



## NCTI 2010 Technology Innovators Conference

### **Education and Technology Policy**

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**Summary:** The panel discussed the National Educational Technology Plan, its implications for federal educational technology and assessment policy, and the contributions unexpected partnerships can leverage for education.

### **Discussion**

#### **Karen Cator**

- Draft of the National Education Technology Plan published in March 2010. Much feedback received. Thank you for all the input.
- Context—why are we doing this? The world has gone mobile. The plan is in a mobile context. Social interaction is happening all over the place online. There is a proliferation of digital content as well. And finally, we are moving from a print-based classroom to a digital learning environment.
- President Obama’s goal: by 2020, America will once again have the highest proportion of college graduates. To reach this goal, many more students must reach ever higher standards, necessitating that every student has everything he or she needs to be as productive as possible.
- The National Education Technology Plan components:
  - **Learning:**  
What is 21<sup>st</sup> century expertise? What do you need to learn? How do you learn—including the importance of motivation, language, etc.? How do you apply information? How do you understand information? Personalized learning is the core and essence of the technology plan. Learners of all ages, K-Adult.

Universal Design for learning (UDL) is also incorporated into plan. It is part and parcel of the entire plan. It talks about building accommodations out of the box with an aim towards really helping developers, companies, and designers develop the best tools so that things can be accessible out of the box. The plan talks about connecting formal and informal learning environments—extending the school day by connecting with informal



learning environments. What's happening at summer camps, with mentors, etc.

- **Assessment:**

Assessment consortia have been funded; these followed the common core standards. Race to the Top funds set aside to develop new assessments; these new assessments need to measure the full range of standards and growth over time. Two consortia of states have been awarded these grants. They will be leveraging technology to build these assessments. They will be embedded assessments that provide real time feedback. Adaptive tests will be created where students are getting feedback as they are working, designed so that the feedback loops can be as close as possible to the student, teacher, and parent.

Idea of a persistent learning record—if parents and students had the right to an electronic copy of their persistent learning record they could be more empowered to take charge of their own learning and can take their record with them if they move schools or districts.

Universal Design for learning (UDL) is also important for assessments to make sure we build necessary accommodations into the framework.

- **Teaching:**

Technology has replaced some of the functions people do, but the instrumentation just augments human performance. Technology does not replace teachers; it helps them be more effective. We have to figure out how to make sure teachers are connected to the data, their peers, their mentors, to experts, etc.—to anything they need.

Online education—currently a predominantly print-based classroom and online learning for things such as credit recovery. In this way, online learning is largely individualized. We want to make sure that the best digital materials make their way into the online environment and then also into the physical classroom; we want to be able to leverage the best of complete courses. Connecting informal and formal learning to inspire.

- **Infrastructure:**

24/7 community-wide connectedness is ideal—but, this requires broadband everywhere. Very important to build out broadband across the country.

Online learning must be highly supportive. Students should be able to support themselves. More technology is coming into schools, owned by the school, and operated by the school with the support of IT teams. This is a difficult support environment, so we want to move to a system where



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people and users can support themselves. We need to promote equity so as not to exacerbate a digital divide or a pedagogical divide.

- **Productivity:**

The plan looks at policies, such as moving from seat-time to competency-based learning. It also looks at cost efficiency—what are the inputs and how do they connect with the outputs?

- **R&D:**

What needs to be invented in order to reach our goals?

- **Leadership:**

Leadership is unbelievably important right now. Moving to a digital learning environment, leadership is needed at all levels. Everyone must have the best opportunity to learn.

### **Kumar Garg**

- What role does the White House play in all of this? The White House has a set of tools not usually considered. The Office of Science and Technology Policy (OSTP) has a huge role in education. For instance, they have incredible reflections on the rise of the Internet.
- The president's Educate to Innovate initiative aims to put science and technology education at the forefront. The president has put forth a call to action. What are the ways we can build an all-hands-on-deck call? Encouraging state governments, foundations, and individuals to do more. The STEM folks are trying to get into schools, as one example. It would be great to build on this and pair up with the technology community. There are instances where such motivation has led to a public/private partnership—and our role at OSTP was helping all of these folks communicate with each other.
- OSTP has also looked at the roles games can play as important learning tools. Game developers think a lot about staying in the zone, proximal development, etc. These are things in education we think about all the time. So, how can we leverage this? Some of the foundations and the gaming community came together to discuss this. They are talking about creating new games focused on math and science learning. These are just examples of an underappreciated aspect—we need people to come to us with concrete ideas. ***I encourage you to give us ideas and feedback about what is missing and what is possible.***
  - We are interested in the ability for online learning to provide instruction faster and in a more modular form (e.g., personalized tutors in an online framework). We are interested in the role games can play. This is an emerging area. How does the development of games and how can game mechanics improve the self assessment of the student? How can continuous development be transferred to education settings? *Fold It* is a



protein folding game [see <http://fold.it/portal/info/science>]. Typically folding proteins is a very complex process and the question was whether novices could do it. Novice players started to iterate and learn. They didn't need the advanced degree to figure it out. This showcases the whole test bed idea.

- There is a really important role the government can play around funding, development, and rules and regulations. There are trends that we are most excited about. One is the notion of individualized and customized learning. Differentiated learning matters. How does technology allow for individualized learning? Also, anything that is cheaper and faster. Skill building, for example, is an ever increasing need. How does technology support that? Also, online communities are food for thought. They are a way of getting live feedback and constant improvement.
  - Wireless Generation has been great about exploring learning analytics, for example. They looked at whether you should teach the letter “b” and “d” close to each other or far apart? They actually looked at the data and it turns out that English learners are better off when you teach them far apart, but if you're an English speaker, you pick it up better if you teach them close to each other. Data can teach us about new learning pathways.
- What are some of the challenges? We have to be cognizant of the fact that this is a space we are trying to take online and get a lot more data. Education is a tough market. There are 15,000 school districts across the nation and they are very different from one another. Also, education is a fragmented market. There is an underinvestment from private industry and from state government in education. We spend less than 1% on R&D in education—we can do a lot more in R&D. OSTP works with all the science agencies—advanced learning technology is becoming more important to some of these agencies.

### **Angelo Panar**

- Focused on standards, but not on the process for implementing the standards. Idea: establish standards, but increase innovation if people aren't told how to implement them. Establishing standards is a much slower process to develop. It's too slow, so they generally do not allow you to create a standard and get it to commercial availability until the next standard has already been developed. The market demands consensus on a set of standards to build products on, so collaboration is a must. People working in silos leads to redundancy.
- Significant amount of learning content and resources available on the Internet. Much of this content is tagged as “learning.” Others are simply encountered like YouTube, blogs, etc., and people are learning, but we're unaware. Don't have a measure for this type of learning. It's very ad hoc and unstructured and difficult to



give credit to those folks who have gone through this content. It doesn't match what we traditionally view as effective or as a "standard."

- The activity between the Department of Defense, the Department of Energy, and the Department of Education is how we can provide visibility. Content will continue to be created and at a faster pace on the Internet. How do we make this content that can be used for learning? How do we make it visible and something that can be used in a learning environment? How does it link to what is trying to be achieved in the classroom? How can we measure the effectiveness of this content? If we can do this, maybe we can learn how to package the content or make the content that is out there better. But, to do this, we need to find out what the result of this content is and if the content is effective.
- Education is not straightforward in terms of standards. *Learning Registry* ([www.LearningRegistry.org](http://www.LearningRegistry.org)) is a project with the idea that there is a lot of content being continually produced; a network needs to be created that allows the content to be exposed through an open architecture. Barriers for participation lowered. This enables a broader sense of what is available for search. The content can be repurposed and repackaged and we want people to do that. The value add of the system is that it will track the context in which the content was used. Who used it and how was it used? The path to the delivery may be different, but the content sources are the same. We want to track the consumption side. Did the environment in which the content was delivered make it more effective? This could start to inform the producers of the content. The Learning Registry is just a platform; it isn't a solution. It's a foundation for which we can do the evaluation—what works, what doesn't work, how can we reduce the redundancy?

### Discussion and Q&A:

**Question** (Steve Jacobs, Ideal Group): Kumar mentioned "wireless" and Karen mentioned "mobile." How have comments submitted to the National Education Technology Plan been integrated into the final plan? Also, the audience here may have some contributions. How do we get engaged?

- **Karen Cator:** We incorporated comments with the one lens of not making it twice as long. Many people wanted more examples and specificities. We did try to maintain a level that drilled down to all the existing things we have today, but we also wanted to maintain a vision that was at a high level. Also, a lot of people loved the plan, but wanted to know what we are going to do to get started. There is a part at the end of the executive summary that is called "Getting Started Now." Read those 3-4 pages. It helps everyone in the field understand how they can get started now. Look at the plan and think about *what can I do* to further the cause.

There's so much going on across government agencies and across the country. We are starting a project on doing design research on communities of practice.



Can we create this upper concept of community online for professional educators? We will be thinking this through and doing some design work. We're looking at existing technology and figuring out how we can further integration and interaction across communities.

- **Kumar Garg:** One way folks can help is to create more “do tanks” (as opposed to think tanks). Taking ideas and putting them into practice requires more intellectual work. Who is the right set of folks that can come together and make a meaningful contribution? Think about public/private practices, for example. There is one example of this that has really taken off. It's called “Text for Babies.” Moms can sign up to get mobile information about health, practices, etc., about their babies, such as reminders for check-ups. This has grown rapidly and they are now thinking about expanding to “Text for Toddlers.” Big ideas start small. A second area is that we are huge believers in low-cost devices. Starting to actually workshop out such devices is needed. Anything that could be used to support learning outcomes.

**Question** (Tracy Gray, NCTI): This is a question for Karen. We are anxious to see the new assessment tools coming out, but what about the lack of or limited infrastructure in schools to support such assessments? How will this be addressed?

- **Karen Cator:** We are going to address it and have to address it. We have put a date on the calendar of August 2012. The reality is that these new assessments are going to be technology based. We really do need to have the infrastructure in place a year ahead (they will be in place 2013-2014). There is an effort to build a map to see where things are and are not connected so we can begin to put resources where they need to be. We don't have this information yet. There is a lot of work do to. As you look at the layers, there is work happening at every single layer. I have a lot of optimism and hope.

**Comment** (Jackie Hess, AED): The policy context in which schools exist is one of fear of losing your job, particularly related to turnaround reforms. Schools and teachers are being held accountable around assessments and they can't see down the road to 2014 to what is coming.

- **Karen Cator:** We hear this all over the place. We have this innovation platform but at the same time our schools and classroom environments look much the same as they have in the past. We need to shine a big spotlight on those schools that are making this transition. We need leadership at all levels, especially in the classroom. There are thousands of classrooms and teachers across the nation that are very compelling and doing very innovative things. We need to highlight these examples. We then need to build the scaffolding so that others can follow along. This is part of the rationale for building the learning communities. These



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learning communities can serve as a way to better transparency about what is happening.

- **Kumar Garg:** The system is under a huge amount of pressure and stresses. One of the opportunities is to see it as a feature and a flaw. The Department of Education is going to put more resources into turnaround than they have ever put. We are trying to identify who are these sets of partners who are going to help districts with turnaround?

**Question** (Jackie Hess, AED): With the change in political complexion of the House in the next congress, do the White House and its departments have a plan for protecting the investment in ed tech?

- **Kumar Garg:** The president has talked about this a lot. We need to focus on making investments now and over the next couple of years that are focused on building our recovery. The president is focused on the fiscal issues, but we do not want to cut major investments in education that will hurt our recovery. We see technology as a core part of where learning is going. Unfortunately, I can't see through the crystal ball.
- **Karen Cator:** I think education technology is a sweet spot for bipartisan support. If we're thinking about education as making this country economically viable, if education is a matter of national security, and it is also a matter of social justice, then we have to figure out best strategies for figuring out how every citizen can learn what they need to do. And, to do this we have to leverage technology.