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Online Learning, MOOCs, and More

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Deanna Marcum, Managing Director, Ithaka S+R
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The following is a lightly edited transcript of a live presentation at the 2014 Charleston Conference. Slides and videos are available at http://2014charlestonconference.sched.org/

Ann Okerson: Good afternoon and welcome to this Neapolitan Plenary on online learning, MOOCs, and more. Yesterday, Franny Lee, who's on the platform here as a speaker, and I had a chance to organize a half-day preconference on libraries in support of distance learning. And that was more a series of case studies and dialogue about how this kind of support is proceeding on campus. Today we're going to do something a little bit more structured and a little bit different. Knowledgeable panelists are going to present studies that they have done that address key measures about MOOCs and online learning. They will talk about subjects such as completion, pedagogical success, certification, infrastructure, what does it cost, and what could we expect next. All of these kind of studies and researches are helping us to understand, in real hard facts, what this emerging environment looks like. And one of the things that we agreed on yesterday in the pre-conference is that in our libraries, in our publishing institutions, in our universities, we are just going to see more and more of this kind of activity and we should be prepared to support it as best we can.

All I'm going to do here really is introduce each of our speakers in turn as they speak. So our first speaker is Ithaka's Strategy and Resource Managing Director, Deanna Marcum. She leads the research and consulting services that assist colleges, universities, libraries, publishers, and cultural institutions in making the transition to the digital environment. Deanna is probably one of the best known people in library circles but I'm just going to list a few of her major accomplishments. I think when I first met her, she may have been Dean at the Library School at the Catholic University of America. She then went on

to become President of what is now the Council on Library and Information Resources or CLIR. And from 2003 to 2011, she served as Associate Librarian for Library Services at the Library of Congress—a considerable job managing 53 units, 1600 employees who are responsible for the entire range of services at the Library of Congress. For the last year or so, Deanna has been the lead on a study conducted by Ithaka S+R with the University of Maryland looking at their distance education programs and she is going to report their recently published results of that effort. So, Deanna . . .

Deanna Marcum: Thank you. Good afternoon, everyone. I'm delighted to see some people in the room. I thought, "Ugh, 4:30?" (laughs) Long day, lots of talks . . . You're probably ready to call it a day. But I'm glad you're here. And I want to talk about two studies that we've been doing at Ithaka S+R that have to do with online learning. Just to explain, in the beginning, Ithaka has been really focused on libraries and publishers for the last many years. But as we think about how technology is changing higher education, we thought if we're really interested in how scholars are going to fare in the digital environment, how teaching is going to change in the digital environment, and how libraries support these new roles, it's really important that we learn more about online learning itself. And that's what this presentation is all about. I'm going to talk about a study we have done for the Public Flagships Network, and then I'm going to talk about the University System of Maryland study that we did; talk about the findings in that study, and then the implications for higher education more generally. And if there's time, I'll be happy to answer some questions as well. I want to leave plenty of time for Franny in this presentation.

I mentioned that Ithaka is interested in thinking about digital technologies as they affect scholarship and higher education and, Ithaka is

made up of JSTOR, Portico, and Ithaka Strategies and Research, just to give you some context for who we are and what we do. Let me talk first about the Public Flagships Network. You probably haven't even heard of it. It's a, a new consortium, relatively new. It's made up of 17 of the largest public research universities. And we worked with 10 of those in thinking with them about their strategy for online learning. What we did in this study, we identified 10 of the 17 institutions. A team of two of us went to each campus for three days and interviewed the President, the Provost, the Director of Online Learning, and 10 Department Chairs. We, we spent an hour with each person. We ended up talking to 214 individuals over the study. So we got the President's perspective down to the faculty perspective. What we were trying to understand is what do administrators think online learning is going to do for them, and how do faculty think about online learning? It was absolutely a wonderful, immersive course in higher education doing this study. The only thing I regret is that we did the study between January and March of this year and you remember how cold it was last winter? And Public Flagship universities are hard to get to cold places. That's one of the things I learned. It was below zero in most of the places we visited.

So the findings: we really looked at several things. We looked at how students are consuming courses and credits. We looked at how state policies are affecting what's happening on those research university campuses. We looked at the articulation agreements that many states have written to help students go from community college to any state-funded institution to the major flagship university rather seamlessly and how that's affecting what's happening on those flagship campuses. We found that, without exception, on the 10 campuses we visited, the state budgets have really affected what's happening on those campuses. The subvention funds have dropped precipitously and the flagship universities have had to find other ways to make up that difference between state funding and what the tuition brings in. The articulation agreements that have been signed have very much affected the campuses in that students are

doing comparison shopping. They have general education courses they have to take. They can take them anywhere in the state on most of these campuses. And they shop for the lowest price for taking these general education courses and the result is the humanities departments on these campuses are suffering a lot. Because they're no longer providing the service courses for the campus. Those have been taken care of by the community college in many cases. So the faculty in the English department, the History department, don't have those courses to teach any longer. And they're tenured and it's causing real budget stress for those departments. Still, the administrators on these campuses have great hopes that online learning will be the key to broadening access to higher education in their states.

Many of the chancellors or presidents have made promises to their state legislatures about the number of citizens they are going to educate over a certain period of time. And they are doing everything they can to bring higher education to more people in the state. I mentioned we talked to 10 Department Chairs, and they often brought some of their faculty with them in the interviews. Faculty have quite a different take on this. They believe that personal interaction with the student is the ideal and many, many, many faculty and department chairs said to us, "I can teach my students better because I know them. I know what their needs are. I know how to teach them. I don't want any other kind of learning for my students." They do not believe that online learning can reduce costs. On the other hand, those faculty who've had experience with developing online courses and teaching online courses have much more confidence in what online learning can do. Because they've seen it. And they've seen that, for some of their students, it makes a huge difference. They're able to learn in a different way. They have exposure to different kinds of learning styles. And it's a great help for those students.

One of the purposes of our study for the Public Flagships Network was to find out, because administrators believe that online courses could be created in one place and used on another

campus elsewhere thereby, reducing cost. Faculty were almost uniform in saying, "I'd be happy to make my online courses available to other faculty to use, but no thanks, I don't want to use materials that have been developed by someone else." [laughs] So I think we have quite a long way to go in being able to share those kinds of resources. I give you this as background because it was such a broad landscape review of what's happening, at least, on a particular type of campus.

Now, let me talk about the University System of Maryland study of MOOCs. This was a Gates-funded project in which we asked for volunteer faculty from the University System of Maryland, any faculty member who was willing to try using an existing MOOC in his or her classroom—to see if learning outcomes could be improved and to see if costs could be reduced. That was the purpose of the study. It was an 18-month study. We had these research questions: how can MOOCs be used in the traditional classroom to improve student outcomes? Can they be used by faculty who didn't create them? How do MOOCs compare to other online learning resources? We were particularly interested in the kinds of implementation issues that were created for faculty trying to use them and understanding how those challenges might be overcome and really thinking with the faculty about how these tools might be used over time. So, we had 22 faculty who agreed to do this. Ultimately, we chose four side-by-side comparisons. These were hybrid courses using MOOCs that could be compared to the traditional classroom experience because there was a traditional classroom comparison to make. And in cases where there weren't the one-on-one matches, we did case studies. There, we simply followed the faculty member around and looked at how he or she used the MOOC and tried to write an analysis of how it worked.

Just mentioning that we had tremendous support from the University System of Maryland, from the highest levels of administration through all of the faculty. Coursera was a wonderful partner in this study. Coursera gave us access to the courses without a fee. Coursera helped us work with the individual faculty who had created the courses to gain their permission to use them. Recognizing that this won't always be true, this was true for our study, but we are indeed grateful to them.

So what did we find? You probably can't read the numbers, but three of the professors used an entire MOOC for the classroom experience, 13 of them used some portion. They either used the quizzes, or the videos, or the discussion forums, or some part of it. Two of them used the video lectures only. Just to give you a sense of what they used from the MOOCs. Maybe it's no longer a surprise, but I think earlier it was surprising to many faculty to learn that learning outcomes are pretty much the same in hybrid courses as they are in the traditional classroom courses. You see here that the final test scores and the pass rates for the hybrid courses and the traditional courses are almost identical. So we conclude from this study that learning outcomes are the same in both cases. What's interesting is, not only are those learning outcomes the same but they are almost identical for all the subgroups. We looked at those who had SAT scores of 1,000 or higher, those who had under 1,000, first-year students, not first-year students, African American and Hispanic students, white and Asian students. You see that there's a little bit of a negative finding for those students who have lower SAT scores and from minorities and yet it's not statistically significant. So we concluded that all subgroups do about the same in the traditional classroom and in the hybrid sections.

These are all the things we tested for. Do parents have undergraduate degrees or not? What is the family income? And in all of these cases, there is no statistical difference in any of the subgroups for how well these students did in the two sections. Interestingly though, students liked the hybrid classes less even though they performed as well as they would have in a traditional classroom setting. They thought the hybrid courses were harder and they thought they learned more in the traditional classroom than they did in the hybrid classes. And the overall rating was just generally higher for the traditional classroom. In talking to students who went through this, more often than not they said, "But college is supposed to be sitting with your professor, learning in the

classroom. This is the way it's supposed to be." So part of it is based on what the expectations are. But, but it remains the case that they didn't like this as well. The students who participated in those courses for which we did case studies—that is, the professors that created something new using a MOOC but it didn't have an analogue in the traditional classroom world—did a little better. Most of them rated the courses above average. Difficulty is just a tiny bit below average but the rest are a little bit above average so they fared little better.

What did faculty do with the MOOCs? A variety of things. One, they replaced lectures. They used the MOOC video lectures—the students watched them on their own time. And then, they used the classroom time for discussion or for solving problems that were very difficult for the students or talking about related things. But a lot of them used the MOOCs just to replace lectures. They also used the MOOCs for supplementary material. Many of them found that some portion of the MOOCs did a really good job of explaining a concept or one aspect of something they were studying. And they used it in the way that we would typically use a textbook or some sort of supplementary reading.

This is a quote from one of the professors who was taking part in the study. He said, "I felt that the video lectures were brilliant. They fulfilled a need for course materials that integrated a lot of specialized information in accessible, fun way without having to buy or rent expensive DVDs or other textbooks . . . Using the MOOC raised the level of my class." He was really enthusiastic about this, and one of the outcomes of this study is that the University System of Maryland has begun to think about ways to reduce the cost of textbooks for students by using more of these kinds of materials because this was so successful. Not surprisingly, faculty are often asked to teach a course for which they lack complete confidence in their expertise. It's sometimes a new subject for them or it's slightly tangential to their concentrated expertise. They found that some of the video lectures from the MOOCs were really helpful in filling in those gaps that they had concerns about. Several of the faculty talked

about the MOOCs being an excellent way to expose the students to other styles of teaching and class discussion. They liked the different ways that others presented material and found that very useful for their students. This was particularly true for faculty on the smaller campuses where there isn't quite as much variety in teaching styles as you might find on a very large campus. Several of them used the MOOCs to reinforce skills, things like critical thinking, but also problem solving of various kinds. They found it easier to use the MOOC so the student could go back and repeat the work as often as he or she needed to really grasp the concept without wasting a lot of time in class doing that. And they talked a lot about how online courses really help students learn in a different way. Several faculty said, "Yes, the students are very good with digital technology. They know how to use it. They're expert in social media but they don't really know how to learn online." And participating in this program helped them teach students how to learn in that way.

Let me talk just a minute about the benefits for faculty that, that we observed in this study. Working with the MOOCs proved to be a professional development opportunity for instructors. They were able to think about how they taught their courses in new ways. They were able to think much more systematically about what the learning outcome should be for a course because they had to think about that upfront, and just designing the online course proved to be an important professional development opportunity. For some of them, developing these courses in advance also gave them some relief from time pressures during the semester. They had to figure it all out in advance and some of them talked about how helpful that was. But mostly, they commented on the flexibility of new approaches to teaching their classes. And they found that invigorating and professionally rewarding in many cases.

But I don't want to underestimate the challenges. There are many. It was really hard for the professors to find a MOOC that exactly fit what he or she wanted to cover in the class. And so, just finding the right content proved to be a great challenge. Sometimes they thought the lectures

were too inaccessible. Sometimes they thought they were too easy. It wasn't always possible to match exactly where their students were. And they were concerned very much about the lack of assessment. If you've looked at a MOOC, you know that many of them use a lot of impromptu quizzes—mostly to see how students are tracking with the content. That's not a really good way to assess what the students are learning. Often, those are just one question multiple choice answer and you go on to the next portion of the content. The greatest challenge for many of the faculty was the integration between the technology that was on the campus and the Coursera technology. How does Coursera interface with Blackboard, for example? And finding people on the campus who were able to support the technology component of the MOOC was not so straightforward.

There were lots of intellectual property questions. While the professors had granted permission for us to use the courses in this study environment, they are not going to be so willing to simply turn over the courses for anyone to use in any way he or she wishes. And universities have signed different kinds of agreements with Coursera. So sometimes the intellectual property is defined well on that campus. Other times, not so much. So there are lots of questions there to be addressed before this study could be taken to some larger interaction on campuses.

And then, there's the question of student engagement. Many students were tired of watching the video lectures after a fairly short time. It's always a challenge for professors to figure out the best way to engage students but, many of them commented that students weren't so engaged with these talking heads on their computer screens. And finally, the impact on cost. One of the reasons for conducting this study was to see if it is possible to use MOOCs that have been created elsewhere to reduce costs on a local campus. This chart simply looks at the number of hours faculty spent preparing the course using the MOOC. And you can see that the average time spent by faculty was 100 hours. The median was 58 hours. One professor reported spending 400 hours developing the course. If you spend 400

hours developing the course, it's probably not a cost-saving technique. [laughs] But interestingly, when faculty were asked do you think using MOOCs can have an influence on reducing cost on this campus, six of them said yes, seven of them said no, and five said, "Not this time, because this is the first time we've done it, but in the future, I can imagine that this would save money."

I know I'm out of time, so this is my last slide. Some of the implications of, of this study. It's no longer a surprise that student learning is comparable in online settings and the traditional classroom. Faculty report that there are some qualitative benefits for their students. It depends upon where the student happens to be and what he or she needs to learn. But there are some notable benefits for students being able to look at lectures as many times as they need to. We know that there have to be better ways to support faculty in using MOOCs. There have to be better mechanisms for IT support. Faculty are going to have to have a different incentive structure to use some of these new technologies that are coming along. And intellectual property issues are going to present long-term problems. So with that, I will stop and, I'll answer questions after Franny has talked. Thank you.

Ann Okerson: Just a quick introduction of Franny Lee, my coconspirator. She's Vice President of Business Development and Co-Founder of SIPX. And I don't know . . . Were you a newcomer to Charleston last year or was it the year before?

Franny Lee: This is my third one!

Ann Okerson: This is her third one. So she's a new and very important face among us. She has a very interesting background to bring to her work. She was originally a composer and a jazz musician and was drawn into the fields of copyright and digital communication through experiencing firsthand their effects on the music industry. She's worked on a variety of complicated copyright issues over the last 10 years. And most importantly to me, Franny is both a Canadian and a US citizen—as am I! And she is a qualified lawyer in both countries and, you know, as I've already said, I think she brings

a great deal not just to the Charleston audience but to the start-up that she is a leader in.

Franny Lee: Thank you, Ann. Just let me flip ahead here. So I'm going to take a slightly different approach than what Deanna has taken in terms of talking about MOOCs. And I'm not going to focus on the use of MOOCs in the classroom, but I'm going to focus more on what's happening right now on the front lines, on the ground level in the creation of MOOCs. The data I'll present is aggregated from actual system through SIPX. We supported a number of different MOOCs by now. And it's also going to contain anecdotal reports that we've collected from our conversations with schools, from our conversations with instructors, and from the people who are actually creating these courses. I do want to emphasize that although I do start the talk by focusing on MOOCs, that online learning is much broader and is a much bigger base than just MOOCs and I don't want online learning in general to get lost in the MOOC hype.

I will start by talking about specifically MOOCs and the data we see through that. But then I'll talk about how some of the schools are looking ahead and starting to take some of these early experiments they're doing in MOOCs and applying them to different types of online learning, either in the more traditional approach of distance education, or continuing studies that have online learning components, or in some of the new innovative projects that we see happening. Flipped classrooms, multischool or multicampus or international course collaborations and things like that.

On that note, I did want to start with a little bit of background on SIPX, because I don't know if everyone in the audience would be familiar with us. We are fairly new. I'll take a moment to describe the system because I think it helps everybody understand how SIPX is being used right now and where this data that I'm going to talk about is coming from. SIPX itself is an interface that allows whoever's using that interface in creating the course readings in that interface to get real-time information about what they're selecting. So if they're selecting a reading, for a classroom, faculty will be able to know, for

example, if this is a library subscribed reading, what the cost of it might be. If it's a $2 versus a $25 reading and bringing them that kind of information at the point at which they're making these decisions. Part of how we've built the system has created a very large cost savings for students as well. And part of the data we've run before has been to measure what that effect was. So in looking at all the transactions that run through our system and being able to bring it into platforms that, for example, have not been able to recognize library licenses in the past like bookstore course packs. We've been able to showcase savings of between 20 to 35% for students because of the mere fault that you're already recognizing this library subscribed content. It is fully copyright compliant. It's built to automate all the manual publisher communications and permissions applications that have to be sent back and forth. And it does this using database technology so it is scalable. And one thing that we as faculty who are at Stanford building this ourselves, one of the things that we felt very strongly about is you can't really convince faculty to go and use outside platforms and retrain for those platforms. So we had to make sure that our technology could connect into whatever existing workflow that that school had set up for faculty or that faculty had chosen for their students. And because it's information technology, it does have the ability to report back a new level of analytics and it has the ability to be able to un-bundle elements of what used to be a full course pack into individual readings like iTunes. And that brings a new breed of consumer usage for the students and reports back different kinds of information to the schools as well. And how we do that is we connect in with a variety of different sources. It's a very large range. We'll harvest library subscription information from the universities and their libraries. We'll connect with open access resources and open educational resources. To service that, in the same set of search results as, as publisher paid material so that whoever's making the decision in selecting those readings can make the right choices.

We provide connections with publishers as well as the Copyright Clearance Center to make sure this is a comprehensive experience as well. A

professor has the expectation of a Google search these days. You put in what you're looking for and everything in the world will show up to you and you don't have to hop around to different websites and navigate different flows in order to find that. At the end of the day, we are in a position to be able to connect to all of these platforms and showcase a wide variety of different benefits. And how we're seeing that being used right now in the online learning, in the MOOC space is to deal with one of the many, many challenges that exist when a creator comes in and tries to make, for example, a MOOC. It's a maze for an instructional designer, or a professor, or someone who's running a department head, or a program manager to come in and try to figure all of the different pieces that are necessary to create one of these courses. So on one hand, nothing happens without money. You have to figure out where you're going to get your funding from. You have to figure out the grant application and the timelines, you know, what department or what programs you have to apply to. There are video assets that have to be prepared as well. And it's not just about, you know, some of them have talking heads on a screen but other MOOCs try to create a different kind of experience. So you have higher production value and you're thinking about scripts for the professors who aren't used to sitting still and communicating in a television camera. They're used to pacing back and forth in a classroom so in some of these cases, I've heard stories where the program managers have to almost tie the professors to a chair and teach them not to fidget because they look like children that are kicking under the table at the kitchen table.

So there's all of these different kinds of work elements that are required to produce a high quality communicative MOOC. On top of that, Deanna talked a little bit about the technology challenges. You know, first, you need your school to decide well what kind of platform are they going to invest in? Is it EdX? Is it Coursera? Is it FutureLearn? Is it NovoEd? There are contracts that come along with that. And then you have to either teach your department head or the professor themselves or their T.A.s to create and

navigate the course materials themselves on that website. You need T.A. support because who's going to look after these 50,000 students? Are all those emails going to go to the professor's inbox? Who's going to monitor discussion boards to see if there are questions that need to be fielded? Who's going to grade? If you have assignments, who's going to grade these assignments and give feedback to people so they feel like they're being responded to? Tons of administration—forms to fill out, IP issues, approvals to get from department to department to department, and school policies to . . . perhaps, you know, perhaps you don't know. And then, where SIPX comes into play is this tiny little component as well about the pedagogy. What are you actually going to teach? Right? What are the lectures you want to deliver? What are the lessons and the messages you want to communicate here? And then within that, there are going to be content and copyright issues. And we come into play just into this one component - to be able to help people manage some of this content copyright stuff. But you can imagine how an instructor, a math professor, for example—a math professor cannot do this! [laughs] And if you ask them to navigate this on their own without significant infrastructure or resources or help to at least point them to who they could get to help them do some of this work, they're right now at a space, at the ground floor on the ground levels. They are racing to put this stuff out there and they are drowning. And they don't know what they don't know.

At this stage, we often see that the copyright issues come in as an afterthought. And, and these are things that could create significant liabilities for the professor and the school. I echo what Deanna was saying as well. I think the reason that a lot of schools are putting themselves through this pain right now is they're trying to find more effective methods for education. And the only way you can do that is to try to measure what you're doing and see if it's creating an effect, an improvement. But the last thing that the professors who are in this situation right now are thinking about is how to measure the results. They're desperately thinking about how they're going to get their films filmed and, and their grant funding approved and they're not going to be

thinking—unless their grant funding is contingent on assessment—they're not going to be thinking about how do I measure the results for my students. Where we come into play is in this content aspect. And I want to share where we're getting our data set from.

To date, SIPX has run 30 MOOCs through our system that we've supported. And these are, you know, think of traditional course readings. The course readings are delivered through SIPX's system. We've had 20 new courses and 10 of what I call "reruns." Those reruns are very interesting as well because we're seeing what changes the instructors are making between the versions. They're from a wide range of institutions across all different types of platforms and disciplines. And in terms of our data set total, we're looking at—I'll explain what the transactions mean here. Transactions is when a student actually comes in and purchases that reading or they don't all have prices to them so . . . When they engage in that reading and they've actually retrieved it. So in total, between the last two years, we've done 48,000 of those transactions and you can see the split between what people will pay for and what people are able to access at $0. There's a couple of different reasons why they might be able to get $0 transactions. One is either the publishers or the rights' holders have said, "This won't cost them anything. Please put it up there." Or it's because there are other benefits that our system has been able to bring to that student. Some publishers, for example, engage in geo-pricing and offer discounts sometimes up to 100% for people in developing nations or whatever factors they want to put in play there. Or sometimes it's because the libraries for the purchasing student have subscriptions that apply for that student and have brought that cost down to zero.

In terms of the types of content we see being selected in MOOCs, the number's a wide range. I present this data not to say we can draw any conclusions, but just to say out of these 30 MOOCs, this is what has happened and I don't want to draw any trends yet. But we do see that subject matter, how the instructor wants to teach, all of this will affect the number of readings that go in and how those students

engage with it. In terms of range, we've seen MOOCs that have only used one reading and we've used MOOCs that are more of a traditional course pack list that have used up to 24. Median-wise, about nine and a half each. In terms of the type of reading, we don't try to tell the instructor what they choose. The instructor chooses what they choose. We've seen about 36% come from journals and about 63% come from books. Across the range, we've got about 350 active readings in these MOOCs. They were selected from 53 different publishers and there have been five independent authors in there that were selected. In some cases, we've seen schools choose to put their own materials, things that the professor or the school has put together as the rights' holder and sell those within the course as well. And we've seen that as self-generated readings used in three different MOOCs.

In terms of the pricing, there are some new things being experimented with by publishers and what I was explaining before, contextual pricing or geographic-based pricing. We've seen 25 of our 53 publishers participating in that kind of new differential pricing-based initiative. The discounts that they have offered have ranged from between 50% off to 100% off their base price. The most common type of context-based pricing was 50% off for purchasers who are coming in from developing nations. The way that the tool can be . . . I mean there's a lot of different things and, and publishers right now, we see them taking baby steps in. So we could imagine how as things grow out, you might want to offer your alumni one price, or you might want to offer different geographic-based prices, not just developing versus developed nation but UK gets this. Canada gets this. Whatever it is you want to do there. In terms of the base prices, we saw that the readings ranged from between $0 to $22. I don't want to draw any averages out of this either because these readings are set up by the instructor. They range. They vary greatly in the type of content that's being selected. Sometimes it was one article. Sometimes it was one school business case. Sometimes it was 10 chapters from a book. So I don't think there's anything we can draw right now in terms of averages. The size, the source, the type of reading varied too greatly there. But

this is just to give you a sense of how much people are putting up for sale in the MOOCs. 18% of our readings were $0 readings as base price.

Even before discounts were added, there were a lot of materials that professors put up there to track—even if there was no price and they didn't need a commerce component—they wanted to see what happened with those readings. Where we saw engagements from students coming from was all over the place. And each course performed very differently and again, factors vary wildly. The transactions per course ranged from somewhere maybe 100 transactions in that course to somewhere over 15,000. Of the 48,000 transactions, we saw transactions coming in from 183 countries. I've put the top 30 up there just to give you a sense of the divide. But what we do see, I think what's interesting to see here is the US is under 50% right now. We did the same kind of measurement about a year ago. We didn't have as many MOOCs. We only had about five then. But we did the same measurement about a year ago and it was over 50% at that stage and now, I think we're somewhere between 40, 45%? So it is changing and I don't know if you can draw a conclusion just based on 30 MOOCs but this is just what we're seeing right now.

In terms of why there's such a range between 100 readings to 15,000 transactions, I think the way that instructors present materials to their students has a huge effect on this. Some people will put it in there as like a last afterthought bibliography and some people make it very forefront and say, "I think that this is a reading that's very critical to the way you learn. If you want a deeper engagement, here it is." And they build it into their course lessons with our links. What we've always seen is the instructor-generated materials are always highest performing in that course. And, and we do see that—there's no surprise—the cheaper something is or the more zero cost that reading is, the higher the transaction engagement tends to be.

We've been looking at different things that have come into play. So for example, we've been able to show that if, this example we're seeing here is a Case Western Coursera MOOC, but I have signed in as a University of Arkansas student taking this

Coursera MOOC. I'm able to get the second reading here in—this is actually a course of 24 readings—I'm able to get a large number of these readings in the course for free. We saw that students tended to go in and get some of the free stuff to and pick and choose on some of the paid stuff. In terms of participation rates per course, what we do see—and, and again, I don't really want to draw conclusions. This is just a sample of what's happened in one particular course. This was a liberal arts college course out of UT Austin and they published these results regarding . . . This is a total enrollment versus this is how many people received the certificate. And our last line here is what SIPX contributed, which is how many readings were consumed by those students. We're trying to see if there are corollaries. The numbers are about the same, but again, I wouldn't draw trends until we have more data.

What we are seeing though is, you know, I love showing these examples. And I'm showing someone else's work here. This is the liberal arts college from UT Austin, not my survey. But they did a post-MOOC survey after they ran it the first time. They were asking very different questions from what you typically see, thinking about how to measure successful educational experience for a university course. They weren't asking how many students completed that course. They were asking, "Hey students! Tell me what you found most useful about this course." They had identified the video lectures, the homework, it's the assignments. They also asked the students what were you trying to get out of this course. Right? Were you trying to learn about the MOOCs? Are you taking this because you're interested in it? Are you taking this because your job is making you? You're asking them the last question here which is "Well, do you feel like you accomplished what you came in to do? Did you measure, did you find a measurement of success there? Did you take this course because you wanted to earn a certificate or did you take this course because you wanted to learn one new topic item?" Because if you did that, right? Even if you didn't complete the course, to a student who's in a free voluntary learning environment, they've achieved success. And we have to really think about the way we define and apply

traditional four-year degree application of success to this type of new voluntary learning kind of experience.

I like to show this because I think they're asking the right questions. They are new questions. And they're using these kinds of questions to pick up what has really helped that student achieve educational effectiveness in this course. We're seeing people not necessarily using the whole course, but using these kinds of questions to identify what components of the entire whole did you find successful? And let's see if we can extract those and apply them in different context. I know this particular MOOC had plans to extract the video components, and the homework, and the readings that had been successful for their students and put them into continuing studies programs that were revenue generating. So it's a new way to think about how to unbundle the educational experience, and unbundle that MOOC experience, and take only the pieces you need and push them forward if you think they've been successful for students in this environment. It is early in the maturity cycle.

What we tend to see is, is it's very rare that after these MOOCs, nothing happens. It's an extremely expensive financial commitment for a school to create a MOOC and they want to do something with it after. What we do see, it's common to see that something happens with that course. Either they're going to re-use the whole thing, they'll either rerun the MOOC, or use it in a new context where it might be a system-wide course offering. Or they might put it into, we've seen some of these MOOCs being used as proprietary materials for undergraduate courses coming in. Or, what I was talking about in terms of extracting and unbundling the successful components and re-using those in different context. So if this video lecture was really good at explaining this element, that's almost a reading for a flipped classroom setting or a distance education setting. We've seen some of these MOOCs have video lectures that were extremely engaging, high production value, and they've extracted that from the MOOC and repackaged it as like a PBS learning asset that they could sell.

We are seeing lots of different activity happening on the ground floor right now. There's a lot of innovation and creativity about what people can do. But to draw it all back to the beginning, we've got to think about making people understand that assessment is important, to be able to identify and move this kind of initiative forward. And we've got to make sure that they have the resources and the infrastructure to create the high quality assets they need to. That's all I've got. [laughs]