

# EDUCATION WEEK

Published Online: September 16, 2008  
Published in Print: September 17, 2008

Commentary

## Let's Get Over the Slump



—Illustration by Luis Diaz for Education Week

## Innovation Strategies for Learning in a Global Age

By James Paul Gee and Michael H. Levine

More than 15 million children in preschool and the primary grades have just entered or returned to school, eager to learn. Unless we change our nation's literacy priorities to address both the early reading gap and a newly emerging digital-participation gap, five years from now more than a third of these children will fail to attain the literacy and necessary 21st-century skills to engage with school. They thus will risk spiraling on a tragic trajectory toward academic failure and economic insecurity.

Ensuring that these children of promise develop the competencies needed to succeed in a global age will take a new national commitment to unleashing the untapped power of interactive media.

For the 25 years since the release of *A Nation at Risk*, the report of the National Commission on Excellence in Education, our country has faced wide achievement gaps that derive most centrally from disparities in economic circumstance, educational opportunity, and basic-skills mastery. Today, the United States faces two increasingly related gaps, both detrimental to our continued recognition as the world's innovation leader. The first is the old reading gap between richer and poorer children, and the consequent disparity in school success between white children and children from some minority groups. The second is the gap between students who have mastered digital media and those who have not.

According to the National Assessment of Educational Progress, most low-income children in this country are below grade level in reading by 4th grade, and international assessments show that they lag behind their global peers on literacy measures. While national policies such as Reading First have strongly emphasized the need to learn such key reading skills as decoding and phonemic awareness in the early grades, the well-known phenomenon of the "4th grade slump" remains a critical challenge. Far too many students who appear to be learning to read well in the early grades hit a wall and fall behind by the 4th grade.

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The most important cause of the slump is a lack of comprehension of increasingly complex language. As school progresses, the language of learning becomes more and more abstract and specialized, and less and less like everyday conversational language.

What gives students a good head start toward comprehension is a wide-ranging, sturdy vocabulary of complex words in the early years, before the age of 5. One big reason for success in school is early home-based preparation, acquired through regular dialogue with parents or grandparents, being read to frequently, and exposure to a wide variety of experiences in the world. Unfortunately, many students today, especially those from low-income families, do not get such preparation. And schools don't teach early literacy in a way that provides these students with complex vocabulary or comprehension skills. It is here that digital media can make a vital contribution.

Video games, simulations, modeling tools, hand-held devices, and media production tools can allow students to see how complex language and other symbol systems attach to the world. Because digital media easily, perhaps uniquely, can combine action in relationship with environment, this technology can generate situated meaning—vocabulary used in actual situations, which makes meanings clear and easier to remember—in many settings. Thus digital media have the potential to increase "book" vocabulary, and the concepts attached to such words, for children whose families are unable to do so.

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Another reason to embrace digital media has to do with the second gap, often overlooked, that exists between students who can leverage technical skills and technological know-how to learn content, produce knowledge, and develop high-level expertise, and those who cannot. Mastery of digital media for the production of knowledge constitutes a new family of “digital literacies,” since such media, like print before them, are tools for the production of meaning. For a student to fully leverage all the possibilities for learning and knowledge production to be found on the Internet, he or she must learn how to access, assess, and modify the plethora of information available. These skills don’t just develop on their own. They require mentoring and teaching, especially for children who come from families unable to provide this at home. So the digital gap is not just a matter of who has access to technology. More important, it is about who has access to well-designed learning systems and mentorship built around new digital technologies.

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Digital media offer other advantages. They naturally elicit problem-solving behavior and attitudes in students, and have the potential to create different modes of assessment. For example, students can demonstrate mastery by using them in work on real-world problems. They can also be used to track how learners learn, moment by moment, allowing constant feedback based on our knowledge of various trajectories of learning.

In fact, children are already using digital environments and tools to join learning communities and become experts. Many use the Internet, communication media, digital tools, and membership in often virtual, sometimes real, communities of practice to develop technical expertise in different areas. These include video games, digital storytelling, fan fiction, music, graphic art, political commentary, robotics, anime, and nearly every other endeavor the human mind can think of. Their informal process of learning, collaboration, and transforming passion into knowledge is desperately needed in schools today.

Current early-literacy practices have cost taxpayers tens of billions of dollars over the past decade, with only scant progress. (["Reading First' Research Offers No Definitive Answers,"](#) June 4, 2008.) Despite sluggish gains in the reading enterprise, the nation has not seriously assessed or integrated the digital tools and new teaching practices that have the potential to promote the types of skills and knowledge demanded by employers in the 21st century. Digital media, well deployed, can have enormous educational impact almost immediately. We recommend the following for policymakers, business leaders, and practitioners to consider:

**Fund digital research and development to invest in what works.**

We need to invest in our national research agencies to determine effective practices. We should examine in depth the specific educational benefits of digital media, and the impact of adult scaffolding on children’s digital experiences. And we should assess what works best for children from different backgrounds and with different learning profiles.

**Establish a “Digital Teacher Corps.”**

Teachers cannot teach what they do not know. Most practitioners are unskilled in embedding new media in powerful instructional practices. A corps of tech-savvy teachers should be established to work in the lowest-performing elementary schools to train teachers to help students learn to read by transforming information for discovery and problem-solving.

**Design and test alternative assessments and new standards.**

Besides measuring traditional skills, literacy assessments should be measuring the skills necessary for problem-solving, including lifelong learning habits, and the ability to adopt new technologies and ways of understanding from multiple cultural perspectives.

**Create “a place in every community.”**

Building on models such as the Intel Computer Clubhouses and Club Tech of the Boys & Girls Clubs, we can and should create a place in every community where young children could gain confidence in their literacy and interactive-technology skills.

**Establish digital-partnership schools.**

Each state should create at least one digital-partnership elementary school as a model and demonstration site. These schools would be laboratories for testing many different digital approaches to learning and assessment, as well as for testing different ways to break down the barriers between in-school and out-of-school learning. They could become a hub for the professional development of digitally savvy teachers.

**Modernize public broadcasting.**

Public-broadcasting initiatives should advance experimentation with new formats, such as games, virtual worlds, and social-network communities, that would engage children in both literacy and digital skills. Educational media companies should also make available to educators publicly supported productions at low or no cost via the Internet and new communities of practice.

Ongoing American leadership in a global age requires a renewal of our long-admired creativity, communication, and innovation skills. A reformulation of how traditional and new digital literacy skills can be promoted, starting now, will help ensure a brighter future for all our children.

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