WELCOME

Welcome to the eighth edition of Educational Technology News. We are pleased to share the recent developments of our work in educational technology, as well as announce our new resources and upcoming events. Thank you for your continued interest in our work. We invite you to learn more about the ongoing research and development efforts of the Center for Technology by visiting us online at www.ncrel.org/tech/. For more information about Learning Point Associates, please visit www.learningpt.org.

Educational Technology News is a biannual newsletter published by the Center for Technology at the North Central Regional Educational Laboratory (NCREL), a wholly owned subsidiary of Learning Point Associates. As one of 10 regional educational laboratories funded by the U.S. Department of Education, NCREL is a leading research laboratory with a designated National Leadership Area in educational technology. In partnership with the North Central Eisenhower Mathematics and Science Consortium (NCEMSC) and the North Central Regional Technology in Education Consortium (NCRTEC), we continue to enable countless teachers, administrators, and policymakers to integrate technology effectively.

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The No Child Left Behind (NCLB) Act established the expectation that all students will be technologically literate by the end of eighth grade. However, the Department of Education has left it to state education agencies to define and determine how to measure technology literacy, and most states have passed the responsibility on to local education agencies. In response to state and local needs, the NCREL Center for Technology, in collaboration with the International Society for Technology in Education (ISTE), is working to assist state and local education agencies in their efforts to measure student technology literacy.

So what is technology literacy and how can it be measured with scientifically valid assessments? The State Education Technology Directors Association (SETDA, 2003) offers a definition that probably includes important concepts that most educators associate with technology literacy:

“Technology literacy is the ability to responsibly use appropriate technology to communicate, solve problems, and access, manage, integrate, evaluate, and create information to improve learning in all subject areas and to acquire lifelong knowledge and skills in the 21st century.”

This definition has many terms and ideas in common with the National Educational Technology Standards (NETS) developed by ISTE. According to ISTE, 33 states have adopted or adapted the NETS as their state technology standards for students. In effect, the NETS represent the most common working definition of technology literacy in the United States. In particular, the NETS for students address six major concepts:

1. Basic operations and concepts
2. Social, ethical, and human issues
3. Technology productivity tools
4. Technology communications tools
5. Technology research tools
6. Technology problem-solving and decision-making tools

The NETS, like most standards, describe what students should know and be able to do in relatively general terms. For example, the basic operations and concepts standard states that “students demonstrate a sound understanding of the nature and operation of technology systems.” ISTE also has developed performance indicators that provide more detail about what students should be able to do before completing second, fifth, eighth, and twelfth grades. For example, one performance indicator states that students will “apply strategies for identifying and solving routine hardware and software problems that occur during everyday use” before completing eighth grade.

However, standards and performance indicators generally do not provide enough guidance to develop valid assessments. Recently, NCREL has been working to provide state and local education agencies with an assessment blueprint of specific and measurable objectives based on the NETS. In addition, NCREL hopes to define multiple levels of achievement within grade ranges—prekindergarten to second, third to fifth, and sixth to eighth—to help chart progress toward the goal of all students being technologically literate by the end of eighth grade. To do this, NCREL enlisted the assistance of an expert panel of ISTE NETS leaders to draft a rubric defining four levels of performance—novice, basic, proficient, and advanced—for each of the standards.

Currently, NCREL is constructing multiple-choice assessments based on the ISTE NETS achievement rubrics for fifth- and eighth-grade students. The goal of developing the assessments is to help state and local education agencies make more data-driven decisions in their development and delivery of professional development and curriculum resources to meet the expectation that all students will be technologically literate by the end of eighth grade. In order to ensure that the assessments will meet high scientific standards of validity, NCREL is working with the expert panel of ISTE NETS leaders and the Measurement, Evaluation, Statistics, and Assessment (MESA) Laboratory at the University of Illinois at Chicago.
To provide evidence of content validity—that is, evidence that the assessments are closely aligned to the content of the NETS—the expert panel reviewed the assessments item by item. In their review, the expert panel removed assessment questions for one of two basic reasons: (1) the question did not represent the content of the standard it was intended to assess or was not sufficiently consistent with the content of the standard, or (2) the question was more or less difficult than intended for reasons not related to the content of the standard, such as ambiguous wording or implausible incorrect responses.

To provide evidence of construct validity—that is, evidence that the assessments accurately measure the concepts described by NETS—measurement experts at Learning Point Associates and MESA analyzed pilot test data with methods derived from Rasch item analysis. Rasch analysis removes questions for one of two basic reasons: (1) the question was answered incorrectly by students who were otherwise more technologically literate, or (2) the question was answered correctly by otherwise less technologically literate students.

Questions that survive the rigorous processes for providing evidence of content and construct validity will be included in NCREL’s assessments of technology literacy. Table 1 provides a sense of the assessment questions with two sample questions—one “easy” and one “difficult.”

### Table 1. Sample Questions

#### Example of an Easy Question
What is the best thing to do when you cannot log on to a school computer with your password?
A. Use a friend’s password
B. Break the computer
C. Ask a teacher for help
D. Make up a new password

#### Example of a Difficult Question
Which of the following features of many word processors provides the best way to include the same information on each page of a document?
A. Header or footer
B. Bullets and numbering
C. Track changes
D. Copy and paste

The last step in the process is for the expert panel to set cut points based on the rubric and the Rasch analysis. Cut points exist between the most difficult novice item and the easiest basic item, the most difficult basic item and the easiest proficient item, and the most difficult proficient item and the easiest advanced item (see Figure 1). The cut points set by the expert panel of ISTE NETS project leaders determine whether a student scores at a novice, basic, proficient, or advanced level of technology literacy.

In August 2005, our eighth-grade technology literacy assessment will be completed and publicly available, followed by a fifth-grade technology literacy assessment in January 2006. The assessments will be available online and require only an Internet connection and Web browser; no special software or plug-ins are required. The assessments can be taken in less than one hour, give students immediate results, and provide educators with customized reports. Because the assessments will be scientifically valid, they will provide state and local education agencies with convincing evidence of whether their students are technologically literate.

Through use of the fifth- and eighth-grade technology literacy assessments, state and local education agencies will have the needed measure by which to gauge their students’ technology literacy proficiency as required by the NCLB Act.

Learn more about our assessments and work with ISTE at [www.ncrel.org/t...](http://www.ncrel.org/t...)
An important component to the No Child Left Behind (NCLB) Act is to integrate technology effectively with teacher training and curriculum development. E-learning is a growing educational initiative intended to increase student achievement through the value-added learning opportunities technology affords. According to John Bailey (2002), former director of the Office of Educational Technology at the U.S. Department of Education, the growth of e-learning programs is moving at unprecedented rates. There are currently 2,400 cyberschools in 37 states, with 40,000 to 50,000 students participating in at least one online course.

To provide educators with the management and support skills required to administer the growing number of e-learning programs available to all students, the North Central Regional Educational Laboratory (NCREL) at Learning Point Associates is currently offering two Management of Online Learning (MOL I and MOL II) courses to provide school administrators with a comprehensive understanding of instructional management and support requirements for successful deployment of K–12 online learning.

Each course lasts three weeks and consists of intensive online modules (or lessons) intended to provide school administrators with a better understanding of online learning through firsthand experience. Major topics covered in the courses include the benefits and limitations of online learning, managing resources for online learning, and planning for online learning.

Participants are required to complete assignments for each lesson to demonstrate competencies in specific content areas. In addition, participants are required to develop a plan for managing online learning in their schools and present this to their classmates at the end of each course. Each course schedules two Web conference sessions per week, and participants are required to attend all sessions to satisfactorily complete the course. In particular, participation in the Web conferences during participant presentations on professional practice (MOL I) and assessment/evaluation (MOL II) provides each participant with a repertoire of highly situated implementation and evaluation strategies and scenarios that can be drawn upon and adapted for individualized use.

After completing Management of Online Learning I (Deployment), participants will be able to:
- Explain the benefits of online learning and how these benefits apply to increased student achievement and school improvement strategies for NCLB.
- Identify the technology and human resources required to implement online learning in a school.
- Describe the cost, funding, and budget implications of online learning.

After completing Management of Online Learning II (Management and Supervision), participants will be able to:
- Select and prepare teachers for online teaching.
- Describe evaluation and assessment methods for online learning.
- Describe ethical and/or legal issues associated with online learning.

School principals, assistant principals, county and/or state education staff, and school board members would benefit from participation in the courses. NCREL is currently working with state education agencies within its seven-state region (including Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, and Wisconsin) to pilot the course.

To learn more about the Management of Online Learning Courses (I and II) and NCREL’s Online Teaching Facilitation Course, please contact us at info@learningpt.org.

Reference

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### Following is the curriculum design for MOL I and MOL II:

#### MOL I (Deployment)

<table>
<thead>
<tr>
<th>Technology Standards for School Administrators (TSSA) Standard</th>
<th>MOL Session</th>
<th>Primary Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Leadership and Vision</td>
<td>Week 1</td>
<td>Identify benefits for students and for school districts.</td>
</tr>
<tr>
<td>4. Support, Management, and Operations</td>
<td>Week 2</td>
<td>Identify resources and financial considerations.</td>
</tr>
<tr>
<td>3. Professional Practice</td>
<td>Week 3</td>
<td>Develop and present an implementation plan.</td>
</tr>
</tbody>
</table>

#### MOL II (Management and Supervision)

<table>
<thead>
<tr>
<th>Technology Standards for School Administrators (TSSA) Standard</th>
<th>MOL Session</th>
<th>Primary Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Online Teaching and Learning</td>
<td>Week 1</td>
<td>Identify online teacher performance objectives.</td>
</tr>
<tr>
<td>6. Social, Legal, and Ethical Issues</td>
<td>Week 2</td>
<td>Identify and discuss administrative issues and policy considerations.</td>
</tr>
<tr>
<td>5. Assessment and Evaluation</td>
<td>Week 3</td>
<td>Develop and present facilitator performance assessment and/or online instructional project evaluation plan.</td>
</tr>
</tbody>
</table>
Case Studies Report on Promising Educational Technology Practices Used to Close Achievement Gaps

The North Central Regional Educational Laboratory (NCREL) at Learning Point Associates has recently completed case studies of 19 high-performing, high-technology schools with significant low-income, African-American, and/or Latino student populations. NCREL’s case studies document various schools’ success on state achievement tests. Also, the case studies illustrate a progression of how these schools used educational technology to help narrow achievement gaps in environments that are not typically characterized by high performance. The study documents the technology that students, teachers, and administrators routinely use in these schools; the impact these practices have on student achievement; and the policies, resources, and strategies these schools have implemented and integrated into other school improvement efforts to create and sustain their high-performing, high-technology learning environments.

Reports were drafted for each of the schools included in the study through the triangulation of survey, interview, and observation data. Examples of promising educational technology practices that these schools believe have impacted student achievement also have been included. Collectively, these reports advance research-based procedural knowledge about how educational technology can be used to build and support high-performing learning environments, and offer examples of effective strategies that schools and districts can implement to help all students achieve.

The case study reports, along with a cross-case analysis that summarizes the themes of educational technology use across the 19 case study schools, are now available at www.ncrel.org/tech/hpht/.

Fourth Annual NCREL Blue Ribbon Panel on Emerging Technology Envisions Systemic Education Reform

The fourth annual meeting in late 2004 of the NCREL Blue Ribbon Panel on emerging technologies identified that technology will be the catalyst for large-scale systemic reform in education over the next decade. This most recent panel of 25 members represented both the public and private education sectors, including the U.S. Department of Education, Classroom Connect, SchoolNet, the National Education Association, the Education Development Center, Plato Learning, SRI, IBM, the Southern Regional Education Board, and the Corporation for Public Broadcasting.

This record-size groundbreaking panel agreed that such comprehensive change will capitalize on technology’s continued role within education through its widespread integration. The panel identified the following five specific areas in which technology will likely drive change across education and incorporate transformation:

1. Information use and management
2. Teacher roles and teacher preparation
3. Student roles and responsibilities
4. Delivery of education
5. Building capacity

Panelist Susan Patrick, director of the U.S. Department of Education’s Office of Educational Technology (OET), echoed the need for systemic change in education discussed during the Blue Ribbon Panel with OET’s January 7, 2005, launch of the National Education Technology Plan, Toward a New Golden Age in American Education: How the Internet, the Law and Today’s Students Are Revolutionizing Expectations.

“We must listen to our students,” Patrick said. “Too often, schools have simply applied technology to existing ways of teaching and learning, with marginal results in student achievement. We must transform.”

To learn more about the education transformations envisioned by the Blue Ribbon Panel, visit www.ncrel.org/tech/netc/.

Reference

2005 NCREL National Educational Technology Conference a Success

A variety of high expectations are continually placed upon teachers, principals, and superintendents. These expectations include preparing high school students for college or post-secondary life, ensuring third graders are reading at grade level, bringing equity to the classroom to help all students succeed, and putting high-quality teachers in the classroom. Heightened expectations in teaching and learning are an integral part of education and impact all levels of education. The 2005 National Educational Technology Conference (NETC) held in conjunction with the NCREL Annual Conference, “Reaching High Expectations: Research, Resources, and Strategies for Excellence in Teaching and Learning,” helped address these issues for educators.

NETC, held March 9 and 10, 2005, in Bloomingdale, Illinois, brought together more than 300 educators, administrators, researchers, and policymakers to learn about and address these topics and other augmented needs and expectations. The NETC awareness sessions, workshops, and panel discussions offered resources and strategies on addressing the expectations associated with online learning for teachers and administrators, using the Internet for improved student reading skills, teacher technology integration and educational software integration, and assessing student technology literacy. View the presentation slides and materials from this year’s conference online at www.ncrel.org/meeting.

See You at NECC!

Attend one of our exciting conference sessions to learn more about our various initiatives in educational technology and to meet our knowledgeable Center for Technology staff. Our next conference appearance is:

National Educational Computing Conference (NECC)
June 26–29, 2005
Philadelphia, Pennsylvania

- “How to Assess Teacher Technology Integration”
  Presenter: Matt Dawson, Ph.D., Learning Point Associates
- “Building Blocks of Technology Literacy: NETS for Students”
  Presenters: James Sweet, Learning Point Associates, and Lajeane Thomas, Ed.D., ISTE NETS Project Director

Also, be sure to visit the Learning Point Associates exhibit and receive valuable resources and research on technology in education.