



## **Technology in Education: No Longer Supplementary—It's Integral**

The Source for Learning, Inc., is a not-for-profit educational technologies company. We were established to help educators—particularly those in K-12 schools—use technology effectively in their teaching. When we began more than thirty years ago, technology was a very minor part of school operations. Instructional uses of video were probably the most advanced applications. The PC had yet to be invented; there was no Internet; no one had even imagined cell phones, Facebook, or Twitter. Today, SFL operates several web sites for teachers and families, and we hold Educational Broadband Service licenses in 22 markets.

In recent years, digital technologies have become crucial to much of the American economy, and leaders in government, education, and business have come to realize their importance for education as well. More recently, recommendations from the National Governors Association, the Council of Chief State School Officers, The U.S. Department of Education and the Federal Communications Commission as well as the State Educational Technology Directors Association, the Consortium for School Networking, the International Society for Technology in Education, and EDUCAUSE have all dealt with efforts to transform American education—making it more rigorous, more competitive, and better leveraged by available technologies. From one quarter, a new movement for rigorous national standards has emerged. From another there is a renewed push to extend advanced broadband communication into homes, schools, and communities. From still another, there are grass roots efforts to re-envision education in a digital world via a more student-centered, project-based model that takes education outside school walls and timeframes.

SFL supports all of these movements. Further, we believe they are—and should be—inextricably interwoven. The following paragraphs describe why we feel it is imperative to address issues of both education and technology simultaneously.

### **Who Learns?**

While it would seem obvious that students—defined as young people in their PreK-16 years—do the learning, we believe the answer is more complex. The pace of discovery and innovation in today's world, combined with the speed with which that innovation can be disseminated, requires that everyone be capable of ongoing learning. By that we mean that the ability to receive and understand complex new information, synthesize meaning and context from that information, and incorporate it into our daily professional and/or personal lives is a skill that everyone must possess.

For teachers, this means that they must not only be guiding students through a process of discovery geared to the students' particular stage of development, but they must also be engaged in ongoing professional development—pertaining to both subject matter and the teaching of that subject matter—that makes them ever more capable as both teachers and learners.



For other adults—particularly parents, grandparents, and others working with children—it means actively modeling the inquisitiveness, persistence, joy of discovery, and technical facility that we hope to instill in our children. In the end, we must all be learning.

### **What do we learn?**

In recent years, much energy has been spent increasing the rigor of instruction in American schools. The recent standards released by the National Governors Association, however, cut through much of the noise on this issue by focusing on five key attributes of curriculum standards, saying they should:

- Be aligned with college and work expectations;
- Include rigorous content *and* application of knowledge through high-order skills;
- Build upon strengths and lessons of current state standards;
- Be informed by top-performing countries, so that all students are prepared to succeed in our global economy and society; and,
- Be evidence and/or research-based.

These recommendations are parallel to those articulated in the recently-released National Educational Technology Plan, which states,

“Whether the domain is English language arts, mathematics, sciences, social studies, history, art, or music, 21st century competencies and expertise such as critical thinking, complex problem solving, collaboration, and multimedia communication should be woven into all content areas.”

The common denominator underlying these statements is a recognition that technology, in one form or another, has become the medium by which we manipulate all of this knowledge. That technology therefore needs to be universally available, and we must equip both students and teachers to use it effectively.

Communication technology has another important impact on what we should be learning: it shortens distances. A student in Boston can communicate with another student in Shanghai or San Francisco as easily as he can with a classmate in the same room. The challenge for those setting curriculum, therefore, is that international standards and norms matter much more than they once did. Regardless of the standards by which schools measure our students, an emerging international marketplace will measure them against what the rest of the world is doing. If our students do not measure up, the loss will be theirs, but the fault will be ours.

### **How do we learn?**

Technology has fundamentally altered the way in which today’s young people interact with their world. At the same time, it has given teachers significant new instructional capabilities. Those capabilities can be available to students whether at school, at home, or travelling.



Teachers can incorporate resources from around the world, explore the connections among disciplines using real-world examples, and they can help students show what they have learned using new combinations of media and resources.

The reality in many schools is very different. Under pressure to raise test scores, schools concentrate on “teaching to the test,” or on tightly scripted instruction that offers few options for presentation. When this happens, schools are cheating their students, and they are modeling a view in which learning takes place apart from the technologically connected world in which today’s students live. Small wonder, then, that many students conclude that school is irrelevant.

Imagine for a moment what a twenty-first century classroom ought to look like. Teacher and students are learning together, with the teacher guiding students’ exploration and discovery toward a particular goal. The classroom uses technology effectively, not because specific hardware/software is in place, but because of the informed manner in which the teacher and students use the capabilities that connectivity produces:

- Students collaborate with others, both in the classroom and elsewhere.
- There is flexibility in the grouping of students and exploration of subject matter.
- There is a willingness to adopt rigorous standards, and to accept flexibility in meeting those standards.
- Teachers and students “model and facilitate understanding of social, ethical, and legal issues and responsibilities related to an evolving digital culture” as articulated in the standards produced by the International Society for Technology in Education.
- Students have a variety of options available by which they can remix, manipulate, construct, comment and demonstrate what they are learning as an ongoing process.

Moreover, this use of technology applies not just to formal instruction, but also to the delivery of continuing professional education for teachers and administrators. This sharing can leverage the power of peer referral, allowing innovation to emerge from within organizations as teachers share their successes with one another more widely than has been possible previously.

### **Toward a new vision**

The good news in all of this is that some schools and classrooms are embracing technology, functioning as close to the description above as the available technologies, connectivity, and equity will allow. In addition, there are resources available to teachers that can help them integrate technology effectively into their teaching. SFL’s programs and services have consistently led the way in this regard.

- Established in 1998, our TeachersFirst.com web site lists more than 11,000 teacher-reviewed web resources, along with ideas on how to use those resources in the classroom. This free resource receives millions of monthly page views, is used in the U.S. and more than 100 other countries, and has over 11,000 members, whose free

membership lets them create their own personal libraries of instructional resources. TeachersFirst adds more than 100 new resources each month, and membership continues to grow steadily.

- In 2005, SFL created *PreschoolFirst*, an online curriculum and assessment application for early childhood facilities. *PreschoolFirst* is a model for the sort of data-driven formative assessment that the Department of Education and the National Educational Technology Plan have recommended. It has proven effective in Head Start centers, home-based childcare facilities, and independent early learning centers, helping teachers guide children while creating a longitudinal record of their learning development. SFL is working on a new release of *PreschoolFirst* that will incorporate additional capabilities that were not technically feasible when the site was launched.
- In 2009, TeachersFirst launched *OK2Ask*, a series of live, online teacher professional development sessions that foster exploration, sound pedagogy, and collaborative learning in a supportive, teacher-friendly environment. Teachers can attend these 75-minute interactive sessions, scheduled at convenient times, from any computer. *OK2Ask* shares great ideas teachers can **use** in their classrooms. Sessions utilize TeachersFirst's respected resources, innovative ideas, pragmatic implementation tips, sound pedagogy, and reputation for integrity. *OK2Ask* sessions are collaborative, informal, and geared to practical applications in real-world classroom settings. SFL is continuing to expand this service.
- In April, 2009, SFL managed a demonstration webcast in which a fourth grade class in Portland, OR, used 4G wireless technology to tell students around the country the story of their outdoor garden projects. The students wrote the presentation and operated the camera, computer, and other production equipment while their two participating teachers looked on. Students from around the country were able to ask questions during the webcast. We remain interested in creating similar sharing opportunities.
- Late in 2009, SFL launched *GrowUpLearning*, an interactive web site for parents of young children built on the same assessment model used for *PreschoolFirst*. *GrowUpLearning* offers learning activities for young children that parents can easily weave into their daily lives.

### **Expanding the vision**

We noted earlier that SFL supports efforts to align content standards to a set of realistic core principles and to increase the ubiquity of broadband connections in the nation's schools, homes, and to wireless devices elsewhere. In the hope that we can assist in that process, we also offer the following suggestions and observations.

- Above all else, making broadband digital resources universally available and affordable will be a major challenge. On par, American homes have digital

connectivity that is more expensive than and inferior to that of homes in Europe and Japan. Beyond that disparity, there is a need to provide connectivity to those homes that cannot afford it today. Unless all children have connectivity—at home, every day—we will be building our new model on a very shaky foundation. SFL is researching ways to use some of its 4G bandwidth to assist in this effort.

- Digitally literate teachers will be able to find and adapt the resources and tools that help them do their work more effectively. To the extent that schools can focus on disseminating these good ideas more widely, they will reduce the time and expense necessary to equip their staffs with an effective “digital tool kit.” Good teachers will always continue learning; good schools will facilitate that process.
- While education can learn much from corporate experience with technology integration, the needs and network environments of schools and corporations are often different. Schools will need to be judicious in the manner in which they adapt best practices from information systems designed for businesses.
- Many schools have found that open-source software provides them with a means to provide real-world software for students and staff at a fraction of the cost of using similar commercial offerings. Such savings could free funds for other technology investments.
- Similarly, cloud computing applications such as Google Docs provide additional leverage by reducing the amount of computing power required on the student desktop. This results not only in cost savings, but it makes staff and student work available from a central source regardless of the end user’s location. The power of web-based collaborative tools continues to grow and show great potential in education.
- Much progress has been made in recent years in making data collection systems more interoperable. As this trend continues schools should seek this interoperability because it removes the need for customized closed systems, eliminates “information silos,” saves time by eliminating redundancies, and facilitates the broader sharing of information.
- Balancing users’ needs for information against network security will remain a challenge. Staff and student-specific logins can provide a way to assign and modify usage rights based on individual needs and on students’ growth and accomplishments. Increased access can be a powerful motivating factor for students.
- Assessment will also remain a challenge. Learning is not always linear, nor is it always strictly quantifiable. However, the digital classroom offers some new assessment opportunities, if only because digital work product is easily preserved, and it can be evaluated against clearly conceived rubrics in the same manner as more traditional



testing. If this assessment is part of an ongoing, formative process, then “high stakes tests” could take on a very different role.

The transition to a truly effective twenty-first century learning environment will not happen uniformly. Some schools will move more quickly than others. All of us need to remember, though, that this is not a one-time transition, but a process of continual evolution and improvement as new digital technologies become available. For today’s students and teachers, change will be the only constant.

The Source for Learning, Inc., is a not-for-profit educational technologies corporation that works with teachers, children, and families to improve the quality of educational services and materials. The Source for Learning ([www.SourceForLearning.org](http://www.SourceForLearning.org)) provides these online educational services:

- TeachersFirst ([www.TeachersFirst.com](http://www.TeachersFirst.com)) for K-12 teachers
- PreschoolFirst ([www.PreschoolFirst.com](http://www.PreschoolFirst.com)) for pre-K teachers and administrators
- Teachers and Families ([www.TeachersAndFamilies.com](http://www.TeachersAndFamilies.com)) for families of students
- GrowUpLearning ([www.GrowUpLearning.com](http://www.GrowUpLearning.com)) for families of children birth-5 ½
- SFL Streaming, an online digital video library, in development