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The MOOC Model: Challenging Traditional Education

by James G. Mazoue

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3 Comments

Key Takeaways

• A turning point will occur in the higher education model when a MOOC-based program of study leads to a degree from an accredited institution — a trend that has already begun to develop.

• Addressing the quality of the learning experience that MOOCs provide is therefore of paramount importance to their credibility and acceptance.
MOOCs represent the latest stage in the evolution of open educational resources. First was open access to course content, and then access to free online courses. Accredited institutions are now accepting MOOCs as well as free courses and experiential learning as partial credit toward a degree. The next disruptor will likely mark a tipping point: an entirely free online curriculum leading to a degree from an accredited institution. With this new business model, students might still have to pay to certify their credentials, but not for the process leading to their acquisition. If free access to a degree-granting curriculum were to occur, the business model of higher education would dramatically and irreversibly change. As Nathan Harden ominously noted, “recent history shows us that the internet is a great destroyer of any traditional business that relies on the sale of information.”

Colleges have a problem here: the way in which the core services of education are rendered is changing, but the underlying business model is not. This widening disconnect threatens not only the financial viability of traditional campuses following the “Law of More,” but, more fundamentally, their rationale.

A number of converging trends pose a challenge to brick-and-mortar institutions:

- the emergence of the learning sciences and their application to educational practice,
- the movement toward competency-based education, and
- new business models that effectively combine instructional quality, lower cost, and increased access through unlimited scalability (MOOCs).

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The End of Nuclear Institutions

There is compelling reason to think that unbundling institutional knowledge provision and credentialing is not only gaining momentum but is inevitable. Recent events confirm Peter Stokes’s observation that the fusion of the core elements of land-based education (faculty, curriculum, credentials) is no longer inseparably tied to a single institution. The emergence of MOOCs as an alternative to location-bound, proprietary forms of campus-based learning and portals like edX, Coursera, and Udacity that host them undermine the individually crafted course model that sustains the “college credit monopoly.”

The acceptance of credit for MOOCs by accredited institutions, such as Colorado State University’s Global Campus, Antioch University, San Jose State University, Georgia State University, and the recently announced MOOC2Degree collaboration between dozens of public universities and Academic Partnerships, the impetus from Gates Foundation grants to develop MOOCs for “high enrollment, low-success” introductory courses, and the partnership between the Saylor Foundation and Excelsior College and StraighterLine are all opening up a path to credit for free and low-cost courses. A parallel movement away from seat-time to competency-based learning at Southern New Hampshire University, the University of Wisconsin System, further erodes the value proposition underlying the traditional model of land-based education.

MOOCs, as currently designed, address two of the three challenges facing postsecondary education: access and cost. MOOC-based degree programs would not only democratize education, but their scalability would help end the unsustainable trajectory of tuition. They are an effective remedy to the “cost disease” plaguing higher education and a viable solution to the problem of providing global access to educational credentials.

MOOCs represent a postindustrial model of teaching and learning that has the potential to undermine and replace the business model of institutions that depend on recruiting and retaining students for location-bound, proprietary forms of campus-based learning.

MOOCs: Quality Matters

Notwithstanding the importance of their role in reducing cost and expanding access, the remaining unresolved issue facing the acceptance of MOOCs is access to what? The major obstacle to their acceptance relates to the third challenge: their quality. As some rightly point out, current course models can aptly be described as “self-service learning and crowdsourced teaching.” Although self-directed learning and peer mentoring have instructional benefits when part of a well-designed curriculum, most MOOCs (especially in STEM areas) are designed in a way that skews toward autodidacts and more advanced learners. Novice learners needing instructional guidance are largely on their own and no better off perhaps than those in a large gateway course delivered in a lecture hall on campus. Although improving the quality of student learning is one of the priorities of the major MOOC providers, most of their courses currently lack a sophisticated learning architecture that effectively adapts to the individual needs of each learner.
Addressing the quality of the learning experience that MOOCs provide is therefore of paramount importance to their credibility and acceptance. According to the most recent Babson Research Group survey, institutional decision makers have yet to be convinced of the value of MOOCs. Although not specifically attributing their skepticism to the perceived quality of MOOCs, the report finds that only 28 percent of chief academic officers believe that they are a sustainable method for offering courses.14 What potential, then, do MOOCs have not only to improve learning but to provide the best possible educational experience? Contrary to what some may think, designing the best learning environments does not entail their being taught by the best professors or affiliated with elite universities. Instead of simply using scholarly reputation and institutional prestige as quality standards, we should judge MOOCs by how well they enable the conditions that optimize learning for each student. Although critics may scoff at the simplistic design of most current MOOCs, it would be shortsighted to dismiss them as hopelessly inferior to classroom-based instruction. If there is one lesson from the history of disruptive innovation, it is that we often wrongly assume that a product or practice that dominates a current market defines enduring standards of optimal quality. It would be a mistake, then, to think that the near-term shortcomings of MOOCs inhibit their potential to improve in quality. MOOCs and other forms of open curricula will transform how people learn only to the extent that they enable effective learning. What, then, might a learning-optimized MOOC look like?

**MOOCs as Precision-Built Courseware**

We do not need to look far to find a model. Given the pioneering research of Benjamin Bloom and his colleagues, we do not need to speculate about the conditions that produce effective learning. Of three learning conditions — tutoring, mastery learning, and conventional classroom instruction — the least effective was classroom-based group instruction.15 The most effective was a combination of one-to-one tutoring and mastery learning: Bloom estimated that about 90 percent of students receiving tutoring and corrective feedback can perform at two standard deviations above the average student taught by conventional group instruction.16 Subsequent research by Van Lehn found that, although the effect size Bloom claimed for human tutoring might be too high, it supports the general conclusion that intelligent tutoring systems, unlike conventional classrooms, have the potential to approximate Bloom's Two Sigma effect by customizing feedback and targeted guidance to the individual learning needs of each student.17 When embedded into digital content to provide context-specific coaching and guidance, cognitive tutors and feedback loops can incrementally guide each learner along a personal path toward progressively greater understanding and mastery.18

As digital environments that personalize learning, MOOCs have the potential to serve as "educational positioning systems" that precisely navigate students through their curriculum along individual "pathways and routes to maximize student success."19 Initial results indicate that courseware explicitly designed in accordance with effective practices drawn from the learning sciences and enhanced with learning analytics to function as educational positioning systems can have a positive impact on student performance.20 MOOCs can be designed, therefore, as precursors of course exemplars — early prototypes of optimized learning environments that continuously improve educational practice through application of the learning sciences. In contrast to go-it-alone legacy practices that combine batch-processed instruction with folk pedagogical approaches to teaching, the design of MOOCs as course exemplars would systematically apply research-based principles and practices to create the conditions that best enable each student to learn.21 Innovative MOOC design could therefore act as a catalyst for transitioning from our current handcrafted model of teaching to precision-based exemplars.

Fortunately, already completed foundational work can be adapted to build a large-scale research infrastructure for supporting the development of MOOCs as precision-built courseware. At the epicenter of applied research in the learning sciences, Carnegie Mellon University's Open Learning Initiative and the affiliated Pittsburgh Science of Learning Center have led the efforts to transform education into a science. Courseware development projects funded through the Community College Open Learning Initiative, Next Generation Learning Challenge Grants, and APLU/OLI Multi-institutional Cognitive Coursewares Design initiative use the OLI's research-based methodology and data-driven design model to improve learning systematically through a cyclic process of iterative feedback. Although designing courseware that functions as learning exemplars is not the primary goal of the OLI, MOOCs could be designed using its data-driven model to develop courseware that massively individualizes learning. OLI-designed MOOCs, therefore, offer an opportunity to replace intuitive approaches to teaching with practices that enable more effective and efficient forms of learning.

**A New Business Model**

The emergence of a new educational model based on MOOCs fits the evolutionary pattern of Christensen's theory of disruptive innovation. Christensen and Wessel identified a business model's "extendable core" as the basis of its performance advantage.22 If MOOCs turn out to be more than just a fad, it will be because their extendable core confers a competitive advantage that enables them to attract new customers and extend their customer base.23 The extendable...
Five characteristics in particular define the extendable core of precision education:

- Its research-based methodology produces learning-optimized course architectures.
- It is maximally effective because it individualizes learning.
- It is efficient because it is competency based.
- It is scalable.
- It is cost-effective.

If precision education were adopted as the design standard for MOOCs, it would improve the quality of learning for students across all socioeconomic levels and demographic areas. It would affect not only students seeking convenient and affordable options but also students enrolling in the "full-service" sector of the educational market dominated by traditional land-based institutions. In closing the quality differential between MOOC-based curricula and locally crafted instruction, precision-built courseware would gradually eliminate the distinction between "high-end" and "low-end" education. There would only be one kind of learning — optimized for each individual. Effectively designed and organized into a coherent curriculum, MOOCs would have the potential to usher in an entirely new business model of higher education.

The Illusion of Safety from Disruption

In their defense, legacy institutions might counter that Harden’s point about the destabilizing effect of the Internet is largely irrelevant because they offer students more than just information. As Christensen pointed out, brick-and-mortar institutions have advantages that are not easily duplicated online: they provide an on-campus experience that offers students (who can afford it) myriad socialization and networking opportunities.24 According to conventional thinking, college campuses, unlike online networks, serve as career and relationship incubators. But are even these advantages safe from disruption?

MOOCs are beginning to compete with one of the key elements of the extendable core of location-based education: they are challenging the proposition that in-person, on-campus networking confers a decided advantage for those seeking to parlay their degrees into jobs. Recently the major for-profit MOOC providers, Coursera and Udacity, disclosed that mining and brokering talent for business clients are primary drivers behind their business model.25 Coursera's Career Services, for example, proposes to use MOOCs to identify and channel talent to high-tech businesses. By taking advantage of MOOC-enabled recruitment opportunities, talented individuals need not wait to earn a degree before successfully marketing their credentials. If MOOCs can be used to create a system that rewards demonstrable competency, then they will further undermine the value of campus-based networking. When used to connect talent directly to prospective employers, MOOCs can circumvent one of the few remaining rationales for seeking a traditional college experience.

Note that, in the "recruitment services" model, MOOCs do not create talent — they identify it and broker its acquisition. Rather than create intellectual capital, they serve primarily as a means of certifying its possession. Even if MOOCs were used solely as a recruitment tool, however, the rationale for preferring a precision-built model of learning that develops the competencies being measured would still hold. In fact, the for-profit model of MOOCs depends on and presupposes the existence of an optimally designed process that develops the competencies they evaluate. Precision education therefore underlies the rationale for MOOCs as both academic exemplars and as a litmus test for identifying those who possess relevant job-related competencies. Whether the motivation for adopting a MOOC is for-profit or nonprofit, the success of either model depends on a design strategy that optimizes learning.

A Postindustrial Model of Teaching and Learning

Precision-built MOOCs challenge the assumption that students need to come to a campus to interact with resident faculty in order to acquire the knowledge and skills necessary for credentialing. They therefore have the potential to undermine the dominant role that campus-based educational institutions have had as exclusive providers of knowledge and credentials. As competition with MOOCs increases, they will face the following dilemma: Should they compete with MOOC-based curricula head-to-head, or should they begin to assimilate MOOCs into their traditional, residency-based curriculum? On one hand, for those institutions without the cachet of being highly selective, participation in the for-profit MOOC model is problematic: acting as a talent broker for employers would likely siphon away talented, potential degree-seeking students. It would be great for employers and for students who are qualified to transition into good jobs, but not so great for institutions that depend on cultivating and retaining residential talent. On the other hand, elite private and flagship public universities with established brands might choose to offer MOOCs on the basis that they would not pose a threat to their residential operations. But precision-built MOOCs will eventually compromise even their residential academic model as well. Students who would still prefer, for nonacademic reasons, to pay a tuition premium for a campus experience would likely be at a competitive disadvantage if their curriculum were locally crafted instead of learning optimized. On the
strength of their extendable core, therefore, MOOCs represent a postindustrial model of teaching and learning that has the potential to undermine and replace the business model of all institutions that depend on recruiting and retaining students for on-campus studies.

Notes

1. Nathan Harden, "The End of the University as We Know It," The American Interest (January/February 2013).
23. Ibid.
24. Ibid., p. 59.
James G. Mazoue is Director of the Office of Online Programs at Wayne State University in Detroit, Michigan. The Office of Online Programs manages the campus-wide coordination of online faculty development and support services, policy implementation, and strategic planning for online course and program development.

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- Teaching and Learning

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3 Comments

Shallow

Any argument relying on the assumption that there is something like "unlimited scalability" cannot really work, even more so when it comes to learning. Just imagine the difference in communication efforts (forums especially) around 250 students vs. 2,500 students - who is going to take care of this additional feedback at the same quality level?

I agree MOOC can complement existing models and might impact some parts of the educational system dramatically (average local education vs. first-rate online education), but their case has to be looked at with more scrutiny.

Posted by: oas on February 5, 2013

Massive (all together) vs individualized (each one on their box)

I do like the first part of this paper, maybe because I find a lot of coincidence with my own thinking about MOOCs. Then, suddenly, everything change. MOOC (massive) became IOOC (individualized), free learning is transformed into head hunting, and collaboration and crowdsourcing became competition.

I come from the ITS field, and I do believe proactive (intelligent) systems that adapt to the learner state, needs and goals are a good thing. Yet MOOC are massive, that is to say, full of students, thousands of them. If we put each one of them in their own box, to learn with/from the machine, aren't we missing something? Does social learning ring any bells?

Adaptive & personalized learning does not mean individualized learning, necessarily, even if it is common practice in ITS (particularly in the tradition of cognitive tutors). There are alternatives, such as (intelligent) computer-supported collaborative learning. If we have thousand of people got together with the common goal of learning about something, shouldn't we work on improving their collaboration and swift their goal to “all learning, together, about something”, not otherwise?
MOOC

Yes indeed the MOOC movement is the right direction to go. This article was topical for me since I just started my MOOC through coursera.org. Wow -- a breadth of diversity, and for the topic of the class diversity is critical. MOOC’s aren’t 101 courses, but nor should they be. Career and life experiences make this type of learning for upper-division and graduate students. For the record, I am an older adult with a graduate degree already. For me, this is an opportunity to apply knowledge. Great article!

Posted by: morales on January 30, 2013

Post by: davidhalbeisen on January 29, 2013

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