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ISTE Director on Education Technology and Building 21st Century Schools

by Scott Aronowitz

In a time of economic struggle, teachers and their schools may often feel they're fighting an futile battle, not only to educate their students, but to keep their students and themselves current and competitive in the seemingly ever-changing demands of both the domestic job market and worldwide marketplace of ideas.

No one wants to believe that the United States will ever be anything but a key player in the latter arena, but to maintain that status requires a heavy commitment. In the period of life when education is a full-time pursuit, students must receive substantial training not only in basic skills and critical thinking, but in the skills, technology and even creative development mandatory for innovation in all facets of life and for facing challenges that not long ago were conceived of only by authors of science fiction.

But education professionals have allies working full-time to help them fight that battle, including the International Society for Technology in Education (ISTE)--a membership association that provides advocacy, innovation leadership, and professional development opportunities designed to advance the knowledge and use of technology in education from pre-kindergarten through 12th grade and beyond.

Don Knezek has been CEO of ISTE since 2002. He holds a Ph.D. in educational administration from the University of Texas, and he has worked in (and been an advocate for) educational technology for much of his career.

THE Journal recently spoke with Knezek about the myriad of opportunities schools and teachers have available to them, both for exploring new technological tools and solutions in education and for making optimal use of the resources already at their immediate disposal.

"The real goal," Knezek explained, "lies in moving all the programs in a school forward toward 21st century learning, or digital age learning." This can clear the way for funding that, up to now, has been categorically reserved for departments, projects, and existing programs to be used specifically for supporting the technology-in-education agenda.

ISTE CEO Don Knezek

ISTE's outlook is that, because of the myriad of ways in which advancing technology is changing--even revolutionizing--all aspects of our world, the system that prepares students to participate and compete in that world is inevitably headed toward technology being a critical component of all education. The further ahead of the curve any school or system is, the better prepared it will be to keep current and introduce new concepts and innovations to

its already tech-savvy students.

Advancement of the technology-in-education agenda isn't strictly a mandate for local and state governments to try and implement on their own. In addition to E-Rate--the U.S. Commerce Department's program designed to ensure that as many schools as possible have access to current technology--Knezek said the Obama administration is actively working to provide the necessary resources.

"For example, there are some programs that fared very well in the [American Recovery and Reinvestment Act of 2009]."

Title I, a federal program that dates back to the Elementary and Secondary Education Act of 1965, specifically targets funds for learners on the lower end of the socioeconomic scale. While much of the program and its funding are focused on reading and math, it's beginning to move into science and other core content areas. "The idea is: Those funds would allow districts with low funds to help bring student performance up to accountability standards [in accordance with] No Child Left Behind."

Knezek also cites the Individuals with Disabilities Education Act (IDEA), which provides targeted support for special needs learners. Currently the program's Part B is focused on students ages 3 to 21, but Part C, now in the works, will be geared specifically toward children from birth to age 2.

And there are the several billion dollars to be distributed to states and districts in a variety of ways through a number of programs, specifically targeted toward school innovation and improvement, with goals such as building and facilities improvement, teacher retention, teacher incentives, improved data gathering, and a number of competitive grants at the discretion of the DOE. (More information on this funding can be found here.)

Beginning in the fall there will also be an additional $650 million in state grants for educational technology. "I say, bring that funding to bear on focusing on specific programs, and move teaching into the digital age, and it will translate immediately into technological and digital resources. The opportunities to take that array of categorical funding and focus on moving education forward with [advanced] resources holds significantly more promise than expecting major increases in dedicated funding for technology."

Knezek also said he recommends grass roots efforts on the part of district administrators. "We can seek public-private partnerships, e.g., pilot programs with private vendors, and participate in programs that have philanthropic funding of some sort. [We can] advocate for more dedicated funding for technology from the federal government. The real promise is taking this array of other funding programs and moving it all forward together into the 21st century."

Want What You Have
Even if the federal, state, and local governments are struggling to replenish the technology coffers, help may come from unexpected sources, including existing inventories. Knezek said he recommends that even before investigating new purchases, education professionals should seek to make the most of what they already have in house.

"Clearly [we should be] looking at creative ways to first establish expectations across all curriculum areas for the use of technology. [Start by] working to use technology more wisely for engaging contemporary education.

It's not, he he said, just for math, science, and computer courses. "For example, take language arts. In a

literature class, it's clear that there's a segment of students that excel in face-to-face classroom discussion around concepts of historic writing and current literature. But teachers can also use Web 2.0 tools, such as a blog in which a student can [write] in character as one of the characters in a story they're reading. You can reach a whole new segment of learners when you engage them in alternative methods of learning."

He said he believes teachers can garner serious interest from a whole new set of otherwise indifferent students, if, for example, "they can interact online with an expert in a field they're interested in because activity, that's what turns them on." A teacher might engage more restless students in a project in science or social studies "where they interact with a scientist or social scientist to create a higher level of interest. You can use data and records of things going on in the real world, and they can feel like they're doing science the way scientists do it, rather than simply the way it's traditionally done in class."

Technology provides opportunities to work in authentic settings and on authentic projects that can be embedded either in the community or with a special interest group, or to deal with world issues such as environment, violence, poverty, etc. What students look for in their school experience is relevance, something that's really meaningful. A Pew Foundation study on dropouts showed that 80 percent were in reach of achieving enough credits to graduate, but they didn't feel the work they were doing in school was relevant.

"With the technology many schools and students already have in place, if that technology were applied in sound learning environments across the system, that's where they would get the most benefit," he said.

Technology and Professional Development
Knezek identified professional development as a key component to making existing technology work throughout the academy but said traditional viewpoints about such ongoing training need to evolve.

"If you think of professional development as something you get on the outside and pay for, an economic downturn may not be the best time to get schools to fund such efforts. But if you have districts train within, there's a lot more interest."

In an era when people in so many fields pursue technology as a hobby exclusive of their respective occupations, it's quite unlikely that many districts are completely devoid of technophiles. Professionals who know a little, or even a great deal, about the technologies their districts already employ may be eager to apply this software or that device to an educational goal the school or district hasn't even considered, simply because the technology was purchased with a particular use in mind. This, said Knezek, is where "outside the box" thinking in education finds its most obvious applications.

ISTE, through its National Educational Technology Standards program, offers "Train the Trainers" courses, which are an opportunity for districts to seize on their employees existing knowledge and to have their own respective specialists in educational technology training. This, in turn, allows a district to bring professional development in-house, so to speak, and save a great deal of money on efforts to make its educators and administrators proficient in all the current technological resources. Knezek noted that interest in the courses has skyrocketed since the economic downturn began.

On the Technological Horizon
In spite of the condition of the broader economy, Knezek said he sees a lot of promise for education technology in the near future.

"My forecast is that the technology will continue to get less expensive, specifically the tools and devices themselves. We're seeing a proliferation of tools that are very powerful in education." For example, Knezek pointed to ongoing release cycle from Google. There are "productivity tools like Google Docs, for online storage of materials for a project and useful for remote collaboration, and reference tools like Google Maps. Those sorts of applications are becoming less expensive, and in some cases free of charge."

In addition, he noted, "Web access and research on cell phones, handhelds, [are] becoming cheaper by having such access on less expensive devices than a laptop."

Consumer trends, he said, seem to favor smaller, more portable devices in general for accessing the Web. "Marketplace-wise, we're not looking at a significant increase in non-portable devices. [There should be] moderate but continued increase in laptops, but we're still forecasting a skyrocketing increase in cell phones, smartphones like iPhone." The bottom line is, as in so many circumstances, youth drives the market. "Kids prefer [iPhones]. Even principals are beginning to reconsider 'no cell phone' policies in schools, especially as they move toward having more and more applications to learning."

Plenty of applications are coming down in price as well, and some popular and effective ones are already available free of charge. Moodle, for example, is an open-source learning management system that allows teachers to disseminate lessons; post, receive, and grade assignments; conduct online discussions; give and receive feedback; and communicate with colleagues and students.

"There are apps that are provided either free or on a site subscription basis, like Atomic Learning's online video learning snippets for ready reference." Atomic Learning's video tutorials provide extensive video training in a wide variety of software used in schools and other educational environments, including Office, Moodle, Boardmaker 6, Co:Writer, Dreamweaver, Kidspiration, and even Windows Vista and Mac OS X Leopard.

There are also productivity tools like netTrekker d.i., which accumulates relevant Web sites, allows school to store them for particular subjects, classes, etc. And, Knezek even pointed to an effort to build curriculum resources. "Curriki, an open-source wiki where pros collaborate to build a science curriculum for a district, state, or even a whole nation. They rely on the expertise of the crowd, and while we may be a ways away from having that accepted in the [United States], in places where they struggle for curriculum, that could have a lot of impact."

Make It Happen
But the proverbial battle is over before it begins if you're stuck with a passive battalion. All the money from every conceivable source amounts to little more than kindling unless educators take an active role. Professional development is, of course, paramount, but Knezek identified another way teachers can get involved a little earlier in the process.

"I think it's incumbent upon education leaders to advocate for a reform agenda for learning that's progressive rather than regressive. Just because we have the capacity to move forward doesn't mean we're going to. Educators have to advocate with policy makers because policy makers aren't necessarily going to understand these concepts with the level of sophistication required."

He pointed with some dismay to the NCLB focus on skills that, however necessary, are too rudimentary by themselves to help students acquire the knowledge they need to become real competitors.

"What we've seen over the last several years is such a focus on skills of the last century, on the textbook and the high stakes test, that we've actually seen the focus reduced on preparing students for their futures with skills that prepare them to thrive in the 21st century. We've focused all our resources, all our rewards and punishments on the one isolated indicator; therefore schools have focused their efforts on maybe 15 percent of the learners that need special attention in that area.

"I don't want to come across as though that 15 percent of kids isn't important because that's an important target. But if we're not including students who have the capability to be entrepreneurs, to use technology and other resources to be creative and competitive, then we can't expect to compete worldwide at the top of the economic scale. Until we enrich our accountability system so we enhance what we achieve with students all up and down the education scale, we can never really expect to have a world-class education system."

He said he believes it is going to take a lot more to make Americans competitive than simply bringing underperformers up to par. Historically, it's been those countries that have raised the bar for all students that have achieved the most and whose economies have realized the greatest benefit. A prime example is postwar Japan, which took the innovations of others in both products and manufacturing processes and improved on them in terms of quality, efficiency, and even desirable features.

"Right now we reward principals based on how many kids achieve basic academic skills. We don't even have a serious accountability measure to determine whether schools even have programs that stimulate creativity and innovation, so we [can't adequately measure] whether students are prepared to compete in the 21st century using 21st century resources."

Once again the military analogy comes into play. More today than ever before, like an army, the U.S. education system must keep moving forward or it will inevitably fall behind.

Technology is not the only area in which the U.S. was leader in the last century, and there are plenty of disciplines in which the country can innovate and achieve that can, in turn, restore its economic power. But it appears that in the current century, with a global economy growing ever more interdependent, advancing technology will continue to be a benchmark for achievement on the world stage. And, as always, the tools for--and interest in--that achievement begins in the classroom.

"Leaders [can] set parameters around supporting what their teachers are interested in pursuing," Knezek suggested. "It all boils down to how education leaders lead in preparing teachers to teach with and use technology."

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