Technology Integration

quick
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LEARNING POINT
Associates®

Congress passed the No Child Left Behind (NCLB) Act as a reauthorization of the Elementary and Secondary Education Act. Signed into law by President Bush in January 2002, NCLB has brought many significant changes to schools nationwide. This Quick Key was developed to help educators in schools and districts understand the fundamentals of what NCLB means for their technology integration.

Rather than buying the **latest technology** and then figuring out what to do with it, the focus should be on how to **improve student learning.** It should be not on the "boxes" but on the **information** that flows through those boxes. The planning process should envision ways to **connect our students** to the world beyond the school.

The Quick Key *series was a 2006 finalist for the Distinguished Achievement Award for Excellence in Educational Publishing, presented by the Association of Educational Publishers.*

Improving Student Achievement

NCLB emphasizes the improvement of student achievement in academics with the use of technology in elementary and secondary schools through integration initiatives, building access, accessibility, and parental involvement.

Technology Integration Initiatives

An essential part of effective technology use in schools is building a technology infrastructure. Building this capacity includes integrating technology into the classroom, library media center, administrative office, and district office. This infrastructure enables the integration of technology into the curriculum and provides information to the public. These types of initiatives should emphasize public-private partnerships and may extend outside the school to include 21st Century Community Learning Centers.

Building Access

The issue of accessibility to technology and information is crucial in NCLB. Achieving that accessibility requires a solid electronic infrastructure—a local area network and possibly a wide area network—that would enable broadband, high-speed Internet connections. Such access is crucial for communication between educators and for the public to access student data. This standard must be met for all students and their parents, especially for students in geographically isolated areas. In addition, educators may utilize these networks to provide the public with student achievement evaluation results through the use of electronic assessment methods.

Accessibility

NCLB stresses the importance of providing technology integration and technology literacy for all students, including students with disabilities, racial and ethnic minorities, low-income students, migrant populations, and English language learners.

Parental Involvement

NCLB also focuses on providing technology training and accessibility for parents so they may support the academic achievement of their children. Electronic access to student data should be available to parents and families that, in turn, will promote family involvement in students' education.

Integrating Technology Into the Curriculum

NCLB also emphasizes the effective integration of technology into the professional development of teachers, principals, and other school staff. The training for instructional staff should establish research-based methods that can be replicated as best practices.

Professional Development

State and local education agencies should provide professional development so all educational staff can integrate technology effectively into their jobs. Educational staff is comprised of inservice and preservice teachers, paraprofessionals, library media specialists, and administrators. This integration includes using technology efficiently, infusing it into the curriculum, and supporting technology literacy skill development. The training must establish the use of scientifically based research on instructional methods and must be of a continuous nature with access to courses through electronic media.

Technology Curriculum Integration

Effective research-based technology integration can enhance student learning in language arts, mathematics, science, social science, foreign language, English as a second language, and technology literacy. Teachers can engage students in their own learning with 21st century tools: Web-based resources for research and social networking technology. Students can synthesize and present knowledge creatively though graphic presentations, audio and video files, online portfolios, and Web page creation. Teachers can motivate students through project-based collaborative programs—such as the Jason Project, Journey North, ePals Classroom Exchange, and the Global Grocery List project—and can take them on virtual field trips to museums, art galleries, and other curriculum-related websites.

Enhancing Education Through Technology

The specific NCLB goals for Title II, Part D—Enhancing Education Through Technology— are as follows:

- To improve student academic achievement through the use of technology in elementary schools and secondary schools.
- To assist every student in crossing the digital divide by ensuring that every student is technologically literate by the time the student finishes eighth grade, regardless of the student's race, ethnicity, gender, family income, geographic location, or disability.
- To encourage the effective integration of technology resources and systems with teacher training and curriculum development to establish research-based instructional methods that can be widely implemented as best practices by state education agencies and local education agencies.

Improving Students' Use of Technology in Grades K–8

NCLB requires each student to be technologically literate by eighth grade through meeting technology literacy standards. These standards were developed by the U.S. Department of Education and the International Society for Technology in Education (ISTE). The proficiencies in each grade build upon previous ones, enabling the students to reach technological literacy by eighth grade. A major focus of the technology literacy standards is their integration into each content area within each grade level.

In June 2007, ISTE released a revised edition of the National Educational Technology Standards for Students (NETS•S). The new set of standards focus on (1) creativity and innovation; (2) communication and collaboration; (3) research and information fluency; (4) critical thinking, problem solving, and decision making; (5) digital citizenship, and (6) technology operations and concepts. Each standard contains specific proficiencies necessary for a student to be considered technologically literate. A complete text of the new NETS for Students can be found at cnets.iste.org/students/NETS_S_standards-1-6.pdf.

Key Questions

Q: **What are some of the integration activities that educators can incorporate to enhance student learning?**

The delivery of instruction must include scientifically based research supported by replicable best practices that include innovative strategies in technology integration. These strategies incorporate technology to enhance the lesson. For example, an elementary history lesson could use predetermined websites in a scavenger hunt so that students discover information about a historical figure or event. The integration into the curriculum must include changes in the delivery methods educators are using, especially their use and integration of distance-learning resources.

Q: **What type of funding is involved with this legislation?**

Under the Enhancing Education Through Technology (Ed Tech) program, the U.S. Department of Education provides grants to state education agencies based on their proportionate share of funding under Part A of Title I. Ed Tech grants can be used for the following activities:

- Continuing, sustained professional development programs.
- Public-private partnerships.
- New or existing technologies to improve academic achievement.
- Curricula that integrate technology and are designed to meet state academic standards.
- Technology to increase parent involvement in schools.
- Technology to collect, manage, and analyze data to enhance teaching and school improvement.

States may retain 5 percent of their allocations for state-level activities. Beginning in fiscal year 2006, states may award all of the remaining money to eligible districts through a competitive process. Previously, half of each state's grant was distributed by formula to eligible districts and half was distributed through a competitive process.

Q: **What are the state education agencies and local education agencies held accountable for?**

In 2005, the U.S. Department of Education published the National Education Technology Plan 2004, titled *Toward a New Golden Age in American Education: How the Internet, the Law and Today's Students Are Revolutionizing Expectations*. In developing this plan, the U.S. Department of Education actively sought and received the advice and insights from a broad range of stakeholders, including students, educators, researchers, parents, higher education, and industry leaders. As a result of this comprehensive input, the plan recommends seven major action steps to help states, districts, and schools prepare today's students for the opportunities and challenges of the 21st century. The seven steps are: strengthen leadership, consider innovative budgeting, improve teacher training, support e-learning and virtual schools, encourage broadband access, move toward digital content, and integrate data systems. Each step is supported with recommendations to states, districts, and/or schools.

Key Federal Resources

Enhancing Education Through Technology State Program

www.ed.gov/programs/edtech/index.html
This website offers information about the U.S. Department of Education's Ed Tech program, including its purpose, awards, funding status, and resources.

National Education Technology Plan for the U. S. Department of Education

www.ed.gov/about/offices/list/os/technology/plan/2004/site/edlite-default.html
This National Education Technology Plan 2004 website allows users access to the plan as well as offers insights into student voices, participation opportunities, success stories, and supplemental information regarding the action steps.

No Child Left Behind: A Desktop Reference

www.ed.gov/admins/lead/account/nclbreference/reference.pdf
This 181-page guide, published by the U.S. Department of Education eight months after the passage of NCLB, offers a program-by-program look at the required reforms.

No Child Left Behind Act

www.ed.gov/legislation/ESEA02/
The U.S. Department of Education provides links to all sections of the legislation authorizing the No Child Left Behind Act.

No Child Left Behind **Website**

www.nochildleftbehind.gov
This regularly updated U.S. Department of Education website includes links to all the topics associated with NCLB.

Key Resources From Learning Point Associates

enGauge®: A Framework for Effective Technology Use Website

www.ncrel.org/engauge/

This website houses the *enGauge* framework that supports technology integration efforts designed to help districts and schools plan and evaluate the systemwide use of educational technology. It is available as a subscription service.

Keeping Pace With K–12 Online Learning: A Review of State-Level Policy and Practices

www.learningpt.org/pdfs/tech/Keeping_Pace2.pdf

This report by John Watson provides information on specific topics of K–12 online learning policy and practice as well as analysis and discussion of those issues.

A Meta-Analysis of the Effectiveness of Teaching and Learning With Technology on Student Outcomes

www.ncrel.org/tech/effects2/waxman.pdf

This meta-analysis completed in 2003 by Hersh Waxman, Meng-Fen Lin, and Georgette Michko describes the effects of teaching and learning with technology on students' cognitive, affective, and behavioral outcomes of learning.

Pathways Critical Issue "Technology: A Catalyst for Teaching and Learning in the Classroom"

www.ncrel.org/sdrs/areas/issues/methods/technlgy/te600.htm

This Critical Issue examines the value of effective technology use in classrooms with specific references to mathematics and science instruction, programs, and curricula.

Pathways Critical Issue "Technology Leadership: Enhancing Positive Educational Change"

www.ncrel.org/sdrs/areas/issues/educatrs/leadrshp/le700.htm

This Critical Issue examines findings associated with leadership in general and considerations specific to education, provides summaries of major factors associated with change in general and their implications for education, and examines research findings and best practices as they impact technology leadership and educational productivity.

Teacher Education and Technology Planning Guide

www.learningpt.org/pdfs/tech/guide.pdf

This 2004 guide provides a framework of key categories for assessing the readiness levels of teacher education programs to ensure that their students graduate with the knowledge, skills, and predispositions for teaching effectively with technology in any setting.

TechPOINT™

www.techpt.org

TechPOINT is a fully integrated fee-based suite of resources—assessments, surveys, and professional development—based on NETS for Students and NETS for Teachers.

Key Resources

ECS K–12 Education Issues: Technology

www.ecs.org/html/issue.asp?issueid=132
The Education Commission of the States *Technology* website presents a comprehensive overview of issues related to educational technology and provides updates on actions in the states, research, readings, and other resources.

International Society for Technology in Education (ISTE)

www.iste.org
The ISTE website lists technology standards and offers resources for students, teachers, and administrators.

International Technology Education Association (ITEA)

www.iteaconnect.org
ITEA offers multiple resources for technology literacy, including two main publications related to technological literacy standards: *Standards for Technological Literacy: Content for the Study of Technology* and *Advancing Excellence in Technological Literacy: Student Assessment, Professional Development, and Program Standards*. Together, these two publications identify a vision for developing a technologically literate citizenry.

***Technology Briefs for NCLB Planners* Website**

www.neirtec.org/products/techbriefs/default.asp
This Northeast & the Islands Regional Technology in Education Consortium website offers a sample of a series of technology planning briefs. The full series also is available at no charge.

Technology in Schools: What the Research Says

www.cisco.com/web/strategy/docs/education/TechnologyinSchoolsReport.pdf
This 2006 paper by Metiri Group provides a representational analysis of what types of educational technology do and do not result in spikes in student learning. The content areas include literacy, mathematics, science, and digital literacy.

Wisconsin's Model Academic Standards for Information & Technology Literacy

dpi.wi.gov/imt/itlstfst.html
Wisconsin Department of Public Instruction's information and technology literacy standards define information and technology competencies for all PK–12 Wisconsin students and are grouped into four content standards: media and technology, information and inquiry, independent learning, and learning community.

The *Quick Key* Series

Learning Point Associates developed the *Quick Key* series to assist educators, policymakers, and other stakeholders in understanding and implementing the No Child Left Behind Act. The following *Quick Keys* are available online at **www.learningpt.org/QuickKeys/**.

Quick Key 1
Understanding the No Child Left Behind Act: Reading

Quick Key 2
Understanding the No Child Left Behind Act: Opportunities for Schools in Need of Improvement

Quick Key 3
Understanding the No Child Left Behind Act: Technology Integration

Quick Key 4
Understanding the No Child Left Behind Act: Mathematics and Science

Quick Key 5
Understanding the No Child Left Behind Act: English Proficiency

Quick Key 6
Understanding the No Child Left Behind Act: Teacher Quality

Quick Key 7
Understanding the No Child Left Behind Act: Scientifically Based Research

Quick Key 8 Action Guide
Implementing the No Child Left Behind Act: Teacher Quality Improves
Student Achievement

Quick Key 9 Action Guide
Implementing the No Child Left Behind Act: Strategies to Improve
High Schools

Quick Key 10 Action Guide
Implementing the No Child Left Behind Act: Using Student Engagement to
Improve Adolescent Literacy

www.learningpt.org/QuickKeys/