

COMMENTARY

Education Technology Policy for a 21st Century Learning System

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Educational technology has always overpromised and underdelivered. Despite the glitz and hype of technology, no one has figured out a more efficient and effective way of educating students than placing a teacher in front of a bunch of them. Technology has largely been subject to this existing production system: at most, it has been a valuable adjunct. Until now.

Internet technology has the capacity to change the learning production system in three important ways. First, it creates the capacity to move from the existing batch processing system to a much more individualized learning system capable of matching learning style and pace to a student's needs. Second, it can help make the learning system smart. Adaptive software responds to student activity providing options, assistance, and challenges. Third, Internet-based technology has the capacity to switch learning production from its traditional hierarchy to a much more open network.

The potential of technology and the inertia of the existing institution produce a difficult public policy arena. Technology will continue to develop even if the state does nothing at all. Computers, tablets, smartphones, and thousands of apps will continue to appear. Vendors will jockey to incorporate technology into the products they sell, and, of course, sew up proprietary rights as they do so. Venture capitalists will continue to fund applications that look promising. A robust industry of inventors and developers will create new curricula, entire instructional systems, and software for managing educational talent, aggregating data, and analyzing it.

These changes will occur regardless of what the state does. Yet, the State of California has a strong interest in how learning technology is developed and applied. It has a strong interest in being a leader in educational innovation, where it is currently seen as a laggard. One might legitimately ask why should California, the headwaters of the digital revolution, be stuck in the eddies of early 20th Century school design? With the right policies, California could leap from its existing model of education to what I describe as Learning 2.0, the next complete system upgrade.

POLICY OPTIONS

There is no shortage of opinion about needed technology policies. [Digital Learning Now!](#) has a list as does the [California Council on Science and Technology](#), the [Pacific Research Institute](#), and *Education Week*. Instead of a long list, I suggest three policies that have substantial potential leverage to change how students learn:

First, California should support technology applications where the benefits and returns on investment can be shown readily and concretely. Consider four specific instructional areas: teaching English Language Learners, remediation, Special Education, and the transition from high school to higher education. Each of these heavily impacts public education budgets and creates opportunity for developers and users alike. Each is worthy of an investment in tailored technology.

Second, carefully deregulate. Certainly, no one has much good to say about California's regulation of emerging forms of learning. However, the advocates of wholesale deregulation usually begin with the same political worldview that generally favors market policy solutions, and technology is just a special case. I favor more targeted regulatory change.

School districts that offer online courses or other technology services should be able to do so statewide, not just in their own or adjacent counties. Students should be able to take examinations and get credit without a "seat time" requirement, and school districts should be rewarded for student achievement as well as attendance. And the state should adopt the California Diploma idea that was forwarded in the "student bill of rights" initiative. This would allow any student in the state who completed a course of study that would qualify them for admittance to the state university systems to be issued a diploma, regardless of whether those courses had been offered by his or her home district.

Third, rather than creating a single statewide virtual school, develop a network of resources that students and teachers throughout the state can use, Learning 2.0.net I call it. Rather than a virtual "one best system" school, Learning 2.0.net invites us to adopt one of the design principles of flexible specialization in manufacturing: breaking down complex processes into modules, lessons, or projects. These can be combined in different ways to create customized products without starting from scratch with each one. Think Legos.

LEARNING 2.0.NET

Learning 2.0.net would be built around three sub systems: information, learning experiences, and assessment.

Information. Instead of thinking about student information as compliance or accountability, think of it as lights on the pathway to college and career. Currently, the pathway is not well lit, and it's not level either. Professional-class families can illuminate the way to college for their children through the lived experience of parents. But for poor and working-class families, there are hidden rocks and potholes. By when should a child be redesignated as English fluent to have a good chance of getting into college? Why are class placement tests at a community college important?

At a minimum, students and their parents ought to have online access to reliable information about where they are on a pathway, an educational GPS function. They shouldn't have to go to school and ask, find a piece of paper that was mailed from the state, or try to interpret the meaning of archaic numbers or percentages. They should know what testing hurdles they face and how to prepare for them. They should know the options that are available in different schools, tutoring, and support.

Learning. The amount of learning material on the Internet grows with each passing hour. In fact, there is so much that it is difficult to sort through and evaluate it all. There are great lectures and not-so-good ones. There are wonderful applications and cranky ones that don't work or are overpriced. Learning 2.0.net would function as an aggregator or point the way to the several existing organizations that have undertaken that function. It would also allow user or expert ratings of learning programs.

We already have a free market in educational applications with sales directed at students and their families. If we are to make good use of it, we need to safeguard the public interest with both consumer and expert reviews and a ranking system. If TripAdvisor can warn travelers about bed bugs and travel industry nonsense, we should warn students and teachers about software bugs and pedagogical nonsense.

Getting Credit. Learning 2.0.net would allow students to take tests and get credit for learning. For a century, the two most important qualifications for passing a course have been the date of manufacture of the student and the number of hours the student's bottom has been in a classroom chair. Learning 2.0.net can change that. Students could take tests when they were ready, pass courses when they were ready, and take tests to get formative feedback.

USEFUL DISRUPTION

In *Disrupting Class*, Clayton Christensen, Michael Horn, and Curtis Johnson, argue that the Internet is an inherently disruptive

technology for education. I believe that it is, although perhaps not entirely as the authors suggest. Although public policy may not be able to determine the spread of Internet technology to students, it can and should channel this inherently disruptive force into a transformative one for the institution of public education.

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