feedback and make instructional decisions. Upon completing the task, each student will have generated a learning artifact so that the same direct assessment instruments can be used to capture evidence of technology knowledge and skills. This evidence is fed into an ongoing, personal technology literacy profile that is organized using the NETS*S categories.

For example, the students building digital stories may show that they know how to use images to elaborate on text, an important aspect of visual literacy. This evidence would satisfy two categories in the assessment rubric—one for communication and collaboration and another for technology operations and concepts—and would be recorded in the student's technology literacy profile. Eighth-grade students who have repeatedly demonstrated skills across and within each category are considered technology literate for reporting purposes.

Resources

THE INTERNATIONAL SOCIETY FOR TECHNOLOGY IN EDUCATION
www.iste.org

THE WEST VIRGINIA CONTENT STANDARDS AND OBJECTIVES FOR TECHNOLOGY TOOLS
http://wvde.state.wv.us/policies/p2520.14_ne.pdf

TEACH 21
http://wvde.state.wv.us/teach21

Technology Literacy in Your Own School

What can secondary school principals learn from this West Virginia project? How can you, as the instructional leader, create a school culture that supports both innovation and accountability in the use of technology? Following are some factors that may prove helpful in your school.

- Let the learning you want be the data you need. Use the assessment requirement to create a sense of urgency for change in classrooms, and then use the data required for the assessment to drive change in classroom practice.
- Create and articulate a locally shared vision for the use of technology in instruction. Get input from teachers, from parents, and especially from students. How do they want technology to be used in the classroom? Create a structure for technology integration, and then provide for flexibility within that structure.
- Provide adequate access to computers for staff members and students in a well-organized manner. Work with your staff to develop models for access to technology, whether in labs, mobile labs, or classroom configurations, so that availability of computers is not a barrier to implementation.
- Create models for teachers. Provide teachers with examples of best practices, support them with professional development, and give them time to become familiar with the activities.
- Set clear expectations for teachers regarding the use of technology in the classroom. Conduct regular classroom walk-throughs. Look at report data. Ask teachers to invite you into their classrooms at least four times this year to see 21st century instruction in action. Ask students what they are learning and how they are using technology.
- Nurture a culture of innovation and encourage responsible risk taking. Let teachers know that it will be OK if an activity using technology doesn't turn out as well as the teacher had hoped—it can be improved each time—but it's not OK to not use technology. Remind teachers that to nurture creativity and innovation among their students, they must model creativity and innovation themselves.

Use technology as a catalyst for change. Use the technology tools that students love, use easily, and gravitate toward to drive changes in classroom instruction that increase the level of rigor, relevance, and self-directed learning.

These suggestions reflect a new paradigm for student learning: Students must engage in rigorous and relevant learning using the tools of their time to access, analyze, create, and innovate. Students must learn the fundamentals of academic content while also learning to learn, to think, and to create in a world that is increasingly driven by technology. PL