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EDUCAUSE ELI Webinar

The IT Experience of Undergraduate Students: 2018 ECAR Findings

November 5, 2018

1:00PM – 2:00PM Eastern

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>>Welcome everyone to today's ELI Webinar: The IT Experience of Undergraduate Students: 2018 ECAR Findings. This is Adam La Faci, online event producer at EDUCAUSE and I'll be your moderator for today. We'd like to thank SurveyMonkey for their sponsorship of the 2018 ELI Webinars. SurveyMonkey powers curiosity and makes sophisticated research simple for everyone across the campus. We are pleased to welcome today's speakers from the EDUCAUSE Center for Analysis and Research (or ECAR). We are joined by D. Christopher Brooks, Director of Research - Joseph Galanek, Senior Researcher - and Dana C. Gierdowski, Researcher. Before we begin, first let me give a brief orientation on our session's learning environment. The online room is subdivided into several windows. Our presenter's slides are now showing in the presentation window, which is the largest portion of the screen. The tall window on the left is the chat window, serving as the open chat area for all of us. Feel free to use the chat space to submit comments, share resources, or to pose questions to our presenters. We will hold Q&A until pauses in the middle and at the end of the presentation, but we encourage you to type your questions into the chat throughout the webinar. If you have any audio issues or other technical questions at any time, you can direct a private message to "Technical Help" for support. Click the top right corner of the chat window to open the drop down menu, select "Start Chat With" and select "Hosts." You can also click on the link in the lower left hand corner of the screen for quick technical troubleshooting steps.   
  
>> And now let's turn to today's presentation. EDUCAUSE researchers will present information technology using data collected from over sixty thousand students and offer insights into and recommendations for data driven to support learning and student success and topics will include students access and device use and importance and student technology experiences and use and satisfaction, learning environmental preferences and experiences with instructors and technology, home internet access and a day in the online life of a student, accessibility and student success tools. Let's begin. Over to you, Christopher.   
  
>> Thank you so much and thank all of you who are in the virtual audience today. We really appreciate you being here to learn with us and to hear your questions. I'm hoping that collectively we can present to you a variety of data from the study and make recommendations and answer questions in the chat today. Adam has gone through the report topics that we have here. The report topics that you see here are the ten sections of the actual report that was published about a week and a half ago and we did present these reports at at annual conference last Thursday afternoon but within this hour long session we're going to cover eight of the ten that you see here and that includes device access and ownership, device use and importance student experiences learning preferences and experiences with instructors and technology, home internet access, accessibility and student success tools. It gives you a roadmap of this hour this afternoon. This is the cover of this year's student study and as Adam mentioned earlier, this year we had over sixty-four thousand student responses to our student and these come from one hundred and thirty institutions in thirty-six U.S. states. Because we do not have the capacity given our response rates to have a representative from international institutions, we pair that data set down to fifty-four thousand students from only within the United States so that's one hundred fourteen U.S. institutions that are represented in the actual study itself. We're hopeful that one of these days we'll get a large enough sample from an international contact to do comparisons but until we do our faculty student studies focus on institutions and only individuals from the United States. We're going to begin with a little bit of a poll with question to gauge who our audience happens to be and what we're curious about is how many of you who are listening today have participated in one of the E track or student faculty studies before? Just to get a gauge here. There's a lot of folks who have not participated in either one. 83% into that space right there. We have about eight or 9% who have participated in both over the last several years and some have done one or the other. This year this is the 15th annual student study that we've done this. We didn't do a faculty study this year but are planning to do one next year. We found that writing the faculty study made sense to do that on every other year cycle so we don't have faculty data this year. Eighty-four percent of folks that have done neither. Let me tell you a little bit about how you might be able to think about signing up for this. Beginning this year we had moved the E track project into the analytic side of the research team here at EDUCAUSE and we've done this in order to really enhance the impact of the data of institutions receive when it's returned to them. When an institute participates they get the response from students and faculty depending upon who has participated and in exchange we put that into a data set that we use to write-up research reports, faculty study and student study each year but by moving it into the analytics side of the house what we're aiming to do is offer question level benchmarks, institutions that participate should be able to go in and select class level data that compares to their own respective institution as a way of benchmarking student attitudes and usage patterns are as well as faculty. Individuals at institutions including executive leadership, IT as well as student services and faculty develop. They've used the data from the survey in order to produce reports or presentations, to improve programs on their campuses and to use it for strategic and budget planning for subsequent years. Historically we produce IRB to participate but we've made attempts to remove that barrier by working with a third party entity to participate in the annual student and faculty study and ultimately that can increase the number of institutions that are willing to play along with us and to provide their data. As you can see from the slide here, right now through next January you can sign up by completing the playing format this website. Here between January and April of 2019, the surveys will be deployed into the field. This doesn't mean it we apply to your institution the entire time but there's a large window open so the institution can come up in select the dates that work for them. Once we wrap up the survey in the field in April we will go heads down and begin tech data and preparing it for the respective institutions providing you with that data. That should wrap it up a little bit on the front end of our advertisement of how you can participate. Let's get into the substance of what we found this year by looking at student devices.   
  
>> I'm going to jump in. Try adjusting your microphone a little bit more. We're getting a little more echoing than we expected. We just got feedback from our participants. Thank you.   
  
>> I've raised my microphone a little ways away from my mouth. Is that better?   
  
>> Yes. Thank you.   
  
>> Just to let you know, Adam, I'm getting feedback on my end too. I'm not sure from where. Probably the issue we were looking at earlier. One of the things that I wanted to bring up is that we changed the way that we ask this question this year. Historically, we had been asking students and even faculty about their devices that they actually owned and this year EDUCAUSE's diversity and inclusion as well as the declaration on information communication technology we shifted the way in which we asked the question to first ask about access to these particular technologies and then in inquire about individual students access to those. Here we have all of the data related to the access as well as do they have access and then how they have access. Along the black line you see there, those black circles tell you the percentage of students that had access to those respective technology. The levels below the line technology owned and the green line borrowed from friends or family and the purple ones are those who the institution provide access to. A few things to notice here is that smart phones and laptops are accessed and owned by an overwhelmingly number of students. Then we have a large gap between there and the next levels of technology, tablets, desks tops and other technologies used to consume. We go to the end of the spectrum and we see the cutting edge of technology, 3D printers to which only four and 3% of students tell us that they have access to in general. When we look at this particular batch of data by students who have access to the four main technologies that students tell us are important to their student success which are desktops, laptops, tablets and smart phones, students have access to those basic technologies that are deemed by students themselves to be most important. We had approximately less than 1% of students who did not have access to at least one of those particular technologies. This tells us that we're doing a pretty good job at least with making sure that students have coverage and access to technologies that they need on their campus. While closing the individual divide. There were no systemic differences based on ethnicity, gender, age or socioeconomic status and students have access to things that they need. The problem we run into is with the new cutting technologies, headsets and 3D printers. Most students do not have access to those at all and indeed from a research project we did on the campus from the future partnered with Hewlett Packards earlier this year a lot /H-F those technologies are locked behind closed doors as part of those received to get the funding to get them and what we found in that project was that when these technologies are available in public spaces faculty and students engage more and play with them. When they are locked down behind closed door in laboratories students don't have access to them. As these technologies become more affordable we're hoping they are made more generally available so we can create a general divide among these technologies that have a lot more experimentation to do with them. With regards to access and ownership is as follows: We suggest that institutions continue to provide students with basic technologies and devices that are important to them, desktops and laptops and even maybe discounted programs. Also, attempt to make new technologies such as extended realities, 3D, AR, DR, available to students and avoid the divide and making them equally available to all students in places such as libraries. I'm going to switch over. Device use and ratings of important and this is a longitudinal figure, one that we've produced for the last couple of years or so and it helps us to understand the general trends with regards to some of the Key Tech knoll gees. On your Y access we have a percentage of students who rate these extremely important among student success and the X access has the percentage of students who have used these technologies for one class. Now a couple of things still tend to be similar to what they were in last years study. Laptops continue to we the work horse with nearly or close to 100% of students rating them extremely important for their academic success. For the first time this year we asked about hybrids which are laptops with touch screens and perhaps detachable keyboards and the students who owned these or who had access to these devices rated them extremely important and used them overwhelmingly for one class. However this tends to be an inflated percentage because if we go back to this slide here you'll see that very few students actually own those devices. In fact it's the third lowest accessed device that we have here. Smart phones continue to grow in both importance as well as in use, and we've seem tablets and desktops make a considerable rebound. Last year we suggested that tablets were perhaps on their way out since they sort of exist in that space between the laptop functionality in power as well as the portability of smart phones. This year we began to slightly state it in different ways. Lab tops, hybrids and laptops and smart phones are rated extremely important to students' success this changes based on student demographics. Women, student of color, students with disabilities, first-generation students, students free of their parents and students who come from disadvantaged socioeconomic backgrounds view their laptops significantly important. Getting into the specifics of this. When it comes to desktops, lower income, non white and independent students value these devices more than wealthier whites. Laptops were pretty even across the board. Here woman receive laptops more important than men. For smart phones, none white, first-generation, lower income and disabled students see smart phones as being more valuable to them. Tablets, independent first-generation non white students see them as more important than whites. What do we make of these general and specific data as it relates to these demographic groups? Last years faculty study there were a certain percentage of faculty that were banning devices in their classrooms. Well we think that this policy that bans device use in any classroom may disproportion netly affect students of color, students with disadvantaged socioeconomic backgrounds and students that rely on these devices for academic success faculty should reconsider. Policies that ban and discouraged student device use in the classroom may very well undermine the efforts of women with color, and students with disabilities helping them to succeed in college even though this isn't the intent of such policies. I'm going to pass over the microphone to Joe.   
  
>> Thanks Christopher and thanks for being with us this afternoon. I want to get into talking about student technology experiences and specifically I want to start out stating this that overall technology experiences for the student survey, seventy-seven reported good or excellent overall technology experiences. That's good. Students are coming in saying this is working for me. Our next question is about what factors were associated with these overall experiences? Well one thing we did find is that experiences of wireless networks are positively correlated with overall technology experiences. So if you take a look at our figure we have access to WiFi on campus, libraries, classrooms, e-mail login, student housing, dormitories and outside spaces. The only factor that was not strongly associated with reliability of WiFi outdoors. In general, to say that for students experiences, technology experience at your campus it's really the wireless networks that are driving this experience for the majority of them. I want to add that these overall ratings were found across all demographics, gender, race, and age and I've seen questions here. For overall technology experiences and private institutions had a significantly higher student rating on tech as poor or fair. I want to walkthrough this figure and we can see the green line, good or excellent -- excuse me? Sorry. The green lines here representing good or excellent ratings from our students and campus library, instructional spaces are a quite high, over 50% rate excellent. That's a good rating. Logins, we're starting to see some of the pain points and we looked at open-ended responses from students last year and multiple logins during the day or month driving this rating to good or excellent and with that said this may be due to security on campuses, new security procedures might be causing this challenge for students and I'll provide recommendations at the conclusion of this slide. Now we get into dormitories and we're hovering around 50% or lower and I have a few things to say about our housing dorms. Students are streaming and they may be gaming and this is really what's causing the pain points within dormitories. I'd offer to you, however, that students appear to be doing less gaming in the dorms than what one might think. Atypical day of a student online and I'd offer to you that last years conference, Watkins discussed University of West Virginia initiatives to assure seamless WiFi activity inhousing dorms and they found that wireless printing and personal routers, consumer goods was really what was clogging up the band width and gamers may be causing issues with band width but it was consumer devices and I might drop this in the chat for folks if I can do two things as once today. I like looking at this report. It provides a lot of good information. I'm going to put that there for you. I'd also offer that the outdoor space is also an issue because students are thinking or we should think of our students as consumers. They are going from the library to the classroom to get a cup of coffee or a sandwich and then they are on campus and going back to the classroom and constantly having to log on or being bumped off the network and it's causing frustration. A couple of recommendations, if you are getting general concern dorms and outside spaces are the ones you should look at first. Those are two pain point areas that you might want to consider. The other thing that I would consider is that regardless of what's going on in the dormitories, you know, students are using the networks as anyone else. We're always connected from one moment to another, checking e-mail, answering texts and students are probably doing the same thing in their dorm. They maybe checking on assignments or e-mails as they are watching You Tube. I want to offer the material from last year, it has a nice overview of how they addressed this and what the problems were. Wireless networks. Alright. Something to move on and talk about, commuter students. Let's take a look at this. Three fourths of commuter students rate good or excellent and there's a challenge for those who don't have internet at home. Students who live off campus, Hispanic, there's a large percentage living on campus. Commuter students spend a comparable time on homework, three or four hours a day commuting and slightly more reported blending learning environments. That might be intuitive for us. If you're internet is good and partnerships prefer online or blended environments, that makes sense. It's intuitive. Off campus students are still interested in face-to-face either completely or mostly. Those are still high percentages. Not necessarily intuitive. What I'd add here for you is that students may have to share resources with family. There may be a laptop at home but maybe their parents or children are using it, their dependence or spouse are using it and so folks may want to seek out face-to-face because technology at home may not be as seamless as we would hope it to be. I want us to think about that a little bit because one of the important things I want to draw to your attention is that for off campus students, online may be something very appropriate for them based on their schedule. However, if you don't have information to provide about student outcomes, the work expectations, online or a blended course, they may not lean or move towards an online environment, either blended or completely online and this may bible to benefit these students. I'd also add that with the 2% of folks not having really good internet connection or not at all, again, similar to my previous slide, I can't decide if we should apply networks for these students or at least make them aware that potentially they could go to a library to access the internet which may be less mainful than going to a Starbuck's or something. I wanted to add about student learning preferences for the off campus students who may be leaning towards blended or online learning, the FCC, there's risks that educational website's might be put in a slow lain. EDUCAUSE released a report and I would encourage all of our participants to review this and read this to understand where we're coming from when we say this might affect our students disproportionately. No one wants to log on and realize they are stuck in the slow lane for their internet connection. student learning environment preferences by residents. Right now we're going to go onto our questions so let me get to the next slide. Do we have any questions?   
  
>> It seems Brian is asking if there's any consideration of replacing existing computer devices, a certain brand, etcetera, the hybrid device is the only available option? Well I think part of the reason we began to track that particular device this year is we think it could be an e merging technology that could split the difference and provide the best of laptops with tablets and I think it's important for us to be on top of that. Certainly, those using it are seeing it as important and it certainly is a work horse device for those who happen to own it. The point that I was trying to make earlier is few who own these devices, we're going to continue to track those and to help us understand how the ecosystem of student devices changes over time. Thanks for the question, Brian.   
  
>> I think we can probably press on.   
  
>> Okay. Alright. Can everyone hear me? This is Dana. I want to talk to you all a little bit today about student learning environment preferences but before we do that, we had another poll question Which of the following learning environments do you think most kids prefer to learn? Take just a second to see how this could be compared to some of our results to see how they might fallout. It looks completely face-to-face folks are hovering around eight to eleven percent. Not completely. Looks like the majority of folks are thinking perhaps in the more blended environment there and there are really low numbers it looks like for completely online. Let's move on and we'll show you what we found this year. So, over the past few years we've seen a drop in the percentage of students who said they prefer having no online components in their courses but this year we saw students said they prefer face-to-face courses but we actually changed this question in 2018 to improve it's precision. Last year the choice was phrases no online components but this year it read as completely face-to-face. We changed that because we felt like we could get more accurate results by answering this particular item with more precision. Nevertheless, even with this change, the majority of students, about 55% still told us they preferred some form of blended learning environment over purely face-to-face or online environment. It sounds like everyone was in line with what we found as well their whole question. The darker shades is that higher percentage of students and the light is the lower percentages and here it's broken down by Carnegie class. Among the darker boxes that you see there are private institutions and this could mean that students at private colleges and Universities may have the expectation that they'll be receiving more face-to-face experiences with their instructors because they are paying for their education. The way we phrased this, we asked students to think about their experiences over the past twelve months or so so over the past year or so. That means that those who have never taken a completely online class are more likely to prefer face-to-face online courses and vice versa but students who have only taken online prefer less face-to-face courses. It makes sense that students would gravitate towards the environment that are one, familiar to them and two, where they had their most recent positive experiences. With that in mind, we made some recommendations in the report in terms of helping students and expanding their awareness of the benefits, the expectations and will the demand of a blending learning environment and exposing them earlier in chair college careers and reporting to faculty in supporting them with training and opportunities to teach in those settings. So, we also asked students to tell us about their experiences with instructors and how they are using technology in their courses. I'll talk a minute or so about that as well. The majority told us that their instructors were using technology to engage them in the learning process and to enhance their learning with additional materials. Also, about half agreed that their instructors were encouraging them to use their thinking for critical thinking tests and so this was suggesting to us that faculty are feeling the most comfortable with integrating technology to enhance their pedagogy, to make their teaching better, to improve their communication that they have between them and their students but also peer-to-peer communication and also carry out the daily tasks of teaching and classroom management. Those are things that are all largely under the control of the instructor, but we also saw a break between those items I just mentioned and those where students were asked if they were encouraged to use their own devices in class. If you'll notice at the bottom, the bottom five bars or so you'll see a decrease where students were asked if they were encouraged to use their own devices. About a third of students aren't asked or encouraged to use their devices in class and laptops seemed to be more acceptable than smart phones. Only about a quarter of students told us they were encouraged to use their smart phones. I also wanted to point out that we didn't ask students outright if they experienced any technology bands but our data shows they are experiencing rigid technologies and we pulled examples. This is the response to a question, what is the one thing you'd like your instructors to do to enhance your learning? Laptops for note taking, encouraging laptops instead of rep rim manding us and students have a particular need for a smart phone due to a disability and here we're getting to things related to accessibility. What to do? Eliminate classroom band of student devices, encourage technology for course work and encouraging things like helping with note taking techniques, having more open-ended conversations with students in the classroom and develop guidelines. I'm going to stop now and turn it over to Joe to talk about student success tools.   
  
>> Great, thank you, Dana. Let's take a look at student success tools. In previous years, we've broken down student success schools into two main camps. The top part of our figure today, tools aid in academic success are online success tools that are like early alert systems, tools how to deal with performance and tools guiding students toward better performance. If you look at the bottom half, it breaks down the remaining tools on our survey items and this use of registration, audit tools. On the top half of the figure you can see tools that aid in academic success, larger percentage of students haven't used this service and that's troubling, obviously, to see that fewer students are actually using the services and of the students, among the students who are aware of each tool, students indicated, less students found that these tools were useful and as you can see here, it's just hovering a little bit above 50% for all those tools on the top half. We go down to the bottom of the figure, we can see the tool, being able to register for class over-the-phone or being able to check registration at a desktop, paying tuition, these are higher percentage of useful tools. When you get to the bottom, self services such as volunteer work, not too many students have used it so what does this tell us? In our work for this year's report we found that students eligible for Pell Grants for tools for academic success more useful. So the tools on the top half, an early alert system or something, students from programs are finding these more useful than other students. The other thing I'd point out to you is that instructors may not be aware of these tools. In our 2017 faculty study report, faculty had access to tools but a percentage did not use them and we want to be using these tools among the student population. I'd also offer to you that these messages should not come haphazardly, such as one instructor may indicate to use these tools and there may be something in orientation one year but this has to be a consistent message to attempt to use these tools for their own student success, coming from every instructor, every class or have it be very accessible on the website about what they do and why these tools work for students and what the expectation of using these tools are. I just wanted to offer that to you in using the tools. There's questions coming in. We'll save those to the end. I'd like to carry this over Dana now to talk about student accessibility.   
  
>> Great. Thank you, Joe. In the last section we're reviewing awareness for students with disabilities who said they needed technology for accessibility. How do you think they've rated awareness in support for students who need it? It's pretty even between fair and good. About 8% for poor. Neutral. Hovering around twenty or 25% or so. Let's see what we found. I'll share these findings with you. Alright. Here's the graphic. So what we found was that 7% of student respond itself identified as having a physical or learning disability requirek accessible or adaptive technology for their course work. Twenty-seven percent rated the colleges awareness of their needs as poor. So not so great. Of those poor awareness ratings have increased by about 16%age points over the last three years so it hasn't gotten better. We've collected data for three years but this is the first year we've reported out on it. We say that hasn't gotten better over the last few years. More students with physical disabilities, about fifty-eight percent, you can see this on the top bar of that graphic reported poor awareness of their needs for technology for their needs and that's more than those who reported with learning disabilities or with those physical and learning disabilities. We also did analyze this data and this is discussing the report. You can go read more about that there, in terms of institution type and size, 44% of students at DR public University said awareness of their needs was poor and this was higher than any Carnegie class. We saw A A and B A institutions receiving better marks with awareness or support rated as good or excellent by the majority of students. Better news in those camps. Institution five played a factor with poor ratings and good and excellent ratings were lowest for institutions with ST E of 50,000 students or more. We make recommendations in the report to improve those experiences for students with disabilities, starting with building partnerships across campus to try to help support those students better, particularly working proactivity with disability services and supporting the adoption of Universal Design for Learning principles for tech across campus. As part of our analysis in the external research with did this year, we did outside research and we're finding in the broader literature that many students in the higher ed who had disabilities were choosing not to report for fear of being stigmatized. We need to help students feel open enough to request technology they need to feel successful and are entitled to. We can stop now for questions as well and we can talk about where to find the report.   
  
>> This is Christopher again. We had a few questions that we have pending here but certainly we'll welcome more in the chat and questions area from everyone because we do have several minutes left here. I'm going to go to the top here. We have questions about differences between Carnegie class and whether or not we have broken it down. We certainly do. Beginning when the data is delivered to us, our statistician provides us with a data toolkit so we can see the Carnegie breakdown, the format, A A, B A, as well as doctoral. Certainly in a lot of these data we may very well run across significant differences be it requires us to go into the data a little bit more in depth in order to tease those out and decide whether these are meaningful differences or whether these are merely statistical artifacts and on the occasion we find both, then we report out on those and try to interpret them for the general audience. That's the general response I would have as linked to Carnegie class. Someone who is on the student success side of things, we'll look at this question from Victoria. Hi. Her current institution, some students say they find their early alert system useful and this is baffling because they don't have one. Is there a way to get at that end survey? Dana or Joe, do you want to take a stab at that?   
  
>> Sorry, Christopher, I was on mute and that question is students are saying that they are aware of early alert systems and their institution doesn't provide them, is that correct?   
  
>> Right and how we might actually avoid those false positives and then answering further.   
  
>> That's a thorny social science issue. I'm not sure if you have an idea off the top of your head.   
  
>> Christopher, you let me know if, you know, if you are seeing it the same way but every year that we do go over the survey questions, an opportunity identities questions that we may want to improve, any challenges you may have had in the interpretation of these questions and I think the only other solution that maybe offered amongst these processes is a question about have you specifically used these tools? I think our thought about this is that just the awareness of the tool is also adequate to answer the question because people may know what an early alert system is or they may know, you know, what guidance is for tutoring providing these success tools and I think that's okay because it's getting as usefulness. I don't have an iPad, but would I find that useful? Probably. But I just don't have one. I can offer that suggestion right now. I hope that helps.   
  
>> I agree with Joe and I'll also add to his response. There may be questions or they may be unclear about how that topic is being introduced and maybe confusing it with other services offered off of campus as well.   
  
>> Okay. So, another question we had. I think that Virginia was also in the audience here from the University of Kentucky and was severing with us for subject matter experienced in student surveys which both by the way can be viewed if you do a search for E track 2019 faculty students on the EDUCAUSE website. I'm not sure it ultimately made it on to the survey itself, I don't recall but it's a reporting question about what to do when people respond positively to something that they shouldn't be. Let's see here. Another good conversation and series of questions from Jen asking about whether or not similar studies are conducted at the high school level. We don't do that but if anyone has any of that information, please share it in the chat in the questions because I think that could be useful to some of the folks that are in the audience and those of us who are on this side of things might find it interesting as well. David an the University /-FP New Hampshire said there was a question about students use of technology and there was a question asked this year and so are the results reported and I'm trying to think specifically about what the question is and I think this might be the rating of instructors use of technology to engage them in the learning process, use them in the class to support learning events, I believe that we covered that, am I correct data, that that is part of this slide back here?   
  
>> Yes that was covered and reported out in detail as well.   
  
>> I hope this slide was precisely what you were looking for, David, and it comprises its own session in the report. You can have a look at it there. I'm looking for other questions. Let's see. I think we hit up on that at the beginning of the talk in looking at the importance of student device usage, the importance of student devices as well as usage on this slide and we discussed different demographic groups that use different technologies over others and women, students of color and women's with disabilities and students with first-generation and low socioeconomic backgrounds see these devices as important to their student success as compared to their counterparts. There is value for those particular groups more so than their counterparts there. Hopefully, that answers your question there.   
  
>> Hi, I had a quick comment about that. Thanks. I wanted to link this in a little bit about what we found about student success tools and no, we don't know why. We do have the analysis that we did about the types of folks that are finding these devices important but in terms of the why, we do have a couple of theories and part of my theorizing is about how students from programs find tools or academic success more so than other students. Maybe this speaks to student experiences, Pell Grant students maybe trying to use every tool possible to help them success in their academic goals and that's why I'm trying to interpret why students are leaning towards the tools for academic success. An extension theory on our team that we talked about was that possibly students are trying to use technology to access open textbooks or maybe they are renting textbooks online, they are using their phones or devices in the classroom to maybe look at syllabi or to type. I think there is some message amongst these students. That's my own theory. Take it for what it's worth. They may be harnessing these tools a little stronger because they are trying to identify any strategy possible to ensure academic success. That's my viewpoint of why these tools and devices are so important. I hope that helps. I think we still need to be explored and there might be open-ended responses this year that you might want to look at.   
  
>> This is Christopher again. I think there's a great deal of intersection that might be at play here whereas traditional colleges and Universities or higher education in general is then -- those who had access to it tended to be more fluent and tends to be supportive and what we think in that intersection of women versus color, a lot of folks that haven't had access to higher education than their counterparts have historically. We have students that might be legacies and they know how to navigate the institutions and parameters of higher education and so if technology is the one thing and again, this parallels with what Joe said, if this can give them a leg up these groups are going to adhere to it a little bit stronger whereas the students who have been historically biased, having their parents have college degrees and even grant parents, maybe the technology isn't as important to their success as it is to these newer groups entering into the higher education space. I think it's related to what Joe is offering there.   
  
>> Coming down to the last couple of minutes here, thanks Virginia for the affirmation. Mark at hyaline has good data on demographic groups. Thank you for sharing that. I really appreciate that, mark. Alright. I'm going to give the opportunity for one more question to pop up. Final thoughts from Dana or Joe before we sign off and hand it back over to Adam? Okay. On behalf of the research team, I do want to thank you for attending today and being so engaged in all of your questions. This has been enjoyable for me and hopefully it has been for all of you that are online with us. Feel free to reach out to the research team at any time with your questions. We're more than happy to engage you and have chats. Feel free to visit the research help for this project that's listed above and have a look at all the materials that we have introduced for you. Thank you. I'm going to hand it back to Adam.   
  
>> Thank you, Christopher and a huge thank you to all three of you for joining us today and thank you to our participants for joining us for an engaging session in the chat. Now before you sign off today, please click on the session evaluation link and you'll see we have that posted in the lower left-hand corner of the screen as well as the middle of the screen set. Please take a moment to click on that and respond while the memories of the webinar are fresh in your mind. Your comments are important to us. The recordings and session slides will be posted to the website later today and that link is in the chat today. Feel free to share it with your colleagues. With that, on behalf of EDUCAUSE, this is Adam. Thank you for joining us today. We look forward to joining you on the next webinar

**End of Webinar**