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Massive Open Online Courses (MOOCs): A Primer for University and College Board Members

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AGB ASSOCIATION OF GOVERNING BOARDS OF UNIVERSITIES AND COLLEGES

This paper is based upon a presentation given to the board of directors of the Association of Governing Boards of Universities and Colleges. Mr. Voss is the vice president and CIO at the University of Maryland's flagship campus in College Park and also a member of the EDUCAUSE board of directors, serving as vice chair for 2013.

An AGB White Paper
March 2013

Table of Contents

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In 2011, the University of Pennsylvania, Princeton University, Stanford University, and the University of Michigan joined forces to offer free courses online. The Massachusetts Institute of Technology and Harvard University came together to do the same in 2012. That partnership has expanded to include a number of other institutions, including the University of California at Berkeley and Wellesley College. The collaboration of such name-brand institutions has sparked increasingly greater interest among higher education leaders and the public in such massive open online courses or MOOCs, as they are called, and in online education in general.

As boards seek to grasp the significance of MOOCs and their impact on colleges and universities, they should focus on two fundamental ideas. First, while information technology (IT) is the medium through which disruption of the academic enterprise is taking place, that disruption is not about IT. IT is an enabler of almost every aspect of life in the 21st century—on our campuses, in our workplaces, and in our homes. But what is most important for higher education is the transformation of teaching and learning. The "techies" are indeed backstage, making things happen, but the "stars" on the stage are the faculty and instructors. ***This revolution is not about IT. It is about teaching and learning.***

Second, although MOOCs have grabbed the headlines and rightfully become the focal point of the disruption under way in higher education, we must not think of them as the be-all and end-all in online education. We should think of a spice rack: MOOCs are just one spice among many online-education spices, and colleges and universities (and faculty members through their pedagogy) will employ many spices to make the perfect academic creation for consumption by students. While this paper will concentrate on MOOCs, it is important to at least be aware of those other "spices" that institutions will probably use or consider in 2013 and going forward. *(To read more about the broader context of online education in which MOOCs are operating and other types of online offerings, see Appendix 1.)*

Indeed, the environment in which MOOCs and other forms of online education operate is changing virtually every day. This white paper is an effort to give board chairs, presidents, and others some context to help guide discussions on their own campuses. But to stay abreast of this rapidly shifting landscape, you should regularly visit continually updated sources of information, such as that provided by *The Chronicle of Higher Education* to its subscribers in its "What You Need to Know About MOOCs" microsite (*See box on page 12.*)

IS THIS TIME DIFFERENT?

The chief information officers (CIOs) of the members of the Committee on Institutional Cooperation (CIC), a consortium of Big Ten universities plus the University of Chicago, prepared a briefing in late 2012 about the MOOC phenomenon for their provosts and presidents, posing the question: ***Is this time different?***[1] That question was based on the premise that, over the past decade, online education has moved ahead relatively slowly with fits and starts—that the disruption that is changing higher education institutions and pedagogy has been more evolutionary than revolutionary. And the CIOs concluded that, indeed, the answer to the question is an emphatic ***YES!*** To quote their view: *"The effect on residential universities relative to previous experiences and events in the arena will be profound and long-term."* A report by the Education Advisory Board, "Promise and Perils of Innovation: Competitive Challenges to the Traditional Higher Education Model" (September 9, 2012), supports that perspective.

Meanwhile, Kevin Carey, director of the education policy program at the New America Foundation, has postulated in the *Washington Monthly* magazine (August 28, 2012)[2] that before this decade is out:

- The "parallel universe" of an online-age education will reach a point of sophistication and credibility where the degrees granted—or whatever new method is invented to mean "evidence of your skills and knowledge"—will be accepted and taken seriously by employers.
- American colleges and universities will start to feel real pain.
- Political pressure will continue to grow for credits earned in low-cost MOOCs to be transferable to traditional colleges.
- Profit margins that colleges have enjoyed in providing more-traditional education will shrink.
- Colleges with strong brand names and other sources of revenue will emerge stronger than ever, but everyone else will scramble to survive as vestigial players.

Only time will tell if such predictions are correct. Right now, for nearly all involved, MOOCs are still an experiment, a proverbial toe in the water. The institutions involved thus far are prestigious, the faculty renowned and motivated, and the topics largely hand-picked by the institutions, the MOOC entities, or both in concert. The participating colleges and universities have stated that they believe their involvement with these initial efforts will extend, enhance, and preserve their institutional reach, brand, and reputation.

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[1] *Is This Time Different? Questions for MOOCs and Online Learning Beyond 2012*. Committee on Institutional Cooperation, Council of Chief Information Officers. http://www.cic.net/Libraries/Technology/Is_This_Time_Different_CIC_CIOs.sflb.ashx.

[2] *The Siege of Academe*. Kevin Carey, *Washington Monthly*, September/October 2012. http://www.washingtonmonthly.com/magazine/septemberoctober_2012/features/_its_three_oclock_in039373.php?page=all.

Some of the Better-Known MOOCs

Coursera *(www.coursera.org)* was started by two Stanford professors (Daphne Koller and Andrew Ng). The company created an environment, built a learning platform, and subsequently engaged more than 30 university partners in developing course content. (As of January 2013, more than 200 courses will be offered.)

edX *(www.edx.org)* began as a partnership of Harvard and MIT and, as of December 2012, had expanded to include the University of California at Berkeley, the University of Texas System, Wellesley College, and Georgetown University. It will be offering 15 courses in Spring 2013.

Udacity *(www.udacity.com)* was started by Stanford Professor Sebastian Thrun with Mike Sokolsky and David Stavens, and then joined by University of Virginia Professor David Evans. It is offering about 20 courses in Spring 2013.

Udemy *(www.udemy.com)* was founded by Eren Bali and Oktay Caglar, who have built a platform that invites individuals (rather than institutions) to offer online courses.

Yet the viral nature of MOOCs has been apparent through the rapid growth of providers, participating (significant) institutions, faculty members involved in providing courses, students enrolled, and other measures. And MOOCs are starting to exhibit the second trend desired by their startup investors: They are sticky. That is to say, they don't seem to be going away. More courses are being added, more faculty members and students are becoming involved, and each passing month demonstrates that, thus far, MOOCs are not a 2012 flash in the pan. We may have crossed a Rubicon of sorts; it now appears that online education may truly disrupt, in unprecedented ways, more-traditional approaches to higher education.

A PRIMER ON MOOCS

So what exactly are MOOCs, and how do they work? And what specific issues should boards be considering?

How MOOCs Work

MOOCs use Web-based tools and environments—referred to as **platforms**—to deliver education and classes in a new paradigm without regard for geographic boundaries and time zones and to much larger audiences—in fact, tens of thousands of students. As the box above outlines, various MOOC entities own these platforms.

One of the key differences between MOOCs and the previous online approaches is that MOOCs are free. Students can take the courses at no charge. The pedagogy that MOOCs employ also differs significantly from "traditional online learning." Learning is accomplished via a "flipped classroom" model, whereby the instructor employs the Internet and other technologies to allow students to gain knowledge that used to be delivered via a lecture format and then use time in the classroom to work on problems together.[3]

The instructor can in turn then act more like a tutor walking among the students rather than a sage on the stage performing a monologue. MOOCs allow scaling of that approach to massive proportions, using social networking tools so that students help educate each other, as well as computerized assignments and assessments.

Unlike older forms of online learning, MOOCs are not asynchronous; they are not like recorded class sessions that a student listens to at his or her own pace sitting in a library, completing one lesson and then starting a subsequent one. Rather, they are similar to on-campus courses, **delivered synchronously** on a defined schedule—usually on a weekly calendar basis. A student in a far-flung location may take a particular lecture and do the related exercises in his or her own time zone during a convenient window of delivery. A student may also make up for missed lectures at his or her convenience, although that will lessen the impact of some aspects of the cohortlike approach to learning with fellow students.

With MOOCs, lectures are also structured differently. Rather than simply capturing a a 45- or 60-minute lecture delivered in a traditional classroom and making it available online, faculty members record **lecture modules** tightly focused on various topics, lasting perhaps **12 to 15 minutes at most**. One reason for that short duration is to allow students to "squeeze in" the content-delivery modules in convenient blocks of time during the synchronous window.

Imagine the working parent couple taking a course together: One parent gets the kids ready for bed while the other parent consumes a short, focused lecture module, and then the other parent does likewise as the first parent actually puts the children to bed and reads them a story. And then both parents independently undertake the discussion sessions, exercises, and assessment elements associated with the module as their schedules permit. In other words, this module approach was designed to help students fit their education conveniently into the gaps of time in their busy lives.

Exercises, assessment devices (quizzes or tests), and grading are automated within the platform. For more-subjective, content-oriented exercises, students may "grade" each other via discussion forums and social-networking interactions. Of course, many questions about how assessment works and how "grading" is possible must be addressed. But there is no need to do so immediately, because students can take the MOOCs at no cost, and no certified value for their learning assessments has yet been established. As a result, the focus has been on the new MOOC approach itself and its potential impact on the way we deliver higher education.

MOOCs are demonstrating the ability to provide access to education on a massive and international scale. Most students now enrolled in MOOCs are **global**—outside the United States. Most are also older, **nontraditional students** who use MOOCs for continuing education objectives; they are not students currently enrolled in an undergraduate or graduate program. Students who take MOOCs today appear to be doing so either as an "experience experiment" or as a way to augment their previous education for skill-enhancement purposes or personal self-actualization. But that balance could shift at any moment, as the uses of MOOCs to enhance existing educational programs develop.

MOOC providers are already capturing a great deal of data about the classes and learning processes currently under way, and analytics on these data vis-à-vis the learning experience of MOOCs are emerging. That data and analysis will very likely play a major role in the ultimate value proposition of MOOC companies (and potentially their participating institutions) by enabling those companies and institutions to market the data that they've gathered to interested parties. Venture capital investors in MOOCs do eventually want to get a return on their investment in the $1-trillion market that is education.

[3] Flip Teaching (aka the Flipped Classroom). http://en.wikipedia.org/wiki/Flip_teaching

WHAT REMAINS TO BE SEEN

We don't know what impact MOOCs will have on pedagogy or the learning model. Obviously, within the confines of MOOC platforms and approaches, the way that faculty members structure and deliver courses has changed. But as faculty members experiment with the flipped classroom, will these MOOC-inspired approaches also catch on in non-MOOC settings? What will be the impact of the MOOC model on students? Will the self-directed nature and "cohort coeducation" approach of a flipped classroom work well for everyone—or not?

It is true that, thus far, the number of students who drop out of MOOCs is huge: If 100,000 students enroll in a course, perhaps fewer than 5,000 students complete it. That is an interesting factoid, however, because while a 5 percent success rate is appalling, moving 5,000 students through a given course in one teaching is phenomenal. What is also not clear is whether or not MOOCs might actually improve traditional graduation rates, as students are able to "load up" on courses without regard to the logistics of setting up a workable class schedule. That is another hidden—and potentially quite positive—impact.

Also, becoming viral and sticky may not be enough to sustain the multimillion-dollar investments in MOOC entities in the past two years. At some point, business models must emerge along with answers to the question: ***Are MOOCs financially sustainable?*** Education is a $1-trillion market and growing, as new areas of the world seek ways to educate their populations. So funding is there, but how will MOOCs access it? And will it involve the transfer of existing revenue from current providers or the creation of new revenue? These are fundamental questions, and only time will provide answers.

Right now, no standard business model for MOOCs exists. Every passing month, however, new possibilities emerge—and will continue to emerge—for how MOOCs can make money for their providers and the institutions that employ them. Some of those possibilities include:

- **Charging for certification**: requiring students to pay for documentation that they actually gained knowledge and skills through the courses.
- **Charging for assessment and credit**: ramping up certification broadly, up to and including course credit and even degrees. In essence, the value equation to the student is to pay tuition and fees to get credit, yet avoid the associated living costs and either speed up the time it takes to graduate or extend it to align with the demands of their jobs and families.
- **Data mining**: selling the data about students and their performance in classes (with or without formal certification) to potential employers looking for talent. That could also include providing access to the best and brightest students around the world to institutions. Imagine finding the next Stephen Hawking in the slums of Bangalore or the remote countryside of China.
- **Cross-selling/up-selling**: using the platforms as a way to reach students about products related to what they're studying or to offer more advanced and certified course offerings.
- **Advertising**: sending targeted advertising to the users of the system in the same "old" Internet way that Google offers free Gmail, or that Facebook allows all that usage at no cost, through sponsored ads.
- **Write in your idea here**: Creative minds could develop many different business models for MOOCs by which everyone—MOOC providers, institutions, faculty members, students, and society in general—might benefit.

ISSUES TO CONSIDER

We are still in the early days of MOOCs. In addition to questions about the business model and pedagogical impact, other issues should be addressed:

- **Intellectual Property**. Who owns the course? What about scholarly works and the materials used in the course? How do the massive and open elements of MOOCs influence "fair use" claims on copyrighted materials?
- **Identity and Credit**. Once a student completes a MOOC, how do colleges and universities go about ensuring that he or she has really learned something and earned the credit? Perhaps institutions and MOOC entities will develop partnerships with testing centers and verification technology companies.
- **Open courses, certifications, credits, and degrees**. MOOCs are catalyzing exploration of alternative credentialing systems, and traditional institutions should carefully consider how MOOCs fit into their degree programs.

Some colleges and universities are asking themselves: What is our institution's capacity to deliver MOOCs? Are we positioned to undertake the effort and costs to do MOOCs right? But relatively few institutions have the resources to invest in high-quality MOOCs, even with the support of a Coursera or Udacity. Now and for the coming year, colleges and universities—and their boards—should address several other key questions:

1. **Where do MOOCs fit into the institution's eLearning strategy?** Are MOOCs a "spice" to be added to the institution's spice rack? And if so, how?

2. **How should we determine what, if any, credit to give to students who take MOOCs?** How can we assess what students learn from MOOCs, and for what courses in particular should they receive credit? The American Council on Education recently announced that it would endorse certain MOOCs for credit, although the final decision on what credits to accept rests with each degree-granting institution.

3. **What does the presence of MOOCs in the market mean for our institution?** This is a hard question, and one that may be instilling fear in some institutions. Often mentioned is the concern that students may be tempted to take courses via MOOCs and other forms of online education offered by more-prestigious institutions rather than the traditional or even online offerings of less well-known colleges and universities, and that this may eventually drive some of them out of existence. There is no easy answer to that concern. It will require direct, frank, and honest discussion at each institution. Kevin Carey provides his opinion on this in his *Washington Monthly* magazine article, and I encourage using it as a springboard for opening discussion of this disruptive and discomforting question.

THE KEY CHALLENGES

To reiterate the fundamental ideas that I presented at the outset of this paper: *This is not about IT. But IT definitely matters!* IT is the mechanism that is enabling the disruption, and an institution must have a fundamentally sound and strategic approach to IT. In these early days of what is shaping up to be an online revolution (including MOOCs), IT leadership is often tapped to lead institutional forays into this area. But a question looms: *Can IT get off the stage and go backstage where it belongs?*

This *IS* about a new approach to pedagogy. Technology, trends, and broad actions in the market are disruptively changing teaching and learning. That is beyond the control of faculty members and academic leaders. And often their tendency is to examine this as an academic experiment—to study it and wait for outcomes.

But as we've seen in disruptive events in a variety of markets, time is of the essence. Those who insist on simply watching and waiting may be passed by. Faculty members must understand that online learning is a new approach to pedagogy and embrace its possibilities. Academic administrators— chairs, deans, provosts, and presidents—must also embrace the change and encourage a constructive response.

And what about board members? They can be instrumental in helping these two groups embrace change, but not by use of a heavy hand or making matters worse by fostering a clash of cultures. Instead, board members can become actively involved in the campus discourse with faculty members and administrators by asking questions and fostering a thoughtful dialogue—one by which they diligently and openly face the challenges together.

In IT circles, the term "business process engineering" means that advances in technology allow enterprises to not just automate the status quo, but also to *actually change the process and, one hopes, improve it*. In this case, the process is teaching and learning. To date, much of what we've done with IT and technology in higher education has been simply to use it to automate the processes that surround the administration of courses. What is happening now, however, is that technology is allowing the teaching and learning processes themselves to be changed—*to be re-engineered*. That is the true challenge our institutions face today, a challenge that MOOCs are illuminating brightly.

As a CIO at a major flagship research university and vice chair of the EDUCAUSE board, I would share the following opinions and perspectives:

- It will take a significant investment in "humanware" over the rest of this decade to transform the way teaching is delivered—either blended, totally online, or somewhere in between. (*See box on page 8.*) No one is going to invent a perfect device or platform that transitions faculty members overnight from the old way to a new one. Many other people—course designers, multimedia specialists—will have to provide support. Whether that effort is managed centrally by a senior administrative leader or distributed across the existing administration—and how it is facilitated—are matters of institutional culture.
- *The academy must lead the change.* Provosts, deans, chairs, and faculty members must embrace it. In most instances, IT people can play the role of collaborators, supporters, and enablers of the process of change (not to mention instigators of change), but it cannot be viewed as an "IT thing" along with all the other IT things facing nearly all campuses now.
- There will be a lot of discussion and debate about whether MOOCs and other forms of online teaching and learning actually improve learning outcomes. Whether or not they do *is strictly academic (and not IT/technical). And not necessarily relevant!* Remember the music industry and the debate about sound quality vis-à-vis CDs versus MP3s? CDs were "higher fidelity" and judged to be superior in terms of quality. But MP3s were fairly close in quality and vastly more "flexible" in their nature. As a result, they have been adopted as the standard for most forms of music distribution and use.

The Importance of Humanware

Everyone is well aware of information technology terminology involving hardware and software, and even networkware. They have long been established in the IT revolution as elements that institutions and individuals should invest in. We all know we need to buy computers and devices (hardware), and that these electronic devices are made to work by programs called software. And with the Internet, we've come to understand that the network itself is another "ware" requiring our investment and involvement. But what often gets lost in a world where we buy hardware, software, and networkware is that none of this can really be of full use without people—humanware—to help the users of the various wares get value from them. Technology is a wonderful and wondrous thing, but without the humanware to guide and support it, we never will obtain technology's full value.

The CIOs at the Committee on Institutional Cooperation have recommended that the leaders of their member institutions consider several near-term actions:

- Engage purposefully in trials of MOOCs, adaptive learning systems, and emerging technologies to develop institutional understanding. Formulate a long-term strategy for professional development, MOOCs, courses for credit, and full degree programs.
- Carefully analyze emerging business models for revenue-generating, free, and partnered courses. Incorporate costs for campus services and systems.
- Ramp up institutional capacity for online course production and increase resources to support instructional design, media development, assessment, and analytics.
- Develop IT system readiness to integrate with a range of educational software that may need to link to campus information systems in ways that are legal, secure, and compliant with campus policies.

ISSUES FOR BOARDS

If we accept that this time is different, then colleges and universities must take action now. Boards can play key roles in how their institutions deal with the challenge of online education and MOOCs. But boards must realize that the presidents, administrators, and faculty members of their institution are at a point of significant tension and should consider how to aid them rather than simply challenge them to act.

Faculty members' opinions run the spectrum as to the proper approach to online education, but many are anxious about the advances in it and the use of technology to improve blended learning environments. They worry about the level and speed of change required and how they, as individuals, will transition from their existing approach to pedagogy to a brave new world. And some faculty members are skeptical about the motivations of institutional leaders, including board members, for pursuing online learning.

Further, no magic technological wand can be waved that will make all this change easy and quick. *This process will be resource-intensive—not only in terms of investments in IT infrastructure (hardware and software), but also in people who must help guide the transition*. A recent view expressed by one of the leaders of the MOOC movement was that moving a given course into the MOOC format requires a full-time course designer to support the faculty member. Efficiencies will certainly be found, but going forward, colleges will need to rebuild academic support resources that may have been reduced during the past five years of budget retrenchment. There will be a direct, proportional relationship between the investment in human capital resources and the quantity and speed of change at an institution.

It is naive to believe this can all be done quickly, cheaply, and without impact to existing environments and funding models at traditional colleges and universities. If an institution is considering getting into this market using existing resources, it should carefully examine the investments that competitors in the MOOC realm are making: millions of dollars and thousands of hours of collective humanware. Boards must grasp that fact and then help their institutions' leaders also understand it.

Indeed, boards should engage now with their presidents and other senior administrators. These engagements should be significant and supportive, and done with an understanding of the between-a-rock-and-a-hard-place position into which this revolution has placed institutional leaders, especially faculty members. Boards are certainly focused on institutional brand and prestige, revenue and market protection and enhancement, and cost containment and reduction. However, if these are viewed as the business reasons for adapting IT-enabled changes to the process of teaching and learning, resistance will be significant and trust will be slow in coming between the faculty and the board—with the presidents and administrators stuck in the middle. Boards should openly acknowledge and grapple with the cultural issues within their institutions and work actively and supportively with faculty members and administrators to address the challenges presented by this disruptive change.

The Committee on Institutional Cooperation CIOs have posed a number of questions for discussion on campuses. Boards should look to this list of questions and help their institutions have the critical and important discussions needed to advance change:

- What kinds of online experiences are needed as substitutes for current models, and/or as complements for current models?
- How—and why—does scale matter? Should there be a focus on massive courses versus smaller ones? Whole programs versus a course-level focus? For-credit and fee courses versus noncredit and free courses?
- What is lacking at the institution to achieve online objectives? What must be put into place strategically, tactically, and operationally to advance success?
- What kinds of partners are needed, and why?
- What is the degree of urgency? Are there issues that should be addressed sooner as opposed to later?
- Should a central leader coordinate online initiatives—such as a vice provost or special assistant to the president?
- What are the ramifications of a more central approach to IT infrastructure and services? Is it time to centralize more-pedestrian IT support and infrastructure elements so that staff members can focus on the advanced need to support faculty in redesign or re-engineering of pedagogy?

Boards should inquire about the actions that their institutional leaders are taking or plan to take concerning online learning in 2013. They should encourage those leaders to thoughtfully engage in national developments and gain experience firsthand in the advances occurring now in higher education. Finally, boards should continue to monitor this fast-changing situation as it develops and invest time in becoming conversant in the complex issues and challenges that must be addressed.

Appendices

APPENDIX I: THE ONLINE LEARNING LANDSCAPE

Before focusing on MOOCs, boards should have a good understanding of the broader universe of online education today. For example, **traditional online institutions** have, for many years, offered various forms of IT-enabled online education classes and degree programs. These include:

- Western Governors University *(www.wgu.edu)*: Online, non-profit, competency-based university offering more than 50 bachelor's, master's, and post-baccalaureate degree programs in the key workforce areas of business, information technology, K–12 teacher education (including initial teacher licensure), and health professions, including nursing. Enrolls more than 33,000 students nationwide.
- University of Phoenix *(www.phoenix.edu)*: Online and on-campus, for-profit university with more than 200 locations offering associate, bachelor's, master's, and doctoral degrees to more than 300,000 students.
- University of Maryland University College *(www.umuc.edu)*: One of 11 accredited, degree-granting institutions in the University System of Maryland and with locations in the Washington, D.C., area as well as Europe and Asia. Offers more than 100 graduate and undergraduate degree programs online to more than 90,000 students.

In addition, **online learning providers**—colloquially referred to as "universities in a box"—essentially act as outsourcing entities, allowing institutions to quickly offer complete online courses and degree programs without having to invest in institutional infrastructure. Under the banner of the institution, these providers typically offer a complete line of services, including marketing and student recruitment, student admission, enrollment, faculty course design and support services, and course hosting and Internet services. In many cases, they also offer 24/7 support. Examples of these providers today include: EmbanetCompass *(www.embanetcompass.com)* and 2Tor *(www.2u.com)*, which built its initial offerings by selecting exclusive partners by program (for example, only one MBA program/institution, etc.).

This "full service" model allows an institution to provide online programs without any impact on the existing campus IT infrastructure, course design, or faculty and student support resources. However, this model comes at a cost: To obtain a return on their infrastructure and support investments, the companies take upward of 75 percent of the revenue and usually require long-term (five-year) provision agreements. While that percentage may seem steep, the students who are enrolled in those programs tend to be completely outside the recruiting pool for traditional on-campus enrollment—in other words, they wouldn't have attended anyway. Thus, such financial arrangements can often provide purely marginal income with little up-front investment or ongoing cost to the institution.

In addition to these online ventures, adaptive learning platforms/providers offer focused education programs and skills-development courses. The most widely known are Knewton *(www.knewton.com)* and Khan Academy *(www.khanacademy.org)*.

MOOCs News Resources

The Chronicle of Higher Education offers regular news and updates about MOOCs at "What You Need to Know About MOOCs" at *http://chronicle.com/article/What-You-Need-to-Know-About/133475*

Also, see its blog, "The Wired Campus: The Latest News on Tech and Education" at *http://chronicle.com/blogs/wiredcampus*

APPENDIX II: KEY ONLINE TERMS AND CONCEPTS

Boards should also understand some of the pedagogical terms and systems used in online education today. For example, **blended learning** is a term that essentially means augmenting traditional classroom education with various forms of online learning. Elements of the "spices" described earlier might be offered as part of the delivery of traditional courses, allowing students access to materials, elements, or exercises presented outside of the classroom and traditional recitation sessions. Blended learning is increasingly popular with both faculty members and students because it uses technology to give students additional content and allows them to work in a medium (online) that they are increasingly more comfortable with—and often prefer. It also lets faculty members, when working face-to-face with students, focus less on content delivery and more on content analysis and discussion, as well as on assessing what students have actually learned.

Learning-management systems (LMS), originally developed in the 1990s as a part of early efforts to advance online education, provide the IT structure and platform upon which faculty members can build their pedagogy. Professors and students discovered that these tools—which automate the process of course delivery and content presentation using IT—were quite valuable in improving traditional classroom pedagogy. Many colleges and universities developed their own in-house learning-management systems during that decade, and some spun off those systems into commercial offerings—such as Blackboard (from Cornell University) and Angel (from Indiana University). Today, the main commercial providers include Blackboard and Desire2Learn; many other companies were either bought out by Blackboard or went out of business.

In the past decade, as costs for LMS have skyrocketed and competition has been eliminated, this market has seen the rise of open-source and community-source platforms, such as Moodle and Sakai, to compete with the commercial systems. The new platforms have become increasingly popular among institutions of all types and sizes.

A recent entry into the LMS market, Instructure's Canvas product, is available to institutions as an open-source product, as well as in a "cloud" version. In this "hybrid" model, institutions can elect to take the code freely (though it is not clear how well it is supported by other users in the community) and host it on their own campus IT infrastructure (servers), or they can use a version offered by Instructure (for a fee based upon the size of the institution) and delivered to their campus users via the Internet. Colleges and universities that have adopted either the open/community-source tools and the Instructure cloud approach have significantly reduced the costs of providing LMS, allowing them to invest such savings—if they are wise enough to do so—in other forms (spices!) of online learning.

Note: Some of these LMS providers are moving into the MOOCs market, suggesting that their platforms can host MOOCs. This remains to be seen in practice, especially for the commercial providers, due to licensing requirements that may significantly increase the costs of some LMS options.

An AGB White Paper
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Additional Articles

EDUCAUSE

What Campus Leaders Need to Know About MOOCs

An EDUCAUSE Executive Briefing

- MOOCs (massive open online courses) are courses delivered over the web to potentially thousands of students at a time.
- While MOOCs have captured the interest of many, the business models and return on investment are still evolving.
- Currently most MOOCs rely on traditional lecture approaches; students must self-organize study groups or discussion.
- Institutions may experiment with MOOCs as a brand extension; others must determine how MOOCs fit their instructional portfolio.
- MOOCs may catalyze new approaches to credentialing.

Massive open online courses—MOOCs—are online courses that are free and open to anyone, with essentially unlimited enrollment.

How MOOCs Work

MOOCs are online courses where lectures are typically "canned," quizzes and testing are automated, and student participation is voluntary. They attain large scale by reducing instructor contact with individual students; students often rely on self-organized study and discussion groups. An alternative model allows students to vote on which questions should rise to the professor's attention (e.g., Coursera). edX encourages students to rely on each other, awarding "Karma points" to students who correctly answer other students' questions. As points accrue, students' roles can expand, e.g., to a teaching assistant.

Initial MOOCs have often been from disciplines that lend themselves to quantitative assessment, such as engineering, computer science, and math. However, MOOCs are becoming applicable to all fields as the platforms enable assessment methods such as peer review. MOOCs generate massive quantities of data about learner behavior, which can be used to understand cognitive growth and how to improve instruction. Some platforms may evolve from course-delivery systems toward adaptive learning platforms—systems that personalize the experience based on the learner's performance.

MOOCs embody a convergence of technology and culture that is creating new energy around e-learning. On the technology side, the tools enabling web-based instruction are more effective and reach greater scale than ever before. E-learning technologies that are widely used in MOOCs include:

The New Players

MOOC Platforms

Coursera: A Stanford spinoff focusing on elite institutions and faculty. Major university partners include University of Virginia, Duke University, University of Pennsylvania, and University of Illinois.

edX: The Harvard, MIT, and Berkeley collaboration to offer the best of all three institutions free online.

Udacity: Disseminates select MOOCs in partnership with individual professors. Founded by ex-Stanford professor Sebastian Thrun after his MOOC went viral.

Udemy: Allows anyone to create and offer a course, whether free or for a fee.

Adaptive Learning Platforms

While not MOOCs, Knewton and Khan Academy offer massively online material. As students work, these platforms track and correlate data generated—from time of day to clicks and response patterns—to personalize instruction. Ultimately all platforms may use data to adapt instruction to the learner.

- High-quality indexed video
- Data capture and analytics
- Delivery platforms that combine the qualities of social networking sites like Facebook with the content delivery, discussion, and grading functions of the traditional learning management system

From a cultural perspective, communication, collaboration, and knowledge discovery via the web have become commonplace. Sites like TED, Khan Academy, iTunesU, and YouTube, which house rich collections of instructional material, have paved the way for MOOCs.

The Current Value Proposition

Education Access

MOOCs provide access to education on a massive, international scale. Currently, most students who enroll in MOOCs are internationals and/or professionals rather than enrolled college students. This balance may shift as institutions develop models for integrating MOOCs into students' educational pathways. MOOCs provide instruction, but they also highlight the institution by featuring renowned professors. MOOCs can be used as primary or supplementary course material for instructors who wish to weave them into their curricula.

Experimentation

MOOCs represent an experiment in education that attracts talented instructors, technologists, and entrepreneurs. Many institutions are experimenting with MOOCs to inform instruction for large undergraduate courses. Commercial MOOC partners host sophisticated application platforms that mine click-stream data, which can be used to refine adaptive systems and tutoring algorithms that enhance learning effectiveness.

Brand Extension

MOOCs can extend the institution's reach and reputation internationally. Particularly among elite research institutions, MOOCs have become a way of enhancing the institution's brand and signaling innovation. Successful professors can gain a global following, building their own reputation—as well as the institution's—and creating new opportunities for collaboration.

What Remains to Be Seen

Business Model

There is no standard business model for how MOOCs will generate revenue. Venture capital and philanthropy have funded platform providers such as Coursera and edX. Currently, institutions and MOOC platform providers each bear their own costs and split any future revenue. Revenue opportunities include:

- **Data mining:** Sell student information to potential employers or advertisers.
- **Cross- or up-sell:** Course materials (e.g., videos) are freely available, but ancillary services like assignment grading, access to the social networks, and discussions are fee-based.
- **Advertising model:** Courses have named sponsors.
- **Tuition model:** Students pay the originating institution for course credit.
- **Spin off/licensing model:** Sell the course, parts of the course, or customized versions of the course to institutions or businesses for their internal use; license institutional use of the MOOC platform itself.

Who Is Offering MOOCs?

Primarily offered by high-prestige name-brand universities, MOOCs are often taught by high-profile faculty on popular and diverse topics. The list of American institutions offering MOOCs is growing exponentially. New institutions jump into MOOCs seemingly every week. To date, 22 of the institutions listed in *US News*' top-25 best-colleges rankings for 2013 offer MOOCs or similar free offerings, including Harvard, Princeton, Yale, Columbia, MIT, Stanford, Duke, University of Pennsylvania, Cal Tech, Dartmouth, Northwestern, John Hopkins, Brown, Rice, Notre Dame, Vanderbilt, Emory, UC Berkeley, Carnegie Mellon, UCLA, and University of Virginia. Prestigious schools in Canada, Europe, Asia, the Middle East, and Australia also are offering or planning to offer MOOCs.

Pedagogy

Today's MOOC presents largely traditional instruction: lecture segments (often video), readings, and quizzes. The MOOC instructional paradigm works best for self-directed learners. Typically, only a fraction of enrolled students complete the course, and an even smaller subset (e.g., 5 percent) pass. However, options are likely to expand as MOOC pedagogy and technology matures.

Issues to Consider

Intellectual Property

Copyright clearance can be costly. Institutions are currently responsible for clearing copyright and for copyright violations when they partner with commercial MOOC providers. Copyright management of course materials can pose a

challenge. For example, educational fair-use claims are unlikely to hold when courses are open, and few can afford to license content when students number in the hundreds of thousands. Also, traditional institutional practices toward scholarly works might not apply because MOOCs may represent a significant university co-investment, potentially involving a substantial, ongoing infrastructure contribution.

Terms and Conditions. The "terms and conditions" of commercial MOOC companies require close scrutiny. Some commercial MOOC platforms have highly proprietary terms and conditions that claim ownership of course content and prohibit sharing or remixing of material. Not all MOOCs should be assumed to be "open."

Identity and Credit

If credit is to be offered for a course, the identity of the student becomes important. While enrollment can be open, the student cannot be anonymous. The use of testing centers or other proctoring arrangements is one answer. Technology solutions that model the "fingerprint" of an individual's online behavior or monitor the student and surrounding environment are another.

Open Courses, Credits, and Degrees

As new models for access, learning, and certification become more common, institutions will face decisions about course credits and degrees. Students already have access to courses from many providers, but not all are accepted for credit or count towards a degree. MOOCs are catalyzing exploration of alternative credentialing systems, including certifying prior knowledge. How MOOCs fit in an institution's degree program is still being determined.

Three Questions Leaders Should Ask

Why jump on the MOOC bandwagon?

Possibilities include: for outreach and experimentation, to extend the brand, and to gain institutional experience with emerging forms of instruction. Ultimately MOOCs may become a source of revenue to drive down costs while opening access to learning.

Credit for MOOCs

Most MOOCs are offered as noncredit courses. While some American universities award "badges" or certificates of completion, to date only Colorado State University's Global Campus has agreed to provide students full transfer credit toward a CSU bachelor's degree for an introductory computer science MOOC. They must earn a "certificate of accomplishment" from Udacity, the company supporting the course, showing that they passed, and then pay $89 to take a proctored examination also offered by Udacity through a secure, physical testing center.

What is our institutional capacity to deliver a MOOC?

MOOCs require investment. Whether the MOOC is self-hosted or offered through a commercial platform, integrated course support is required. Support requirements include:

- Technical (e.g., videography, editing, graphic design)
- Instructional (e.g., instructional design, teaching assistant support)
- Library (e.g., resource discovery, copyright clearance)

Institutions intending to self-host MOOCs will need a sophisticated, highly scalable LMS-like platform, the ability to effectively market the courses, and the capacity to offer technical system support remotely and at scale.

Where do MOOCs fit into our institution's e-learning strategy?

MOOCs should fit in the overall portfolio of course offerings. Do they complement or substitute for current course models? And if MOOCs are not an option, will faculty with stature, confidence, and teaching experience go outside the institution to offer a MOOC?

Is This Time Different?

Questions for MOOCs and Online Learning Beyond 2012

Committee on Institutional Cooperation
Chief Information Officers

August 2012

Foreword

Each decade has proffered a new IT-enabled alternative to traditional, residential education, yet universities have continued to thrive. Early in the last decade, several university-backed online ventures fizzled while more recently some universities and for-profit institutions (e.g., Apollo group) have established successful online degree programs. Most recently, news of Massive Open Online Courses (MOOCs), venture-backed startups like The Khan Academy, Coursera, Udacity or institutional consortia like edX have renewed the question of IT-enabled alternatives to residential education.

Is this time different? Does the confluence of *improving technologies* in HD video, adaptive tutors, and fast connections; *economic pressures* regarding student debt and tuition; and *social readiness* to embrace distributed education with different relationships between students and instructors signal a substantial change for higher education?

The CIC CIOs believe this time will be different in its effect on residential universities relative to previous experiences, but the more enduring effects may not be the focus of the 2012 press. The CIOs offer our (1) near-term actions for campuses, (2) discussion questions for campus leaders, (3) additional context for recent developments in IT-enabled education, and (4) *State of the Union – Higher Education: Competitive Challenges to the Traditional Higher Education Model,* a compelling analysis by the Education Advisory Board.[1]

1) Near-Term Actions

1. Engage purposefully in near-term trials of MOOCs, adaptive learning systems, and emerging technologies to develop institutional understanding while also formulating a longer-term strategy for engaging online learning for badges, professional development, MOOCs, credit-bearing courses, and degree programs.

2. Carefully model and analyze emerging business models for revenue-generating, free, and partnered courses that also incorporate costs for campus services and systems.

3. Ramp up institutional capacities for online course production to support instructional design, media development, assessment, and analytics.

4. Develop IT system readiness to integrate with a range of educational software that may need to link to campus system information for rosters, identity, services in a legal, secure and policy-compliant way.

[1] Shared with CIC Provosts by special permission of Education Advisory Board.

2) Discussion Questions for Campus Leaders

1. **What kinds of online experiences are needed as *substitutes* or as *complements* for current models?**
    - Are freely available online resources (videos, exercises, assessments, etc.) needed to empower the flipped classroom model and serve as *complements* that improve satisfaction, efficiency, and efficacy of the residential learning experience?
    - Are online, large-scale experiences needed that become *substitutes* to traditional, residential classroom experiences through the engagement of thousands of peer learners and adaptive software?
    - Are online experiences needed that establish by certification basic competency in disciplines? If so, what is the form of that certification and does it serve as a complement or substitute to the curriculum and major and direct interaction with faculty?

2. ***Why* does scale matter for distributing university content, modules, courses, or degrees beyond current models?**
    a. For fee reasons – do we want to:
        i. Grow new sources of revenue with "profit" margins that scale faster than costs?
        ii. Reduce costs per credit hour for students?
        iii. Grow base of click-stream training data for refining adaptive analytics and tutoring algorithms to enhance learning effectiveness?
        iv. Grow access to courses/degrees to satisfy demands for educating more citizens?
    b. For free reasons – do we want to:
        i. Amplify and increase awareness of our institutional brand?
        ii. Recruit top students?
        iii. Contribute to the social good?
    c. For research reasons – do we want to:
        i. Develop deeper understanding of human cognitive growth?
        ii. Refine better methods for teaching specific content?

3. ***What* is lacking within the institution to achieve its online objectives?**
    a. Foundational components – Do we have the:
        i. *Capital* to invest and risk in online course production?
        ii. *Access* to markets of potential students via course placement in portals/aggregators for discovery, marketing, access, etc.?
        iii. *Technology* platform and integrated infrastructure for conducting online courses or courses at Internet scale?
    b. Skills required – Do we have the:
        i. *Content expertise* for online course development?
        ii. *Process expertise* in how to do instructional design for online, faculty pedagogical training, analytics expertise, business model development, etc.?
        iii. *Staff* to support services to distant students, maintain accreditation and legal compliance?
    c. Organizational change – Do we have the:
        i. *Political will* regarding change and uncertainty?
        ii. *University partners* to offer a broader array of lessons, courses, or degrees?
        iii. *Construct* that amalgamates and presents college offerings in a cohesive outwardly facing CIC or University view

4. **What kinds of *partners* are needed and why? What are the non-negotiables in any partnership and why?**
    a. What are the walk-away provisions?
    b. Are there exclusivity expectations?
    c. How will conflicts be resolved?
    d. What is the basis for cost and revenue sharing?
    e. What are the reputational risks related to partners' actions?
    f. Who owns the IP and on what terms is it licensed for reuse?

5. **What is the degree of *urgency* and why?**
    a. What opportunities are perishable?
    b. What is the ramp up time to desired outcomes?
    c. What are the explicit risks/benefits of moving too early or too late?
    d. Does participation enable an ability to shape the terms of engagement?
    e. What is the degree of institutional readiness to engage in online learning?

3) Additional Background

1. **A number of factors provide incentives and context for growth in online learning, and these may combine to have a significant impact on higher education.**
    a. Governments, Boards and stakeholders desire and are acting to create more affordable education options (e.g., Western Governor's University, etc.).
    b. Universities are experimenting and seeking potential first mover advantages as innovators and parts of consortia.
    c. Venture funds are investing in new commercial models and see the Internet as creating a low barrier to entry.
    d. Reduced costs to produce and deliver mixed media for traditional educational experience.
    e. Improvements in information technology infrastructure extending reach.

2. **The path to monetizing "free" courses at Internet Scale remains unclear.** "MOCs" or Massive Online Courses (not free) may provide an interesting middle path to access (a) the benefits that only occur at a scale larger than traditional courses, (b) have a sustainable revenue stream to cover their costs, and (c) provide valuable university credit. New models of pay, subsidized, and free may rapidly evolve with experience, and institutions will want to remain nimble to adapt with opportunities. This is a time of caution for any long-term deals.

3. **Early commercial innovators are aggregating courses across known university brands to establish scale in distribution rather than developing their own content from scratch.** This differs from some previous online commercial ventures. If scale matters – and it appears that it does – then should the CIC directly and urgently assess the value in creating scale together? A number of factors may affect the desirability of CIC affiliation relative to the growing options.

4. **Faculty support for pedagogy and creation of online materials will take enhanced and integrated support from campus providers of pedagogical, technological, audio visual, content expertise, etc.** These are not specific to MOOCS or distance learning and are needed for campus blended and "flipped classroom" courses also.

MOOCs: Get in the Game

In July 2012, John V. Lombardi (someone I have admired for nearly three decades and came to know personally during our shared time in Louisiana) wrote that investing in Massive Open Online Courses (MOOCs) as the "next big thing" in higher education is largely about institutions trying to "seek visibility and preeminence to validate their claims of significance and advertise their association with the latest educational trends and enthusiasms."[1] Lombardi was spot-on in assessing that these "free" courses are by no means free and that many questions remain to be answered. However, I would argue that there is value in institutions sticking their proverbial toe in the MOOC waters, as my own institution—and scores of others—have done via Coursera and other MOOC efforts.

In the EDUCAUSE 2012 session "MOOCs: The Coming Revolution," which I presented with Coursera's co-founder Daphne Koller, I opened my portion by emphasizing that the current IT-driven disruption is not actually about information technology but is, rather, about pedagogy. I'll take this opportunity to state my view again: the focus of this disruption should be on teaching and learning. However, I believe that there is value in having the IT organization take an active role in helping the institution to embrace this change, even going so far as to move onto "point" for change. I believe the move by my institution, the University of Maryland (UMD), into Coursera perfectly illustrates why institutions—and IT leaders and organizations—should get involved with some form of MOOC initiative at this time. I see two primary reasons, along with a third, more fundamental reason beyond those two.

First, there are opportunities available. The current "name-brand" MOOC entries are still interested in developing content-providing partners: Coursera has expanded twice, growing from its original four partners to thirty-three as of December 2012; edX has grown from the Harvard-MIT founders to include the University of California–Berkeley, the University of Texas System, Georgetown University, and Wellesley College.

Second, this is what leading institutions do. As UMD President Wallace Loh said, we stick our necks out (in the metaphor of our mascot, the terrapin). Presidents and provosts at all levels of institutions are, if not under pressure, certainly being encouraged by their boards, legislatures, donors, and others in the community to take action. They are also being pushed by their own faculty, who are eager to give MOOCs a try.

Third, and more fundamentally important, actively participating may be a better way to learn than simply watching from afar. I believe we're at a point of change, where information technology not only is useful for automating the status quo in teaching and learning but can be truly transformative in the evolution of pedagogy (perhaps rapidly) to a "flipped classroom" model. By actively engaging in these start-up efforts, we bring the lessons directly to our campuses and, more important, to our faculty and our academic staff who must assume leadership for how our colleges and universities embrace online and blended education.

Institutions that take a responsible approach and make a reasonable investment of time and resources to get *a few* courses into a MOOC environment can benefit by seeing things up-close and personal. The debate about all aspects of MOOCs is only getting started; it will become even more robust as more data on experiences emerges and as more people join the discussion.[2] Being "in the game," rather than simply watching from the sidelines, provides a better set of insights to inform that robust debate. We will be able to use our own experiences to judge what our unique institutions do rather than basing our decisions on the experiences and views of others who are *not us*.

Although UMD is still in the early days with MOOCs, I can share our experience to date:

- *Contracting with the provider.* Working out our contract with Coursera was not overly challenging. I'll credit that to the flexibility of Coursera and its understanding of the concerns of higher education institutions. The agreement is not secret, with many of them available for perusal online, including UMD's.[3]
- *Choosing the course offerings.* Recruiting faculty and selecting courses was a task of winnowing to a reasonable number from a large set of quality offerings (rather than hunting for volunteers). Today, we have a steady flow of faculty who are interested in being "in the next wave," and our first Coursera offerings won't debut until early spring of 2013. In fact, at this time, our biggest challenge involves how to deftly and sensitively say "No, not just now, maybe later" to an increasingly eager and ambitious number of faculty.
- *Preparing the courses.* Here, we are still gaining knowledge. The first to-do with Coursera involved creating the "course landing pages" (like "trailers" for a coming-attraction movie). This was revealing on many levels, including the need to establish better video support services (we used our University Relations studio and talent) and also support for our faculty on "being ready for their close-up." What we're only now starting to understand is how much goes in to actually preparing the course "modules": Coursera's structure encourages faculty-led "imparting" sessions of 12 to 15 minutes, augmented with associated assignments, discussions, and assessment

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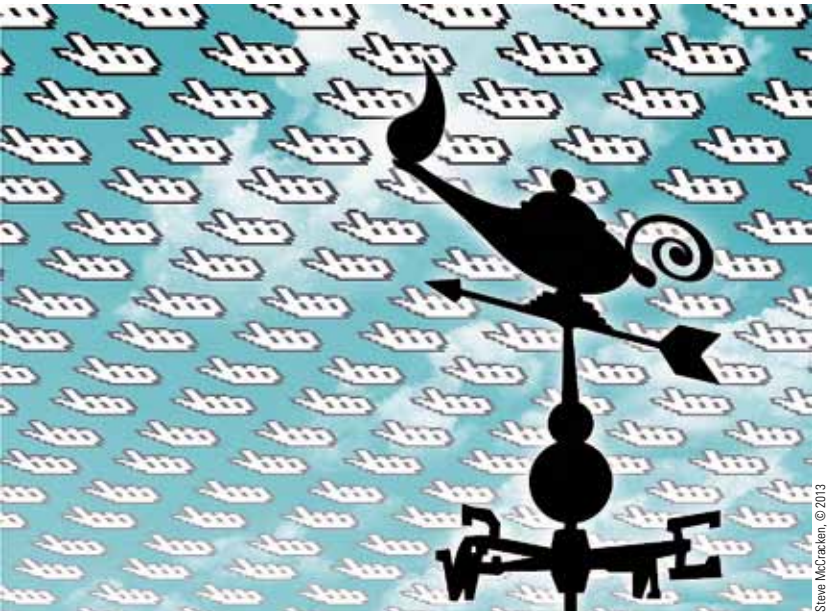

Steve McCracken, © 2013

exercises to create learning modules delivered via its online platform in a synchronous approach.

The challenges we've exposed in our process have illuminated a broader set of questions:

- *What is this new approach to pedagogy?* There is a definite need for a better understanding on the part of faculty of what the new *paradigm of pedagogy* means to them. Many faculty may come to the discussions thinking of the current model of IT enablement in blended and online learning, which is largely one of using information technology (learning management systems and their many attendant parts) to automate the process of course delivery, with little impact in the classroom or in the curriculum. Coursera's approach is challenging this model and is opening up what may be a renaissance in faculty members' approach to teaching (and students' approach to learning) in a 21st-century IT environment. What we have here is a new way to apply an old IT term—Business Process Reengineering—to the fundamental business of our universities.
- *MOOCs are "it," right?* The focus on this "next big thing" has often been viewed as a search for what might be called the *Highlander* Model[4]—that is, *there can be only one*, and MOOCs are the one. Of course, MOOCs are just a single tool in the online education toolbox. We need to stop thinking in terms of a MOOC revolution and instead think in terms of *teaching and learning* revolution, of which MOOCs are just one (currently very disruptive) element.
- *Do we need another administrator?* A critical challenge is the shortness of time to act. Events are transpiring quickly, and the revolution in online education may not patiently wait for the *evolution* of our institutions in terms of how our faculty and scholarly support structures respond. Several leading institutions have decided that there is value in a senior-level position (e.g., vice provost, special assistant to the president), not necessarily to take ownership of all facets of online education but to coordinate the process by which an institution can quickly evolve its collaborative activities.
- *What is the role of information technology?* Many observers, including me, argue that MOOCs are not really about information technology and are not something that should be led by the IT organization. That said, as the debate rages in the academic divisions and the cabinets of our institutions, the IT organization is well positioned to take a "recon" role—that is, to establish a beachhead, or a pilot, or a furtive first experiment or discussion. I'm sure I'm not the only CIO to be called by the president or provost when the MOOC events began to unfold. This makes sense: those of us in information technology are well positioned to contribute in turbulent times. Our challenge will be how to do so and then how to relinquish the point position when the academic divisions are ready to assume their rightful place leading this charge into our future.

In his blog post, Lombardi advises colleges and universities to watch and wait until the leading institutions have experimented and developed a viable strategy that can deliver value (from MOOCs) to their communities. He further cautions that governing boards should exercise caution in demanding trendy responses from their institutions and that it is often best to observe, study, and evaluate and to perform a cost-benefit analysis before jumping onto the next big thing. This is sound advice for many, to be sure.

But I would argue that we can better do these things—including learning about these new environments, platforms, and processes so as to apply their value in the broader blended and online initiatives we undertake, well beyond MOOCs—by taking an active role rather than simply watching and waiting. We should be in this game, and actively so. Our higher education institutions are about creating, sharing, and preserving knowledge. By taking an active role in the MOOC revolution, we are fulfilling the first, to the benefit of the second. ■

Notes

1. John V. Lombardi, "The Next Big Thing," *Reality Check* (*Inside Higher Ed* blog), July 23, 2012, http://www.insidehighered.com/blogs/reality-check/next-big-thing#ixzz2EaNNSQ00.
2. See, for example, Doug Guthrie, "Jump Off the Coursera Bandwagon," *Chronicle of Higher Education (Commentary)*, December 17, 2012.
3. "Online Course Hosting and Services Agreement," http://www.president.umd.edu/legal/frpdpdfs/coursera_contract_2012.pdf.
4. On the *Highlander* movie, see http://www.imdb.com/title/tt0091203/.

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