

The Advisory

LEGAL CAVEAT





Executive Summary (Continued)

Threats and Opportunities for the Other 99%

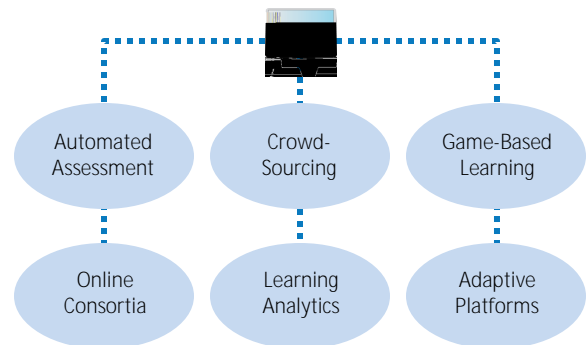
For the vast majority of colleges and universities that lack global brands and multi-billion dollar endowments, however, MOOCs have the potential to be disruptive. The threat is that students will choose free MOOCs instead of paying tuition, weakening an already fiercely competitive market for students. The key question is whether MOOCs will be seen as a substitute or a complement to face-to-face classes. Potentially the greatest threat is to increasingly important revenues from continuing and professional education courses (many delivered completely or partly online). If employers value MOOC certificates as much as credentials from traditional programs, students will choose the less expensive option. At the same time, MOOCs offer an opportunity for non-elite colleges and universities to dramatically expand the resources available to their students without any additional investment.

: Legitimization of Online and Hybrid Learning

As superstar faculty at elite institutions rapidly embrace online teaching and as a range of for- and non-profit organizations develop sophisticated learning management platforms, online and hybrid courses will move from the periphery to the center of attention in higher education. The distinction between online and face-to-face will dissolve as the vast majority of courses will involve both classroom-based and virtual elements.

: Developing a Science of Pedagogy

Many of the first generation MOOCs are simply recorded versions of face-to-face courses with automated assessments, just as the first television programs were simply recordings of live performances. A number of instructors, however, are redesigning courses based on learning outcomes data and developing content and interactions carefully calibrated to student needs. These courses will increasingly be built around adaptive learning assessment and competency demonstration rather than traditional syllabi. Over the long term, we are likely to see much more rigorous approaches to teaching and learning, leading not only to better documented outcomes but also more fluid transfer of credits across institutions.

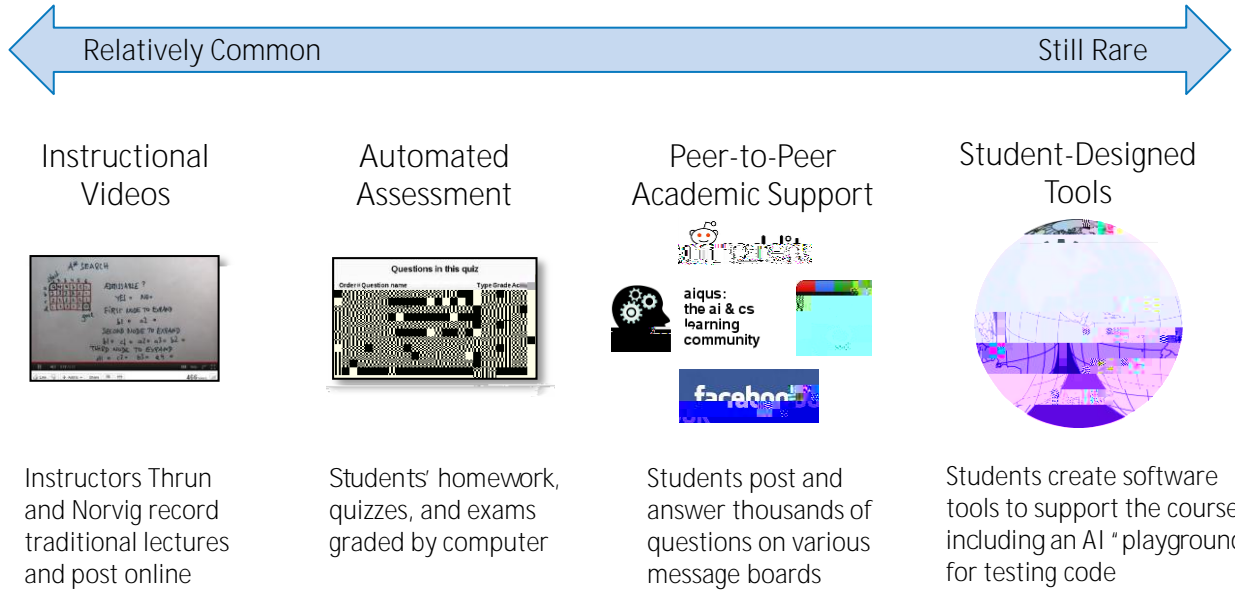


MOOCs are an Accelerator of Existing Trends, Not the Cause

The adoption of online and hybrid course delivery, adaptive and automated assessment, evaluation of student learning outcomes, and competency-based credentials was well underway before the recent flurry of press around MOOCs. Yet by focusing the attention of the public, funding bodies, and faculty on these issues, MOOCs have greatly accelerated the appetite for and pace of change. On their own, these changes are unlikely to put large numbers of universities out of business in the coming decades, but they will pressure them to adopt new instructional approaches, be more flexible around credit articulation, and more clearly define their unique value in a changing higher education ecosystem.

A Seminar at Scale

Thrun's artificial intelligence course incorporated a number of online pedagogical tools, some of which are quite familiar and some that pushed the boundaries of remote instruction. These tools enabled the instructors to engage an astoundingly large pool of students at relatively low cost.



Drawing inspiration from Salman Khan's short, concise video explanations, Thrun and Norvig delivered the bulk of their content through video-taped micro-lectures—many featuring hand-drawn diagrams and outlines. The instructors relied on computer-graded quizzes, exercises, and examinations to assess participants, eliminating the need for an army of teaching assistants and endless hours of manual grading. A thriving discussion forum and virtual study groups arose around the content, allowing students from around the world to ask and answer questions, post links to related resources, and submit new ideas. Students even added new, interactive exercises and platforms to the course; an eighteen year-old student in Toronto created a "[virtual A.I. playground](#)" that enabled other students to write and test code, and volunteers translated video dialogue and course materials into 44 languages.

By mobilizing and capturing the imagination of an already thriving web community of programmers, Thrun was able to facilitate an engaging, active learning experience that many would not have believed possible among such a large and diverse enrollment base.

Parting Ways Over Assessment

A Venture Capital-Backed Startup

Upon the conclusion of his first open, online course, Thrun left his tenured post at Stanford to launch _____, an independent, for-profit MOOC provider focused on STEM disciplines. As of August 2012, Udacity offers 11 courses across beginning, intermediate, and advanced categories for open, self-paced enrollment. Udacity is funded by a combination of venture capital and an initial \$300,000 investment from Thrun.

A MOOC Incubator

- Private company founded by Dr. Thrun and funded by Charles River Associates
- Infrastructure, instructional design, and business services for global MOOC courses
- Six computer science courses now available; eight more by end of 2013
- Taught by prominent faculty on leave from prestigious traditional universities

An Inverted Revenue Model

- Courses are free
- Assessment and certificates are free
- Revenue may come from value-added services to students and employers:

Premium Tutoring

Authenticated Credentials

Lead Generation

$$\begin{array}{l} 1,000 \\ \text{Students} \end{array} \times \$100,000 \times = \$10\text{M}-\$30\text{M}$$

One notable aspect of Udacity's (still provisional) business model is its inversion of the traditional higher education paradigm; while most colleges and universities charge for content and credentials, Udacity gives them away for free and hopes to profit from a variety of auxiliary services.

Students might pay a fee to access one-on-one tutoring services, for example. Udacity has already begun a [partnership with Pearson](#) to allow students interested in authenticated credentials the opportunity to take a proctored examination at one of Pearson's 4,500 testing facilities worldwide for a small fee.

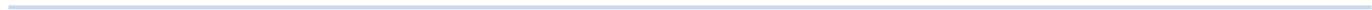
The most promising revenue stream may come from lead generation and recruiting through Udacity's "[Career Placement Program](#)," which connects successful students to interested employers. In a highly technical field such as computer programming, demonstration of specific skills and measurable competencies allows for courses like these to lead companies in need to top talent. Thrun has expressed a commitment to limiting Udacity's offerings to areas of high interest to tech industry employers.

A Tipping Point

Institutions as prestigious as MIT and Yale have been offering course materials and video-taped lectures online for years, and open education pioneers such as George Siemens and Stephen Downes offered full MOOCs well before Thrun decided to put his own course online. In the wake of Thrun's experiment, however, it became clear that a tipping point had been reached. In the space of one year, 18 elite universities have officially begun offering MOOCs, with countless more exploring similar initiatives.

While it remains to be seen whether such sudden interest in MOOCs is a sign of their value to both students and institutions or merely a symptom of peer emulation among elite universities, it is increasingly clear that free, large-scale course offerings will become a lasting fixture in higher education.

The two quotes from Thrun above epitomize two important concerns on the part of many colleges and universities—first, holding on to their best faculty in an era that allows for courses to be broadcast to the world, and second, considering the possibility of massive consolidation and centralization in an industry that has largely resisted the disruptive effects of online delivery.



Disruption from Above, then Below

The scenario illustrated above depicts one way of thinking about pressures on colleges and universities arising from the confluence of technology advances and new business models in education perhaps symbolized best by the rise of the MOOC, though certainly not limited to them.

If online instruction continues to gain traction at both the expensive, elite end of the market and the vocational, low-cost end as well, more and more institutions will find it necessary to differentiate themselves in new ways not reducible to either prestige or affordability.

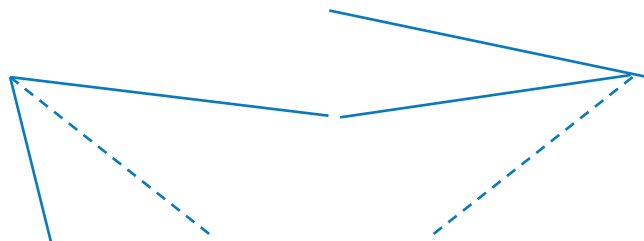
Even as institutions seek to create and articulate separate value propositions from these competitors, it will become very difficult to ignore the pedagogical advances brought about by the technologies that enable them. The next section will



Quality at Scale

Inactive Learning, In Person and Online

Despite emerging consensus from the study of teaching and learning that students acquire and retain information better in “active” educational settings, many classrooms—both physical and virtual—remain decidedly *inactive*. Recognition of this systemic underperformance has stimulated broad conversation about ways in which college and university faculty might rethink their approach to teaching without sacrificing rigor, lowering quality, or incurring substantial new costs.

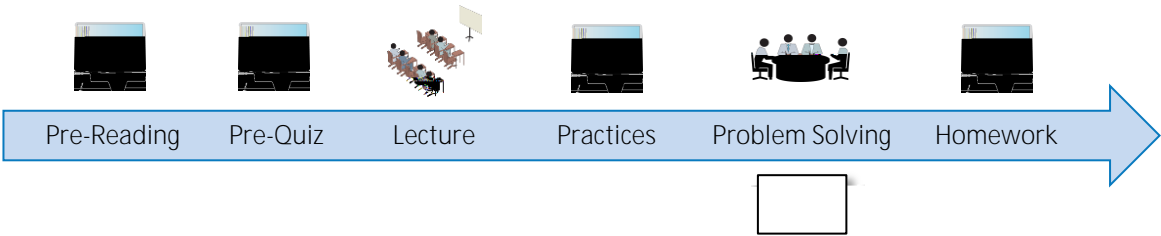


The limitations of classroom lectures are well-documented and perhaps epitomized best by the adage, “Too often information passes from the professor’s notes to the student’s without passing through the brain of either.” Students have no opportunity to “rewind” the lecture to review the information presented, and play a passive, consumptive role.

Online courses often suffer from similar drawbacks, limiting interaction to the viewing of video-taped lectures, readings, and quizzes. In that approach, no additional pedagogical value is created from the addition of technology to the learning experience.

Rather than presumptively weighing a given course by its mode (face-to-face, online, or blended), a more productive analysis must begin by examining its *content*—what activities are included, at what depth, and to what end.

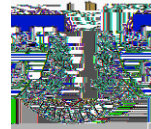
Winning On All Fronts With Course Redesign



Few Excuses Left

Though many redesign initiatives focus on lower-division courses in disciplines that can more easily incorporate online, self-paced exercises, enterprising faculty in almost every field and across all institutional types have found ways to reinvent their approach to teaching.

"I always thought I was a pretty good lecturer, but ...I had come to a realization that even my most successful students weren't retaining a lot of the material I'd covered from one course to the next."



Physics

- Clickers and frequent feedback opportunities keep students on track
- Students grouped based on answers to questions

English

- From 3 hours to 1 hour in class per week
- Additional time spent in one-on-one sessions, peer tutoring, and multimedia lessons



History

- Historical Methods class won "Radically Flexible Classroom" award
- Movable furniture and tech-enabled classrooms facilitate group work



Math

- Emporium model: 1 hour in class, 2 hours in large computer lab
- Significantly improved completion and retention rates
- 19% instructional cost savings

"Do our students actually during class, or do they simply feverishly scribble down everything we say, hoping somehow to understand the material later?"

From remedial math at Cleveland State Community College to upper-level physics courses at Harvard, leading instructors are increasingly eschewing the lecture model in favor of a more engaging set of activities that encourage active participation.

Common elements of successfully redesigned courses include flexible classroom arrangements that facilitate group work and projects, more time devoted to problem solving and questions, the use of graduate students or undergraduate assistants in providing additional support, and technologies that allow students to provide immediate feedback in class (clickers) or to access materials on the go (mobile apps).



“Sabermetrics” for Education

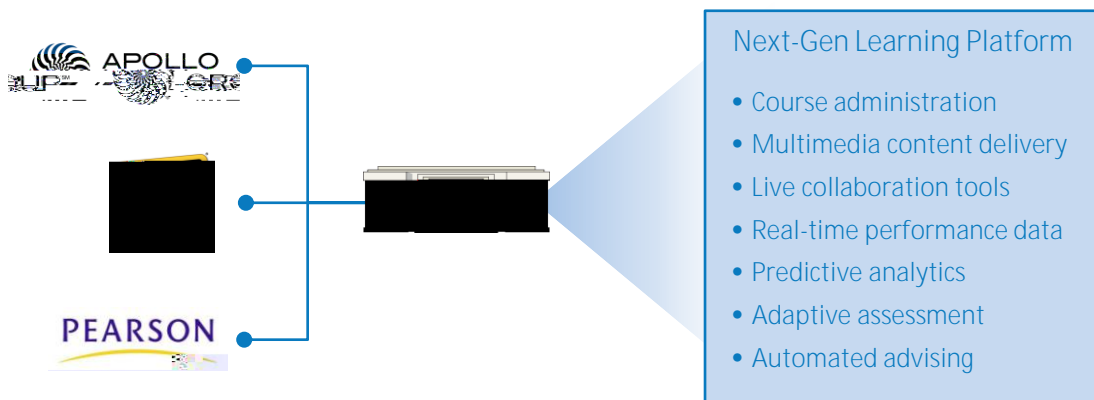
Game-Based Learning on the Horizon

Source: James Paul Gee, "Games and 21st Century Learning,"
, May 6, 2009; Jane McGonigal, "Be a Gamer, Save the
World,"



The Platform Wars

Where does the learning management system (LMS) fit in this picture of digitally-enhanced teaching and learning? By most accounts, LMS providers are rapidly expanding their services to facilitate not only the basic aspects of course facilitation (through class rosters, messaging, content platforms, and assignment submission) but advanced analytics, interactive multimedia, synchronous collaboration, and even integration with student support services.



As the monolithic task of “teaching” unbundles into a complex mix of activities—some digitally mediated, some in the classroom, and others automated—third party vendors such as Blackboard, publishers like Pearson, and

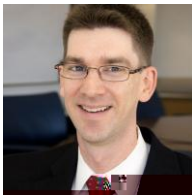
The Power of a Platform

“It’s hard to predict who will win the platform wars, but it’s easy to predict that someone will. The costs of building an online platform are negligible—Instagram, the mobile photo-sharing platform, had nine employees at the beginning of this year. They were just another group of young people gathered around a table staring at MacBook Airls. The rewards of building the winning platform are vast, as Instagram found when it was bought by Facebook for \$1 billion.”

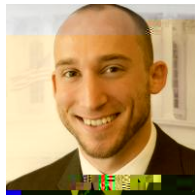


Our exploration of instructional innovation—whether into cutting-edge technologies, industry trends, costs and benefits, business models, implementation strategies and incentives, or new competitors—has only just begun. Over the next year, we will build on our existing best practices research in this area by diving deeper into both the global macro-trends surrounding the digitization of learning and on-the-ground developments in pedagogy.

As we continue to present this material and monitor developments in new instructional models and technologies, we are always interested in hearing from you. Please feel free to contact our research team with feedback, ideas, examples of pedagogical innovation in action, and leads for our ongoing work on online and blended learning.



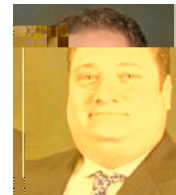
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