



NCTI 2009 Innovators Conference

The Net Generation: Powered by Technology

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Summary: This session focused on the areas of science, technology, engineering, and mathematics (STEM) with three different perspectives of STEM education and 21st Century Skills for technology-literate learners.

Discussion

Alan Brightman

- Strong motivation for independence disabled and non disabled students experience and the pressure that creates for technology developers and educators:
 - Technology makes a difference for students with disabilities.
 - Tools of today can facilitate learning as nothing has before.
 - Technologies can change the identity of individuals with disabilities.

Monica Martinez

- KnowledgeWorks Forecast 2020 asks us to think about what we want students to be able to have in 2020. In working with this tool, it is important to understand the future. Map conceives of three decades: 1990's are about consumption, 2000's saw to participation, 2010's is about creation. We need innovators and entrepreneurs to create and remake learning.
- **The Maker's Economy:** where production and creation are becoming more possible with technology. New technologies for small scale designs will be possible. Consumers become creators. Productions are also more local and more customized at a lower cost. The line between consumers and producers then is blurring as Donald Tapscott has discussed in coining the term "Prosumer." A recent example is: Etsy (<http://www.etsy.com/>) that allows people to buy and sell hand made products online. The MIT Fab Lab (<http://fab.cba.mit.edu/>) is another example that is working with local communities to help them fabricate objects and solutions to problems.
- What are the **learning outcomes** for today's youth? What do they need to know? How do we create a culture of learning? Looking at social networking sites, it is clear that youth are interacting with and learning from each other. Today's youth are not going to



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wait for government to solve the problems they inherit. These students are digital natives who are going to use those tools as they need to.

- **New Tech Network.** Focused on self direction and collaboration. Three key components:
 1. Technology that enables;
 2. Culture of contribution/sharing/collaboration; and
 3. Teaching that engages such as project-based learning and team work.
- Instituted a 1:1 laptop program so the students have an authentic experience and can access the Internet and a learning management system (LMS) that includes projects and rubrics. Teachers also use the LMS and they use it for their work. Important dimension is the report card that parents and teachers can access. Grades are accumulation of 21st century skills. Most powerful experience to date is from the business community. Each school gets to select their own outcomes.

Jan Morrison

- What is STEM Education? The acronym describes what she does. Acronym has helped take the periods out in a transdisciplinary way that is sufficient for college readiness without remediation. Currently there are a lot of college kids that require remediation.
- Why is it important to define this? Part of the rhetoric and op-eds is now part of the Race To The Top (RTTT) initiative and administration focus. What does it mean to have STEM disciplines and to teach with STEM?
- Intended outcomes for STEM education is to promote equity regardless of disability, rural/urban status, gender, etc. STEM education involves creating a level platform. Should New York state be in competition with other states? No, the nation needs to compete globally. Outcome is to treat our education system as a single system in a way that maximizes knowledge capture and transfer and sharing best practice. Some initiatives underway include:
- STEM as a platform:
 - College ready standards in the “common core”, standards that are clearer, higher, fewer.
 - New curricular approaches for all students and all teachers.
 - Source and test ground for innovations.
 - How does this all happen? State STEM Networks. Intra- and interstate collaborative networks.



- OHIO STEM Learning Network
 - Public-Private partnership.
 - OH made the learning network as a prototype for communication and dissemination.
 - 2 years into the initiative and all schools are open and talking to each other.
 - Hub managers. Applied for funding as a cooperative.
 - Gates Foundation is trying to figure out the national approach.
 - Texas created 48 incubator schools and will be moving to 90 schools.
- MIT Fab Lab
 - What happens is that children use the Fab Lab and are in contact with children in Kenya.

Sheryl Burgstahler

- Focus in DO-IT (Disabilities Opportunities Internetworking and Technology) on making sure college students are:
 1. Prepared
 2. Have access
 3. Have acceptance
- Challenges university students with disabilities face:
 - Diminished support systems after high school.
 - Little access to role models.
 - Lack of access.
 - Inadequate self-advocacy.
 - Inadequate accommodations.
 - Low expectations.
- Video: See <http://www.washington.edu/doi/Video/>.

Discussion and Q&A

Comment from Alan Brightman: The future of learning was the Steve Jobs initiative to give an Apple to all students in computer. Steve gave an Apple to all schools, but the computers were not used because the schools didn't know how to use them. *Teachers complained they were*



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not trained for both the disabled students and the computers. The ACOT, Apple Classroom of Tomorrow, and the research showed there was no difference in terms of learning.

Question: One of the products was the 411 on disability disclosure. Feedback on this document was that guide was good, but the adults are all messed up. We don't have to fix the kids. The kids are fine, is that what you are saying?

- **Sheryl Burghstahler:** People need to have positive experiences. In events on campus with 50 kids each year, we host a wide range of disabilities. Kids with behavior issues are a little standoffish at first. Other kids who don't have obvious disabilities feel outed because they are in this group. The kids were accepting of others' questions and answered without judgment. Kids are not born with negative attitudes.
- **Monica Martinez:** Kids need to work in teams and kids don't often get to pick which team mates they have. More complaints from parents than from kids if the teams are not made up of honor students.

Question: How are Monica's teachers and students chosen?

- **Monica Martinez:** They aren't selected.

Question: What is relationship between working collaboratively and learning in depth?

- **Monica Martinez:** At NewTech, all projects have to be aligned to the content standards. They have to hit content and they have to hit depth. All students need to do the standards-based assessment.
- **Jan Morrison:** There are a number of programs working to develop portfolios, this effort is led by IBM and Cisco. It is accessible and good for teacher PD.
- **Monica Martinez:** Digital portfolios are also used by NewTech. The data is collected for that portfolios and college to work readiness assessment (CTWRA), used in 8 schools this year.

Question: When new math standards came out in 1980s, there was a new project-based curriculum. What type of backlash could there be from the project-based view?

- **Jan Morrison:** It is riskier now to remain at status quo than to adopt innovation. There are currently huge educational problems. In the math wars there is a rich history of what works and what does not in meeting the needs of students. Issues now are more about engagement and deliverable then it is about the type of test.