HOW WEB-SAVVY EDUPUNKS ARE TRANSFORMING AMERICAN HIGHER EDUCATION

FREE ONLINE COURSES, WIKI UNIVERSITIES, FACEBOOK-STYLE TUTORING NETWORKS -- AMERICAN HIGHER EDUCATION IS CHANGING.

BY: ANYA KAMENETZ

Is a college education really like a string quartet? Back in 1966, that was the assertion of economists William Bowen, later president of Princeton, and William Baumol. In a seminal study, Bowen and Baumol used the analogy to show why universities can't easily improve efficiency.

If you want to perform a proper string quartet, they noted, you can't cut out the cellist nor can you squeeze in more performances by playing the music faster. But that was then -- before MP3s and iPods proved just how freely music could flow. Before Google scanned and digitized 7 million books and Wikipedia users created the world's largest encyclopedia. Before YouTube Edu and iTunes U made video and audio lectures by the best professors in the country available for free, and before college students built Facebook into the world's largest social network, changing the way we all share information. Suddenly, it is possible to imagine a new model of education using online resources to serve more students, more cheaply than ever before.

"The Internet disrupts any industry whose core product can be reduced to ones and zeros," says Jose Ferreira, founder and CEO of education startup Knewton. Education, he says, "is the biggest virgin forest out there." Ferreira is among a loose-knit band of education 2.0 architects sharpening their saws for that forest. Their first foray was at MIT in 2001, when the school agreed to put coursework online for free. Today, you can find the full syllabi,

lecture notes, class exercises, tests, and some video and audio for every course MIT offers, from physics to art history. This trove has been accessed by 56 million current and prospective students, alumni, professors, and armchair enthusiasts around the world. "The advent of the Web brings the ability to disseminate high-quality materials at almost no cost, leveling the playing field," says Cathy Casserly, a senior partner at the Carnegie Foundation for the Advancement of Teaching, who in her former role at the Hewlett Foundation provided seed funding for MIT's project. "We're changing the culture of how we think about knowledge and how it should be shared and who are the owners of knowledge."

But higher education remains, on the whole, a string quartet. MIT's courseware may be free, yet an MIT degree still costs upward of $189,000. College tuition has gone up more than any other good or service since 1990, and our nation's students and graduates hold a staggering $714 billion in outstanding student-loan debt. Once the world's most educated country, the United States today ranks 10th globally in the percentage of young people with postsecondary degrees. "Colleges have become outrageously expensive, yet there remains a general refusal to acknowledge the implications of new technologies," says Jim Groom, an "instructional technologist" at Virginia's University of Mary Washington and a prominent voice in the blogosphere for blowing up college as we know it. Groom, a chain-smoker with an ever-present five days' growth of beard, coined the term "edupunk" to describe the growing movement toward high-tech do-it-yourself education. "Edupunk," he tells me in the opening notes of his first email, "is about the utter irresponsibility and lethargy of educational institutions and the means by which they are financially cannibalizing their own mission."

The edupunks are on the march. From VC-funded startups to the ivied walls of Harvard, new experiments and business models are springing up from entrepreneurs, professors, and students alike. Want a class that's structured like a role-playing game? An accredited bachelor's degree for a few thousand dollars? A free, peer-to-peer Wiki university? These all exist today, the overture to a complete educational remix.

The architects of education 2.0 predict that traditional universities that cling to the string-quartet model will find themselves on the wrong side of history, alongside newspaper chains and record stores. "If universities can't find the will to innovate and adapt to changes in the world around them," professor David Wiley of Brigham Young University has written, "universities will be irrelevant by 2020."

Wiley doesn't come off immediately as a bomb thrower. He is a 37-year-old member of the Church of Jesus Christ of Latter-day Saints with five kids. He has close-cropped gray hair, glasses, and speaks softly in a West Virginia accent. But he employs his niceness strategically, as a general in the intellectual vanguard of the transformation of higher education. The challenge is not to bring technology into the classroom, he points out. The millennials, with their Facebook and their cell phones, have done that. The challenge is to capture the potential of technology to lower costs and improve learning for all.

Wiley has been experimenting with open educational content and tools since the early days of the Internet. As a college junior, he was hired as the first Webmaster of his small, resource-starved alma mater, Marshall University, in West Virginia. "I was working on developing a JavaScript calculator for a Web page when it occurred to me that this calculator, unlike a real one in our elementary schools, can be used by 100,000 people all at the same time," he says. "When you put materials online, they're different in that particular way; you can pay to produce them once and they can be used by an infinite number of people. That seemed to be somewhere between terribly fascinating and the kind of realization that it makes sense to spend the rest of your life working on." In 1998, when Wiley arrived at Brigham Young to do a PhD in instructional psychology and technology, he learned about open-source software-programs and operating systems like Linux that are produced collaboratively and shared freely. "I said, 'Hey, that's exactly what we need to do with educational materials. Let's call it open content.' "

Today, "open content" is the biggest front of innovation in higher education. The movement that started at MIT has spread to more than 200 institutions in 32 countries that have posted courses

online at the OpenCourseWare Consortium. But, as Wiley points out, there's still a big gap between viewing such resources as a homework aid and building a recognized, accredited degree out of a bunch of podcasts and YouTube videos. "Why is it that my kid can't take robotics at Carnegie Mellon, linear algebra at MIT, law at Stanford? And why can't we put 130 of those together and make it a degree?" Wiley asks. "There are all these kinds of innovations waiting to happen. A sufficient infrastructure of freely available content is step one in a much longer endgame that transforms everything we know about higher education."

Wiley is pursuing several different strategies toward this endgame. He has cofounded a free, not-for-profit, online public charter high school that draws on open courseware, letting Utah students complete their degree from home. He is "chief openness officer" at a for-profit startup, Flat World Knowledge, that commissions professors to write open-source textbooks that are free online, $19.95 for a download, or $29.95 for a print-on-demand copy. (Flat World closed $8 million in VC funding earlier this spring.) He has also offered five of his courses to anyone on the Web for free; he donates his own time to review nonenrolled students' work, awarding a signed certificate in lieu of course credit. Wiley's most recent open course was formatted as an online role-playing game, with students divided into "guilds" completing "quests" -- a learning community inspired by the world of online gamers. "If you didn't need human interaction and someone to answer your questions, then the library would never have evolved into the university," Wiley says. "We all realize that content is just the first step."

Open courseware is hard for the self-learner," agrees Neeru Paharia, a PhD student at Harvard Business School. Building a social network to make it easier is the goal of her newest project, Peer2Peer University. The daughter of two Indian-born Silicon Valley engineers, Paharia is a former McKinsey consultant and an early employee of Creative Commons, a not-for-profit set up to create the intellectual and legal framework to share and remix content without the expense and red tape of commercial copyright. In 2005, she started AcaWiki, a crowdsourced compilation of free summaries of academic papers. Now, she says, she wants to address "all the other things that a university does for you: It provides you a clear path from A to B, provides

social infrastructure of teachers and other students, and accreditation so you actually get credit for what you do. So the question becomes, Is there a way of hacking something like this together?"

At a conference in Croatia last year, Paharia met Jan Philipp Schmidt, a German computer scientist working on open courseware in South Africa; together with a Canadian and an Australian, they started Peer2Peer University, which has become one of the most buzzed-about initiatives in open education. Would-be students can use the Web site to convene and schedule classes, meet online, and tutor one another; a volunteer facilitator for each course helps the process along. Peer2Peer got a $70,000 seed grant from the Hewlett Foundation to launch its first 10 pilot courses, in topics from behavioral economics to Wikipedia visualization -- content areas that already have online audiences of self-motivated learners.

Paharia's idea of "hacking" education -- putting something together on the fly -- is important. All of these projects are still very much works in progress. Not even the most starry-eyed geeks are claiming that an LCD monitor can and should replace the richest, most fully textured college experience out there (at least not yet). But it could certainly represent an upgrade in opportunity for those who can't afford college, or for the half of American college students who attend community colleges, or even the 80% who attend nonselective universities.

Ultimately what interests Paharia is proving the model, demonstrating that there's a way to provide education cheaply or even for free to all who are qualified. "I ride the Boston T around and I see these ads for schools, and it bothers me that so much hope is rested on having an education, and yet at the end of the day you end up with $100,000 in debt. What are you paying for? And is this the best way of setting up the system?"

Peer2Peer is not the only attempt to bridge the gap between free material and cheap education. The online University of the People, founded by Shai Reshef, who made his fortune in for-profit education, signed up its first class this fall -- 300 students from nearly 100 countries. While it has yet to get accreditation, the not-

for-profit plans to offer bachelor's degrees in business and computer science using open courseware and volunteer faculty; fees would add up to about $4,000 for a full four-year degree.

Richard Ludlow, a 23-year-old Yale graduate, has his own ideas about a workable business model for open educational resources. His for-profit startup, Academic Earth, is a Web site that brings together video lectures and other academic content from various sources. As an undergrad looking for help grokking a tough concept in his linear algebra class, he stumbled onto MIT's OpenCourseWare. He realized that there were some really cool educational resources out there and that most of his classmates didn't know about them. "My idea was to first, aggregate this huge critical mass of content disconnected over various sites; second, apply best practices in user interface design and Web standards to do for educational content what Hulu has done [for TV]; and third, build an educational ecosystem around the content," Ludlow explains. "Showing the videos is one thing, but building the right interactive tools and the right commenting system will really create something of value."

The Hulu comparison is a striking one. When you look at the cultural industries that have fallen under the spell of the Internet, the transformation has happened unevenly: newspapers before television, music before books. Hulu.com, launched just 18 months ago, is widely considered to be the first Web site to prove that mass broadcast-television viewing as we know it can and will shift online. Hulu did that by being attractive, well-designed, and easy to use, and by having a viable business model with actual paying advertisers -- and soon, subscribers.

"We're talking about revenue sharing with a lot of universities," says Ludlow. "Most of this content is licensed noncommercial, but with endowments dropping, universities have to be selective about what they're funding. We're trying to find a way to make this sustainable by generating revenue and making sure it's in sync with the university's brand."

If open courseware is about applying technology to sharing knowledge, and Peer2Peer is about social networking for teaching and learning, Bob Mendenhall, president of the online Western

Governors University, is proudest of his college's innovation in the third, hardest-to-crack dimension of education: accreditation and assessment. WGU was formed in the late 1990s, when the governors of 19 western states decided to take advantage of the newfangled Internet and create an online university to expand access to students in rural communities across their region. Today, it's an all-online university with 12,000 students in all 50 states. It's a private not-for-profit, like Harvard; the only state money was an initial $100,000 stake from each founding state. WGU runs entirely on tuition: $2,890 for a six-month term.

"We said, 'Let's create a university that actually measures learning,' " Mendenhall says. "We do not have credit hours, we do not have grades. We simply have a series of assessments that measure competencies, and on that basis, award the degree."

WGU began by convening a national advisory board of employers, including Google and Tenet Healthcare. "We asked them, 'What is it the graduates you're hiring can't do that you wish they could?' We've never had a silence after that question." Then assessments were created to measure each competency area. Mendenhall recalls one student who had been self-employed in IT for 15 years but never earned a degree; he passed all the required assessments in six months and took home his bachelor's without taking a course.

Most students, though, do the full coursework, working at their own pace through online course modules, playlists of prerecorded lectures, readings, projects, and quizzes. For every 80 students, a PhD faculty member, certified in the discipline, serves as a full-time mentor. "Our faculty are there to guide, direct, counsel, coach, encourage, motivate, keep on track, and that's their whole job," Mendenhall says. Multiple-choice tests are scored by computer, while essays and in-person evaluations are judged by a separate cadre of graders. What WGU is doing is using the Internet to disaggregate the various functions of teaching: the "sage on the stage" conveyor of information, the cheerleader and helpmate, and the evaluator. WGU constantly surveys both graduates and their employers to find out if they are lacking in any competencies so they can continue to fine-tune their programs.

Mendenhall is impatient with those who argue that what he's doing with education and technology is unworkable. "Technology has changed the productivity equation of every industry except education," he says. "We're simply trying to demonstrate that it can do it in education -- if you change the way you do education as opposed to just adding technology on top."

So far, the open-education movement has been supported, to an astonishing extent, by a single donor: The Hewlett Foundation has made $68 million worth of grants to initiatives at Berkeley, Carnegie Mellon, MIT, Rice, Stanford, and Tufts. Today, such foundation money is slowing, but new sources of financing are emerging. President Barack Obama has directed $100 billion in stimulus money to education at all levels, and he recently appointed a prominent advocate of open education to be undersecretary of education (Martha Kanter, who helped launch the 100-member Community College Consortium for Open Educational Resources and the Community College Open Textbook Project). Meanwhile, outfits such as Flat World and Knewton are attracting venture funding (see "5 Startups to Watch"). The Carnegie Foundation's Casserly is helping existing open-courseware projects generate metrics that demonstrate their value to universities. "We need to figure out the models for this stuff," she says. "If it were easy, it wouldn't be such a fun challenge."

The transformation of education may happen faster than we realize. However futuristic it may seem, what we're living through is an echo of the university's earliest history. Universitas doesn't mean campus, or class, or a particular body of knowledge; it means the guild, the group of people united in scholarship. The university as we know it was born around AD 1100, when communities formed in Bologna, Italy; Oxford, England; and Paris around a scarce, precious information technology: the handwritten book. Illuminated manuscripts of the period show a professor at a podium lecturing from a revered volume while rows of students sit with paper and quill -- the same basic format that most classes take 1,000 years later.

Today, we've gone from scarcity of knowledge to unimaginable abundance. It's only natural that these new, rapidly evolving information technologies would convene new communities of

scholars, both inside and outside existing institutions. The string-quartet model of education is no longer sustainable. The university of the future can't be far away.

A version of this article appeared in the <u>September 2009</u> issue of FAST COMPANY magazine.

ANYA KAMENETZ

Anya Kamenetz's passion is the future of learning. And unitardicorns (unicorns in unitards.)

CONTINUE

September 1, 2009 | 5:00 AM

YOU MIGHT ALSO LIKE

FROM THE WEB

Create Your Own Smartphone App With Infinite Monkeys – No Coding Knowledge Required

MAKEUSEOF.COM

FROM THE WEB

Alexa Who? Why SimilarWeb's Analytics Tool Puts Amazon's to Shame

SIMILARWEB

The Cardboard Bike Becomes Real, But It's No Longer Cheap

CO.EXIST

[?]