When Learning Matters: The Case for Technology-Enhanced Education

by

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As experienced administrators and faculty members, you undoubtedly know that nothing sparks a heated debate in higher education quite like e-learning does, particularly among the non-believers. And there are still a good number of them, many of whom are voicing reasonable objections. Some say it’s too expensive for the average institution to sustain; some contend that only the most motivated and disciplined students will actually succeed (although the same could be said for far too many traditional face-to-face classes these days); and still others see it as the domain of proprietary universities that are often accused of sacrificing the purpose of knowledge for the limited utility of profit.

There is also the all ‘too’ familiar argument that e-learning of any kind is somehow inferior to the face-to-face-only variety, although the evidence we have gathered thus far seems to refute that claim when it comes to well-designed, technology-enhanced courses - both hybrid and online-only. It wasn’t all that long ago when the resistance to technology-enhanced education was virtually insurmountable among most traditional academics and at times, could even get pretty ugly. In fact, one of the many online pioneers I have met in my travels, Scott Freehafer, told me a rather humorous story about the brick wall he ran into at a college where he once taught business education. After uploading major portions of his course into an online format, a move he saw as a real benefit for his students, Scott received a nasty rebuke from his supervisor, pointing to, among other things, his “obvious propensity for deviant behavior.”

Undaunted, however, he soon packed up his laptop and moved on to the University of Findlay in Ohio, where as an associate professor, he continues to teach graduate courses online with increasingly positive results, given both his enthusiasm and his expertise. Of course, for most of us who have been blazing distance education trails for some 20 years now, Scott’s story is hardly unique or surprising. But having worked hard to overcome these hurdles, we are making real progress in moving online into the mainstream of higher education and not only because of its convenience. After polling 250,000 students from 523 universities, the National Survey of Student Engagement found that those pursuing their education online reported higher levels of academic rigor than in the traditional face-to-face environment. They were also more satisfied with their educational experience overall, claiming greater academic gains in many cases. Likewise, technology-enhanced education is gaining ground among administrators and faculty.
According to the Sloan Consortium’s 2013 Online Learning Report, which is based on responses from twenty-eight hundred colleges and universities, nearly three quarters of the academic leaders polled rated e-learning outcomes as the same or superior to those in the face-to-face classroom. And even employers are coming around. In another recent report published by Excelsior College and Zogby International, eighty-three percent of the CEOs and small business owners surveyed said an online degree is every bit as credible as its campus-based counterpart, when provided by a reputable institution such as this one. With results like these, it’s no wonder that a steadily increasing number of traditional colleges and universities, public and private, have either quietly entered or quickly expanded their share of the distance education market. In surveying more than 100 traditional colleges, the audit firm KPMG reported that the percentage of higher education leaders planning to invest additional resources in online education rose significantly in only 12 months’ time, from forty-one percent in 2012 to fifty-nine percent in 2013. Still more remarkable is the startling speed with which massively open online courses, better known as MOOCs, have captured the imagination of educators around the world, even in the most elite universities.

Then in 2008, a group of Canadian online learning experts, Stephen Downes, George Siemens, and Dave Cormier, became the very first academic team to offer what Cormier called a MOOC, which was appropriately titled Connectivism and Connective Knowledge. It was Massive in the sense that it enrolled twenty-five fee-paying students on campus, along with twenty-three hundred others who paid nothing for the privilege. It was also open from the standpoint that anyone with an email address could register. And it was entirely Online. Yet while it was billed as a Course, it didn’t meet the traditional definition for one, in that it was far less bounded and structured. Even more important, in linked anytime anyplace learners in what its creators termed “collective sense-making,” by providing multiple avenues for them to interact with both the content and each other. Thus, in keeping with its name, this course was later described as a connectivist or cMOOC. Course modules were available through RSS feeds and students used an array of digital learning tools, such as blogs, Second Life, and synchronous online forums, to interact, as well as to develop web-based learning artifacts. Daily e-mails also provided links to course announcements, blog posts, and Twitter messages.

Three years later, Andrew Ng, a Stanford University computer science professor, stepped into the ring to offer his own MOOC, which was basically an online version of his on-campus Machine Learning course, attracting more than 100,000 registrants. Ng called it the achievement of his lifetime, declaring that it would have taken him 250 years to reach that many students in the face-to-face classroom, although only 13,000 actually completed his MOOC. But, convinced of its transformative potential, he joined fellow faculty member, Daphne Koller, in founding Coursera, and began enticing elite institutions like Harvard, Duke, Princeton, and MIT to jump aboard their bandwagon. Thus, the xMOOC was born, along with a vast array of MOOC providers, including such other well-known enterprises as Udacity and edX.

The truth is, massive, passive online courses with enrollments in the thousands, or even tens of thousands, are not really designed for the average, inexperienced student, who is new to the discipline of college study. According to a recent study at the University of Pennsylvania, the typical MOOC user is, in fact, a lot like all of you in this room, college-educated, intellectually
curious, and genuinely interested in the topic under study. So it would seem that MOOCs do indeed serve a useful purpose as self-directed professional development, continuous learning, or even advanced study. I'm sure you've all heard about the MOOC master's degree in computer science at Georgia Tech. While program courses are free, qualified students can also earn credit for the degree, at an astonishingly low tuition price of around $7,000. Still, completion rates remain exceedingly poor overall in these supersized courses, even among educated, motivated learners. And research to date has uncovered at least two possible explanations. For starters, MOOC users are generally busy people. And while it's one thing to enjoy the occasional TED talk or YouTube podcast, it's quite another to invest the time and energy it takes to complete an eight-week course—particularly when the content is unfamiliar. Likewise, non-completers often blame their waning enthusiasm on lecture fatigue, poor course design, and the lack of meaningful faculty-to-student feedback. Indeed, for the most part, xMOOCs are only barely on the cutting edge of tradition, in that they use technology to replicate the very same teacher-centric, "drill and grill" instructional methods we know are failing to engage students in the large lecture hall environment. What's more, with extremely limited or, in many cases, no opportunity for interaction with professors, content, or other students, it's a lonely learning experience within a disembodied learning environment. Put simply, these massive experiments fail to capitalize on the real power of technology as an innovative tool for supporting what we know from both years of experience and hundreds of research studies. That is, our brains are wired to learn best through repetitive and meaningful experience that is collaborative, multisensory, and authentic.

As seasoned online professors will certainly attest, truly effective technology-enhanced education is all about quality, rather than scale; active learning rather than passive transfer. And when done well, it should enrich the traditional face-to-face experience, not merely replicate it. With that in mind, practiced distance educators are beginning to transform the MOOC landscape, by creating well-designed courses that are far more connectivist and experiential in their approach. By that I mean they facilitate interactive learning environments, where learners engage in authentic learning activities and co-create tangible learning artifacts. Or as cMOOC pioneer, George Siemens, once put it: courses that are far more focused on knowledge creation than they are on knowledge duplication. Let me give you an innovative example from my own university. For years now, budding trial lawyers have had the hands-on learning advantage of most courts and mock trials for mastering litigation skills. On the other hand, their transactional counterparts have been expected to learn the art of negotiation by reading textbooks and listening to lectures. At least until one of our law professors at Drexel, Karl Okamoto, created LawMeets, a "moot court" experience for emerging transactional attorneys who want to practice and perfect their deal making skills.

Although Karl launched his brainchild as an in-person competition, he has since moved it online. And today, law students across the country use this site to post videos of themselves counseling "clients," which are peer-reviewed through a digital voting device. Top-rated performances are then evaluated by practicing attorneys, who furnish a demonstration video of their own, as well. Of course, given the dearth of experiential learning opportunities in this area of legal education, Karl's colleagues in other law schools have enthusiastically incorporated these online exercises into their own classroom activities, with excellent results. And like all
good entrepreneurs, he took his concept to an even greater scale, by offering a MOOC that combines LawMeets simulations with short vodcasts from some of the best legal minds in the country. His first such course (Basics of Acquisition Agreements) met with rave reviews from students, who overwhelmingly agreed that the challenges were realistic, and the experience, worthwhile, citing the unique opportunity to connect online with recognized experts in their field. Inspired by the response, Karl has since added a few more options to his course roster, including a low-cost version for mid-career professionals, who are interested in earning continuing legal education credits. Like you, administrators and faculty members at other universities are having the same discussions and sharing the same concerns around what, if any, benefits MOOCs will provide for both their students and their institutions. In fact, according to a Gallup poll conducted rather quietly back in April, among nearly nine hundred college presidents, the jury is still very much out on the subject—particularly with respect to boosting student learning outcomes and reducing college tuition rates. Only three percent of these leaders strongly believed that MOOCs will improve student outcomes across the board. And an even smaller number, around two percent, were convinced that these massive courses would solve the financial challenges their institutions were facing. On the other hand, they were more likely to favor using MOOCs as a way to promote and support creative teaching approaches.

More recently, the Sloan/Babson survey published similar MOOC data collected from among the 2800 colleges and universities it polls. Only five percent of these institutions are offering MOOCs, although the number has doubled over last year’s number. That equates to around 140 colleges and universities, most of which are large institutions with more than 15,000 students. When asked if these courses were meeting their stated objectives, nearly two-thirds of those administrators who had invested in MOOCs said it was way too early to tell. Even more telling, over half of all respondents are still undecided about MOOCs in general, while just under a third of them say they have no plans to move in that direction. And the numbers are dropping when it comes to the long term. Only twenty-three percent of these academic leaders believe that MOOCs are a sustainable model for delivering online courses, down from twenty-eight percent the previous year. But interestingly enough, among those who either offered or were planning to offer MOOCs at their universities, there was general consensus that, when well-designed, they can be effective tools for driving student recruitment and experimenting with effective pedagogies and innovative technologies.

Like I said earlier, experienced online educators are stepping up to design and customize MOOCs that truly harness the power of technology as an interactive platform for connecting, communicating, and collaborating. By the same token, there are plenty of administrators and faculty members exploring creative ways to deploy MOOCs in better meeting the academic and financial needs of their students and their institutions. And by doing both, we are making great headway in the distance education arena. For example, Longwood University in Virginia took a far more interactive approach to MOOC development, after teaming up with a learning platform creator Badgestack to help high school student get a head start on career success. This open access, non-credit course entitled 5 Skills You Need to Succeed exploited the latest gaming technology to provide hands-on exercises and continuous feedback, both of which create an engaging and effective learning experience, a big factor in the MOOC’s unusually high retention rates. And although it attracted nearly 3,000 students from across the
country and around the world, the largest percentage of them lived within a 200 mile radius of the university, which made the MOOC an exceptional student recruitment vehicle, as well.

Gaming technology has, in many ways, greased the wheels for *adaptive learning*, which allows us to customize the online learning environment, by spontaneously adapting content and delivery to meet the needs of individual student. Even more impressive, we now have the capacity to do it on a massive scale, which will undoubtedly enable us to produce high-quality course exemplars to use in designing far more effective MOOCs going forward. One of the earliest efforts involves a partnership between Google and CogBooks, and adaptive, web-based learning platform. Together these companies have produced a pre-college math MOOC that is massive in its scale, yet personalized in its delivery. NovoEd, a MOOC provider that grew out of a Stanford University project called Venture Lab, has also made headway in breaking these massive courses into smaller groups of learners. As such, it offers a variety of open online classes in entrepreneurship and business that focus on group interaction and peer-to-peer collaboration, by creating computer—selected cohorts according to geography, ability, and type. These MOOCs also provide access to mentors and facilitate peer review.

Along the same lines, our College of Nursing and Health Professions at Drexel University is experimenting with what they call a "mini-MOOC" called *Gateway to Online Learning* as a way to stimulate enrollment in its fully online RN to BSN degree program. Given that most of their prospective students are in their 30s and 40s, relatively few of them have ever experienced an online course, much less an entire program, which makes them understandably hesitant to enroll in one. So this mini-MOOC was designed to give them a risk—free chance to test-drive the e—learning environment, while reacquainting them with such other important college—level skills as conducting research and writing scholarly papers. They would also earn three free credits toward their degree if they chose to keep moving into the tuition—paying program. What’s more, the faculty wanted to make it as interactive as possible. Which meant, limiting open enrollment to dozens, rather than thousands of students, and incorporating all of the usual tools for connecting and communicating with instructors, as well as other students. And as an added bonus, they embedded a variety of effective resources, including YouTube videos; hot links to journals, library tutorials and reference; helpful hints from previous students and professors and popular podcast on the Fear of Writing by our Dean of Nursing, Gloria Donnelly.

All in all, this pilot was a successful one, with nearly half of all completers continuing on into the program. Even more important, we have gathered a great deal of highly useful feedback for improving upon both course design and student outcomes going forward. In yet another interesting experiment, Ithaka S&R, a non-profit research group, teamed up with University System of Maryland to test how a variety of interactive online learning platforms might be used to improve student outcomes and reduce college cost in then of the state’s public universities. And the results have been extremely promising, as a faculty member continues discovering a variety of ways to use MOOCs as an adjunct or supplement to their regular coursework. Some professors saw them as an opportunity to flip classes, using readily available online content they didn’t have time to create on their own to supplement experiential projects and group discussions. One in particular decided to use a well—designed, well—received MOOC on genetics
to replace textbook content in the hopes of improving student engagement. Still others saw MOOCs as a way to add expert voices-sages on the side, so to speak, to complement their own areas of expertise, thereby promoting a more interdisciplinary approach to learning. For example, one instructor is using MOOC content on macroeconomics as an added dimension in his comparative politics course.

A department chair who had, by his own admission been slow to adopt technology as a learning enhancement, came to see the light when he found that MOOC strategies such as peer review were "incredibly empowering" for his students. Consequently, he is enthusiastically reinventing his courses to incorporate these effective instructional approaches. Although we have explored a few of the more innovative ways that MOOCs can be designed and used to enhance the learning process, developing your own here at New Mexico State University may not be particularly feasible. So before you undertake such a resource intensive process, I would suggest asking yourselves a few basic questions. For starters, will they fit well with your current online learning strategy? Likewise, will your IT infrastructure support them? And specifically what do you hope to accomplish in the process: Instructional enhancement, institutional recognition, tuition reduction, recruitment tool, or something truly novel?

How important is scale, after all, and how do you define it (massive versus smaller, degree programs versus individual courses, for-credit and fee or non-credit and free)? Who will coordinate and track these courses from the institutional side, and are external partners a necessity? On the other hand, you might find it far more feasible to experiment with MOOC content that's already available out there, much in the same way the University System of Maryland schools did. Because as e-learning experts like Gardner Campbell at Virginia Tech are quick to point out, it's not the technology itself that's important, it's what we do with it to engage our students in mastering the skills they need to be successful in today's emerging innovation economy. In fact, as the "bricks versus clicks" debate rages on, it seems increasingly more logical that the solution lies somewhere in the middle. So rather than choosing one option over the other, we should be capitalizing on the best of both to create innovative and result-driven hybrid models that are as empowering for our students, as they are sustainable for our institutions. Or in other words, models that add real value to academic investment by creating rich learning experiences, interactive learning environments, and vibrant learning communities. While it's tempting to view this approach as a temporal construct, a pre-prescribed division of time between campus and cyberspace, it is actually a fundamental change in the learning paradigm.

To begin with, the hybrid environment generally shifts the focus from teacher-directed to learner-centered, thereby affording students greater control over and engagement in the learning process overall. It also fosters increased interactivity across the board, student-to-student, student-to-instructor, student-to-content, and student-to-outside resource. Equally important, it enables us to integrate a variety of learning assessment mechanisms beyond the standard test and papers. But above all, the hybrid environment offers a unique and truly cost-effective opportunity to bring the digital devices and applications we use in our everyday lives into the classroom, where they can be deployed as powerful, interactive learning tools. Given the hours our students spend browsing in cyberspace, digital devices have become as
fundamental to their learning process as pencil and paper once were for most of us. One recent survey revealed that the typical 18 to 34-year-old college-goer comes to campus armed with, on average, seven digital devices. The most popular of which are laptops and smartphones, followed closely by game consoles and MP3 players. On top of that, students reported spending a little more than 14 hours a day multitasking across these devices. And although much of this activity is devoted to entertainment, a considerable portion of it is spent on learning. Seventy percent of them said they used their laptops for research and coursework, and forty-seven percent, for taking notes in class at least some of the time. Ninety-eight percent of those who owned an e-reader occasionally downloaded textbooks, while sixty-five percent employed a wide variety of digital tools for creating class presentations, complete with impressive multimedia enhancement. Not surprisingly then, college campuses everywhere are struggling to get their arms around the Bring Your Own Device (BOYD) phenomenon. Can your IT department support this? While there are still plenty of administrators and faculty members who believe students should leave their personal devices at the classroom door, there is an ever-expanding circle of BYOD supporters like myself, who are convinced that it’s an inevitable, if not indispensable, practice. In fact, as far as I’m concerned, students should not only be encouraged to bring their own devices, they should be required to; and not just as a distraction, as in texting friends or updating social media sites, but as a gateway to technology-enhanced learning. By doing so, we are helping our students use these devices to cultivate personalized lifelong learning networks that when connected empower complex knowledge ecologies, in which innovative ideas and new information flourish and cross-pollinate.

Given the mobile devices we now have at our disposal, it’s hard to imagine our lives without these gadgets. And as they become even more compact and ubiquitous, they provide us with a unique opportunity to foster flexible and adaptive learning experiences that are active and authentic, individualized or collaborative. They can be used either in the classroom for structured learning activities or on the move for independent study that extends beyond the classroom. By the same token, they enable rich content for interaction, as in multimedia simulations and social networking sites, as well as discrete content, such as quizzes, simple games, and class announcements. Likewise, we can push content out to our students or ask them to pull it in for themselves, depending on their individual interests and needs, both in and out of class. And in the process, they will also have the option to consume it or produce it, an important factor in promoting knowledge synthesis and co-creation. Of course, digital devices of all sizes and types are virtually useless without the software applications that power them and there are literally thousands of them at our fingertips, many of which can be downloaded for free. In fact, my friend Dr. Robbie Melton at the Tennessee Board of Regents has reviewed and catalogued more than 70,000 of them, which is why she appropriately calls herself an appologist. Needless to say, it’s difficult at best to forage through them all on your own. So I want to spend the rest of our time today talking about and playing with a few of the better ones.

Let’s start with back channel media like Twitter. Not only is it free and easy to use, it has also proven especially effective for engaging students in active learning under even the most passive scenarios like large lecture halls where there are few, if any, meaningful opportunities for student participation or content clarification. But thanks to Twitter, students can work their devices to jump in quickly and quietly with mid-lecture questions and/or observations for the
instructor, while maintaining a steady flow of commentary with fellow classmates, much in the same way we used to pass notes under the desk. Indeed, one of our colleagues at the University of Texas, Dallas has successfully incorporated Twitter into her history courses, using weekly hashtags to organize the comments, questions, and feedback her students tweet during class, which she projects on a giant screen at the front of the room. By the same token, this approach makes it easier for her students to reference and review important discussion points once the hour is up. Twitter is also being deployed in some academic circles as a tool for developing effective reading and writing skills. For example, a professor at Holy Cross College uses it to help his students to communicate more concisely, by having them summarize major political texts without going over the imposed 140-character limit.

Blogs are great for getting the creative, collaborative and conceptual juices flowing, and can be employed to promote active and authentic learning. Instructors sometimes develop course blogs for disseminating content and encouraging student feedback through posted comments and/or discussion questions. In addition, blogs can serve as a hub through which to coordinate essential course information, such as syllabi, learning assignments, class schedules and supplementary resource materials while facilitating group projects, as well. As group sites or individual journals, blogs are also learner-driven, enabling students to share, evaluate and reflect on course-specific information and ideas while also building their personal learning environments. Not surprisingly, this digital enhancement offers a variety of academic benefits. From the instructor’s perspective, blogs provide an ongoing record of work for measuring student progress. And learners who are more or less “invisible” in the face-to-face classroom often flourish in the blogosphere, as they become increasingly more proficient communicators and collaborators both of which are essential career skills. There is a host of user-friendly blogging platforms in which to choose from, many of which are not only free, but also equipped with all sorts of advanced features, including anti-spam filters, sophisticated template widgets, and search engine optimization.

Word press is still considered the granddaddy of them all for posting in class or on the go, on laptops, smartphones, and tablets, on iOS, Android, and Blackberry systems. And it’s free to use for publishing and sharing content, which can also be connected to popular social networks like Facebook, Twitter, and LinkedIn. Equally impressive, it is more than just a blogging system. It’s also a content management system that can be easily customized, with thousands of plugins, widgets, and themes. That means you can start a blog or build a full-fledged website. Wikis are also turning knowledge consumers into knowledge creators, while strengthening higher order thinking skills such as creating, analyzing, and evaluating new information. In addition to providing collaborative and asynchronous workspace for both authoring and editing, wikis are incredibly easy to use, even for digital novices, and can support any size effort from small-group class projects to worldwide mega-libraries like Wikipedia. Consequently, they are being incorporated on campuses across the country for any number of purposes from conducting mini research projects and compiling collections of case studies and field reports. They are also being used to foster group discussion around specific concepts and create collaborative annotated bibliographies for students to summarize and critique course-related readings. And there are a growing number of free, open source wiki engines to choose...
from, including MediaWiki (which was originally developed for Wikipedia), TikiWiki, and DokuWiki. All of which can be configured for mobile devices.

For those of you prefer the personal touch of the face-to-face classroom, there are a variety of videoconferencing options that can be used to remotely connect students with professors, students with students, and students with outside experts over any number of devices. Simple mobile applications like Skype and FaceTime enable one-to-one connection via webcam. On the other hand, one-to-many videoconferencing systems with multipoint controllers use cloud based services (such as Blue Jeans, Zoom.us and Google+ Hangouts) to manage these linkups across multiple platforms and mobile devices. With Google+ you can also tune into live video broadcasts on a wide range of topics. Aside from the more ubiquitous applications, however, there are thousands of others to choose from that can be incorporated as additional course resources and enhancements. So I'd like you to power up your own devices so we can play with a few of them. Let's start with dictionary.com app on your device and download from there. With more than two million definitions, synonyms and antonyms, this is a fast-loading, user-friendly mobile app that will benefit students in any course. As you can see, it can be downloaded for free on any platform. There is also a voice-activated search feature, along with other bells and whistles like “Word of the Day” updates and a “Hot Word” blog. I would also like to introduce you to Babylon.com, which is all available on most systems, including Kindle and Blackberry. Go to Babylon.com and look on the mobile menu for your app. As you can see, this is an indispensable app in today's global village, as it provides free mobile translation on demand from single words to full-text translation by accessing more than seventeen hundred glossaries in multiple languages. So imagine how useful it might be for your students as they study abroad, prepare foreign language presentations, or simple converse with a dorm mate from overseas.

Let's go to TED.com now and scroll down to “More Ways to Get TED” at the bottom of the home page. Now look for the app that will work with your device. Earlier, we discussed the option of using pre-recorded expert voices for supplementing in-class readings and discussions. And a heavy dose of genius from among the TED Talks archives will give both you and your students access to some to the real thought leaders of our time. Now for those iPad users, I want to share a free app called ASK# that enables you to create a mobile classroom anywhere anytime by connecting with your students’ iPad devices. Just take a moment to download it here: https://itunes.apple.com/us/app/ask/id572042047?mt=8

Essentially, this app turns your iPad into a recordable whiteboard, enabling you to do any number of virtual activities. For example, you can teach once and record it for the class, annotate content, or host a virtual discussion forum. It also allows for peer-to-peer teaching and collaboration. So for those of you who teach hybrid courses, this is a perfect digital learning tool. Explain Everything is another easy-to-use interactive whiteboard tool that will let you annotate, animate, narrate, import, and export almost anything to and from almost anywhere, which also makes it great for creating dynamic lessons, learning activities, assessments, and tutorials. And for only $2.99 you can download to an iPad, as well as an Android tablet. If you want to take a look, here's the site: http://www.morriscooke.com
As many of you know, well-designed virtual learning environments and activities offer risk-free, ethically sound, and cost-effective opportunities for your students to learn by doing, under real world, real-time conditions. And there are more than an a few apps that provide high-quality, media rich, and immersive simulations that can be used to master discipline-specific knowledge and skills. For instance, here’s one that would definitely enrich a freshman biology lab, by providing a human vehicle for dissecting frogs. It can be downloaded for less than $5.00 on a variety of tablets and laptops. (http://frogvirtualdissection.com) Of course, in addition to planning for designing high-quality hybrid courses and content, we also need to think about how to make these digital enhancements available to our students. For years, distance educators have been wedded to the learning management system approach. These systems are not only robust and secure; they also incorporate a fairly standardized set of tools for downloading courseware; giving and grading exams; and evaluating student performance. What’s more they pave the way for coordinating virtual learning activities, sharing digital files, learning objects, and furnishing online support services, including vast digital libraries. But as many benefits as they offer, learning management systems are still, for the most part, course-based and campus-owned. Likewise, they can be expensive to manage for smaller schools with fewer online offerings. Students also complain that these systems often fail to support personal learning environments because they are typically device-dependent, which makes them difficult to access from mobile phones and tablets.

With that in mind a growing number of professors are accommodating their students by providing them with online webmixes of course-specific virtual resources. And SymbalooEDU is an especially popular application. Bring up symbalooedu.com and hit “start now” on your projected screen. As you can see, there’s a free version for individual student use, along with a relatively inexpensive premium account for instructors and campuses that provides additional features for creating, customizing, and managing multiple, course-specific webmixes and sharing them with an unlimited number of users. Symbaloo is also easy to organize and effortless to update. What’s more, it can be accessed from any device, and allows for hosting almost any platform, from learning management systems, to social networking sites, to collaborative cloud tools. Consequently, students can add and share new resources, as needed, which makes it a wonderful tool for supporting self-directed, continuous learning.

Well, we’ve now come full circle from MOOCs to Personal Learning Environments and I want to thank you for the opportunity to be here today for what has certainly been a stimulating discussion for me, and I hope for you, as well. If we have any time left, I would be more than happy to entertain a few more questions or comments.

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