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Learning 2.0: Time to Move Education Politics from Regulation to Capacity Building

As the current controversy over parent takeovers of schools illustrates, almost all the politics of education concerns rearranging adult power and privilege. Relatively little political energy is spent consciously designing a contemporary system of public education. That should change.

By focusing political energy on how students learn rather than the long list of hot button issues—tenure, teacher evaluation, charter schools, Parent Triggers—it is possible to design a truly modern education system that is a worthy successor to the industrial-era public education structure that served the state well for a century.

With minor variations, we teach as we have for a century: Learning 1.0. In software nomenclature, we work with the first full version of mass public education designed to move most students from toddler through teenager. Designed in the early part of the 20th Century, Learning 1.0 involves all the parts of schooling that we consider normal and proper: students divided by grades, lessons by subjects, tests at the end of the year, and high school units collected until graduation. Underneath it all is a common pedagogy and an outdated assumption that it is aptitude rather than effort that should determine a child's course in school. Why, one might ask, should California, the headwaters of the digital revolution, be stuck in the eddies of an early 20th Century school design?

The answer lies partly in culture and partly in politics. In Learning 1.0, schooling and most other forms of formal learning are built on the design principle of acquisition and storage of information, acquiring the ability to analyze it, and, eventually, to use it. When Stanford University dean Elwood Cubberly wrote the first widely used textbook on school administration in 1916, the acquisition and use of knowledge were proximate. Students left school early; most all by the end of high school, some by the end of third grade. The world of work and adulthood greeted them, however harshly. Indeed, in 1939, over 95 percent of the jobs in the automotive industry could be accomplished by someone with a primary school education.

But now, the lag between acquisition and use can be long. High school graduation is no longer the gateway to economic self-sufficiency. The pathway to being a medical doctor, a lawyer, or a professor can take a student well into their third decade before they practice what they prepared for. Deferred gratification, or at least incomplete selfhood, is one of formal education's fundamental lessons. (And we wonder why neurosis is rampant among the professional class.)

The Learning 1.0 acquisition and storage model

The acquisition and storage model of learning forms the bones of schooling. Students march through eight years of basic literacy and numeracy without a hint that any of what they are learning might become part of their lives or livelihood. Through high school, college, and, for the most persistent students, through graduate or professional school, knowledge becomes increasingly specialized. The academic disciplines, some with medieval roots, are mirrored in high school subject matter, departments, licenses, approved courses of study and textbooks. Spatial and personal relationships mirror these divisions. High schools have “math wings,” and teachers cluster by professional associations. These structures are cemented into an institution of education: school districts, state departments of education, the federal government, schools of education, and universities.

In this view, knowledge acquisition itself has value. As John Seely Brown notes, it's a Cartesian premise of “I think, therefore, I am.” Pedagogy becomes the means to transfer knowledge through known and authoritative channels. Teachers teach. Students learn. Academic disciplines and courses of study organize knowledge into neat divisions. These become curriculum requirements that are counted and tested. Every strand of the public policy muscle surrounding these bones wants to strengthen these structures. The current system of tests and standards are the institution's biceps. However, even as the existing institution bulks up, its basic logic is becoming antique.

“Just in time” learning

Cognitive science tells us, for the most part, people do not learn through the acquisition and storage model; knowledge acquisition and practice are integrated. The information processing capabilities of the Internet along with personal computers and other smart app electronics, have enhanced the capacity for “just in time learning:” students are highly motivated to get the information they need to do the task that needs to be done.

This was the case in traditional societies, through formal and informal apprenticeships, “working” the farm, or “learning the ropes” in a business. In these settings, young men and women acquired knowledge as they needed it, not for storage and recitation on tests followed by rapid forgetting. Urbanization and industrialization obsolesced the traditional learning-by-doing form of education. Children were withdrawn from the workplace. Learning 1.0 gained efficiency through the graded schooling, subject matter disciplines, and a batch-processing model borrowed from industrial manufacturing.

Now, we have the opportunity to redesign education creating Learning 2.0, a more flexible, personalized, and experiential form of learning. The capacity to do this comes partly from the Internet's network technology but mainly from changing how people think about learning. More than their schools, it is people's heads that will need rewiring.

The essence of Learning 2.0

Over the last year, I have visited schools where people think outside the conventions of the acquisition and storage model, and where learning is organized in unconventional ways. I have visited High Tech High in San Diego, New Tech at Jefferson High School in Los Angeles, and the Avalon School in St. Paul, where students learn by designing and completing projects. I've watched parents tutor their kids who are enrolled in the California Virtual Academy, and seen how they integrate a highly structured curriculum with family life and experiences. I've visited the Los Angeles Unified School District's technology fair and seen students who had been "ganged up" and lost to any form of schooling recreate themselves as designers and graphic artists. I've looked at blended learning—"clicks and bricks"—that bring together technology and face-to-face experiences using Moodle and other software. I've looked at games, simulations, apps, and the burgeoning world of open lectures and courses. (MIT now has over 2,000 free courses on line, and Carnegie Mellon has invested hugely in smart teaching software.) I've visited Scotland, and talked with the people who developed the world's first national education intranet, Glow, with the capacity of linking every student, classroom, teacher, and family in the country.

Synthesizing these experiences and the rapidly growing research literature on learning, technology, and open education, it is possible to sketch the design of Learning 2.0:

1. A remix of acquisition and practice in project-based learning; or as the founders of High Tech High in San Diego call it, the integration of head and hands. Integrating experience and academic standards creates multiple pathways through school without old-fashioned tracking, and it often changes students' aspirations. Larry Rosenstock, who founded High Tech High, realized that more of the students in his carpentry class were going to college than those in the school's "academic" track. Learning and doing motivates students, and changes the flows of information.
2. An individual education plan for everyone. The official curriculum of most schools leaves large numbers of students either bored or bewildered. Both in the speed at which knowledge is presented and the style of learning experiences, the system needs more variety in type and style of education, not less. Individualization and specialization of learning will allow different mixtures of technical, artistic, and conventionally academic education to co-exist and prosper. New technologies help. The software for handheld devices, such as that developed by Wireless Generation, allows teachers to individualize and regroup students while constantly monitoring their progress.

3. A redefinition of who is the worker in the education system. Historically, education reform has been built on getting adults to work harder hoping that this would make kids smarter. Instead, we need to design and build learning experiences that are accessible directly by students and which better motivate them. Given data about standards and expectations and the expanding universe of educational experiences, students are capable of much more self-monitoring and direction than the current system expects or allows.
4. Unbundle the time spent learning, teaching lessons, and the assessment of competence. While the current practice of semester-long classes may endure for some time, the system needs to open the capacity for students to learn and be tested in different blocks of time, and to be certified as having learned. If there are productivity gains to be made in education, they will be made largely in shrinking the number of years and months it takes a student to move through high school and higher education and by reducing the necessity for remediation for students who simply needed longer to master a topic.
5. A redefinition of Basic Skills. The United States has been obsessed with higher standards in reading, math, and science. But standards and testing are dangerously narrowing learning. Learning to collaborate and to solve ill-defined problems are to the 21st Century what industrial discipline was to the last hundred years, according to those who have studied what employers and society need. Adoption of a common core of standards, to which the California State Board of Education has subscribed, is supposed to address these issues, but the danger remains that these standards—like the existing ones—will produce a longer list of atomized, and thus trivialized, skills.

The politics of Learning 2.0

The contemporary politics of education cannot produce Learning 2.0. The problem is not—as many who call themselves “reformers” allege—with education interest groups. Politics is always full of interest groups, and some of the loudest reformers are reaping generous personal benefits. The problem is that the system is focused on the wrong things. For most of the last four decades, the interest groups in public education have battled over mandates and regulations: increasingly fine grained rules about who gets paid for what and what paperwork needs to be delivered as evidence of performance. Those same interests need to focus on changing the design of the system and increasing its capacity. Consider three policy levers:

First, create and use the capacity to design learning using 21st Century information tools. Rather than designing “one best system” as the developers of the early 20th Century learning model sought to do, adopt the notion of continuous improvement and redesign, what Google calls “permanent Beta testing.” Do not assume that California can move from early 20th Century learning to Learning 2.0 by adopting a new textbook series, by

cabling schools, or selling them tablet computers by the truckload. Do not assume that “best practices” can be distilled into an educational pill for all to swallow.

Public policy in California has established two potential education laboratories recently. They should be better used, and there is an older experimental tradition that should be revived. Charter schools, in their original intention, were supposed to be Petri dishes of innovations that would be transferred to district-run schools. Pilot schools, which are essentially in-district charters, are being spawned in the Los Angeles Unified School District and could work elsewhere as autonomous schools where teachers and educators remain district employees. They have a similar experimental capacity, and each goes through an explicit design phase before being approved. An older, largely abandoned, tradition of university-based laboratory schools could also become developers of Learning 2.0.

The state should treat charters and pilot schools as laboratories of learning rather than experiments in governance. Those experiments should be explicit, a part of the design and application process for such schools. The requirement for pedagogical experimentation should apply particularly to statewide-benefit charters, those which are granted the ability to work across school district boundaries. And the state should top-up charter school funding to allow careful documentation. Universities should be able to modify their teacher and administrator education programs to incorporate laboratory schools, and should get added support to do so.

Second, carefully deregulate. In many ways charter school law discriminates against existing school districts, making it easy for charters to be innovative while failing to scrape four decades of regulatory barnacles from the hull of district-run schools. Gov. Jerry Brown promised deregulation in his education platform. In addition to fiscal flexibility, he and the state school board should foster the ability to blend education technology into district-run schools.

The most important change involves moving toward a system where student progress can be based on mastery of a subject rather than the number of days and minutes that a student’s bottom was attached to a school seat. Some blending of attendance-based financing and achievement incentive would spur new forms of learning.

In addition, Learning 2.0 involves many changes in work rules. Blended learning or the organization of learning in ways other than traditional classes obsolesces standard class size limitations, indeed the whole definition of a class. Monitoring on-line instruction probably doesn’t require the skill set of a certified teacher. We don’t yet know all the contours of a teacher’s job in this new environment, much less what’s fair and just. We do know that getting from here to there will require a lot more flexibility and experimentation than the current system generally provides. Either through legislation or a statewide teacher contract, the state needs to open up space for experiments within school districts. The unions resist these changes at their own peril. Historically, unions have not fared well when the basic technology of work changes. In California’s at least semi-friendly political environment, teacher unions have the chance to get ahead of the

curve of teaching and learning innovation. If they fail, and most pedagogical innovation takes place outside of the realm of district-run unionized teachers, the attractiveness of these schools as workplaces is likely to diminish rapidly along with the size of the unionized sector of public education.

Third, invest in a learning infrastructure for students. Think of it as a combination of Facebook for school, the best computer game you ever saw, and a smart app for your mind. By thinking of the student as the end-user rather than designing educational products that will be attractive to a textbook adoption committee, the state can vastly open up learning to new participants, approaches, and ideas.

Consider the Kahn Academy for a moment, the singular creation of Sal Kahn using off-the-shelf software and retail technology. Its web site now contains over 1,800 math lessons (mostly) and has had over 10-million visitors. (One school district in the Bay Area is experimenting with using it as part of its math curriculum.) Consider the burgeoning open-source courseware movement first centered at MIT and Carnegie Mellon and now spread around the world with scores of additions each week.

The state does not need to create a single learning utility, a power grid for learning. These are already springing up, and district schools and charters are testing adopting them. Consider Moodle, the open-source classroom and lesson management system that is being used by school districts throughout the state and the California State University system. With tens of thousands of users, a wealth of adaptation is already taking place. (As a current events note: the American School in Libya, whose building is closed by the revolution, is holding its classes on Moodle.)

Although there does not need to be a single learning utility to which all students and schools subscribe, there does need to be a network of learning utilities, the pedagogical and intellectual equivalent of common grazing land. The state has a very strong public interest in preserving the open-source commons and not outsourcing the intellectual and pedagogical core of its educational system.

Learning 2.0's commons-based, peer-to-peer collaboration is a powerful new production system that takes advantage of the Internet's technical and networking capacity. Its means of production is starkly different from that of the existing information industrial economy. In Learning 1.0, the long-standing practice of purchasing textbooks and educational materials from vendors morphed into buying programs of instruction and whole school designs. Education followed the mid-20th Century information economy model that applied to newspapers and television stations: scarce expertise and high fixed costs. Only a few people had the ability or the capital. Thus, the textbook and instructional materials oligopoly came into being, the educational equivalent of the "military-industrial complex" that Dwight Eisenhower warned us about. Learning 2.0 turns that older production system on its head.

It is particularly important to protect the commons as a way to develop and benefit from the knowledge of teachers. Proprietary software developers and the retooled textbook

companies are intent on delivering complete integrated programs that are easy for school districts to adopt, but which lock them into the tender mercies of vendors. In contrast, most open-source learning systems and the platforms for developing applications are adaptable by teachers and often by students. This commons-based peer-to-peer production system is an integral part of Learning 2.0, both its pedagogy and its economy.

Politics will have to sort this out. However, I believe that the existing interest groups are forming battle lines in the wrong places, primarily around the regulations regarding technology use. The more fundamental educational design decision concerns *who builds Learning 2.0?* At issue is whether teachers and school administrators are to be cast primarily as industrial era factory workers, whose job it is to oversee the flow of externally created learning technology; or are they primarily educational artisans and craft workers, whose job it is to choose among available tools, adapt them to specific needs, and build new ones.

Protecting the commons means public funding of computer access. It means including time in teacher work weeks for their participation. It means developing technology that teachers actually want to use. It means incentivizing those teachers who are leaders in development. The state also forwards its interests by creating design standards, in the same way that Apple creates standards for the applications one can buy for its phones and tablet devices. By creating design standards and learning modules, the state will allow teachers and many others to combine bits and pieces of instruction and teaching ideas from different sources and prevent the vendor's monopolistic practice of creating what is called coherence as a way of increasing market share.

This is the pathway to Learning 2.0.

In future posts, I will develop both the pedagogy and politics in more detail. Readers are particularly invited to comment and suggest ideas.

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