Newsmaker:
Education Department's technology head Karen Cator

The Obama administration's education goals are nothing if not ambitious: ensuring that all students graduate from high school college- and career-ready, and raising the proportion of two- and four-year college graduates from 39 percent to 60 percent.

To accomplish this task, the National Education Technology Plan 2010 says schools must adopt "a 21st century model of learning, powered by technology."

How close are we to reaching that goal, and what more will schools need to do to get there? To help answer these questions, *ASBJ* talked with Karen Cator, director of the Office of Educational Technology at the U.S. Department of Education. Cator, a former education director at Apple and a past chair of the Partnership for 21st Century Skills, will be a featured speaker at NSBA's T + L Conference, Oct. 19-22, in Phoenix. She recently shared her thoughts on school board members, personalized education, and "grand challenge" problems with *ASBJ* Senior Editor Lawrence Hardy.

The new technology plan calls for "revolutionary transformation rather than evolutionary tinkering." What does that mean in terms of what the Education Department would like school districts to accomplish in the near future?

The president and Education Secretary Arne Duncan have set a high bar. By 2020, the United States will be the nation with the highest per capita college graduation rate. Currently, we are at about 39 percent, and clearing this bar will require us to successfully graduate 60 percent of our citizens with a college education. To do so, we have to employ strategies to support further and better education at all levels. With new technologies, we have a better opportunity to provide more efficient and effective, personalized, and engaging learning experiences and vastly improve the opportunity for all students—from "cradle to career."

In your view, what is the biggest challenge school districts face in realizing the goals of the new technology plan?

The plan calls for schools and districts to ensure that students and teachers have adequate access to the Internet when and where they need it, and to manage the transition from a predominantly print-based environment to a digital environment. These are certainly challenges, but there are practices that have demonstrated success and road maps to follow. Schools and districts are in different places with respect to what they need to accomplish. But above all, leadership and clarity of vision are paramount to making the kind of progress needed.

What role do you see for school boards?

School boards today are leading in a time of rapid change. They have the opportunity to make decisions that support the vision of education empowered and transformed with personalized learning technologies. School boards may need to set policies around student-owned devices or the use of social media sites. They will need to grapple with the budget and approval of expenditures that hold promise for improving teaching and learning. And, they must understand the social, global, and economic context for setting policies so technology can be leveraged in the best possible ways.

During the past decade, many school districts have made great strides in equipping schools with the latest technology and helping innovative teachers use technology in their classrooms. But many times, there seems to be just a handful of teachers and administrators getting on board—and often working in isolation—while others are ignoring school technology or actively questioning its value. How do we change this dynamic?

In some cases, the focus has been on equipping classrooms and schools, rather than equipping teachers and students. So, we need to better understand the work that students and teachers engage in every day, and keep a laser focus on making sure that technology is improving their ability to do the work of teaching and learning, and that it is available when

and where they need it. That means access needs to be pervasive and close at hand.

The plan calls for teachers and leaders to be highly connected—to the data, content, tools, resources, experts, and learning experiences that will help them be as effective as possible. This higher level of connection supports learning from the innovators and the transfer of best practices from one context to the next. We are working on a project to research and design online communities of practice and exploring ways we can increase transparency in order to scale the innovations.

One of the promises of technology is its ability to individualize and personalize education—by tailoring teaching and learning to specific student needs, providing better ongoing feedback for teachers, and enabling students to take more responsibility for their education. That's the promise. How far are we from making this a reality?

Personalizing learning—the type of learning that takes into account student abilities, interests, background, and experiences, and pays attention to the importance of engagement, affect, and motivation—is at an early stage, but we are starting to see pockets of success throughout our education system. But personalized learning is a practice that will benefit from adaptive algorithms, very large data sets, and high levels of access. We actually have a lot to learn from the work being done in the consumer industry. It is extremely focused on personalizing your online experience with more specific responses to your searches, personalized content, and even advertising. We want to stay focused on creating the best learning environments for our students. Analyzing how learning takes place today in a variety of contexts is helpful.

We also want to look across various professions. How do biologists, journalists, musicians, engineers, nurses, and photographers learn today? How do they stay current with their profession? Education is a knowledge industry, and today technology provides the environment for research and information access, and the tools for data analysis, collaboration, and communication. Technology supports writing and editing, producing and publishing, and increases the opportunity for quantity and quality of feedback for students and teachers, enabling continuous improvement.

The technology plan takes a student-centered, constructivist approach to learning. However, many state assessments follow a more traditional "back-to-basics" philosophy, in which the accumulation of knowledge is valued over the development of skills and competencies. Is there a disconnect here, and, if so, how will this be resolved?

If we only look at the single instance and the current generation of state assessments, and expect these scores to give us the only information about how our schools are doing, then we do create a disconnect. Current state assessments give us some important information but are not designed to assess the full range of skills and competencies articulated in many state standards. So, there is funding under Race to the Top to create new assessments that assess the full range of standards, not just the ones that are testable with multiple choice bubble tests. This next generation of assessments can leverage technological advancements, advancements in the cognitive sciences, and new assessment design principles to best measure student growth.

Still, every day, teachers use multiple measures and strategies for understanding how their students are doing and better tailor learning experiences. For that, we are looking for better algorithms, tools, and resources that will also provide on-the-spot information about the next intervention, the next activity, or the next group project that is recommended. This is the practice of turning data into very usable information. And, this is a part of the equation for creating more personalized learning.

Can you describe the "grand challenge" problems? Why were they included?

Technological innovation has been applied to many other industries, and we were aware as we created the plan that there were some things that needed to be invented for the vision to be fully realized. Some examples include: new assessments that cover the full range of standards and provide information for continuous improvement; better cognitive tutors who can guide students as they learn; the development of a system that provides more relevant and effective content and resources for the learner the more it is used; and better and more effective filtering systems for online safety. There is so much room for innovation as we move from a predominantly print-based environment to one that leverages digital technologies. The grand challenges were included to address some of these more difficult challenges.

What's next for the technology plan? When will it be finalized? And lastly, what would you most like to see the plan accomplish?

We published the draft online so that we could collect public comment. We are incorporating these comments and will be publishing the National Education Technology Plan 1.0 soon.

The purpose of the plan is to articulate the vision, recommendations, and actions for transforming American education by leveraging existing and emerging technologies appropriately and effectively. We want to see teachers and students fully empowered to teach and learn with the best possible content, tools, resources, access to experts near and far, and the best simulations, cognitive tutors, adaptive environments, and embedded assessments so that we have a more productive and efficient education system. Achieving the goals of the plan is essential to realizing the president's and Secretary Duncan's 2020 vision. ■