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Exploring the 2019 Horizon Report

Tuesday, March 19, 2019

1:00PM – 2:30PM Eastern

**EDUCAUSE**

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>> Nori Barajas: Wonderful. Well, welcome, all, welcome to EDUCAUSE Live!. This is Nori Barajas. I am the Horizon Project Director for EDUCAUSE, and I'll be your moderator for today's ELive webinar. We'd like to thank Quest for their sponsorship of the 2019 EDUCAUSE Live! Webinars. Quest is the go-to solution that helps universities and schools better move, manage, and secure their Microsoft infrastructure. Thanks, Quest. Before we get started, many of you are probably familiar with the interface of the webinar, but I'd like to give you a few reminders. We hope you'll join us in making this session interactive. Use the chat box on the left to Submit questions. You're welcome to share resources, and you're encouraged to comment throughout the webinar. If you are tweeting today, our hash tag is #EDULIVE. That's E-D-U-L-I-V-E. If you Have audio issues, there is a link on the lower left-hand corner. At any time you can direct a private message to Technical Help by clicking on the top-right corner of the Chat Pod. A drop-down menu will appear where you can select start chat with and hosts. Again, top-right corner of the chat pod, drop-down menu, select start chat with. The session recording and slides will be archived later today on the EDUCAUSE Live! Website. Our webinar today is Exploring the 2019 Horizon Report. We're going to explore the trends, the challenges, and the technology developments identified in the 2019 report by a panel of global experts. The focus of today's session will be project exemplars that will be included in the full report when it is published on March 28th. Those project exemplars are showcased today from three institutions, and we have guest hosts, who were introduced, David and Maya, who are going to provide some contextual trends and challenges and help discuss as the presentations are made how the technologies can assist higher education to meet its many challenges and opportunities. Again, we are delighted that Maya Georgieva, the Director of Digital Learning at The New School will be one of our hosts today. And returning from our 2018 webinar is David Thomas. David is the Director of Academic Technology at the University of Colorado, and both Maya and David are going to facilitate our conversations. We have three presenters today. You heard from Tony Frisby. Tony is the Director of University Libraries and the Center for Teaching and Learning at Thomas Jefferson University. We are also joined by Taylor Kendal. Taylor is an independent consultant and designer with Tayken Design and Colorado Blockchain. We will also be hearing from Kristin Wegner. Kristin is a Project Manager, and she works with The GLOBE Program. Our three presenters will be presenting during today's session, and I'm going to start off this morning providing a little context about the report, and you'll see on the screen there that we have provided a link for the Horizon preview. The preview this year shows the topics that were selected by the expert panel. And the topic summaries in the preview are all new summaries that were provided after reviewing the expert panel interactions. The Horizon report, higher education edition, has long played a rule in influencing and supporting strategic initiatives in higher ed. Again, the report explores trends that accelerate technology adoptions. The report also forecasts six technology developments anticipated to impact teaching, learning, and creative inquiry. These forecasts are arranged along three horizons of which they are expected to achieve wide-scale adoption. I mentioned that there is an expert panel. Listed here on your screen is the largest expert panel to date. You'll see a global panel of experts. I can see several -- actually, many names of folks who participated this year as attendees today in this session, so a big shout-out to all of you who really did the hard work of selecting the topic for this year's report. This was the largest panel to date. We had over 98 global panelists, and the data show that they were the most engaged panel to date. Let me take you through the key trends. Accelerating Technology Adoption. The topics in this year's trends section reflect a very strong focus on meeting students' expectations, of constant access to platforms, to learning materials, and to resources in order to learn anywhere at any time. The panel expanded the definition of the first -- you'll see the short-term trend, it was interesting this year that when the panel discussed redesigning learning spaces, there was an emphasis on learning spaces programmed into extended reality, going beyond learning spaces in the physical, the physical campus location. Similarly, expanding access and convenience was evidenced in a topic that was new to the report. You'll notice there on the long-term trends, the last one, modularized and disaggregated degrees, was an interesting new topic presented by the panel. They anticipate increased opportunities for individual learners to transcend traditional pathways. They have discussion around this topic included a student's ability to blend formal education with modularized online coursework, especially coursework that is credit-bearing or otherwise accepted as valid in the workforce. The trends this year were -- had some representation from trends that were previous, and as I mentioned, a new trend. This slide shows the trends going all the way back to 2012. And again, you'll see that modularized and disaggregated degrees appears for the first time in the report. And as I mentioned, blended learning designs has reappeared after a drop-off in 2018. We think that the focus from the expert panel on considering other learning spaces is a reason it's returned to the report. I mentioned that there are challenges selected by the panel. These are the challenges, the significant challenges. The panel agrees are likely to impede technology adoption in higher ed. They are placed along three difficulty ranges, solvable, difficult, and those challenges that are wicked. The trends reflected are focused on improving the teaching profession, but it was much more strongly evident when the challenges were discussed by the panel. It was interesting this year that we saw two divergent topics related to faculty, and each were highly voted by the panel and they evidenced the difficulty faced by institutions to support a changing teaching population. You'll see as a difficult challenge one title "the evolving role of faculty with ed tech strategies." In the wicked challenge area you'll see one titled "rethinking the practice of teaching." Upon deeper investigation of the panel engagement, we tried to tease apart how these two were distinct. The evolving role of ed tech faculties, that discussion focused more on equitably including faculty and the adjunct teaching force in the strategic planning of campus initiatives, whereas the rethinking of the practice of teaching related to the changing practice of teaching, teaching methodology, and the complexed barriers institutions must overcome when designing faculty support that is not bound by location or time. Finally, the section of the report that has broad appeal -- oh, I apologize. This is always an interesting slide. The challenges going back to 2012. You'll see new challenges there. Those two are evolving role of faculty and the rethinking of practice of teaching. And for the first time, an increasing demand on digital learning experiences and instructional design expertise was also included in the report. As I started to say, the important developments. These tend to be the forecasts that are widely read in the Horizon report. The panel agreed on these six technology developments, and their importance to the impact on teaching, learning, and creative inquiry. It is these developments for which we seek the project exemplars that are included from campuses around the globe. Today, we'll be hearing from three of those project exemplars that are included in the report, and those projects will give us some context around how a campus can incorporate an initiative that includes one of these six technology developments. I'm going to take a moment to reintroduce our two hosts, David and Maya. David and Maya will be providing some context today in between the presentations. For those of you who are Americans in our webinar here, or those of you who watch American television on the 1st of the year, we have a Rose Bowl parade, and every year we have announcers on the side of the Rose Bowl who give us a little bit of chatter around the different Rose Bowl floats, so I think of David and Maya as having that position in today's webinar, and our project exemplars are those beautiful floats that we celebrate on the first of the year, so our webinar will follow much like the Rose Bowl does. We'll see the project presentation, and then Maya and David will provide some context and conversation, and we'll take your questions in between each presentation. With that, I am going to turn over the presentation stage to Tony Frisby. Tony is at the medical college at Thomas Jefferson University. Tony is going to talk to us about the Jefferson Competency Tool. With that, Tony, ready to take the stage?   
  
>> Tony Frisby: I am, Nori, thanks for the great introduction.   
  
>> Nori Barajas: Excellent.   
  
>> Tony Frisby: Over to our set of slides. So again, I'm Tony Frisby, director for the center of teaching and learning and with me is Cathy Daye, who assisted with the project and since then she's been promoted to the director of student assessment for the medical college, so if we have any questions about the specific instrument or the data recording that we're doing, Cathy's here to also participate in the chat for answering those questions. So a little bit on the background of Jefferson. For our medical class, we are one of the largest class sizes with 275 students. And before 2017 we had a rather traditional curriculum, two years of basic science, followed by two years of clinical work, and there have been a lot of medical colleges that have been changing their curriculum over in the last three or four years with ongoing support from the AMA. Jefferson began a new program in 2017, and it pretty much changed everything for us. So instead of your standard 2x2, which is a typical semester for the first two years, we now have this rather rainbow-colored curriculum map for the medical students. Broken up into three phases, one, two, and three. The first being the bulk of the content knowledge and the clinical development skills. Phase two is the traditional clinical rotations, and then in phase three we have the students who by then have selected what their clinical specialty is going to be, come back and do a little bit more integration work so they'll be able to start off as residents with a head start. So in the blue area along the left, where we no longer have courses, it's primarily a team-based learning event. Students go through a number of these blocks, and inside each of these blocks done on the left you see a range of curricular threads. So instead of having an anatomy course or histology course, they are going to approach them through a team-based learning environment, so quite a different structure for being able to support this. And having gone from a traditional curriculum, where in a semester you might have a midterm final and maybe a lab practical exam, so anywhere from three to six data points, we now have a huge number of data points coming at both the students and academic affairs and student affairs deans, so we knew early on we needed a way that would make sense of all the data in a way for people to digest it and understand it and report back to each other. So where some of these data points are coming from, we have Examsoft, weekly quizzes, team-based learning evaluations, peer team member evaluations, scholarly writings, and humanities. SimulationIQ is software we use in our clinical skills and OSCE center. OSCE is realistic standardized patients. Yep, trying to speak louder. Sorry, folks. So the OSCE is objective clinical exam, it's done to help students develop clinical skills that are more communicative. People sorts of skills, the social skills. New Innovations does our clinical experience tracking. Cathy has lately been working on a new mobile app for clinical evaluation. They'll be able to do bedside evaluations through this through a narrative voice-entered data and our current LMS at Jefferson is Blackboard, so we have data coming from it, as well. So our first polling question is to see how you guys have been doing with these dashboards and if you're creating many of them. If you could just go ahead and respond to some of these and we'll all see how far along we are on this new venture. Good, looks like a lot in the getting started. So I think the dashboard that we're about to present will help with some of these ideas. While you're still voting, one of the things that will come up towards the end is what impact does this actually have on the students, will they take advantage of what the data's telling them on what they need to study? So, all right, let's go ahead and stop the polling there, and I'll continue with the slides. So what did we do that was unique, and, I think, got us the interest of EDUCAUSE here was we partnered with industry, so the company that does the OSCE software for us, Education Management Solutions is what we used to create JeffCAT. We also recruited a librarian, which was helpful, because we were able to do the creation from our librarian's extensive experience, so she provided a way to standardize the terminology used in all of our instructional and assessment activities, and we tagged everything. I mean, everything. The SKMC competency graduations became tags, body systems, curricular threads, ACGME milestones are being added now, so we've got a lot of data coming from a lot of different points, but we're able to react to each of the different accreditation groups and saying how everyone is doing. So let's go in, since I imagine most of you really want to see what these dashboards look like, and this afternoon I'm going to take a look at two different views. The first one is going to be the Learner, and this is what our dashboard looks like if you sign in as a Learner. Across the top you can see you can look at your progress as an assessment type through clinical skills, through the different threads we have labeled, by body systems, or by the competencies that are identified. And in this display of bar graphs you'll see some of those are blue, indicate I'm doing well. The orangish-red color indicates I underperformed as expected. In the body systems category I clicked on the red bar there, and it tells me that this has been in the urinary area, so what would display after I click on that is this screen, and here we can see it was a clinical skills exam and it was with the renal subject, so I performed at 73%, which is just underneath expectation. Oh, yeah, Cathy reminds me, too, make sure I say this is, of course, fake data, and some of the numbers that you'll see next to the percentages on the next few screens are going to look a little bit out of whack and that's because we've used fake data for the different demonstrations. Right next to the bar display in blue is a bracketed display showing what the course median was, and one standard deviation above and one standard deviation below. In case you're wondering what these brackets here represent. The other views, if I click on Threads, I can look and see how I'm doing along each of those, and I'm also not performing quite at expectation in the Health Information Science, and I will go forward again and show another way of looking at the same kind of data, so we use these radar plots and we're able to demonstrate how the student is performing in the first year, in this case underperforming in communications, diagnoses, hypothesis and physical exam, but doing well in the others, and this would have been partially through the first semester. This next band will represent where they are at the end of phase two, and the outer band will represent where they are at the end of phase three. So the students will have different color coded metrics as they progress to see how they've done and hopefully by the end of all four years of medical school, they'll all be up here where they are expected. And the third and final view of way of looking at stuff is just in a tabular view, and the way I was toggling those is just by clicking on this and it jumps between the different screens. So let's take a look at it from the administrative side, and we'll look at student affairs. The student affairs look and academic affairs look are pretty much common. I come in as a student affairs dean, and I can see the students assigned to me for my advising, and the second block here would tell me if any of my students were at risk, also flag the student in red, so I would be able to identify them quickly and sort by risk assessment, as well. So if I needed to check up on a group of them, I could. If any happened to be out on leave, it lets me know here. Quick view, able to see all the students that I'm responsible for. Let's go ahead and take a look at our first student here, and I'll just remind you it is fake names and fake data. So as we saw before, we've got the different blocks across the top. And I can see medical knowledge is an area where this person is underperforming. Over here on the right is a downward arrow, and that's going to let me see what shows up underneath that assessment. So just looking again here, I've got medical knowledge, in parentheses it tells me 14. That would represent the number of data points that were collected in this assessment related to medical knowledge. And then to see the actual assessment questions, I just scroll down, and here with the screen capture shows what would have happened if I just scrolled down live. And in this clinical assessment, either you got the assessment correct or you didn't, so you're seeing scores of 100 or zero. So we are a little bit more than six months into the sharing this data with students in Iowa, so we've got some initial feedback from students. Cathy was at a session just before this also getting feedback from them. So far students affairs deans are doing a lot more with the data, but you can appreciate some students feel a little bit overwhelmed with it and some not so much, so we knew ahead of time we were coming up with all this data. We tried to create a dashboard that would allow you to present the data more easily and understandably, so it will be curious to see what the students do with having this information, and if it affects their studies. Like when you were taking the traditional courses of biology or biochemistry, if you were doing poorly, it was easy to identify you might need a tutor. When you were going through team-based learning that covers cases, sometimes it's more challenging to find out what subject it is you need to get the extra support on. So that's defines us, and I thank you for your time. If you have any questions, we'll get it turned over to our hosts for some question and answer time. And Cathy is here with me, too, if you want to address something to the assessment expert.   
  
>> Nori Barajas: Tony and Cathy, thank you, appreciate that. David and Maya, I'm going to turn it over to you for your impressions and also to field questions.   
  
>> David Thomas: Great. I'll jump right in here. You know, having been a reader and working on the advisory board with the Horizon report for a long time, I love this kind of a presentation, because I think that naturally the Horizon report looking so far into the future, sometimes we get overwhelmed by what the possibilities of the technology might be in the future, rather than trying to realize stuff that we have in hand, and I'm really excited to see an analytics project, which really is focused on just surfacing what we actually already know in a format that people can use it. So, you know, it looks to me like you're doing curricular change and changing assessments on top of everything, but just putting the hard work into turning that into data and making that data present to students is really important, because, you know, in some sense it's not as sexy as AI predictive analytics, but may have a greater impact. I think the question I'll have and already seen asked in the channel is, what was the efficacy, what's the impact, and what's your plan for assessing that over time?   
  
>> Tony Frisby: Our first major feedback on the curricular changes that we made will come very soon to students that are all finished with the phase one portion, are required to the national licensing step exam before they start their clinical rotations. So they all will have that done by the end of March, and that will be the first round of feedback to let us know that JeffMD didn't damage Jefferson's usual well-scoring in the step one realm for the JeffCAT assessment tool, specifically, I think we're still just starting at the surface of understanding what students are going to be looking at. Cathy, anything you want to add that you've heard positive or really frightening about it?   
  
>> So one of the things that we do have in the administrative back end is the user log, and, you know, although we're not really tapping into exactly how long they are using it, we're able to see, you know, where they've logged into, where they've been, and so we're -- I'm really finding that the bulk of usage right now is from the second year, who are currently working on, you know, studying for their step exam. As Tony had had indicated previously, as well, we've gotten a lot of usage from the faculty, so we really built this tool more with the students in mind, but I have to say, remediation initiatives with faculty are really -- that's currently where our biggest usage is, and that's kind of leading the students, too, to the, you know, to the water, if you will. So where the students probably wouldn't necessarily think about it, when they do seek help from faculty, whether that be a thread leader or a block director, the block director, thread leader, will access their information, excuse me, and then help them remedy the learning issues that they are having.   
  
>> Nori Barajas: Thank you. It's great to see a project that is really focused on what many of us are focusing on at the moment, which is analytics and the growing focus on measuring learning. And I'm particularly appreciate that you are able to kind of put this capture all this data and put it in sort of an interface that was very visual, and wondering whether that had to do something with your faculty adoption in terms of, you know, accessing to that data. I think one of the things that we've done very well in the last few years is to capture a number of different sources of data, and I think to sort of the next way in which I kind of feel like this project in a way represents, is then make this data in a way that empowers users, both the faculty and the students. So I'm wondering in the process, like, retraining, you know, how did you involve the faculty and the students, you know, if you can share a few particular examples?   
  
>> Tony Frisby: Yeah, we can both help address that. A year, almost two years before we knew we were going to implement the change, we started recruiting additional faculty that were getting trained in the small skills for team-based learning. We worked with the existing faculty to identify who was willing to serve as subject matter experts to go with the cases and the content presentation change that would be different, and then we hired thread leaders and sometimes that was the course director that was previously responsible for that course, but not always so, and then just spent hours every week with them treading along, producing all of the course content and the assessment all at the same time.   
  
>> Maya Georgieva: Yes, and I guess a little bit for the developing and the question, does this, as you were in this conversation with faculty, did you map that, the different teaching techniques and methods in a way you tailor the data?   
  
>> So mapping is probably the bulk of the work, as you can likely assume. So, yes, and we constantly continue to map, as any item is brought into our item bank, whether that's a multiple-choice style question, or a checklist question for an OSCE or clinical situation, or everyone a clerkship skill checklist assessment item, all of that is mapped over all of the domains, if and when appropriate. So mapping has been a huge push, and, thankfully, we started the entire project with one of our cataloging librarians here at Jefferson, which was invaluable. In terms of data display, so reporting out is actually still -- we're -- we have those basic screens, but we're still really taking feedback from faculty as they continue to use it. So this product is very much in its infancy, and I would not necessarily say that it's complete, so I actually just met not too long ago with one of the people in leadership who's a researcher, and he has some very definitive ideas about how he wants to be able to visualize that data. And, again, we're working with a vendor, and they are very flexible, so I feel that we can probably, as soon as we're done with the phase two implementation, we can probably go back and rework those screens, if, in fact, they are interested in that.   
  
>> David Thomas: Two questions out of the chat that maybe you could kind of merge together. Are you using any of the data that you're pulling to inform accreditation or teaching efficacy? Looking at different teaching modalities and looking at what's actually meeting the mark?   
  
>> Tony Frisby: For accreditation, Jefferson received its LCME accreditation a couple of years before JeffMD launched. I know that we are going through this change, so we'll be sending them an update, but they are probably the biggest indicator is going to be that step one performance exam scores, and we should know that in a couple weeks, since they are going to be finishing up next week is the last chance they have to take them before they start their clinical experiences.   
  
>> And just to tag on the end of that, absolutely, tracking all this data is going to be extremely valuable when the time comes, you know, to report back for accreditation. Direct observation and clinical is definitely something that we want to make sure we're doing, you know, a better job at tracking, I would say. It's not that we don't track it now, but the idea is that you can tell with 270 students in a single class, we do have a very large class size, so direct observation of our students by their clinical preceptors, it's a challenge. There's nothing else to say, that it is challenging, but this direct observation tool is an app, and it's being launched, literally, in two weeks. So we don't have, really, any feedback except from students who are piloting it and faculty who are piloting it. But the idea is that they will, the student, will take the faculty member with them into a patient room and have their skill be directly observed by that preceptor and on the spot the preceptor will fill out that checklist as opposed to the student handing them a paper copy that they put in their pocket and the student then has to follow them around to make sure that it gets filled out, and then, of course, we have to process it back at the assessment end of things.   
  
>> Tony Frisby: Regarding the data on individual instructional activities, we are getting feedback on a separate measurement, not getting reported through JeffMD, but students are evaluating any skill sessions and they evaluate the faculty that present in those, as well as the team-based learning. One of the things that Jefferson did I want to say would have been in 2016 when we were doing the admissions interviews for the first class to come in to be taking JeffMD, we had those students meet with some folks about what this change would be. We didn't want to have somebody that was applying to Jefferson that had previously had a very structured traditional curriculum and then coming in and doing team-based learning and small group instead of the traditional lecture hall stuff. So they knew what they were coming in for and knew that there would be a lot of surveying going on, and they've really been a good group responding.   
  
>> Nori Barajas: Excellent. Tony, Cathy, thank you so much for your presentation. Again, for those of you attending and looking forward to the report released on March 28th, this exemplar will be included in the development section of the report. We do have a few questions pending. At the end of the session, we'll come back to some of the questions that are still lingering after our presentations, so just know that we've tried to capture as many of the questions that came up in the Chat Pod. The next presentation is by Taylor Kendal. Taylor's going to be presenting about a project he's been working on called FlexchainEdu. I am posting in the Chat Pod a link to one of the resources that you can read, and Taylor, are you ready to take over?   
  
>> Taylor Kendal: I'm just getting back in, and had one little glitch here. Can you upgrade me one more time here, I think we'll be able to get going.   
  
>> Nori Barajas: Excellent. Again, in the Chat Pod, I copied and pasted a link to Taylor's project. You can see live the application for this project that I pasted. Taylor, how are you sounding?   
  
>> Taylor Kendal: I think we're good to go. Are you hearing me okay?   
  
>> Nori Barajas: Excellent. Yeah, I can hear you.   
  
>> Taylor Kendal: Hearing me okay?   
  
>> Nori Barajas: Yeah, it sounds a little bit tinny, but I can hear you. Go ahead and start, and we'll adjust. Yeah.   
  
>> Taylor Kendal: Okay.   
  
>> Nori Barajas: There you go. Go ahead.   
  
>> Taylor Kendal: So, thank you. Big thanks to all those that are sort of tied into both the Horizon report and this webinar and Maya and Dave. I appreciate all the tireless work I know that goes into sort of a multifaceted project like this. And this project was also selected by the Department of Higher Ed as part of their 2030 ecosystem challenge as one of ten winners, so just a quick thanks to Sharon Lou and others at the office of Ed Tech for organizing an amazing initiative with that challenge and bringing some national and really global awareness to something that are really willing to push the boundaries and experiment with the future of education might have in store. So going from Tony, which was definitely sort of on the ground and practical, we're taking one step towards the ethereal, I think, here, but hopefully there's some good, tangible stuff to take away. So this project really started in a lot of ways about 50 years ago at a small state school, one that I -- it's both my alma mater and somewhere I spent about 15 years of my professional life working, so although I'm sort of separated and working a little more independently, this project was definitely sort of born and lives at MSU Denver in a lot of ways. And MSU, what was Metro State College in 1965, really was created as an opportunity school, a street-smarts kind of school, one really founded to create sort of an equilibrium between sort of the demand of skilled jobs in the '60s that were needed and supply of workers. So that's sort of the basics of what we're working from. So that was then, I mean, and this is now. Those that are -- have been to Denver or in sort of booming metropolitan areas, you understand this. There's a lot of economic growth in the areas, and as much as that brings a lot of benefit, it's also ironically this being introduced is sort of the same problem and really, you know, brings full circle this idea of a need for skilled workers in an area that maybe undersupplied, so it's sort of a weird full-circle moment in Denver, where the city, again, is sort of booming and the skilled labors aren't necessarily here to sort of meet that demand. So, there's a need for skilled laborers, but I think instead of intelligently sort of connecting students to those jobs and opportunities, we're often just adding debt to what's already going to be sort of a difficult path. And these are sort of some numbers that come out of MSU Denver. 26% graduating within six years. About half are taking on some sort of debt. This number here, $24,250 of average debt is definitely below sort of the national average, but if you look at the next number there, the numbers around just what sort of population is attending MSU Denver, it's a high-need population. And so taking on, you know, $24,000, $25,000 in debt is actually very problematic for the students that are here. And then, again, there's still a high need outside of graduating for workers. So that's just some real sort of high-level framing, and so with all of that in mind, this is sort of -- this is sort of where we've landed, I think, and this really introduces the crux of the issue that we're trying to solve with this project. And I should give credit, I first saw this from -- and I think it's really apt. He talks about how we have these students on our campuses that all have sort of this spectral sort of debt, this number that's looming over their head, and we don't often see it. It's ghostly in that sense, but we know that there's a lot of debt tied to our students. So to solve this problem, I dove into this world of just sort of alternative credentialing and blockchains and sort of how we can build trust into systems in new and different ways, and so that's where this project, FlexchainEdu, was born. Just really looking to address the problem of both, you know, the debt sentences that seem to be tied to students, but then also new opportunities to get more flexibility around how we can demonstrate that skills are being sort of achieved and mastered along the way without necessarily putting all of the effort on just graduating students just because we know that's not always the case. They are not always getting all the way through. So, you know, just as sort of MSU was originally founded to do, this project is really meant to provide flexible opportunities to learners. I won't get into the real deep technical details, but the overarching sort of solution that's available here is really a sort of mobile app and student passport, something that would contain very granular, verifiable credentials that are both recognized and provided internally, but then also understood by employers to represent important skills that students are gaining throughout their educational journey. This really, I think, we're trying to embrace this idea of just lifelong learning and that whether or not a single degree is attained from any university, in the end, I don't think that's really the -- that's not really the goal. The goal is to really empower students and allow them to have a fulfilling life and a job that's rewarding. So that's the idea. We've got a crew that are all sort of behind this concept and this idea, and pushing out a hopeful pilot. A number of folks at MSU Denver, as well as -- I want to give a shout to Eddie Andreo, at Cowley College in Kansas. We really wanted to ensure that there was -- that there was a sort of cross institutional potential for some pilots, so Eddie's been very willing to work through this and see how it might work between universities, and then sort of on the technical side, Jamil Dewji's at Learning Machine, the sort of technical piece of this was born out of M.I.T. Media Lab with block certs, for credentialing on a blockchain, so have a range of folks who are all willing to push this forward and see what the future of credentialing could have in store. So if -- I'm happy to go into some technical details. I wanted to leave a little time if it's useful to go down that road, but kind of wanted to lay a broader, overarching sort of how this looks and the landscape of where we're at and why I think projects like this really are important and need resources to push some pilots out. There are, certainly, schools that are already kind of going down this road exploring some of these sorts of ideas, and so I think there's just a lot of data to be gained and a lot of lessons to be learned in how sort of flexchain, or flexible blockchain-based credentialing systems can really revolutionize the way we sort of verify the skills being gained. So that's it. Feel free to get in touch. This is still certainly early, and it's at a pilot stage. All of this is fairly conceptual, but I think there's enough momentum, and so if you're interested and willing to sort of jump onboard and explore this further, please shoot an e-mail to flexchainedu@gmail.com or just get in touch with me online. I've also recently got tied into the Colorado blockchain community, which has sort of taken on a new direction, but it's going to, I think, allow us at least locally in Denver to explore this in a deeper way. So thank you and excited to field any questions that may come up. I'm ready for David to grill me here, because I know this is sort of future-facing, for sure. This has potential, but it's got a long way to go.   
  
>> Maya Georgieva: Hi, Taylor, this is Maya. I really appreciate you bringing this project up. We've been talking about blockchain the last several years, you know, understanding, bringing awareness and understanding the underlying sort of mechanisms of this technology, but it's great to see a project, even in its conceptual phase, that brings it into context. And I think that one, obviously, one very obvious, but at the same time very important use of that, is nabbing it to an educational journey, and I really, really appreciate how you laid out that context in terms of, you know, what it means for the students, what it means to the employers, what it means to the ecosystem of education. And I feel it touches so many trends we've identified in the Horizon report this year in terms of just modularized degrees, not just blockchain, but in terms of, you know, rethinking just education. So I was wondering, as you're building this, if you could, like, share with us, like, what is your scenario, you know, if you at that point can walk us through, like, a student and sort of engagement with the mobile app. Because, obviously, that also brings us so much closer to the student experience.   
  
>> Taylor Kendal: Sure, yeah. There is a sort of prototype app that you can pull down right now through block certs. It's sort of just a template. Anything at institution would, obviously, need to be customized, and I love the way they built that as an open standard, so it's meant to be customized, but block certs has a very easy demo how it would look on the student end, but the way I envision it, and this was born out of my instructional design background and realizing that, you know, we're doing a lot of work to lay, you know, foundational learning objectives and we know sort of the core competencies that we're often expecting students to gain, and there's really no reason in my mind that we shouldn't be, you know, say a student enters a biology course, and they, you know, maybe work through half of that course or even just, you know, miss a day here, miss a day there, and it can get really granular, I think, but there should be a mechanism for students to demonstrate that learning and then have an immutable record of the skills that they've gained, and so with a simple, you know, basically blockchain as the sort of back-end piece of it that locks it in place and allows for sort of agreed trust around the fact that skill or behavior, whatever it might be, was actually attained. That's sort of the back end. I can actually give you a quick sense of sort of just from a technical standpoint. On a phone, a student may have sort of a front-facing presentation layer that is tied to a university, maybe tied to a specific course or instructor. That's going to have some details around what it was that they achieved. There's then sort after secondary content layer that can have really any number of pieces of added content that can then be built into registrar systems and other important data within a system in the university. And then there's a sort of final single hash, it's basically just a code, a key, that ties that in it in a sort of immutable way to the blockchain. That last piece is the blockchain piece that keeps it secure and sort of everlasting, but that's the idea, the student could, any student could have any number of these and they could get mashed up in interesting ways to either all the way towards a degree, there are definitely universities that are using this. M.I.T., in fact, is now issuing digital diplomas using block certs, so whether it's granular and sort of on a learning outcome base or all the way up to, you know, a final degree or diploma. It's sort of infinite in that way, I think, in the ways that it might be used, but we're just so early in where it's at. I think just getting pilots off the ground and seeing how it interfaces with the broader systems that we know are super structured within universities, I think that's the key right now.   
  
>> David Thomas: So, Taylor, could you briefly comment on this. Blockchain's sexy, that was in the discussion, people are interested in it, but whether or not this kind of approach is successful is going to depend on adoption, like, how many businesses will look at these credentials, how many universities will share these credentials. What's your take? What's a minimum viable blockchain-based credential going to take? How many institutions? How many employers?   
  
>> Taylor Kendal: Yeah, I mean, that's -- that is the million-dollar question, and I think it's the key. From my perspective, and now that I've dove really deep into this world on sort of the developer and industry side, that's not slowing down. Like the demand and the use cases on the industry side are only gaining momentum, and I've seen it really clearly happen over the last year or two. And I think in parallel we've seen a sort of devaluing of the degree, and I don't want to tie this just to the big companies, but I think we all have seen, you know, the Googles and Facebooks, they are all saying that the degree just really isn't what we're after. We want the folks that are passionate about this work and can demonstrate that they are able to form, you know, the task that we do within that context. So, you know, what the threshold is to, like, have adoption take place, I think it will require some sort of probably institutional network. It probably can't be born out of a single school. It already exists in places, and that's -- I don't think that's enough. So I think gaining traction among a broad sort of cohort, and I should say, there are European versions, there's a lot of movement in this world going on overseas that I think show how those sort of networked university systems can potentially adopt these things and really push forward. I think we're behind the ball quite a bit when it comes to sort of just playing openly and across borders and across systems, but I think that probably is what it will take. I don't actually -- I don't think there's any concern on the employer and industry side of whether or not they'd like to see something like this, and, you know, ultimately you could have this then get displayed on your LinkedIN profile, and that's what many employers are looking at now anyway, like, the standard resume that says you graduated from Stanford, I think, is just sort of losing traction over time. And maybe Stanford's not the right one. I want to bring it back. I really see the value here in the smaller state schools, where the Ivy league brand may not be enough to land you that perfect job. That's a good question, David. That's exactly what I'm wrestling with. I don't know. It's a big problem, it's a big project, but that's also why I'm inspired by it.   
  
>> Maya Georgieva: Several questions that are coming up in the chat, in terms of at this point, we saw a broad team involved in this conceptual phase, but are you talking to employers? Are you looking at this being some kind of consortium, where some of that credit could be transferable or shared across institutions or potentially students' credit, kind of bringing it together for students? You know, what's being done or what are you thinking on doing on that front?   
  
>> Taylor Kendal: Yeah, the -- I think the timeline -- I'd hate to go too far down that road without really testing viability on a smaller scale, so the sort of alignment around different partnerships, that's already, I think, taken place in small ways. That would be great to have sort of a broader national partnership forum, but that was sort of step one, and then there are some employer partnerships. Comcast here locally in Denver. I've spoken with somebody who's interested. I think there's plenty of interest, it's just we need to get a small-scale pilot off the ground at a few universities just to figure out where -- there's going to be some evolution that's going to take place internal to the university system. The broader connections beyond that, I don't think, are as big a list. I think it's getting past a lot of the internal hurdles that are going to take some time. And then, yeah, you know, at that point once something is tangible and, you know, sort of early MVP-style app might exist at a few schools, then it's getting, you know, focus groups. Georgia Tech did a really interesting pilot study using block certs and had students offer feedback. It was harsh and rough. They got a little too technical and students didn't care about what a hash function was and why, they just wanted something clean and easy to interact with. So it's got a long road, but I think starting internally and getting small-scale pilots at schools, we can learn a lot from those internal hurdles and then I don't think it's as big a lift after that to have something gain traction and have employers, you know, and yeah, it's happening. UC Austin is another example. I saw that from Mark, and even the system he's at, there's some movement. UC Irvine had some really interesting curricular programs already that they are evolving. Not so much from the sort of infrastructure side, but there's a lot of also just internal programs that are building out, you know, there's going to be more and more students getting interested and those with the skills, they can expect this sort of pilot to exist.   
  
>> Nori Barajas: Taylor, thank you. Wonderful presentation. And we still have a few questions that are pending, but we are going to transition to our third presentation, and we will have time at the end of today's session to go back over some of the questions that are still pending in the Chat Pod. With that I'd like to introduce Kristin Wegner. Thank you, Taylor. Kristin is coming to us from the GLOBE Zika Education and Prevention project. This is a project that is in partnership with the U.S. Department of State, and Kristin's going to tell us how this program is impacting higher education, and you'll be able to read more of this in the Horizon report as a project exemplar. Kristin, are you ready and live? You want to say a little hello and make sure sound is working?   
  
>> Kristin Wegner: Yes, can you hear me?   
  
>> Nori Barajas: Yeah, loud and clear.   
  
>> Kristin Wegner: Great. Hello, everybody. Thank you so much for being here today. It's a pleasure to be able to present. Again, my name is Kristin Wegner. I'm a project manager for the GLOBE Implementation Office in Boulder, Colorado. I'm going to talk about citizen science and the app and also about the Zika project. So the GLOBE program is an international citizen science program. It's sponsored by NASA, receives funding from NOAA and the Department of State. It's a citizen science program. It's predominantly been through K-12 education since 1994, and the past few years we've opened it up to be broader. So citizen science is a way to have people of all ages be able to collect scientific data and be able to solve issues together in a local, regional, and international level. So, again, over 25 years we've had students collect data, and this is our database. It's an interactive database. We have four different spheres, so students and citizen scientists can collect data and then upload it to our visualization system and also access it. And so in 2016 we launched a new app, the GLOBE Observer app, and this involves citizen scientists in addition to K-12 students upload data, clouds, mosquito habitat mapper, and land cover. So just to show an example what's possible, in the recent eclipse in the United States we had people go out and collect temperature data a week before the eclipse, and then you can see how many people collected data the day of the eclipse, so they were able to see the temperature difference before and after and during the actual eclipse, so through that we had over 105,000 solar eclipse observations. This data, the data is currently being analyzed by students in a university in Ohio, and so a lot of our scientists and faculty at different universities across the United States and internationally use this as a way for students to learn science classes, but then also for pre-service teachers to learn about science education, as well. So a little bit about the history of GLOBE and mosquitos. In 1998 we had a high school student in Benin look at temperature and precipitation, so we created a mosquito identification, mosquito larva identification, and recently a scientist created an app that helps people be able to take the data a little further. This is what the mosquito habitat mapper does, so not only can you locate, sample, count, mosquito larva, but also eliminate breeding sites. So this is an interactive app that anyone can download, and you can go on and identify the larva, take pictures of it, zoom in with the camera, identify the larva, but then also overturn buckets of water or tires of water, and then report that back. So that fourth step is really important, because that's how we report the data back. So one of the projects that I manage is the Zika Education and Prevention Project, so this project is through the support of the Department of State and there are three objectives, engage hard-to-reach at-risk populations on the ways Zika and other mosquito-borne diseases are transitted, create regional networks of schools and organizations, and use and disseminate crowd source data. So we started this project last year, and we're currently working in 30 countries, so we're working in the globe Africa region, Asia Pacific, and also Latin American/Caribbean. We've had a lot of participation in a short amount of time. And we do that through a train the trainer approach, and so we went and we first conducted three trainings in the three different regions and worked with country coordinators, people at the Ministry of Health and Education and also some scientists at different universities, and so from there, some of the countries were able to receive small grants to carry out their own trainings, where they conducted them at universities and also did teacher trainings at a more local level. And so this is a good way for us to partner with universities across the world. We have universities in Thailand that are leading this effort using it as part of their curriculum, as well as throughout Africa and Latin American. And so to partner this, it's not just mosquitos. As we saw from the student research in 1998, it's also important to look at other parameters, and so we have a mosquito protocol bundle, which encourages people to go out and collect data on air temperature, humidation, relative humidity, et cetera. And so since May 2018 when the first training happened, until just this current month of March 2019, we've had more than 40,000 data points collected. And so this is really exciting, because this data, the data we can use to analyze in partnership with satellite data and being able to connect it back to larger databases, but then also we're working on having different tools for public health officials to be able to access it and make decisions around that, too. And so this is really helping us be able to prevent the spread of Zika by being able to locate it at a local level. And so this is what it looks like close-up. You can see the images of the mosquito larva there. So finally, before I turn it over to questions, some of the things that were interesting to me in the recent report that came out was just looking at the social media and cross institutional and also cross sector different areas, and so for me this project really is that. I think through our train the trainer approach, working across different sectors, including scientists, remote sensing scientists, public health officials, and also the government sectors, we're helping people on a local level be able to problem solve real-life issues. And additionally working with teachers and through the students, we're really hoping to continue to expand across the cross institutional support. Some of the social media aspects, too, have been interesting. We've had a lot of students collect photos and share them via social media. We've also done a lot with storytelling. We had a Google Voyager story that came out about the project, and then we're also seeing this is the way to engage students at the university level, so again, for example, in Thailand, they have a few students that are social media coordinators for this project, and so through that effort they are able to engage the local community to collect more data, to be able to understand the efforts, as well, and we also have mission mosquito campaign. I'll put the link in the chat window in a second, but through that we have access to different scientists and community members, so our NASA partners are conducting two webinars per month. One is for teachers and the other is for citizen scientists and that way people can share all of their different research and ask questions by the experts, too. Again, going back to the report and some of those areas, the cross-sector professionals working with social media and also cross-institutional aspects, I think, make the project a lot stronger. I know many of you are at universities, so I encourage you to go to our website, globe.gov, and see if your university is already a member and connect with that person in the university. And if not, you could reach out to me or we could also put you in touch with some of the different people we have in your state, too. So at that time I'll welcome any questions.   
  
>> David Thomas: Wow, that's fascinating project. It touches on two things that I think I'd like to highlight. The first one is that I think with a lot of technologies we really look at how we can push more information out to the student, the end user. I love that you've already flipped this around and you're asking people to be citizen scientists, to use the same technologies that we love to push lectures and textbooks through, and ask them to bring information back, and I think that really flips the script in a certain way, in a kind of a structure that I think is really important for higher ed to think about, that we continue to think about our students as co-collaborators and cocreators and not just as consumers. I love that. The second theme that this touches on, which I really want to highlight, we increasingly are talking about digital equity achievement gaps, digital literacy, and I think for most of us we're talking very locally about what's happening in our own backyard, but I love to see this, you know, spread at global scale and reaching communities that, you know, for a lot of us we don't take the time, we're not afforded the time to even think about. So I love this is a very appropriately named, it's earth scale, globe-expanding kind of thoughts. With that in mind, I would ask you the question in terms of digital equity, how much further do we have to go? How many people in these communities have devices to produce data or consume data? I mean, how big is the gap, from your perspective?   
  
>> Kristin Wegner: Sure. That's a really, really good question, something that's very relevant to us. Just about three weeks ago we had three webinars with the regions to hear from the country coordinators and hear some of the different challenges that they are going through, and so it's really interesting to hear, although some communities may have access to smartphones or shared tablets or some of the schools might have tablets, we've also heard from lots of different places that do not. We also heard from some of the countries when they'd do one-day training and ask people to download the app and show up prepared, they also realized they had to help people set up e-mails before they could set up accounts in our app. So it also helped us look like they have smartphones but use what's app or text messaging instead of e-mail, so not only is the hardware a very access issue, but the different ways we engage with the actual smartphones and tablets also. So it's been really interesting to see what and how it changes throughout each country, too. We are really making an effort to work with really rural areas, and asking our country coordinators to engage local communities in rural areas and trainings, so we're seeing a wide range between urban and rural, just what we see in the U.S., too, but they are helping us realize those issues, and we're trying to troubleshoot as best as we can, offering WiFi hotspots or support in that type of way. But I think it is a wide, wide range, but I think what we've seen is a lot of people get it as soon as they have something in their hand and they can see the picture of the larva and they can figure out how the phone works. Just last Friday we had a training here in Colorado, and a woman was very skeptical, and at the end of the day she was really engaged, because she could see it with her own eyes and hands and what it could actually do, so I think we're also seeing that the students might pick this up faster than others anticipate. We might hear skepticism from teachers or from different levels at the university, but I think the students go farther than we could ever imagine also. And I mean that also in terms of data analysis and being able to develop their own tools or being able to manipulate big data. I think we're able to see a lot of different creativity once we just provide the tools.   
  
>> Maya Georgieva: Yeah, this is so amazing to see this project. Basically, it's a validation of our work on emerging technologies and education and shapes the environmental, social, and political challenges that we face today, like basically giving people, students, and communities, the tools to use and possibly the tools to co-create. It's amazing to see. And with that in mind, I was wondering whether, are you mapping a particular skill set, literacy, or have a framework in a way you can kind of encourage, you know, these, you know, students and communities to develop certain sort of skills.   
  
>> Kristin Wegner: Sure, that's a really good question. I think there's a lot of opportunity to do that. Again, because we're an international program, we look to our countries and the people that are conducting trainings and implementing the program to do that, so a lot of times especially it's adapted for the different culture or language, so we look to them, some of our countries have our program as part of their national curriculum or local school districts, as well, but I do think there's a lot of opportunity for standardizing it and developing some benchmarks and practices. So hopefully people on the call are already working on that, I'm sure, but there's definitely an opportunity, and I'd be interested in talking to anybody that would be interested in collaborating on that, too.   
  
>> David Thomas: One quick question popped up in the chat here. Can you talk about language barriers? How do you deal with the variety of languages in these different countries?   
  
>> Kristin Wegner: Yes. That is a great question. It's one of my favorite ones to work through, as we work on this project. So the countries we're working in, specifically, we have western Africa, where they speak French and Tobo an Benin, Spanish, Portuguese, and Thailand we also noticed also really wanted it in Thai, so we had to translate the app. We work with a vendor that manages that, but we also saw that a lot of the different educational materials also needed to be translated. And one thing I will say with that, it's more than just the language. We also are working in Seranom and one thing they tell us, it's great to translate the language, but if we're going to have cartoon characters and comics, they have to look like us, too, so there's this part of cultural sensitivity and what that looks like also, but I think the more we can have things translated and also led by the local country efforts, the farther it will spread. And, again, we've had to do that with our evaluation. We've translated our survey into five different languages, as well, to make sure we fully capture the impact of this project. So I think it's important to do, but it's also important to do within our own country also. When we look at the different languages in urban and rural, and just being sensitive to that across all of it. There's a lot of different ways to adapt materials.   
  
>> David Thomas: Another thing I'd kind of like to come back to and have you comment more on, can you talk a little bit about sort of the shift in maybe understanding the technology when you ask people to use this technology to contribute information and create data and not just run around and consume?   
  
>> Kristin Wegner: Sure. I think a great part about this program and this approach to citizen science is that people can participate, it's participatory science, it's democratizing science, so it's one thing to refer back to a local government to provide scientific data, but as soon as you give power to the people and they can go and collect their own data, it really opens up their understanding of science and science literacy and how the process of science works, but then also the process of data collection. I think there's a lot within how we analyze data and absorb it, but being able to participate in the -- and contributing to an actual database I think really broadens it and makes it more meaningful, too, so I think providing the opportunities for creating meaningful data sets that are relevant to the local community that helps them connect to larger data sets is really helpful also. Did I answer that question?   
  
>> David Thomas: Yeah, you did, sorry, just trying to figure out who's next here. I think we're going to go ahead now for the end and open it up to questions for cross-panel discussion. So we can look through some of the questions that didn't get answered. Maybe people have other questions that have come to mind as we've listened to the three exemplars present.   
  
>> Nori Barajas: I think, Tony, there were some more questions for you and Cathy.   
  
>> Tony Frisby: Okay.   
  
>> Nori Barajas: I'm not sure if you addressed this one. I think Allison was asking from the Chat Pod, why did you decide to build your own dashboards rather than working with a third party?   
  
>> Tony Frisby: Well, we worked with an industry partner, because we didn't think in-house we could do it in a fast enough time frame, and because a lot of the input sources are similar to other colleges, we also thought it would be something that would be available to other institutions if they wanted to invest in it. There's just a lot of customization that has to happen on your different data sources for those points, but at least, like, the basic structure's there and certainly re-creatable by working with that company.   
  
>> Maya Georgieva: Hey, Tony, just an additional question. I'm sorry. Building on that, was the idea of, like, data and privacy. Data and privacy and how you are managing this.   
  
>> Tony Frisby: So we -- the individual log-ins identify in the database what access rights you have, so what you see, and the students only see their own data. We don't roll it out to first-year students until I think it's at least two blocks in. Cathy, do you remember?   
  
>> Yeah, and that's --   
  
>> Tony Frisby: Just so there's enough data points it makes sense to look at it. When they finish an exam, they get basic reporting data back how they performed on that exam, so each event they are getting an evaluation. This is just trying to roll up all of that into a more wholistic view of what happened.   
  
>> David Thomas: So I got a quick question for all the panelists. I mean, great work, interesting work, meaningful work. What would you guys say would be your biggest barrier to actually seeing further positive change? Is it policy? Is it resources? Is it new technologies? What's holding you back from making bigger changes?   
  
>> Taylor Kendal: I can jump in real quick and having been inside the bureaucratic system that is higher ed for, like, a third of my life, it's just existing structures that many are there for really good reasons and have allowed the system to become what it is, but it's that sort of, I think, just legacy effect and that, you know, that can change with just, I think, really open and willing leaders that want to sort of push forward with what might be possible. And there's going to be things that don't work, and there's going to be things that break, and there's going to be problems, and I think it's just finding a good balance of being willing to push down that road, but also being careful. I mean, there's -- certainly can go too far, and that's something I've actually had to be sort of very honest with myself about, of where going too far past the edge creates more problems than it's worth and what you've learned from going there. So I think it's just legacy systems, from my perspective at least, on sort of pushing a really new, nascent technology into existence. That's the one that I kind of hit my head up against often.   
  
>> Tony Frisby: That was certainly a challenge for us, Taylor, the getting rid of the courses and the structure and the empire building that had been around. That was a huge change for faculty, and I think part of the genesis for the JeffCAT was you wouldn't have that same accountability of being able to track things back easily if we were missing concepts in biochemistry by doing a case-based approach, so we needed to have a mechanism to serve as both an early warning that students weren't picking up this content that we felt they needed to, and then for us to know where that content mapped back to, to where we thought we were teaching it that didn't happen as expected.   
  
>> David Thomas: Kristin, did you have any thoughts there?   
  
>> Kristin Wegner: Sure. Funds always comes up, and I think I always see a lot of really good people don't good work, but it's hard to pull together some of our different ideas. I think we're sometimes always working through the same challenges, and so finding more spaces like this where we can talk through, I think this has been really fascinating for me to hear from the other presenters and see what else is going on, but I see that within my own office, so just finding ways to really figure out what are some of the challenges we're working on for solutions. I think one of the bigger ones for me that's come up with this project is we might have a way to visualize data and provide that access to students, but that's very different for public health officials, so even taking what we do and adapt it to different audiences and across different sectors is also really important, too. So more conversations like this, I think, are helpful to solve that.   
  
>> David Thomas: Awesome, thanks.   
  
>> Nori Barajas: Excellent dialogue and questions, everyone. Thank you so much. I'm going to go ahead and wrap up our session today. I would very much like to thank both Maya and David for taking the role of our Rose Bowl parade hosts, and a really special thank you to Tony, and Cathy, and Taylor, and Kristin, for sharing the work that you've done. Again, those project exemplars will be included with 15 other exemplars in the Horizon report. And on behalf of EDUCAUSE and our speakers, this is Nori Barajas. I thank all of you for joining us today and engaging in the session and the conversation. Before you sign off, please click on the Session Evaluation link. You'll find that in the bottom corner of your screen. Your comments are very important to us. We did record today's session. This recording and the presentation slides will be posted on the EDUCAUSE Live! Website. You are welcome to share those resources with your colleagues. And a last note, finally, please join us for our upcoming online course. This course will be meeting on April 1st, 10th, 17th, and to hear about Launching Digital Credentials: Designing, Developing, and Deploying Strategies. Again, on behalf of EDUCAUSE, this is Nori Barajas. Thank you for joining us today for EDUCAUSE Live!.

**End of Webinar**