

The New Literacies

By: Zach Miners and Angela Pascopella (2007)

It might seem that evaluating information online (just one form of "new literacy") and reading a book (more of a foundational literacy) are pretty much the same thing. But there are differences that, when brought into the classroom and incorporated into curricula, are enriching the educational experiences of many K-12 students. Many administrators are beginning to recognize the need to revise their districts' media skills instruction.

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Students are immersed in 21st century "new literacy" technologies, but are schools preparing them for the future?

Are you familiar with the Pacific Northwest tree octopus? Most likely not. Good thing there is a website on the Internet to tell you all about it! According to the [tree octopus site](#), this solitary cephalopod resides in the temperate rainforests of the Olympic Peninsula on North America's west coast. It is amphibious but lives in trees, spending only its early life in water. It has eight arms, complete with sensitive suckers, and a soft body, just like a regular octopus. It is intelligent and inquisitive. And it does not exist.

Surprised? Again, most likely not. But 25 seventh-grade, high-performing online readers, when directed to the site in a recent study by the New Literacies Research Team at the University of Connecticut, all thought the Pacific Northwest tree octopus was real.

"Knowing truth from fiction on the Internet is a huge problem," says Kenneth Eastwood, superintendent of Middletown City (N.Y.) School District. "Students might be good researchers, but they tend not to scrutinize the information."

Apparently high-performing online readers are not so high performing after all. And those 25 students were the same top students who, when first surveyed from a larger pool of 800 students in urban Connecticut school districts, said, "You can't trust everything you see online." But you can always trust a tree octopus. (Or maybe that's a mountain walrus. Check the site.)

It might seem that evaluating information online-just one form of "new literacy"-and reading a book-more of a foundational literacy-are pretty much the same thing. After all, you can't trust everything you read, either. But there are differences. And those differences, when brought into the classroom and incorporated into curricula, are enriching the educational experiences of many K12 students. Unfortunately, many administrators, although they are beginning to recognize the need to revise their districts' media skills instruction, lack the resources, and more importantly the vision, to bring the new literacies into the classroom.

21st Century Skills

Foundational or traditional literacy is about print on a page, or decoding and making sense of words, images and other content that a reader can string together and then begin to comprehend. They are the words and pictures students read and pore over that are contained in textbooks, in novels, on standardized tests, and even in comic books.

The new literacies encompass much more. Their utility lies in online reading comprehension and learning skills, or 21st century skills, required by the Internet and other information and communication technologies (ICTs), including content found on wikis, blogs, video sites, audio sites, and in e-mail. They require the ability not just to "read" but also to navigate the World Wide Web, locate information, evaluate it critically, synthesize it and communicate it—all skills that are becoming vital to success in this century's economy and workforce.

What complicates the situation is that there is a growing gap between what today's students do in school and what they do at home. According to a recent Pew Internet and American Life Project study, "The Digital Disconnect: The Widening Gap between Internet-Savvy Students and Their Schools," students are spending 27 hours a week online at home, compared to an average of 15 minutes per week at school. "It's hard to develop online skills in traditional classrooms when so little instructional time is online," says Susan Patrick, president of the North American Council for Online Learning. "Online learning is not this separate silo that we might need to use as a tool." Administrators should have such learning weaved into classrooms, she adds.

Today's students, the "digital natives" as they are sometimes called, are practically inseparable from their computers, video games and the Internet. Moreover, a recent study by the National School Boards Association found that 96 percent of students who have online access use the technologies for social networking such as blogging, sharing music, instant messaging, and posting their own movies. Not exactly the first thing you think of when you imagine a classroom.

And although digital natives may be tech savvy, they don't use a lot of information, or at least they don't know how to think critically about the information they use. They need guidance on how to find the best information most efficiently and determine fact from fiction.

"Technology and knowledge in general are growing at an exponential rate," says Mary Colombo, assistant superintendent of curriculum and instruction at Hopkinton (Mass.) Public Schools. "Where do you find it? How do you gather it? How should you use it?"

New Literacies Research Lab

At the New Literacies Research Lab at the University of Connecticut, tucked amid the rolling hills of northern Connecticut, researchers are conducting studies on the state of new literacies in schools and encouraging district leaders to realize the importance of such technologies, particularly in middle school. The six-year-old research lab, with \$8 million in private and federal funds for research, professional development, assessment and curriculum development, is the most widely recognized center worldwide for doing such research. And the 14-member team develops research-based evidence to prepare students in these new skills. The lab's co-directors, Donald Leu, Douglas Hartman and Julie Coiro, maintain that it's high time for school districts to focus on this new form of literacy. "It's a huge challenge because we've never been in a position where every month or every year there are new reading and writing skills that you have to acquire because there are new technologies," Leu says. "We've had the same technology for 500 years. We have basically been reading books. Who knew about wikis or blogs" just five years ago?

But few, if any, of the new literacies have found their way into the American classroom.

"Indeed, many seem to be resisted overtly by deliberate educational policies or covertly by educators who sometimes are not nearly as literate with the Internet as the students they teach," according to Leu and others at UConn, who wrote a research paper, "What Is New about the New Literacies of Online Reading Comprehension?"

Economically challenged districts have little incentive to include online reading skills in the instructional program because they face pressure to raise reading test scores on assessments that have nothing to do with online comprehension. As a result, many students are not taught these online skills, especially those students who require the most support—and who have the least access to the Internet at home.

"And think about the wealthy districts," Leu says. "The kids have the Internet at home. When they come to school, the teachers, the superintendents and the administrators feel less pressure for AYP, and so they're integrating the Internet more into the classroom. They're

getting the skills. And the kids who are the lowest- performing students on state reading assessments are being denied them just because of the pressure of these tests."

Among the UConn lab's various studies, one with the North Central Regional Educational Laboratory/Learning Point Associates created an online reading comprehension assessment. It asked seventh-graders from a Connecticut district first to download a document from a blog post, requiring them to search the web, and to post a new blog message to communicate what they found. The results showed no statistically significant correlation between scores on state reading assessments and students' performance on online reading assessments. It suggests that there's "something different going on here," Leu says. "That's highly unusual in the reading world—all reading comprehension assessments correlate with one another."

New Instructional Models

Under the lab's experimental study with Clemson University in South Carolina, Teaching Internet Reading Comprehension to Adolescents, the research team is now developing a three-phase instructional model for teachers, called Internet Reciprocal Teaching (IRT). This year the team will randomly choose seventh-grade classroom teachers in Connecticut and South Carolina to receive instruction in the new literacies using the model.

Another study underway in California is ascertaining the contexts in which students learn new literacies best. "It's a qualitative study where one of the doctoral students is watching new literacies being introduced to the classroom, and the kids are the informants to the researcher," Leu says. The doctoral student learns the context in which the students' new skills are acquired, such as from a teacher or another student, or from something the student decided to do on the Internet or from something that was assigned. "That information is really going to be important to understand what contexts facilitate the acquisition of new literacies," Leu says. "Is it when the teacher tells you directly, or is it when students explore something and figure something out? And those contexts are important as we think about integrating these things into school classrooms."

Spoof Websites

Critically evaluating information on the Internet is key for success in the 21st century workforce and economy, experts say. Students should first figure out who created the information to determine what stance the authors take. "You can often get different points of view" when looking at multiple sources of information on the same topic, says Donald Leu, codirector of the New Literacies Lab at the University of Connecticut. "And that's what we should be encouraging kids to do—to say that there isn't a single truth out there."

The Pacific Northwest tree octopus and other animal spoof sites:

POP! The First Male Pregnancy shows a pregnant Lee Mingwei, with links to videos, a sonogram and a Newsweek cover photograph. Dwayne Medical Center at RYT Hospital is the organization behind the site.

The RYT Hospital-Dwayne Medical Center offers the world's "most innovative and extraordinary healthcare, from the first human male pregnancy to the first successful medical application of nanotechnology."

The Onion is touted as America's Finest News Source, which includes what appear to be authentic news articles yet are really satires of media stories.

National Motor Vehicle License Bureau offers a free searchable database of over 121 million U.S. driver's license photos and license information.

Strawberry Pop-Tart (SPT) Blow-Torches explores the idea that Pop-Tarts could emit flames "like a blow torch" if left in a toaster for too long. The work describes independent verification and experience with SPT-based combustion.

The Ova Prima Foundation continues to build scientific evidence that will shed light on the chicken-and-egg controversy.

Testing Mandates

Ironically, the federal No Child Left Behind law includes an Enhancing Education Through Technology section mandating that every student become technologically literate by the end of eighth grade. But there are few, if any, federal funds going to schools under this mandate, and

the law doesn't clearly define the mandate, Leu and Hartman say. Every state has technology standards, but they go untested, which makes real change difficult to achieve.

Joseph Cirsuolo, chief operating officer of the American Association of School Administrators, agrees that these new skills are about the present, not just the future. "Until we change assessment laws or NCLB starts to test for these skills, I think we'll have a major time problem" where the school day and year is limited, he says. "This will be a bigger problem in school districts that serve children who don't test as well."

"Technology literacy is endangered by well-intentioned educators trying to create checklists and tests," says Dennis Harper of Generation YES, which provides programs for youths to improve their education through technology, such as TechYES, which is a technology literacy certification program for sixth- through ninth-graders. "And they artificially put an end to the process. Technology should open new doors to students, not limit them." Leu adds, "This is really critical — it's not only that there are new reading skills and strategies involved, but our public policies, because they're not in tune with what's going on, are actually preventing the kids we care about the most from acquiring these skills."

Learning from Other Nations

As news reports proclaim that the world is getting "flatter" as a result of a rise in economic and workforce competition from foreign countries, there are signs that the U.S. educational system is not taking the new literacies seriously enough, Leu and Hartman say. The National Assessment of Educational Progress—the nation's report card—has no plans to test such skills at least for another 10 years. And the United States is not participating in the 2009 PISA reading assessment, which is a worldwide assessment for 15-year-olds conducted every decade by the Organization for Economic Cooperation and Development.

The 2009 assessment will include online reading literacy skills for the first time. "Assessment needs to be part of it," says Colombo. "We must know how what we're doing is helping students and what new skills they're leaving with when they're out of school."

By contrast, other nations around the globe, particularly developed nations, are taking the new skills quite seriously. Finland, for example, has a national training model for teachers to integrate the Internet and other ICTs into the classroom. The government gives five weeks of paid release time for professional development to all teachers, Leu says. "They know their kids are going to have to compete with other kids," Leu adds. "And they also have a priority for an information technology economy. They're very focused on that."

Ireland is following a similar path. "It's a boom economy right now," Leu says. "It's being called a 'Celtic Tiger.' More software is manufactured in Ireland than in the United States today, and it's because they have a trained workforce. They've invested in integrating technology into their schools so that kids know how to work in an information age, and major companies have been setting up their headquarters in Ireland because they have a trained workforce. Ireland is importing workers now because their economy is so strong. It used to be that they sent their sons and daughters away when they didn't have enough jobs."

The United Kingdom has just developed a national ICT literacies assessment that's being piloted in schools, and in Japan the government subsidizes Internet access in 98 percent of all households because it knows that kids spend more time reading outside of school than they do inside, Leu and Hartman say. In Mexico, there is a national policy to make Internet access available to all schools in all classrooms and all homes in the next 15 years. And all of Singapore's high schools are using online learning, Patrick adds.

State Initiatives

Fortunately, there are pockets of hope in the United States, as various states and districts have taken steps to alter the educational technology landscape. The International Society for Technology in Education encourages administrators across the nation to use the new literacies in classrooms. And the Partnership for the 21st Century Skills, a national advocacy organization focused on infusing 21st century skills into education, recently started joint partnerships with Maine, South Dakota and Massachusetts to bring 21st century teaching and learning skills to students. Other states are also getting involved, including Michigan, North Carolina and West Virginia. Gov. Michael Easley of North Carolina and Gov. Joseph Manchin III of West Virginia realize that students must move beyond mastering instant messaging and MP3s and cope with the bigger demands of the new literacies.

For example, North Carolina has been losing jobs in the textile and clothing industries over the past few years, so Easley's development strategy is designed to introduce more high-skilled

jobs. The North Carolina Center for 21st Century Skills is working with business leaders, educators and policy-makers to ensure that all high school students will graduate with new literacy skills that are relevant to jobs today. Among its plans, the center has a program to create smaller learning communities that make class work relevant to contemporary workplaces. It also created Learn and Earn, a one-year high school extension program that allows students to earn two years of college credit or an associate's degree.

West Virginia has also lost jobs in the coal and mining industries, so Manchin implemented the West Virginia 21st Century Skills Initiative, a 30-member board of key leaders, including teacher union and higher education representatives, which is working to restructure the state's education system to integrate 21st century learning and implement online professional development tools.

Wisconsin has a book full of ICT standards, but the difficulty is weaving them into core subject standards that were implemented before the ICT standards were born, according to Barry M. Golden, educational consultant at the Wisconsin Department of Education. "I believe we are ahead of the game with the standards but are far from having them fully implemented, in great part because we don't have the resources at the state level, nor do the districts have the resources at the local level to deliver the training necessary for full implementation," Golden says. "I think it's imperative that the nation look at the challenges facing us in most content areas, 21st century skills, problem and project-based learning, and technology integration in general and conclude that the K12 enterprise must go on a massive retooling effort."

Learning the New Literacies

Like any skill, learning how to navigate the Internet requires various steps.

1. The Nuts and Bolts

The first phase of learning the new literacies is teaching students the nuts and bolts of using the Internet. Many students don't know how to use a search engine or the best way to find information. "The person who gets the best information in the shortest period of time does the most important thing with it," says Donald Leu, co-director of the New Literacies Research Lab at the University of Connecticut. "One of the interesting things we find is that kids really want to get out of that phase. They don't like to be taught these things directly. And they just want to get in and figure it out." After receiving the search results, knowing what to do with them is incredibly important, Leu says. Many students simply click on the first site, and if they find nothing of interest they click on the second site. The process continues until they find what they're looking for. Unfortunately, they don't first read the search results and try to figure out what would best fit their needs, Leu says. "They don't know the grammar of reading a search engine output," he adds.

2. Critical Evaluation

The second phase is when students are given a problem to solve in groups on the Internet. Then they can learn critical evaluation skills—for example, how do you know who made this web page? What strategies can you use to figure that out?

3. Self-Inquiry

There's an inquiry phase related to the curriculum, Leu says. "If you're in science and studying the human circulatory system, what problems or questions do you have about the circulatory system? The kids get to define the problem and then they gather the information," Leu says. "When they have all of these strategies in place, then they should use them. Let them pick the problem" that is important to the unit they are studying, he says.

4. Deictic Learning

Since technology is always changing, Leu contends that learning how to learn new strategies when new interfaces and new tools emerge is really the most valuable skill. The new literacies are deictic, or regularly change as defining technologies change every year, Leu and Hartman say. An example of the deictic nature of the technologies is web 3.0, a term being used now to describe the evolution of and a possible future form of the Internet, characterized by even more interactivity, enhanced search engines, artificial intelligence, virtual reality, and maybe even 3D graphics, Hartman adds. "Kids tend to be very, very good at this," Leu says. "Their

minds are quite plastic and they learn about the world by exploring it. They push buttons to see what happens, whereas adults tend not to be as exploratory in their learning processes. But learning how to learn may be more important actually than a particular skill that would get extinguished later on" due to new technologies emerging.

Reaching Out to Districts

In districts where the UConn lab is working, administrators are starting to think about the digital disconnect—the gap between how often students use the Internet at home compared to how often they use the Internet in school. But Leu reiterates that administrators are at different levels of awareness.

Tim Lauer, the principal of Meriwether Lewis Elementary School in Portland, Ore., not only is aware of the technological gulf between what students do in school and at home, but he also points out that the way students conceptualize information is so radically different now from when he was a student four decades ago. "Students are more connected now than ever. They don't even look in books. It's actually really funny as far as where they go to get information. They don't even know what yellow pages are," he says.

School change must start from the top, Leu and Hartman stress. Early on, the research team prepared dozens of Connecticut high-level administrators to work with new literacies over a three-year period, under a Bill and Melinda Gates Foundation grant with the Connecticut Department of Educational Leadership. "We had a series of workshops around the state and we had groups of 40 or 50 people in them to show them what new literacies were, trying to get them to understand these things," Leu says. "If you don't have leadership it's not going to happen. If you're going to change schools, you have to have a vision for it."

While the research lab can offer no primer or "how-to" list that administrators can follow, Leu says, it's key for administrators and teachers to spend time every day online. "If they don't live online, how are they going to communicate to kids how to do these things that they themselves don't do?" Leu asks.

Beyond leadership, Leu says that revamped curricula and preservice teacher education will support teaching new literacies to students. "We've got to coach current teachers to become newly literate, understand how to use the Internet, so they can pass along a lot of those skills, and then we have to implement effective instructional models," he says.

At the Middletown district—where administrators are working to enhance its curriculum with new technologies through a federal Enhancing Education through Technology grant—Eastwood agrees that to address the most important issues one must first properly train the teachers in instructional technology. "New teachers do not do very well with technology integration skills in the classroom," he says.

Hartman's grant with preservice teacher education, funded by the Carnegie Corporation of New York and called the Adolescent Literacy Preservice Initiative, is designed to develop and implement an innovative program of teacher preparation for candidates in secondary math and science education that focuses on foundational print literacy as well as the new literacies. "All of this is gradually receiving greater attention, but the change is huge," Leu says.

Hartman plans to work with a school in the Manchester (Conn.) School District this year, focusing on how teachers already use online reading and writing every day, and then have administrators think about how such technologies can be integrated more fully across grade levels. As teachers develop the skills and language for building a professional school culture, then educators can think about "logical and natural ways to fold" online reading into what the students could and should be learning about using the Internet and other communication technologies, Hartman says.

Patrick believes that school leaders also need to be clearer about their mission, which should be to prepare students for the Information Age and to ensure teachers have online teaching credentials. "I'm going to push our teacher education schools to include these skills" and get certificates, she says. Boise State University is one such example, she explains. It is working with Connections Academy, a free K11 public school distance-learning program, to encourage standard classroom teachers to receive online training skills.

Districts Ahead of the Curve

The lab researchers have worked with more than 500 K12 education leaders in states such as Connecticut, New York and South Carolina who are "starting to get it" and understand "the enormity of the challenge," Leu says.

Portland, Oregon

At Meriwether Lewis Elementary, Lauer oversees classes in digital arts for third-, fourth- and fifth-graders. Held in a computer lab outfitted with 30 Apple MacBook computers, students delve into every subject from filmmaking to music composition to digital photography, but some of the most interesting lessons merge Internet-based programs like Google Earth with 3D modeling and city building programs like SimCity Societies and Google SketchUp. "Students capture real earth images from Google Earth and then expand on them with the other software," explains Lauer. "Each kid gets his or her own property lot to build on." Lauer says students use web-based search engines like Google to "research zoning and construction issues" and through the software learn the importance of planning and sticking to a budget. Students also share their ideas with classmates and respond to each other's work through a "construction diary" blog.

Scarsdale, New York

This fall, Scarsdale (N.Y.) Public Schools will begin offering a yearlong course through its Teachers Institute on the new literacies so district teachers can collectively examine the pedagogical nature of the technologies and incorporate them into classroom teaching models. The course is inviting national experts in the field to investigate the research that's being done and make recommendations on how participating educators can use the technologies to improve student learning.

"One of our goals is for students to read better online," says district technology director Gerald Crisci. "Becoming more critical, knowing the importance of the source, knowing how to navigate... are all examples of what we're trying to do."

But Scarsdale computer teacher Jodie Giroux stresses that the phrase "new literacies" is almost a misnomer, because what should be achieved is "balanced literacy," or a comprehensive literacy that incorporates traditional print media, electronic media and everything in-between that makes connections among various forms of content. "This is nothing 'new,'" says Giroux. "It's much more like taking what we already know and applying these new technologies to it. It's a good commonsense approach to teaching literacy, in every sense of the word."

The Scarsdale district also has an intensive Capstone Project for fifth-graders in which they choose and research a topic of their own and make a presentation at the end of the year. Giroux says that "inquiry research" is central to the project's ideals. Students are taught the value of framing good questions, how to make connections, and how to research both in print and online. Teaching students how to read web pages and how to find sources on the Internet is paramount, she adds.

Additionally, Paul Folkemer, assistant superintendent of instruction, not only "gets" the importance of new literacies and web 2.0, but he runs and maintains a current events blog for all the district's students. He often reads news articles from various online sources, chooses one he believes will be interesting for young people, rewrites the story himself, posts it to the blog, and poses questions that he thinks will be debated or considered.

"Critical reading is one of the new literacy skills, and the current events blog is an effective strategy for teaching critical reading because students connect the content to their lives and then accurately respond to what they have read," says Folkemer. "The blog gives students an opportunity to read, think and respond in writing to events and issues that are important for them to understand as citizens of democracy."

Folkemer says that whenever he adds a new story to the blog, an e-mail is sent to more than 80 teachers in the district who incorporate the blog articles and questions students raise into their own lessons.

Baltimore, Maryland

Online and technology literacy is part of the success of Connections Academy, a virtual public school based in Baltimore, according to Patricia Hoge, senior director of curriculum and instruction. The academy offers a course, Educational Technology and Online Learning, every year in which students learn Internet safety skills, how to navigate search engines and how to distinguish bogus from authentic sites. Middle school students also learn about intellectual property rights and plagiarism. Assignments are directly related to class work. "We certainly

have them well-positioned to move out into the world and use technology skills on a daily basis," Hoge says, "and not just sit in a computer lab once a week."

Monroe, Connecticut

Monroe (Conn.) Public Schools is part of a group of districts turning to organizations such as the Partnership for 21st Century Skills to explore the educational potential of new literacies. The district held a retreat this past summer for school administrators at which they reflected on what 21st century skills are and what it means to have those skills. Assistant Superintendent Richard Canfield, who is also concerned about teaching life skills and lessons in personal finance, says, "Improving these literacies is an enormous task. It is important in every single subject."

Engagement and Motivation

Despite the fact that many students struggle with traditional reading, they're still engaged when they're online. And engagement means they are more excited in school and less likely to drop out. "We think we get spillover into traditional reading," Leu says. "We think we'll get engagement and motivation even with these kids because we'll be integrating reading where they get to control where they're going. We give them a problem to solve and they get to decide where to go."

Leu feels that the much-needed technology shift in American schools might just boil down to patience. "But other nations are doing this stuff," Leu reiterates. "Meanwhile we're still struggling here with the best technology in the world, the most access in the schools, and one might argue the least use."

Resources

Connections Academy, www.connectionsacademy.com

Generation YES, www.genyes.org

Meriwether Lewis Elementary School, www.lewiselementary.org

Middletown City (N.Y.) School District, www.middletowncityschools.org

New Literacies Research Team, www.newliteracies.uconn.edu

North American Council for Online Learning, www.nacol.org

Partnership for 21st Century Skills, www.21stcenturyskills.org

Scarsdale (N.Y.) Public Schools, www.scarsdaleschools.k12.ny.us

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Accessed January 11, 2009, retrieved from <http://www.readingrockets.org/article/21208>