Challenges to Technology-Literate Classrooms

As American society becomes increasingly driven by advances in technology, our nation’s teachers are faced with the challenge of incorporating these innovations into their classrooms. Although educators acknowledge that technology-based education is crucial for ensuring the success of future generations, many teachers are still unsure of how to proceed in this unfamiliar territory. A 2000 National Center for Education Statistics study showed that only 31 percent of new teachers felt “very well prepared” to work technology into their daily classroom activities (United States Department of Education, 2000, cited by the University of Kansas Center for Research on Learning: Advanced Learning Technologies, 2002). Both longtime and new teachers feel ill equipped to incorporate technology into their curriculum planning, and many do not receive the support, training, or mentoring needed to smoothly transition such substantial changes into their teaching. Clearly, improvements need to be made in educator technology training. In order for students to utilize technology effectively and achieve their goals, they must have teachers who can help them develop the solid technological literacy and sophistication necessary for using technology in living and learning.

The Impact of No Child Left Behind

At the same time that they grapple with technology, our nation’s schools are attempting to incorporate sweeping changes required by President Bush’s No Child Left Behind legislation. The law, passed in January 2002, calls for major school reforms in order to improve nationwide educational outcomes (United States Department of Education, 2002d). No Child Left Behind will hold each state, school district, and individual institution accountable for
their students’ performance. States will create their own academic standards, test students’ progress toward those standards, and report their test scores so that people can see how an individual school compares with others in its district and state. *No Child Left Behind* hopes to create education reform by addressing four key issues:

1. **Accountability**—Schools will be required to maintain a certain high level of student achievement (as determined by test scores in each state) or face consequences for failing to improve student academic performance.

2. **Flexibility**—States, as well as individual citizens, will have more freedom in choosing how to use federal education funds. For example, local agencies may allocate money toward programs that promote quality teaching, educational technology, or safer school environments, depending on the issue(s) that most significantly impact their schools.

3. **Research-based reforms**—Federal money will be allocated to states that use programs scientifically proven to improve students’ performance. One such program, *Reading First*, addresses the acquisition of basic reading skills between kindergarten and third grade. (United States Department of Education, 2002c).

4. **Parental options**—Parents will have the ability to transfer their child to a different public school if the original institution is identified as needing improvement for two consecutive years. Students who attend schools that underperform for three consecutive years may utilize supplemental services to assist their academic progress, but only if they remain in the same institution (United States Department of Education, 2002d; United States Department of Education, 2002e). Additional educational services, such as tutoring, summer school, afterschool programs, and extra classes, are provided at the expense of the student’s original district (United States Department of Education, 2002b).

Limited assessments began during the 2002–2003 school year, but by 2007–2008, students in grades three through twelve will be tested annually in reading, mathematics, and science. Schools will be expected to measure progress toward their own standards and set annual goals for academic improvement.
No Child Left Behind’s Technology Initiative

Although No Child Left Behind will only conduct formal testing in three content areas, the law incorporates a Department of Education initiative called Enhancing Education Through Technology (ED Tech) that requires schools to improve learning by:

- increasing elementary and secondary student achievement through the use of technology;
- helping all students to become technologically literate by the completion of eighth grade; and
- ensuring that teachers incorporate technology into the curriculum to help students achieve ED Tech’s goals (United States Department of Education, 2002a).

No Child Left Behind does not require schools to set separate standards for technology literacy; instead, the law encourages states to integrate technology in all academic areas. ED Tech assists schools by providing grants for technology resources to support both teacher training and student programs (United States Department of Education, 2002a). Grant funds may be used, for example, to update classroom computers, develop distance learning programs, provide sustained professional development, and maintain electronic networks (United States Department of Education, 2002f). In accordance with the tenets of No Child Left Behind, ED Tech requires regular evaluation of all programs supported by their funding.

Creating Standards for Technology Education

Prior to No Child Left Behind, many states did not have standards to assess academic progress and student achievement. Since the timetable for implementing the new law is relatively short, multiple states have turned to the International Society for Technology in Education (ISTE) for assistance in complying with the new technology regulations. ISTE, a nonprofit organization representing more than 75,000 direct and affiliate members, is dedicated to promoting the appropriate use of technology to improve teaching, learning, and educational administration. As part of their efforts to encourage technology literacy in our nation’s classrooms, ISTE compiled and released the National Educational Technology Standards (NETS) in 1998. These competencies were created through collaboration among curriculum associations and educational organizations; teachers of all academic levels
were represented on the committees. The NETS writing teams were divided into two groups: curriculum groups considered academic subjects such as language arts, mathematics, foreign languages, and social studies; and multidisciplinary teams addressed grade ranges from prekindergarten to twelfth grade (The International Society for Technology in Education, 2002b).

The major purpose of NETS is to define what students should know about technology and what they should be able to achieve in a technology-infused environment. The standards, also known as NETS for Students, address how technology can improve various aspects of learning, including communication strategies, research, problem-solving skills, and productivity. ISTE created NETS for Teachers in 2000, reasoning that the people who educate future generations must be technology-savvy themselves. They also adopted the NETS for Administrators in 2001; these standards were originally developed by the Technology Standards for School Administrators (TSSA) Collaborative through a project led by ISTE. As of December 2002, 44 states (including the District of Columbia) had either adopted, adapted, aligned with, or referenced at least one set of the standards in their state education materials (The International Society for Technology in Education, 2002c). Thirty-three of those states currently use the NETS for Teachers in some fashion.

**National Educational Technology Standards for Teachers (NETS-T)**

Based upon ISTE’s original set of student standards, the NETS-T address six important areas in which teachers need to achieve competency in order to effectively utilize technology in their curriculum.


2. *Planning and Designing Learning Environments and Experiences*—Teachers plan and design effective learning environments and experiences supported by technology.

3. *Teaching, Learning, and the Curriculum*—Teachers implement curriculum plans that include methods and strategies for applying technology to maximize student learning.

4. *Assessment and Evaluation*—Teachers apply technology to facilitate a variety of effective assessment and evaluation strategies.
5. **Productivity and Professional Practice**—Teachers use technology to enhance their productivity and professional practice.

6. **Social, Ethical, Legal, and Human Issues**—Teachers understand the social, ethical, legal, and human issues surrounding the use of technology in PK–12 schools and apply those principles in practice (The International Society for Technology in Education, 2002a).

The NETS-T were developed primarily within preservice teacher education, but ISTE stresses the importance of these standards for all educators. As teachers become more confident in their own technology knowledge and skills, they will empower their students to master similar innovations and become more experienced in using technology both in and out of the classroom.

**The Impact of ISTE and the NETS**

Federal provisions like *No Child Left Behind* and ED Tech present a significant challenge to our nation’s educators. In just a few years, schools are expected to improve both student achievement and technology literacy, even though many states had no student performance standards before *No Child Left Behind* passed into law. Fortunately, ISTE’s standards for students, teachers, and administrators are assisting many states’ efforts to reshape teaching and learning to address educational improvement through the use of technology. Even with the assistance that the NETS provide, teachers still need better access to technology resources, continued teacher training, and reliable technology support systems in order to keep their students’ knowledge and skills current with emerging innovations. However, in creating standards that can be applied nationwide, regardless of school environment or prior technology experience, ISTE and the NETS provide a crucial step in our nation’s efforts to improve individual learning and performance and create technology-capable students.
References


