

# DIGITAL INITIATIVES

( A quarterly newsletter on educational technology at SUSE )



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Educational goals should drive instructional design and delivery—not simply that we have internet and mobile devices. As a teacher in the DC public and public charter schools, if a technology didn't add value or proved cumbersome or unreliable, I wasn't going to use it in the classroom. On the other hand, the right tools allowed me to present information in understandable and dynamic ways, and to more efficiently share and provide recognition for student work, interact with students, and expand the power of assessments and data. Still, even some "right tools" don't come that way out of the box; for instance, one of the most compelling ways I used the SMARTBoard in my classroom was as a platform for accessing the internet (often with an iPad connected to the same site for remote control) rather than with its proprietary software. A manual or conventional class on SMARTBoards was not going to teach me that, which is why I have joined SUSE IT.

Within my role—a new one for the school—I provide support for the adoption and effective use of technologies in teaching and learning. Today's learners are doing fascinating things with content and ideas, and I am passionate about how educationally sound approaches can leverage these to enrich what happens in (and beyond) the classroom. As a former educator and graduate of the POLS Program, I am familiar with curriculum development, assessment, school systems, SUSE courses, and educational research. Since arriving in June, I have had the chance to work with several members of the SUSE community in implementing technologies for the learning environment, some of whom you will find in this newsletter. I am enthusiastic about continuing to contribute to digital initiatives within the School of Education.

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## Ann Porteus and Susan O'Hara deploy i>clickers in Ed200

This fall, Ann Porteus and Susan O'Hara are serious about active, peer learning in their Data Analysis and Interpretation courses. Both courses will use the *i>clicker*, a wireless handheld response system that allows students to anonymously submit answers to conceptually-driven questions projected at the front of the classroom. These questions, called *Braincandy* by TA Bryan Henderson who runs a nonprofit by the same name ([www.braincandy.org](http://www.braincandy.org)), are based on strategically written answer choices representing common student misconceptions.



Not only does the interactive technology create a safe, low-stakes environment for student participation, but it also allows voting data to be tabulated and displayed in a real-time feedback loop. In turn, instructors can use this formative assessment data as a catalyst for peer-to-peer learning. They do so by displaying a histogram of voting results and informing students that they will get to vote on the same question again, but only after first providing justification behind their initial vote to a fellow classmate.

As Porteus' TA in 200A for the past three years, Henderson introduced the clicker concept, and together they have been figuring out how to successfully embed polling questions into an existing introductory statistics curriculum. With two 200A courses being offered concurrently this fall, he, Porteus, and O'Hara are enthusiastic about moving these efforts forward together.

Student feedback consistently indicates that 200A students really like the clicker approach because it allows them to try out their answers anonymously, see how others were thinking, and then engage in active discussion in small groups about the content of their answers.



*Interested in using i>clickers or another technology in your course? Contact Pamela Levine at SUSE IT.*

## [pinterest.com/StanfordEdtech](http://pinterest.com/StanfordEdtech)

SUSE IT has launched a new space to share about emerging technologies for education. **A good URL to share with SUSE students**, the site points readers towards free edtech resources for the K-12 classroom, online trainings for technical competencies, and tools that can help with completing and presenting research projects and masters theses.

## John Krumboltz modifies Blackboard for a better peer-learning environment



On the door to John Krumboltz' office, you'll see a sign with the words "Quiet Rebel." It's not surprising, then, that he wasn't satisfied with Blackboard's default discussion tool for his Mediation for Dispute Resolution course. When effective, online forums can further in-class discussions and progress the peer learning experience beyond a question-and-answer format with the instructor positioned as expert and sole facilitator. This only happens, however, if participants log in, read, post responses, and keep coming back. For Krumboltz and TA Denise Benatar, online discourse was not encouraged or sustained within Blackboard's original structure, as posts and comments were not readily visible or accessible to users.

Krumboltz and Benatar worked with SUSE IT to explore and evaluate a variety of online communication and course management tools. Ultimately, rather than abandon Blackboard, which they liked for some of its other features and the fact that it is Stanford-supported, they upgraded to a version of the platform that enabled them to manipulate its design. They then overhauled how students would experience Ed131 online by:


1) repurposing the Blog tool to be a more open discussion area that is the first thing students see upon logging in, 2) de-cluttering the interface by removing all modules and links that wouldn't be used in the course, 3) re-naming the tools with descriptors more intuitive for the course, and 4) modifying the color scheme to reflect Krumboltz' personal style, for good measure.

As educational practices are formed and maintained within the constraints of the learning environment, instructors seeking to improve online peer-learning interactions should evaluate the platform in which they operate. Of course, the right technology provides only the *framework* for communication—arguably, the instructor's most direct role in facilitating peer-learning and interaction comes from the quantity and quality of direction and feedback he or she provides. In a meta-analysis on the effectiveness of online as compared with face-to-face education, instructor involvement was the most significant contributor among all identified factors to the quality of student experiences and learning outcomes (Institute for Higher Education Policy, 200; Zhao, et al., 2005).

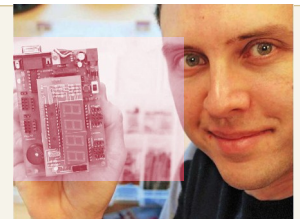
Institute for Higher Education Policy. (2000). Quality online: Benchmarks for success in internet based distance education. Washington, DC: National Education Association.

Zhao, Y., Lei, J., Yan, B., Lai, C., & Tan, H. S. (2005). What makes the difference? A practical analysis of research on the effectiveness of distance education. *Teachers College Record*, 107, 18361884.

## Interview with Paulo Blikstein


 What is successful technology integration in teaching and learning?

**Paulo Blikstein:** I think there are two types of education technologies. The first include technologies that improve what you already do—they are not necessarily revolutionary, but they make the management of the classroom or the students easier. There are many of these tools for optimizing communications and improving the visibility of students' work. For example, I use blogs for students to post their work, so instead of emailing they create blog posts and upload work that the whole classroom can see and comment on. Even people from outside can see more or less what goes on in the courses.



Another thing that is interesting are the technologies for peer-learning and peer-help, where students can post questions and other students can answer the questions. I've used this in my class. Especially where you have a lot of technical content, it can be a really powerful tool because a lot of the time some students know the answer and they can help each other get things done instead of waiting for the professor. There are all kinds of technologies to achieve this such as peer discussion groups, email lists, blogs, forums.

The second type of education technologies are what I call constructive technologies, such as the 3D printer, laser cutter, and equipment in my lab, that give students radically new tools to create projects that simply weren't possible before. Before you could do a website or use particular software to develop something for learning about equations in mathematics, but now with these tangible, digital fabrication technologies, students can actually create physical interfaces that might be better than just manipulating things on a computer screen. They offer students a completely new way of producing things for the class. I think in education this second type of technologies are particularly important because they allow our students to experiment with all kinds of media and don't limit what they can do to on-screen products.

 In your *Beyond Bits and Atoms* course, you describe that a major flaw of many edtech solutions is that they are too technocentric. What are some considerations in using technology in education?

**Paulo Blikstein:** There are some things that people have been looking at, for example videotaping classes, that come to mind. For things that are purely informational or lecture—where you don't need a lot of interactivity—I think those things can be particularly useful because you can give access to your students as well as reach a lot more people. But often it's not the case that it's just a lecture—a lot of classes at the School of Education use a discussion group format, and I think you need to be careful about just videotaping because you might lose all of the interaction. You have to really analyze what kind of content you are teaching; if it is content that requires a lot of discussion, questions, and back-and-forth between students and teachers, you might want to consider whether it's really a good idea to put it online.

What is doable is you can look at your 3-hour class and see which parts can be made into a video lecture and which parts cannot. Sometimes there are parts that are suitable for a video, and that would allow some more time for discussion. But I think you really need to carefully analyze before jumping in. One thing I am considering for my class is asking my students to go to Codecademy or Khan Academy's computer science learning environments to complete the programming tutorials as an introduction, so that when they get to class they already know about it. I think for general purpose skills like that, there are a lot of technologies coming along that will be very useful because they help get students to your class with the technical training.