The Unfulfilled Promise Of Educational Technology

BY MICHAEL BLANDING

Not only has technology entered nearly every area of our personal life, it’s the rare industry that isn’t computerized, networked, and advertised on Facebook.

Except one: education.

Outside of the occasional computer lab, basic webpage, or iPad in the classroom, schools have stubbornly resisted technological innovation.

“If you go to the smallest mom-and-pop restaurant, you’ll find a point-of-sale terminal behind the counter and no one would think of doing inventory without the use of technology,” says John Jong-Hyun Kim, a senior lecturer and William Henry Bloomberg fellow at Harvard Business School. “And yet, schools have been slow to adopt and integrate technology in the classroom.”

Despite a doubling in funds devoted to education over the last three decades, educational performance in the United States has shown only marginal improvement, and lags that of other developed countries in Europe and Asia. While some school districts have excelled, the majority of districts, including most urban districts, have stagnated.

“Education is the foundation for a just society, and being able to provide a high level of public education for all students has long been a goal in this country,” says Kim, who is cochair of the Public Education Leadership Project (PELP), a joint project of HBS and Harvard Graduate School of Education. He is also founder and CEO of the District Management Council, an organization that works with school districts to improve management practices.
What both organizations have encountered is that, especially in urban school districts, excellence is found in pockets—terrific schools in underperforming districts or engaging classrooms in terrible schools—but that high performance is lacking across entire school systems. “The question is,” says Kim, “is can you do it at scale?”

That’s the problem he explores in the HBS Teaching Note, *Technology Innovations in K-12 Education*, cowritten with Roniesha Copeland (HBS MBA ’14), and research assistant Christine S. An. The report reviews the burgeoning interest in “edtech,” or the use of technology in the classroom.

Scale, after all, is one thing technology has been good at implementing, and schools are ripe for innovation. “School design has not changed much in over a hundred years,” says Kim. “We are still teaching for an industrial model that was designed to put out a homogenous product, rather than helping individual students explore what they want to learn and how they can best learn it.”

That isn’t to say that schools don’t need objective standards, says Kim. “But the question is with 50 million public school students in America, how can you provide a more individualized learning experience? If you had an experience with a terrific teacher, you probably remember feeling that that teacher provided you with individual attention and explained things in a way you understood. But how do you do that at scale? That’s where technology is so promising.”

**Three transformations**

Kim identifies three ways in which technology can transform education: personalization, access, and productivity.

**Personalization:** Every child has different needs and learns in different ways. What if technology could customize classes so that students received the lessons they needed without reviewing material they already knew? That is the idea behind *School of One*, an approach to learning piloted by New York City Department of Education, which assesses each student and gives them a personalized itinerary for the day at different learning centers. In addition to studying various subjects, students are given lessons in different “modalities” depending on how they learn best—whether through lectures, videos, computer programs, or group projects. “Rather than having a classroom where you have a teacher in front of 25 students all day long, this essentially says, Let’s figure out what students need and how they learn best, and then let’s offer them an individualized approach,” explains Kim.
The concept has been successful at increasing test scores for 6th and 7th graders, and has been spun off into a nationwide program Teach to One, which Kim profiles in a new HBS case. The program has since been started in 15 schools in New York, Chicago, Washington, D.C., New Jersey, and Charlotte, North Carolina.

Access: The New York Times declared 2012 the “year of the MOOC,” referring to massive open online courses pioneered by many universities that put their lectures and course content online. That has provided new access to students on two dimensions, says Kim, distance and time. Distance, because now students from all over the world can take courses in specialized topics no matter where they live; time, because they can take these courses at their own pace. Despite the revolutionary nature of MOOCs, however, there is conflicting data on their results. “There is scant evidence that most people taking these courses are completing them, or benefitting from them in any way,” says Kim.

In part, he says, it may be because offerings have been little more than just lectures repackaged as videos. The next generation of MOOCs, he adds, needs to be truly interactive, citing HBS’s own CORe program as a model that uses the online medium to create something new. On the elementary level, Kim cites Khan Academy as a program that really helps students learn on their own time. By presenting bite-sized chunks of learning in hands-on videos, Khan allows students to work through discrete concepts as quickly or as slowly as desired.

Productivity: Less visibly, apps and software programs have been helping teachers better manage their time so that they can spend less energy on administrative work and more on teaching. “This is probably the least sexy of the innovations we looked at,” says Kim. Nevertheless, for teachers buried in paperwork, it can be a game-changer.

Programs are developing that allow teachers to share lesson plans and streamline grading. On a district level, technology can help pair teachers and students. “Currently, nearly 80 percent of school funding is spent on people,” says Kim. The more efficient districts are at scheduling their time, the more bang they’ll get for their buck.

Making edtech profitable

Investment in education technology has increased dramatically over the past decade, with venture capital firms driving investments of more than $1 billion in 2012 alone. Despite high hopes, however, edtech still faces considerable challenges.
Technology firms must figure out how to turn a profit on edtech applications—whether that means dealing directly with school districts, which can be bureaucratic and cumbersome, or marketing directly to teachers and parents, who can be hard to reach.

The biggest challenge to edtech may come from teachers themselves, some of whom are concerned about being replaced by technology or having control of the classroom taken away from them. Ironically, says Kim, more experienced teachers were generally more accepting of the School of One concept than younger ones.

“Experienced teachers know how difficult it is to teach to so many students, and tended to welcome the help that technology brings, while younger teachers often had more idealistic views of how they were going to individualize their lessons, and were sometimes threatened by it.”

A certain amount of wariness by schools and teachers about how new practices will affect students is probably a good thing, says Kim. At the same time, business and technology still offer the best chance for implementing innovations on a wide scale—if they can learn how to do it successfully.

“Businesses are really good at adopting and scaling things, and school districts in general have not had to do that before,” he says.

“Technology holds a lot of promise, but we haven’t seen the proof yet.”

About the author: Michael Blanding is a senior writer for Harvard Business School Working Knowledge.