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Creative Disruption

How to Change the Way Kids Learn

Clayton Christensen, Michael Horn and Curtis Johnson 08.11.08

Computers have failed to improve education. That's because no one's gotten disruptive with technology.

Why do U.S. public schools struggle so to improve? Everyone has a theory. Is it a lack of money? Maybe, but the U.S. spends more per student ($9,000) on K-12 public education than all but a few countries and still lags in results. Also blamed: student disaffection, parental neglect, intransigent teachers unions and flaws in the way we measure performance.

Elements of all these play a part, but the underlying problem is deeper. It comes down to the fact that schools aren't motivating the children, and they are unmotivating because they are far too monolithic and standardized. The system doesn't account for the fact that every student learns in a different way. Harvard psychologist Howard Gardner first posited the theory of "multiple intelligences" in the 1980s, and it has gained wide acceptance since. His classification system now numbers eight kinds of intelligence. You cannot compare the wiring of Michael Jordan's brain (a kinesthetic intelligence) to that of a Frank Lloyd Wright (spatial) or a Walt Whitman (linguistic). Every student has a different blend of intelligence and within that a different learning style and pace.

In the 1800s teachers in a one-room schoolhouse would have no problem customizing their approach to each student. But at the turn of the 19th century, as schools filled up with 30 or 40 kids in a room, standardization became the norm. Schools turned into factories and ever since have resisted all efforts to break from a monolithic batch-process approach. Students who succeed today do so because their intelligence happens to match the dominant paradigm in use in a particular classroom, or they've somehow found a way to adapt to it.
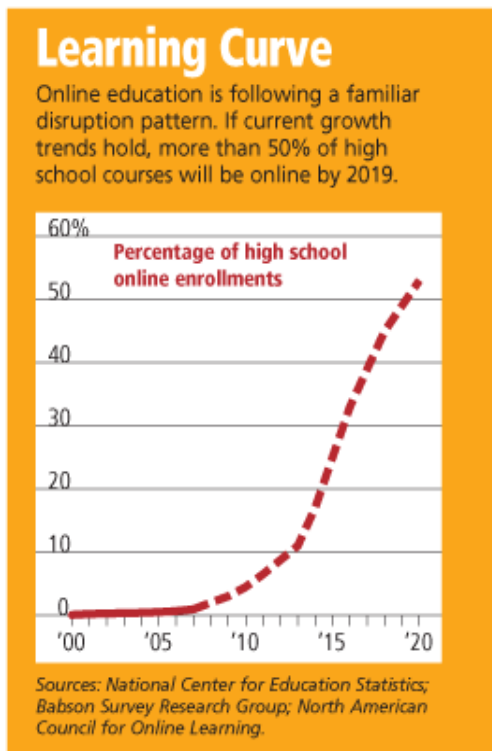
If the goal is to educate all students so they have an all-American shot at realizing their dreams, we must find a way to disrupt the monolithic classroom and move toward a student-centric model. The way to get there is with computer-based learning. Technology offers students the ability to learn in ways that match their intelligence types in the places and at the pace they prefer. The hardware exists. The software is emerging. Now all that has to change is the system around it. Change will face mighty resistance, but we predict it will happen in the next ten years.

Skeptics will say the U.S. has spent $60 billion putting computers into schools over the last two decades and has still failed to transform the classroom—save possibly to increase costs and draw resources away from other school priorities. This should come as no surprise. Schools have done what virtually every organization does when implementing an innovation: cram it into its existing operating model to sustain what it already does. Merrill Lynch developed a solid online trading system to be used by customers. It could have fended off the E-Trades of the world. But all Merrill did was give the new system to its army of brokers so they could handle existing clients better. It didn't transform anything. This is perfectly predictable, perfectly logical—and perfectly wrong.

The way to implement an innovation so it will transform an organization is to implement it disruptively. That means not attaching it to the existing paradigm and serving existing customers but targeting those not being served or not buying what's served, people we call nonconsumers. That way, all the new approach has to do is be better than a nonexistent alternative.

Disruptive innovations tend to be simpler and more affordable than existing products. This allows them to take root in undemanding applications within a new market or arena of competition. They start to handle more complicated problems, and then they take over and supplant the old way of doing things. Sony chose to sell its tinny little transistor radio to teenagers who had never had a radio because they couldn't afford a tabletop RCA model. Bit by bit, that radio improved until, at some point, it became a superior alternative. Japanese car companies did this to Detroit. Nucor's mini mills did it to U.S. Steel. Google started out with ads from bicycle repair shops.

Computer-based learning is a radar blip now but is moving up the adoption curve we've seen in many industries (see chart below). Enrollments in state-accredited online courses went from 45,000 in 2000 to roughly 1 million today. That accounts for 1% of all courses, but we estimate that, given a looming shortage of teachers and widespread state budget crises, online learning will continue to gain market share until, by 2019, it surpasses live instruction.

Learning Curve

Online education is following a familiar disruption pattern. If current growth trends hold, more than 50% of high school courses will be online by 2019.

Percentage of high school online enrollments

Sources: National Center for Education Statistics; Babson Survey Research Group; North American Council for Online Learning.

There are many areas of nonconsumption within schools where this is already taking place. One is Advanced Placement classes, those college-level courses offered to high school students. Schools offer only a fraction of the 34 courses for which AP exams are available. One-third of high school students attend schools that make no advanced courses available at all, according to a 2007 Department of Education report.

Other pockets of nonconsumption include rural or small schools that are unable to offer breadth; prekindergarten courses; remedial courses students must take to graduate; and homeschooling, the choice for an estimated 2 million students today.

As online classes improve with better video and social networking tools, they can get more customized and engaging. Costs should fall. Already it costs less to educate a student online ($200 to $600 per course) than it does in a classroom ($600).

Plenty of companies have sprung up around online learning. Apex Learning, started by Microsoft cofounder Paul Allen, started out by offering online AP courses that schools couldn't afford to offer. In the 2003–04 school year it enrolled 8,400 students. Last year that number was 30,200.

A professor at Brigham Young University created the Virtual ChemLab in 2003, and it now serves 150,000 high school chemistry students across the country. The professor took 2,500 photos and 220 videos and got videogame designers to create a simulated laboratory to allow students to do online many of the same things they would do with real Bunsen burners. While virtual labs aren't as good as real ones, they are better than the alternative, which is nothing.

A group of 50 Minnesota teachers laid off from rural schools because of declining enrollments banded together in 2004 to start an online charter school called Blue Sky. They each have the same number of students as they did before (150), but the teachers describe their bond with each student as far stronger and more nuanced. The students call or e-mail at all hours because they are taking courses at all hours. Online, each student is an individual. Even children who were formerly behavior problems in school seem to have shaped up. It's hard to be a behavior problem in a class of one.

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