Can an app curb campus rape?

If tech is Title IX-compliant, can it really help solve the rising campus crisis of sexual assault?

Is higher ed truly innovating?

Neil deGrasse Tyson of education argues that colleges and universities may not be as progressive as they think.

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What does it mean to prepare students for the workforce?

Higher ed and business leaders explain what work-readiness really means outside of jargon and buzzwords.

By Meris Stansbury, Managing Editor

It used to be that preparing students for a job post-graduation meant knowing how to dress for a job interview and developing critical-thinking skills. And while problem-solving talent is still valued, today's competitive market requires much more from recent graduates.

Therefore, today's colleges and universities often discuss "workforce-readiness" or their "career pipeline"—but what does that actually look like on campus and within disciplines?

Cutting through trendy-speak, academic and business leaders say preparing students for the workforce means everything from a strong e-portfolio to harnessing business partnerships for undergraduate student work opportunities.

It Means a Set of Skills Across All Disciplines

By Letha B. Zook, PT, EdD, University of Charleston in West Virginia

At the University of Charleston we prepare students with knowledge of disciplines and professions and the skills of living and learning. All graduates are to demonstrate mastery of our Liberal Learning Outcomes (LLOs), no matter their chosen discipline or profession. These LLOs prepare graduates with the skills employers demand; including: written and oral communication, critical thinking, citizenship, creativity, inquiry and ethical decision-making.

We believe that by establishing an intentional curriculum with progressive assignments and experiences to develop each of these skills, the student matures into an exceptional employee.

Foundational-level LLO experiences and assignments start in the first year outside the students' academic program, while midlevel and advanced levels are part of program curricula. Students are made aware early in their studies that these skills are essential to their success in the workforce. As they advance through the curriculum, they are asked to use these skills in the context of the knowledge gained in their discipline. This practice challenges them to apply skills in a variety of ways before entering the work place and prepares them to adapt to the demands of that new environment.

Dr. Zook is the Provost at the University of Charleston in West Virginia.
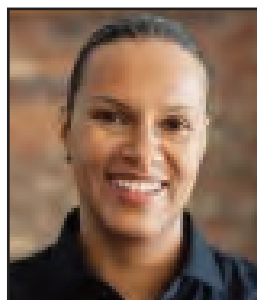
It Means Curating an Academic Career Online

By Heather Hiles, Cengage Learning

According to a study by the National Association for Colleges and Employers (NACE), employers look for talent online, especially through social media. Students, on the other hand, view social media as a private affair. There's a major disconnect. Institutions can play a role in bridging the gap through encouraging the use of digital portfolios, which can increase connectivity in job searches and job placements. e-Portfolios challenge the traditional resume and open the door to a more holistic approach to cataloging achievements by providing a space for

users to aggregate all digital evidence of what they have created, achieved and mastered. A digital portfolio brings the job seeker to life through the use of smart, user friendly technology and provides a connection point between employers and job seekers.

Those soon to be entering the workforce need help in presenting their best self. Employers are looking for evidence of ability, passion, skills and knowledge, and today's students want to show what they know in a way that goes beyond a transcript or static resume. Digital portfolios allow the evidence to speak for itself. Users are able to record their pursuits and create interactive narratives around the skills and knowledge they gain through projects and collaborations. These narratives can then be shared and leveraged for future opportunities.

A portfolio is more powerful than a thousand words. It is the best mechanism for differentiating people and what they can do. I encourage anyone serious about breaking through the clutter to start curating their academic careers and collecting evidence of their skills and abilities in a portfolio. It's one of the most enduring ways of communicating and customizing what you know to multiple audiences in both private and public ways.

*Heather Hiles is the senior education advisor for Cengage Learning and founder & CEO of **Pathbrite**, which offers a cloud-based Portfolio Platform, whereby users can aggregate and showcase all digital evidence of what they have created, achieved and mastered.*

It Means Work Experience while in College

By David Kieffer, Ohio State University

Ohio State provides many opportunities for students to prepare for the workforce, with academics as the first focus and most obvious preparation.

However, there are also several other ways that Ohio State provides opportunities for preparation. Opportunities for undergraduate research provide students with hands-on experience and an outlet for professional creativity. Over 800 research projects are selected to compete in the Denman Research Forum and Spring Expo each year.

Work experience is a must. Just last week I had a software executive I work with say that he did not hire new graduates without relevant work experience. Our students are encouraged to work in their fields in off-semester internships, and on and off-campus jobs during the semester provide many students with work experience.

Ohio State provides students many ways to connect with employers. In addition to the Career Services offices on campus, as previously highlighted in this publication **http://www.ecampusnews.com/top-news/osu-it-students-937/**, Ohio State's Office of the CIO is striving to build partnerships with employers to provide more quality opportunities for student employment on and off campus.

Social and club experiences for students are terrific opportunities to pursue individual interests while building leadership and working skills that can be directly applied to careers. These student-led organizations are tremendous outlet for student creativity, community outreach, mentoring, and leadership preparation.

The vast resources of Ohio State can be an incredible support system for students preparing for the workforce –and I'm sure I have missed some! In my own experience as an employer, there is a remarkable difference in work readiness between students who have taken these opportunities versus those that have relied solely on their academic work to prepare them. We continue to look for new ways of engaging students in support of their academic and professional journeys. eCN

David Kieffer is the senior director of enterprise applications at Ohio State University.

Why colleges and universities are easy targets for hackers

Unrestricted access demanded by students is luring hackers to higher education networks. But what can IT do?

By Michael Patterson

The complexity of College campus computer networks combined with the number of users and the need for unrestrained access, opens the door for hackers to try their skills. Unlike business owners who can make decisions on what is and isn't blocked from the internet, colleges and universities must operate a bit differently.

These schools in many cases are essentially internet service providers for their students who access very few resources on the local network. Almost every web site they visit and email they receive is from a source that resides outside the LAN.

Students Demand Unfettered Access

Because students are often paying hefty tuitions, they generally want unfettered access to anything on the internet. Although much of the traffic they create is non-academic related, the argument is that any blocking could inhibit their learning and research efforts. To add to the security problem, many young adults stay plugged into social media during all hours of the day. Even when sitting in their classes they can be found texting, tweeting and making comments on Snapchat and Facebook. All of these communications add up to a massive amount of short, quick connections to the internet which need to be evaluated for security reasons.

When young adults aren't on social media, the programs they are running on their personal devices are constantly uploading details about their devices, unbeknownst to many students. In truth, many applications today are providing free use of their application in exchange for the right to take information from the student's device. Software such as **Windows 10** and **Pokémon Go** for example, are frequently uploading information about the devices they are installed on. This causes additional internet traffic which exacerbates the connection volume that university security is partially responsible for.

Where Is All of This Traffic Going?

Years ago, the network team could identify the application causing the traffic under surveillance by either looking at the source and destination TCP ports being used or the internet domain behind the IP address involved. Later on, vendors performed something called Deep Packet Inspection (DPI) where they would look deeper into the packet's payload and even observe a series of packets to identify applications. It even worked with difficult-to-identify peer-to-peer applications such as Skype, but it didn't work for long.

Today, these strategies don't work nearly as well because of primarily two reasons:

1. Content delivery networks: Lots of traffic today is headed for internet sites such as Amazon AWS, Akamai or PubNub. Both Microsoft and Adobe software updates use these services as well as Netflix. As a result, when security administrators observe traffic to one of these sites, they can't determine if the traffic is work related or personal in nature. This is frustrating and more importantly, administrators

can't stop it. In fact, the same IP address managed by Akamai Technologies could be hosting work and non-work related content. Administrators can't tell the difference using DPI because of the second issue: encryption!

2. Encryption: Over two years ago, Google announced that they would play SEO favorites to websites that implement secure connectivity (e.g. HTTPS) on their web sites. Since then, com-

> *Students simply won't tolerate slow connections! They also don't like their privacy being invaded unless of course it means they can't play Pokémon Go. :)*

panies have been quick to implement SSL or TLS in order to comply. Over 70 percent of internet traffic today is encrypted and as a result, DPI stopped working…but not for long. SSL DPI was introduced which performs a Man in the Middle (MITM) on the certificate exchange. Although MITM is often associated with hacking, it is also utilized by ethical vendors in order to regain visibility into encrypted connections. However, the problem with SSL DPI is threefold:

- It requires a configuration change on every web browser. If the application isn't browser based, it won't be accessing the internet.
- In some countries (e.g. Germany) it can cause legal issues surrounding privacy. In the US, it is a violation of some medical compliance regulations. As a result, exclusions must apply.
- It can place a lot of processing overhead on the security appliances responsible for performing it. Often times, it has to be turned off due to unacceptably slow connections.

Students simply won't tolerate slow connec-

tions! They also don't like their privacy being invaded unless of course it means they can't play Pokémon Go. :)

Visibility into Encrypted Traffic

There is a way to regain visibility into encrypted traffic that doesn't trigger privacy issues or cause performance degradation—it involves gathering context.

If the security team is investigating a suspicious IP address, they will want additional context such as the username (e.g. hclinton) that authenticated the device onto the network. Security administrators will also want to identify the type of device (e.g. iPhone) as well as details surrounding the internet IP address users were visiting such as the website (e.g. Netflix.com). As a result, the context surrounding a device involved with an incident can tell us, for example, that when the incident occurred the user hclinton was visiting Netflix.com from her iPhone. Clearly these details make trouble shooting much easier. Here is how the context is gathered:

- *Usernames* can be gathered from the Microsoft domain servers or from other vendor products such as Cisco ISE or ForeScout's CounterACT.
- *Device types* can be gathered from Cisco ISE, CounterACT or sometimes just by looking at the MAC address of the device.
- *Internet site* or 2nd / 3rd level domain requested is obtained by watching the DNS requests. For example, the device that requested the IP address for the domain Netflix.com. The DNS responded with an IP address for Akamai Technologies.

Most universities are collecting some or all of the above data. The security team simply needs to cross reference it with the NetFlow or IPFIX collected from the existing routers and switches

that are supporting the students. Examples are shown to the right.

With all of this unrestricted access, students who enjoy clicking, joining and reading are bound to introduce malware to their devices and eventually onto the internal campus network. Once inside, the malware can much more easily infect other internal users. Infections can move laterally inside a network fairly easily because many security administrators are focused on two things: Outbound internet traffic and access to internal resources.

The nastiest intrusions easily sneak past the best firewalls and antivirus solutions. As a result, security teams are now focusing more on monitoring for odd communication behaviors internally before they access the internet. Examples of this include:

- comparing the volume of unique connections vs. destinations
- counting failed DNS lookups and NX domain replies
- triggering for fully qualified domain names that look like encrypted messages
- checking the reputation of the domain reached out to
- monitoring large "low and slow" data transfers between non server devices

Once a behavior triggers an event like the above, context surrounding the perpetrator becomes important for speedy investigations. The better the context, the faster the security team can be with Malware Incident Response.
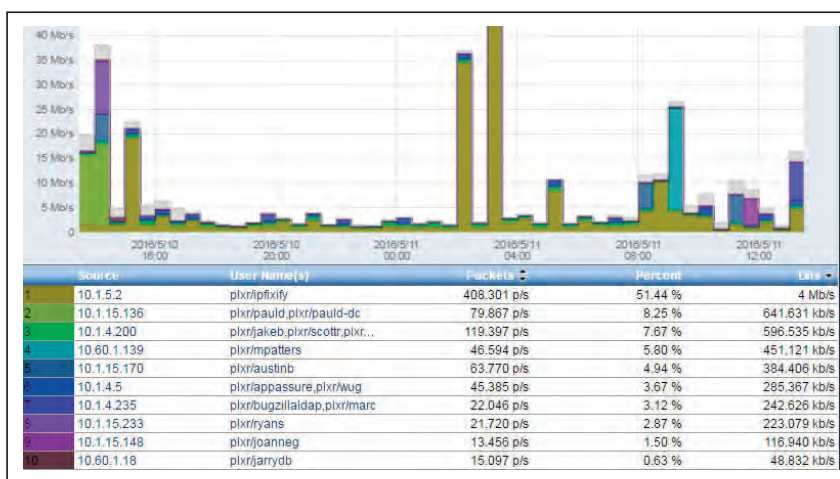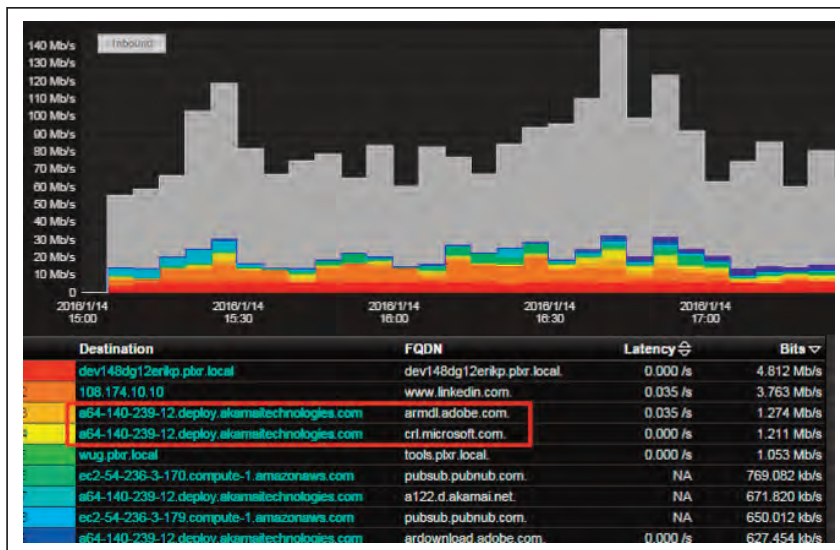
The next time an infection is suspected, tracing the event back to the source is much quicker. When an RIAA notice is received, finding the student who participated in pirating a movie is a snap. So remember: Having context readily available is key. *e*CN

Michael Patterson is CEO of Plixer. Michael worked in technical support and product training at Cabletron Systems while he finished his Masters in Computer Information Systems from Southern New Hampshire University. He joined Professional Services for a year before he left the 'Tron' in 1998 to start Somix which eventually became Plixer.

Alternative credentials now a must-have for traditional universities

Millennials prefer badging and certificates to traditional degrees, according to researchers from UPCEA, Penn State and Pearson.

By Laura Devaney, Director of News

More than half of higher education institutions (64 percent) participating in a recent survey said alternative credentials are an important strategy for institutions' futures. That same survey also found that millennial students are likely to support the use of badges and certificates as part of their educational system.

The study of 190 institutions, from the University Professional and Continuing Education Association (UPCEA), Penn State and Pearson, was released at the UPCEA and the American Council on Education (ACE) Summit for Online Leadership in Washington, D.C. and found widespread acceptance and use of alternative credentialing programs at American colleges and universities.

Leading the way are millennial students, who the study found are more likely to favor an educational reward system that is built around badging and certificates, rather than the traditional bachelor's degree.

The study breaks down the forms of alternative credentialing, explaining that:

- **Digital badges** are online representations of skills learned by students, typically with visual iconography
- **Certificates** are credentials typically issued by educational institutions to students who have completed significant programs of study that do not culminate in a degree
- **Micro-credentials** are granular, digitally presented certifications offering evidence that an individual has mastered a specific skill or area of knowledge, with links to detailed criteria, endorsements, or demonstrations of their learning

In addition to gauging institutions' and students' views of alternative credentials, the study explored the role that alternative credentials play in higher education to better serve the needs of learners worldwide. It was conducted by Jim Fong, director of UPCEA's Center for Research and Marketing Strategy; Kyle Peck, director of the Center for Online Innovation in Learning and professor of education and research fellow in the learning, design, and technology program at Penn State University; and Peter Janzow, senior director of business development for Acclaim, Pearson.

Among the study's other key findings:

- Alternative credentials are offered by 94 percent of institutions.
- One in five institutions offers badges.
- Badges are most commonly offered in the business industry.
- 71 percent of institutions have consistent engagement with the business community for internships, practicums, and job placement.
- Only 18 percent of institutions surveyed offer digital badges.
- 45 percent of those surveyed offer at least some competency-based alternative credentialing.
- While 64 percent see alternative credentialing as critical to their future, only 34 percent have strategic plans around alternative credentialing.

The authors noted that as postsecondary educational models evolve, the standard degree will not always be top dog.

"The degree will always be an important credential, but it won't always be the gold standard," said Fong. "As millennials enter the prime years

of their career and move into positions of greater power, we'll see more alternative credentials for specific industries and possibly across the board. Higher education institutions, especially those in our survey, are showing that they are being progressive with workforce needs."

"Our research highlights the ways that higher education is changing to adapt to today's demographic, technological and other societal shifts," Janzow said. "Non-credit training courses, non-credit certificate programs, and micro-credentialing all provide learners with less expensive and

> *"Our research highlights the ways that higher education is changing to adapt to today's demographic, technological and other societal shifts."*

faster alternatives to job opportunities than traditional degree programs. What was previously thought of as cutting edge is now becoming mainstream and is transforming the paths that learners take to success."

Three institutions' experiences with alternative credentials

The team at Acclaim, Pearson's digital badging platform, works with numerous institutions that offer opportunities to earn alternative credentials.

Harper College in Palatine, Ill., faces challenges shared by colleges across the United States: to create clear connections between coursework and careers, provide students with a transparent and portable way of defining what the school's learning outcomes have prepared students to do in the workforce, and strengthen the credibility of continuing education programs. Harper launched its program by issuing badges through Acclaim

across a variety of courses and skills, including CPR, network administration, pharmacy technician and Six Sigma Green Belt Training.

Anne Arundel Community College in Arnold, Md., turned to digital badges to help fill an urgent workforce need. With a growing number of casinos in the area, the community college is offering a number of non-credit courses that teach the skills needed to work in that field. When students complete the courses, such as Carnival Games, Casino Blackjack and Mini Baccarat, they earn a digital badge through Acclaim, indicating their preparation for work relevant to those games in the local casinos.

Charlene Templeton, assistant dean of continuing education said, "In 2014 Anne Arundel Community College formed a focus group to investigate offering digital badges as a way to validate core competencies and student achievements. After considerable research on open and closed systems, the Pearson Acclaim platform was selected as it met all of the college's security requirements, provided protection to the earner and could be shared by the earner using social media. Digital badge earners indicated that since all job applications are online, the badge sets them apart from other applicants. Employers like that they can click on the badge icon and verify an applicant's skills. It's a win-win for both."

Capella University in Minneapolis is one of the first four-year online universities to offer digital badges through Acclaim. Designated by the National Security Agency (NSA) and the Department of Homeland Security as a National Center of Academic Excellence in Information Assurance/Cyber Defense, Capella offers NSA Focus Area digital badges to students completing its master's in information assurance and security, network defense and digital forensic specializations. eCN

Can technology help curb sexual assault on campus?

Can mobile applications truly reduce the number of sexual assaults and rapes that take place on the nation's college campuses?

By Bridget McCrea

Wendy Mandell-Geller was just putting the finishing touches on a mobile app focused on reducing the incidences of sexual assault on college campuses—while also encouraging safer sex—when a new, 5-year study validating her beliefs was published in *Adolescent Health, Medicine and Therapeutics*. The report suggested that mobile cell phone interventions are an effective mode for delivering safe sex and sexual health information to youth and young adults (19-24 years of age).

"Youth and young adults account for nearly half of the new infections, primarily as a result of risky sexual behaviors," according to the report, which points to mobile technology as a popular option for delivering safer sex interventions for adolescents. According to a Pew Research Center survey, 78 percent of teens now have a cell phone and almost half (47 percent) own smartphones. One in four teens (23 percent) has a tablet computer, and 93 percent have a computer or have access to one at home.

And while the report also outlined some key limitations of delivering safe sex information to youth (e.g., the fact that some of the higher risk groups may not have access to smartphones), it did validate Mandell-Geller's assumption that mobile technology could be effectively combined with safe sex information and consent tools.

The Consent App

In May, she launched a Title IX-compliant sexual education consent tool that gives college students a new, digital tool to instantly give and receive sexual consent. **YES to SEX** aims to help mitigate and deter unwanted sexual situations by educating young adults on how to confidently say "yes" or "no"; verbally accept a "no"; and make the safest sex protection choices. The app is available as iOS and Android (and is also available online).

"YES to SEX is just one part of the safe sexual consent movement; it's the link in the chain that brings everything together and puts it in the hands of the students who are using technology,"

must take immediate and appropriate steps to investigate or otherwise determine what occurred, as well as protect the complainant as necessary, including taking interim steps before the final outcome of the investigation.

Knowing this, Mandell-Geller says she specifically designed YES to SEX in a way that would comply with Title IX and help schools more effectively manage, address, and resolve complaints. That meant creating a tool that didn't store any personal information, that included a compliant privacy policy, and that incorporated specific verbiage on its "consent facts" page, according to Jake Geller, chief marketing officer and director of collegiate partnerships.

> "YES to SEX is just one part of the safe sexual consent movement; it's the link in the chain that brings everything together and puts it in the hands of the students who are using technology."

says Mandell-Geller, founder, "which is the ultimate way to bring information to this age group."

The app can also be customized for university use and utilized by all collegiate affiliates and their surrounding communities to educate and keep students safe. "Universities still struggle to completely implement all required Title IX sexual consent resources," says Mandell-Geller, "the YES to SEX EDU platform helps integrate Title IX regulations related to sexual consent and provides protection to students."

Designing for Title IX Compliance

According to the Office of Civil Rights (OCR), under Title IX, a school has a duty to resolve complaints promptly and equitably and to provide a safe and nondiscriminatory environment for all students, free from sexual harassment and sexual violence. When a school knows, or reasonably should know, about possible discriminatory harassment (including sexual assault) it

The app uses verbal consent that is encrypted and stored using the same method that the Department of Defense uses, according to Mandell-Geller. "All we take is the verbal consent based on 'safe words,'" she says. The app's newest, Title IX-compliant "continuous consent" feature allows users to manage ongoing interactions using safe words (which, in turn, will prompt a partner to stop even after consent has been sent via the app).

Beyond Compliance

Looking beyond Title IX compliance, during the development phase Mandell-Geller focused on creating an app that would allow both female and male users to confidently say "no" to sexual advances and to say "yes" in a safe manner. She also incorporated information and education about safe sex practices and how to make the best protection choices at a time when it counts the most. "I felt that was extremely important," she

says, "considering that young people (between the ages of 15 and 24) account for **50 percent of all new sexually transmitted diseases** (STDs)."

And knowing that YES to SEX had to appeal to the digital, "real-time" generation, Mandell-Geller says she focused on creating an interface that would be fast (25 seconds or less) and that required no input of personal information. "Once someone uses the app with a partner, he or she doesn't want anyone else to be able to see that information at a later date," says Mandell-Geller. "Finally, it had to be free. I knew no one would want to use it if it costs them money or if they have to put their fingerprints on it (i.e., by registering and paying for it)."

A National Tech Initiative

With one in five women sexually assaulted while in college and more than 90 percent of sexual assault victims on college campuses never reporting the assault, more universities, government groups, and advocacy organizations are doing their part to help curb sexual assault on campus.

"Sexual violence has no place in society and especially no place in our nation's schools or on our nation's college campuses," said Dorie Nolt, press secretary at the U.S. Department of Education, via email. "The Obama Administration has worked with technology experts, students, policy makers, and others through data jams and app competitions to help generate new creative ways to use technology to help address sexual assault on campus."

Nolt says those collaborations include the **White House Task Force to Protect Students from Sexual Assault**, a "Data Jam," that brought together technology experts to address the issue; and an "Apps Against Abuse" technology competition. The latter took place in 2011 and challenged software designers nationwide to develop innovative applications for mobile devices that would "enhance the safety of young adults

"Sexual violence has no place in society and especially no place in our nation's schools or on our nation's college campuses."

by making it easier for them to contact friends and to access important resources for help, including local police and abuse hotlines."

But Can an App Really Curb Sexual Assault?

While any effort that addresses and/or thwarts sexual violence on campus is clearly a step in the right direction, certain advocacy organizations are concerned about the marriage of technology with sexual consent. "Generally speaking, these developments are rather disturbing," said Anna Voremberg, managing director at **End Rape on Campus (EROC)**.

"First of all, rape is not sex and so YES to SEX reflects a misunderstanding of the issue at hand

and also what we actually need to be doing to prevent it," explained Voremberg. "It puts the onus on the would-be victim to provide consent in the form of an act. In addition to that, it ignores the fact that rape is often extremely violent. Ensuring that people can consent would actually, in my opinion, have absolutely nothing to do with rape and sexual assault at all."

Voremberg is also concerned that the app could be used at a later date to prove that someone consented even if they later retracted that consent and/or changed her mind. "More than 50 percent of freshman girls are sexually assaulted on campus," she stated, "so what happens when someone is drunk and coerced into pressing the button and consenting?"

"Then she's assaulted and he brings in that app and says, 'Look, she said it was okay.' Meanwhile, she had no idea what she was consenting to," Voremberg continued. "That adds another layer of disbelief that will be applied to a young woman who is already in an uphill battle because of the way society works."

Laura Palumbo, communications director at the **National Sexual Violence Resource Center** in Enola, Pa., is cautiously optimistic about technology's role in providing clear and confident consent. However, she points out that consent is more than just a "yes" or "no" answer. "It's about actively listening to and respecting your partner, and having that ongoing communication," said Palumbo. "In that manner, I think there are ways to use technology as an avenue to make consent very clear."

Acknowledging that young people are extremely comfortable using technology as a communication tool, Palumbo said a mobile app could also be used to create a more unified front against sexual assault and rape both on and off campus. "We've really seen how technology was part of what enabled students to connect with one another across the country, and really join their voices against campus sexual assault," noted Palumbo. "I think an [app] can be used as a unifying tool in that same way—to mobilize students about campus sexual violence prevention."

A Positive Impact

Mandell-Geller knows that one mobile app isn't going to end the high number of sexual assault and rapes that take place on the nation's campuses, but she's still determined to do her part. "Whether I can help millions of people or just one person, I just want to be able to make a difference," she says, acknowledging the fact that the current plans and strategies in place aren't going to have an instant impact.

"It's going to take time, but if we can use social media and mobile strategies to communicate with Millennials on their terms—and even before they get to college," she said, "then maybe we can start making a positive impact." eCN

Bridget McCrea is an editorial freelancer for eCampus News.

5 things you may not know about being a CIO in 2016

Research from thousands of tech leaders and CIOs say becoming a CIO in 2016 requires specific steps.

By Meris Stansbury, Managing Editor

"It used to be being a CIO meant making sure your IT staff down in the basement had enough Twinkies and Mountain Dew. But boy has that changed," began Wayne Brown, VP or IT and CIO at Excelsior College in his session at the **Campus Technology Conference** in Boston on what it takes to be a CIO in 2016.

According to Brown, who also created the Center for Higher Education CIO Studies, Inc., (CHECS) while little has changed in terms of the gender and ethnicity of a CIO—white male over 51 years-old with an advanced degree who's planning on retiring in 10 years—the role of the CIO has not only deepened, but campus technology leaders and CISOs (Chief Information Security Officers) are coming to expect more from a CIO's qualifications for the position.

"I've been doing this presentation a few times now and I'm always happy to see people interested in becoming a CIO," he said. "It's a hard job but it's a great job. There's no other position outside of the President that can have this kind of impact at an institution."

Brown's CHECS conducts a yearly study, **The Higher Education Chief Information Officer Roles and Effectiveness report,** surveying thousands of technology leaders and CIOs around the world, but mostly in the US. The report contains a wide variety of information, including demographics of the CIO, their perception of their effectiveness, their opinion on the attributes and experiences necessary for a higher education CIO, and their plans for the future. The report also provides longitudinal data on a variety of questions

to show trend data. The institution management teams (other VPs and Presidents) of those CIOs are then given a survey containing many of the same questions that the CIO answered. This two-step process provides CHECS with a way to compare CIO and IMT perceptions. The Higher Education Technology Leadership (TL) report contains information on those people most likely to succeed the higher education CIO in the future and includes the demographics of the TL, their career plans, activities they are undertaking to prepare for that future, and their perspective on the CIO job.

According to the CHECS report, there are 5 key takeaways about the CIO of 2016:

**1. They're probably someone you know.**

According to the report, 75 percent of CIOs in higher ed are from the higher ed sector, and most CIOs rise up through the ranks of the IT department. It's also increasingly likely that the CIO is someone from within the institution.

2. They're incredibly qualified.

82 percent of CIOs today have a Master's degree (same percentage as 2003), and 81 percent of technology leaders surveyed said they believe a CIO should have a Master's degree. However, while in every other yearly survey respondents said the choice of major doesn't matter, this year the majority of respondents said a CIO's major should be a technical major.

Yet, experience can trump a degree, said survey respondents. 75 percent said preparation for the CIO role should focus on serving a college-

wide constituency. Other preparation should include being mentored by a CIO (63 percent), on-the-job training (62 percent), continuing education (19 percent), and certifications (18 percent).
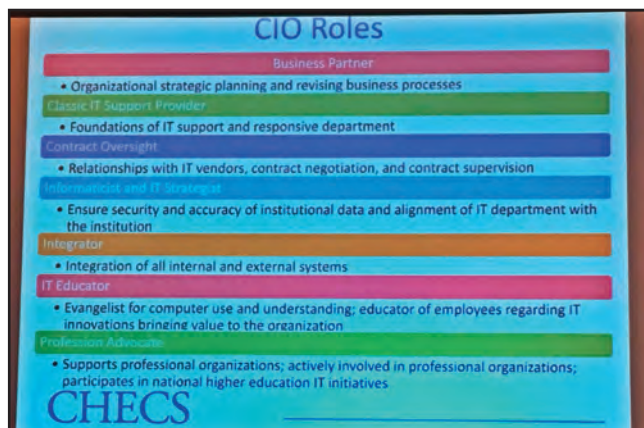
3. They're a role chameleon, but are appreciated for the classics.

Brown noted there are seven roles a CIO must undertake: business partner, classic IT support provider, contact oversight, informaticist and IT strategist, integrator, IT educator, and profession advocate.

Yet, when it comes to the role technology leaders say is most important, classic IT support (i.e. laptop setup and phone support) rules them all. CIOs themselves report spending 70 percent of their time on IT and institutional strategy. Their self-reported areas of responsibility are IT (69 percent), library (10 percent), research (8 percent) and facilities (4 percent).

4. They are communication masters.

Technology leaders and CIOs surveyed for the report said that leadership and communication skills are the two most important skills a CIO should have in 2016, followed by higher education knowledge, relationship building and technical knowledge.

Communication skills refer to the ability to be fluent in business language, fluent in higher education language, and able to communicate and present information without technical terms to non-technical people.

"I used to make horrible mistakes hiring people because I would hire based on their technical skills only," noted Brown. "But you really have to have people who can hold a conversation and know how to dress properly for the role."

5. They're probably mentoring someone

Brown explained that training to be a CIO is much like a shoe-cobbler: you get to be skilled through on-the-job-training and years of experience. And much of this training comes from a mentor, usually the CIO at the time.

The report highlights that 47 percent of technology leaders said they were being mentored by their CIOs, while 59 percent of CIOs surveyed said they were currently mentoring someone.

However, 40 percent of those technology leaders who said they were being mentored by a CIO expressed that they were not doing any activities related to the mentorship. In other words, a mentor was there in name only.

"I can't stress enough how important mentorship is for this position," emphasized Brown. "Make sure that when you're a mentor, you actually do something with that mentorship."

For much more information on methodology and findings, **click here**. eCN

Op-Ed: Is education really innovating?

The Neil deGrasse Tyson of education urges stakeholders to look at the bigger picture when trying to predict the future.

By Meris Stansbury, Managing Editor

I think I very audibly sighed into my overpriced latte when a recent keynote speaker at **Campus Technology's Boston-based conference** waxed poetic about how MOOCs and online learning are innovations changing everything in education. *"Not this again,"* I cynically mumbled to myself. *"Not someone relatively new at philosophizing about education that's discovered Khan Academy."*

Doing a complete 180° from yesterday, I practically choked on my overpriced now-macchiato this morning when keynoter Stephen Downes, program leader of Learning and Performance Support Systems for the National Research Council of Canada, almost verbatim mimicked my thoughts out loud: "The things most people think are innovations or 'disruptors' are not these things at all," he explained. "If you take a Physics lecture and put it online that's not transformative. What's transformative is what happens when you realize the Physics lecture is not what students are really there for in the first place."

Downes' gist of his presentation was that keeping the same mentality about what students need from postsecondary education and why they need it is never going to bring about true innovation and transformation. In order to bring about these buzz words so commonly used in the education arena these days, educators and stakeholders must first understand the nature of prediction and the tools needed to predict the future.

Prediction and the Future

"People say predicting the future is impossible, but we do it every day," noted Downes. "I predict perennials will bloom again next spring.

I predict barren trees this winter will bloom in the spring. I predict the corner bar will fill up around happy hour. These are all predictions made with a fair amount of certainty that will probably come true. However, change is the wildcard!"

According to Downes, what determines the success of one's predictions is how well they understand and perceive change. For example, he said, a person might go to a tropical island because they believe the island is unchanging: no storms and sunny weather. But in reality, even if the scene doesn't perceptibly change, it has completely changed: the water is cycled anew as is the air, et cetera.

"What you see often depends on what you're looking for," he said. "What you're looking for often depends on what you currently value."

Another aspect of change that's critical to consider when trying to predict the future is in its two forces: drivers and attractors.

Drivers and Attractors of Change

Downes explained that drivers are what push someone toward an action, like a need. Attractors are what pull someone toward change, like a desire. Drivers also push someone from the past, while attractors pull someone toward the future. Resistance impedes drivers, while inertia impedes attractors.

"Many changes in technology that changed learning were the result of drivers; for example, a need to write and publish led to print technology, and a need for networks led to electronic technology. These came from outside education and impacted how we manage and deliver education, but they also reflected changes in what

we value in education."

Yet, he also cited many changes in technology that didn't change learning, such as: TV, video and overhead projectors; portable classrooms; learning management systems; clickers; and Second Life.

"The problem is when you take the Physics class and put it in Second Life or take the classes' information and deliver it via video, it's still the same class," he emphasized. "So we have to look at MOOCs and online learning similarly, asking the question: are these formats truly candidates for disruption? I would argue 'no,' with the backing from a quote by Steve Kolowich that says, 'Stalled efforts to push MOOCs through the institutional membrane that surrounds higher-education credentialing have cast doubt on whether large-scale free courses will end up disrupting anything.'"

Downes also gave the example of Microsoft's vision for educational transformation, which he said encompasses the laundry list of: learning communities, teacher capacity, efficient schools, personalization, physical learning environments, and better curriculum and assessment.

"I don't think anyone wakes up in the morning and goes 'I really need a learning community today,' or 'gosh I really desire an efficient school.'" In other words, these abstract concepts are not transformative because they are simply new twists of the same existing systems, restyled solely for the purpose of keeping the existing system in place without confrontation.

So now that we know what isn't innovating education, what is and why?

Guesstimating Today's Drivers and Attractors in Higher Ed

Downes argued that to understand the real innovations in education and how education will transform in the future, we must look at how education has been transformed through the years based on changing drivers and attractors. In the past, these factors of change led to a progression from storytelling to apprenticeship to factory work to academia.

He also argued that true transformation happens with a moving, strange attractor. In other words, the attractor could be one basic concept that changes with time and leads to variations of change.

So what do these drivers and attractors look like today and what/who is driving it? Here's my guess based on the trends I'm noticing:
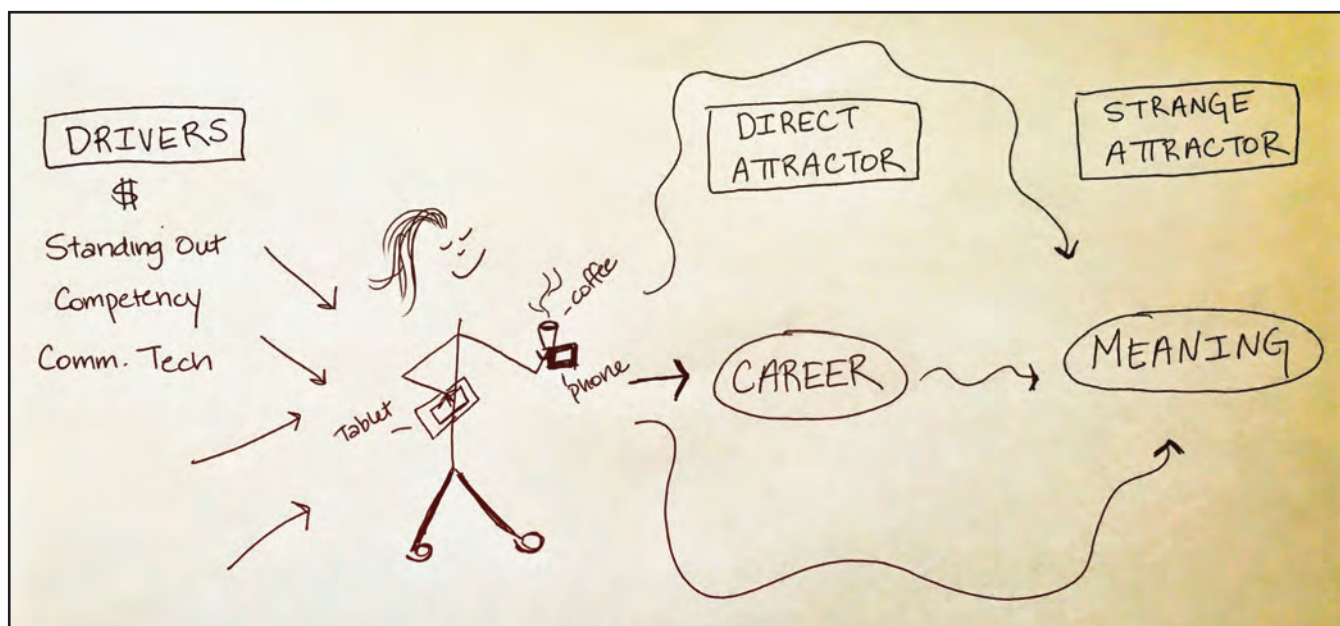
- What's influencing the factors of change for higher education? Students
- What are a student's drivers? Cost, standing out from the crowd, competency, technology's ability for communication
- What is a student's *direct* attractor? A versatile, sustainable career
- What is a student's *strange* attractor? A meaningful life

Though Downes did not, as in my case (and perhaps wisely), give his overall take on these factors of change, he did discuss how stakeholders can usher in the future with better success.

low cost, feature-poor technologies, experiment on popular platforms.

"Ultimately, the new institutional perspective should be 'Don't do things to people, do things withpeople and help people do things.' Like Daniel Pink noted, institutions must provide opportunities for autonomy, mastery and purpose," he said.

"Instead of seeing a course as a series of contents to be presented, try to see a course as a network of participants who find and exchange resources with each other," he concluded. "An example of this is the cMOOC [connectivist

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Reframing the Issues and Going from There
According to Downes, issues under consideration should be:

- Students must pay too much to study and learn
- Assessment is unreliable and (often) unfair
- Texts and resources are locked behind paywalls
- Content is poorly communicated
- Life as a student is incredible stressful
- Research studies are poorly designed
- Education science rarely replicates

Those truly interested in transformative innovation should also consider new models of deployment. For example, instead of focusing on just one driver for innovation, like low cost, focus on multiple drivers at the same time, like low cost and product release. Instead of targeting small groups first then mainstream, market to all at once and scale swiftly. Instead of implementing

MOOC], which has a structure seeded with existing open educational resources [OERs] and encourages participants to use their own sites to create or share resources via a mechanism—gRSShopper—for connection."

In summation, perhaps education will truly experience transformative innovation when it goes from personalization for the student (educators define an ideal state and then reinforce with content, requirements, practice and assessment) to letting the student personalize for him/herself (he/she defines the desired state and then reinforces with practice, affordances, and opportunities to try out their learning with support).

What do you think are the drivers and attractors in higher education? What do you think will usher in transformative change, and are there any specific technologies that can help?
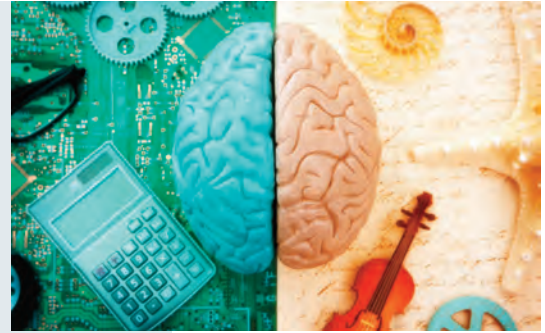
Get Downes' presentation here:
http://www.downes.ca/presentation/392

3 ways technology can bridge the STEM-Humanities divide

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http://www.ecampusnews.com/curriculum/technology-stem-humanities/

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http://www.ecampusnews.com/technologies/career-college-choice/

5 ways higher ed's social media use has changed from 2015 to 2016

New data from over a thousand different institutions provides a detailed snapshot of 2016's college and university social media use.

http://www.ecampusnews.com/research/social-media-2016/

What to consider when developing a mobile app for university students

With mobile usage on the rise, your team should make developing a mobile app for university students a high priority.

http://www.ecampusnews.com/featured/featured-on-ecampus-news/mobile-app-students/

73% OF STUDENTS RECOMMEND
THEIR UNIVERSITY REVIEW AND CHANGE ITS DIGITAL STRATEGY
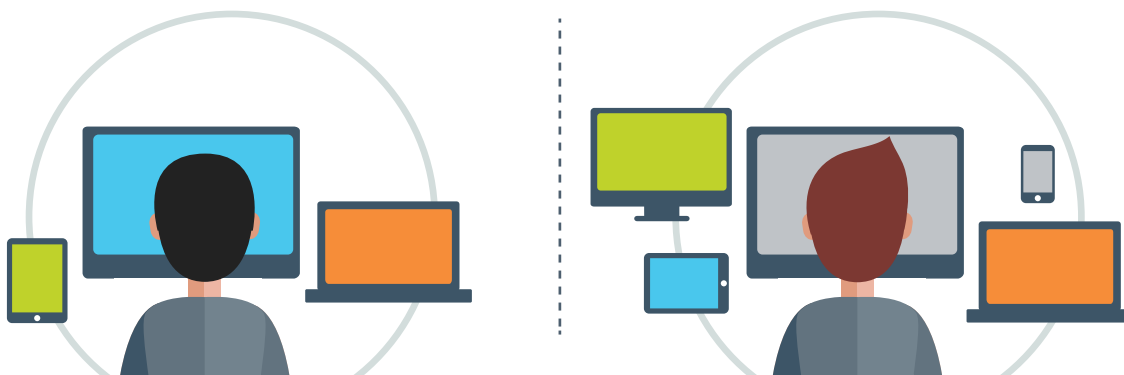
THE DIGITAL REALITY FOR UNIVERSITIES

79% Seventy-nine percent of Generation Z consumers display symptoms of emotional distress when kept away from their personal electronic devices.[1]

Millennials[2] vs Gen Z[3]

Whereas Millennials use three screens on average, Gen Zer's use five: a smartphone, TV, laptop, desktop, and music player/tablet.[4]

THE DIGITAL DOWNGRADE ON CAMPUS

36%
Believe they spend less time studying because admin is so complex

47%
Expect student administration to be easier to manage given the fees they pay

41%
Would have a better experience if they could interact more digitally with their institution

Results reveal a ranking of how easy it is for students to manage different areas of their lives digitally:

1. Online Shopping
2. Entertainment/music
3. Social life/social media
4. Finances/banking
5. Travel
6. University life

WHAT DO STUDENTS WANT?

A quarter of respondents think less of their university because their systems are poor

41% would be more likely to recommend their university if digital interaction was better