

On-line Learning & the Implications for School Design

By Greg Stack

In the year 2020, we will need only half the high schools we have now. Unbelievable prediction? As fantastic as this sounds, you can draw this conclusion if the predictions about the adoption of on-line learning in Christiansen, Horn, and Johnson's "Disrupting Class" come to fruition.

“Disrupting Class,” published in 2008 (McGraw Hill), is the story of how disruptive innovation, innovation that changes the business model of organizations, will fundamentally change the American school system. The book’s most startling prediction is that half of all high school classes will be on-line by 2019. The book makes a very compelling argument in support of this assertion showing how the seeds of this movement have already started, and the rate at which it will grow.

In considering these predictions, I began to wonder what this might mean for the future of school planning, and design. How will schools be different? If half of all classes are on-line, will we need as many schools as we have today?

To begin answering these questions, I decided to investigate the on-line learning taking place, to see if this is transpiring as the authors predict. Beyond this, I wanted to determine the physical environments that on-line users prefer while they are teaching and learning.

This article is a progress report on that effort. I will more fully explain the predictions of “Disrupting Class,” describe what on-line users seem to be doing today, and discuss where this might be going relative to designing and building schools.

The Adoption of On-line Learning

“Disrupting Class” uses over 200 pages to make its case about the ascendance of on-line learning, but to set the stage, I will outline a few of the pertinent points.

- The American system of education operates a “value chain” business model which is “monolithic” in that it has strongly standardized processes. It is similar to an industrial operation in which raw materials (students) go in one end, are processed (taught), and come out the other end (graduate). It is an efficient system for mass education but was never designed for individualized instruction. It accommodates students who learn in certain ways pretty well, but does not serve students who learn differently. It is relatively economical as a mass production system, but very uneconomical when it must deal with individualization – think of the cost of special education. The system is no longer functioning well as noted by today’s poor test scores and low graduation rates.
- To address its problems, the system has increasingly focused on testing and punishment for

underperforming schools. This has resulted in a tendency for schools to teach to the test. Elective subjects have been minimized since they are not tested. Scoring better on tests requires more individual attention. The system was not designed to provide individual attention, so the costs of education continue to rise. As costs continue to rise, schools offer fewer subjects so they can concentrate resources on tested subjects. This creates unmet needs for educational consumers. One need is elective courses, while a second is remediation courses for students not mastering material presented to them using the system’s monolithic approach.

- On-line learning is stepping in to fulfill these needs by providing a range of elective and remediation courses. For school districts, it is much cheaper to pay for on-line courses than to hire teachers to teach them. More importantly, on-line learning is allowing students to proceed at their own learning pace, and gives them choices about how they acquire information. For example, if a student is having trouble understanding French grammar the

way it is presented in class, they can find different approaches on the web that may be better suited to their learning needs. On-line learning takes a “*modular approach*” to providing content, with modules adapted to individual needs. This is a sea change in our educational system caused by the disruptive innovation of on-line learning.

- In the first phase of on-line learning - “*Computer Based Learning*”- schools will incorporate on-line classes into regular education. This is unlikely to change the system because innovations will be co-opted to fit the existing school business model of mass standardized education. After compromises are made to satisfy parents, unions, politicians and others, the innovations of on-line learning will be watered down so that they are no longer disruptive to the educational system. Current first phase examples include the Florida Virtual School, which has over 90,000 students in several states, and a number of other school district and commercial initiatives.
- After this phase of development, demand will still exist and consumers (students and teachers) will turn to each other to provide the individualization they need. A new business model for education will emerge - the “*Facilitated User Network*” - in which a third party connects users who are creating and searching for content and methods. This second phase of development is termed “*Student Centric Technology*” and is the disruption that will really change education.

There is considerably more explanation and supporting data for these scenarios in the book, but if these changes are happening at the pace predicted, there should

already be evidence of this change. My research assistant, Nathan Compton, has located the following examples of second phase facilitated user networks that will allow us to gauge their prevalence.

What’s Happening Now

A search of the web yielded a variety of network types. Some are for creating or sharing content, while still others are more like social networking sites for education. We were able to classify them into five groups: 1. *Classroom Management Systems* like: BrainHoney, Moodle, Catalyst, Blackboard and Global Scholar; 2. *Social Learning Networks* like: eduFire, Learn Hub, Nuvvo, Grockit; 3. *Tool Trading sites* like: MERLOT, Moodle’s development community, Curriki, Free Reading; 4. *Tutor Services* like: Tutor Vista, Tutor.com; and 5. *Commercial Grade Technologies for the Classroom* like: mCLASS by Wireless Generation, and the Immersive Education suite (car2ouche for example).

Limited space will not allow us to describe the characteristics of all these sites, but here is a sampling:

Grockit - Is a Social Learning network. Grockit gives users the option to log in with their Facebook profile and skip the registration process entirely. Grockit is not focused on classes taught in any traditional fashion, but uses social networking to connect peers. Grockit focuses on peer-to-peer discussion, tutoring, and competition and uses a competitive scoring system to show progress. It turns studying into a game. Its slogan is “Get Addicted to Studying.”

The Moodle Engine - Is a Classroom Management System. Moodle is a completely open source free engine for student networking. It’s designed for schools to create their own “places” on the web with no size constraints. They have customizable tools to create lesson plans and evaluate how your stu-



The excitement of online learning

dents are doing relative to state standards. Moodle is free and completely open to independent adaptation and redesign.

MERLOT - Is a Tool Trading Site. MERLOT has an interesting content swapping system, where educators can share websites and other content they create. Content is ranked by stars and similar means. The site is designed to make teaching systems that are already in place more efficient, by updating them to 21st Century technology.

Where might this all be going?

As you can see from this brief sampling, facilitated user networks are already appearing. If they take hold as predicted, what will it mean for brick and mortar schools? It is typical for architects and planners to rely on our own experiences when considering this question. Our experience tells us that the social, community, and physical aspects of schools will always make them relevant. This may be true, but consider the following:

Have you ever seen a group of students lounging around, madly texting away, when one says out loud with his eyes not leaving his phone: “ha, ha good one.” You realize he is talking to someone six feet



The Industrial Model

away and has been texting that person rather than just looking up and talking to him. For millennials, and those that come after them, virtual socializing may take an increasingly important role in their lives. In the future, if you can get instruction tailored to your individual needs online, and if all school is doing is providing a physical location for social opportunities, why not meet friends at the mall, or a coffee shop rather than a school building?

You might say that on-line learning can't replace the hands-on learning in a science lab, but that may not be true. If you look at the "VitalLab" in Second Life on YouTube you will see where the technology for virtual science experiments is today. Virtual labs are even preferred by some teachers in that they allow students to try more rigorous experiments safely in the virtual world.

"What about physical education?" you say. "That can't possibly be done in a virtual environment." Virtual PE classes already exist. In the January 2010 edition of "The Journal," an education technology periodical, an article entitled: "Virtual P.E.? No Sweat?" describes how students are completing physical education credits at their own pace out of school. They are using web-based tools to create P.E. programs customized to their needs and then using the tools to monitor their progress. This has been especially effective for students with body image problems who don't do well in regular P.E.

What about music education? Check out the "Wiiolin" on YouTube. This is a virtual violin or cello using the Wii controller. It requires fingering and bowing just like a real violin. There are also numerous "dashboard" types of programs that allow plenty of exploration with electronic music.

Now it may be easy for you to discount these examples as not providing the experience you can get in school, but remember we are at the start of a wave of rapidly-developing technologies and their adoption. In addition, the sensibilities of current students are different than earlier generations. Today's students are more willing to embrace technology, and are even inspired by technology that gives them customizable access to subjects that interest them.

I think it is likely that there will always be demand for schools in traditional bricks and mortar settings. If nothing else, the vast inventory of existing schools will encourage the continued delivery of education in purpose designed school buildings. But as the technologies that enable these customized learning approaches continue to develop, and the approaches are adopted, the mass instruction available in school may become increasingly irrelevant to students. As laws are passed requiring school districts to fund these alternatives, as is the case already in Florida for the Florida Virtual School, districts may have no choice other than to cut operating and capital costs as demand for physical space for school declines.

Some Alternative Views

Declining demand for school buildings is only one possible outcome. Another is that "school," as we know it, fundamentally changes. Physical locations for school will still be required but rather than one specific physical place, school will become many places scattered throughout our community. Student groupings could be very different and based on preferences or learning styles, requiring a new building type - specialized centers - to meet these needs. Schools as part of businesses may also become relevant. Theory may be learned online and through facilitated user networks, while experience is gained working with people engaged in real world situations.

Another possibility is that we make existing schools and the new schools we design, so enticing for students as physical environments, that students choose to come to school buildings to engage in on-line learning and use facilitated user networks. If we are able to plan and design schools that are flexible enough, attractive enough, and that challenge and inspire students enough, students will choose to come to school even when there are other options available to them. These new challenges will take fresh responses from planners and designers in a future that is quickly becoming now. There are alternatives to the obsolescence of school as a "place." ■

Greg Stack

Greg Stack is an educational architect, designer, and writer. Greg is vitally interested in how students learn and the conditions that best enhance the learning process. He has planned and designed numerous K-12, college, university and specialty educational buildings during his 31-year career in architecture. As the K-12 Thought Leader for NAC|Architecture, Greg works firm-wide to develop deep knowledge in the planning and design issues of learning environments. He has authored articles on a range of K-12 subjects and has presented analytical perspectives on K-12 topics at a variety of conferences.