



THREE TECHNOLOGY TRENDS THAT HIGHER EDUCATION LEADERS SHOULD BE AWARE OF IN THE YEARS AHEAD

SASAN POURETEZADI

Higher education leaders and Chief Information Officers (CIOs) are often focused on strategic initiatives and day-to-day operational tasks, but an ever-increasing portion of their efforts are focused on where they should be investing their limited resources next. A substantial percentage of that insight involves doing research and keeping current on the latest in higher education information technology trends, but it also involves knowing and understanding your core business and being able to discern the multitude of value propositions that exist.

A challenging task to say the least, but one that offers substantial rewards to those who keep their eye on the ball and position themselves and their institutions to reap the benefits of foresight, planning, and the willingness to take some level of risk.

This article outlines three key technology trends of which higher education leaders should be aware in the coming years.

1: The diversification of information technology services

In the not so distant past, higher education information technology (IT) departments were the sole purveyors of all that is technology, commonly including the management of large-scale enterprise resource planning (ERP) systems, network communications, email, learning management systems (LMS), and the software used across the enterprise. During the last decade that model has changed dramatically, and many services that once defined an IT organization's value are now being offered by commercial service providers at economic scales with which higher education IT departments cannot compete.

Software-as-a-service (SaaS) solutions provided for higher education by companies like Google, Microsoft, and Amazon have become much like an electrical or water utility, and have

been offered at commodity levels (Mesa Community College, 2011). Knowing that Google alone had over a million servers - with multiple data centers distributed across the planet - brings this point home even further (Google Data Centers, 2014). Companies like Google have provided email and document services free of charge to higher education, and while some IT organizations may continue to provide and manage these services internally, that trend is changing.

Take into account Educause Core Data Service findings from 2013 to 2014, for the services of email, customer relationship management (CRM), and learning management systems (LMS). Vendor-hosted student email increased from 36% in 2013 to 55% in 2014. CRM moved from 29% in 2013 to 36% in 2014; and LMS moved up from 29% to 31% during the same time period (Educause 2014, 2015). Other services such as ERP, network communications, and web services followed suit, with more services moving to cloud-based service providers.

This fundamental shift to cloud-based solutions will further change the culture of IT departments and how they interact and provide services to their internal and external customers. Instead of focusing on the "bits and bytes", customer service will become the primary agenda for many IT departments. Though there will still be some IT departments that resist this trend, many will continue to move past the culture of being a purveyor, and embrace the concept of becoming brokers of IT services. Accomplishing this goal will require IT departments and campus leaders to further develop and retrain existing staff and hire new types of IT professionals that know how to develop vendor relationships, manage projects, negotiate deals, and build buy-in from constituents (Linthicum, 2014).

2: Predictive analytics for student success

“Analytics is the use of data, statistical analysis, and explanatory and predictive models to gain insights and act on complex issues” (Bichsel, 2012, pp. 6-7). The article “Big Data Comes to College”, published in July of 2014 by Anya Kamenetz, outlined some of the opportunities and challenges of integrating technology-based analytics solutions with institutional business processes to achieve better student outcomes. Kamenetz described some of the successes that Purdue University had in increased student outcomes utilizing their “Signals” solution. Signals utilized multiple data sources and bio-demographic information of students to provide graphical status updates regarding performance and likelihood to succeed, as well as alerts to address student performance issues such as completion of assignments. As of 2014, Purdue’s Signals solution had been used by 24,000 students, increased the number of students earning As and Bs, lowered Ds and Fs, and helped increase persistence rates (Kamenetz, 2014).

Technology-based predictive analytics have had demonstrable success at other institutions as well. For example, Arizona State University (ASU) has used technology-based analytics to improve student outcomes and success since 2007. An early pioneer, ASU launched eAdvisor in 2007 – much like Purdue’s Signals – to help students stay on track and alert them when they were not. The program also helped with things such as degree sequencing maps and advisement. Students were compelled to seek advisement when needed and were given the quickest pathway to achieve the requirements of a degree within a specific timeframe. Since eAdvisor was introduced, ASU realized significant increases in student retention and graduation rates, especially among first-generation and minority students (Phillips, 2014).

Even with the successes of programs such as these, the use of analytics in higher education has not been without controversy, as described in the aforementioned article by Kamenetz. Regardless of the concerns being voiced by some in the academy, about 80% of IT and institutional research (IR) participants in a 2012 Educause Center for Applied Research study believed that analytics were becoming more important to institutional success. The same report stated that 75% of IT and IR study participants believed that analytics was a major priority (Bichsel, 2012).

3: The information security staffing challenge

With seasoned information security professionals stating that “It’s no longer a matter of if... it’s when,” you really start to think about the level of risk that exists for organizations with regard to information privacy and security (Hendershot, 2014, p. 1). A blunt statement regarding the current environment of information security, but one that is accurate when considering the number of organizations and institutions that have suffered from information security incidents within the past two years. Organizations such as Target, Home Depot, and J.P. Morgan suffered from major incidents that involved millions of users’ data and accounts (Tobias, 2014). The stakes are high, with projected losses to be in the billions for 2015 (Experian, 2015).

Information is what drives higher education, and risks abound at both the technological and human level. Higher education

has not been immune either, with incidents being reported by institutions such as the University of Maryland, Butler University, and Iowa State University among others over the past few years (Poremba, 2014). A recent Educause survey of IT leaders listed the “Top 3 Strategic Information Security Issues” for higher education as 1) developing an effective information security strategy; 2) ensuring constituents receive education and training; and 3) developing policies. All of these priorities require substantial investments in people and process, as well as creating a sense of shared ownership of information security across the institution (Grama & Vogel, 2015, p. 1).

The January 2015 blog post by journalist Anthony Freed, on the security site DARKMATTERS, addressed the issue of a cyber security skills shortage. Freed cited the 2015 Global Cybersecurity Status Report which revealed that 86% of participants were concerned about the global shortage of skilled cyber security professionals. Of even greater concern, 38% of the respondents believed they were not adequately prepared to thwart more sophisticated attacks (Freed, 2015). With a shortage of qualified and trained information security professionals, institutions of higher education will be competing for a limited pool of candidates. The average salary for a qualified Chief Information Security Officer ranged from \$125,000 to \$259,000 a year for 2014 (Salary.com, 2015).

Summary

Given these three technology trends that higher education leaders should be aware of in the coming years, college and university leaders should prepare to place more emphasis - and invest more resources - in developing new approaches to IT services through brokering cloud services, redefining IT staffing skillsets, and integrating analytics into institutional business processes to improve student success rates. To address the information security staffing challenge, college leaders may need to make greater investments in professional information security staffing, increase staff training levels, and develop new processes and programs to create shared ownership and accountability for information security across their institutions.

References

- Bichsel, J. (2012, August). Analytics in higher education: Benefits, barriers, progress, and recommendations. Retrieved from <http://net.educause.edu/ir/library/pdf/ERS1207/ers1207.pdf>
- Educause. (2014, March). *Core data service almanac: All U.S. institutions with classification AA, BA, MA, or DR*. Retrieved from <https://net.educause.edu/ir/library/pdf/CDA1401.pdf>
- Educause. (2015, February). *Core data service almanac: All U.S. institutions with classification AA, BA, MA, or DR*. Retrieved from <https://net.educause.edu/ir/library/pdf/CDA1401.pdf>
- Experian. (2015, January). *2015 Second annual data breach industry forecast*. Retrieved from http://www.experian.com/assets/data-breach/white-papers/2015-industry-forecast-experian.pdf?_ga=1.172114915.1943093614.1418003182
- Freed, A. (2015, January). *Majority concerned about cyber security skills shortage*. Retrieved from <http://blog.norsecorp.com>

com/2015/01/21/isaca-majority-concerned-about-cyber-security-skills-shortage/

Google Data Centers. (2014, April). *Explore over a decade of innovation at our data centers*. Retrieved from <http://www.google.com/about/datacenters/>

Grama, J. L., & Vogel, V. M. (2015, January). *The top 3 strategic information security issues*. Retrieved From <http://www.educause.edu/ero/article/top-3-strategic-information-security-issues>

Hendershot, S. (2014, September). *Cyberattack means sophisticated cybersecurity*. Retrieved from <https://www.pmi.org/Knowledge-Center/PM-Network/2014/cyberattack-growth-means-sophisticated-cybersecurity.aspx>

Kamenetz, A. (2014, July). *Big data comes to college*. Retrieved from <http://www.npr.org/blogs/ed/2014/07/04/327745863/big-data-comes-to-college>

Linthicum, D. (2014, April). *Change your company culture and get onto the cloud*. Retrieved from <http://www.infoworld.com/article/2610906/cloud-computing/change-your-company-culture-and-get-onto-the-cloud.html>

Mesa Community College. (2011, March). *Mesa Community College information technology strategic plan, 2012 – 2017*. Retrieved from <http://tinyurl.com/9juvxl>

Phillips, E. D. (2014, January). *Improving student success using technology-based analytics*. Retrieved from <https://www.aacu.org/diversitydemocracy/2014/winter/phillips>

Poremba, S. (2014, November). *5 Higher education information security threats you should know before your child leaves*

for college. Retrieved from <http://www.forbes.com/sites/sungardas/2014/11/05/5-higher-education-information-security-threats-you-should-know-before-your-child-leaves-for-college/>

Salary.com. (2015, April). *Chief information security officer salaries*. Retrieved from <http://www1.salary.com/Chief-Information-Security-Officer-Salary.html>

Tobias, S. (2014, December). 2014: The year in cyberattacks. *Newsweek*. Retrieved from <http://www.newsweek.com/2014-year-cyber-attacks-295876>



Sasan Poureetezadi is Vice President of Information Technology & CIO at Mesa Community College. He has worked in the fields of information technology and higher education for the past 20 years, and has served as an IT consultant and adjunct faculty member at the community college and university level. Sasan has presented on a variety of information technology topics such as new media, predictive analytics, virtualization, and flipped classrooms.

We invite you to join our team!



Shape the future at DCCCD

Dallas County Community College District – one of the largest undergraduate institutions in Texas – is strongly committed to fostering an inclusive workplace and takes pride in the work environment provided for its employees.

DCCCD is a great place to work.

Beautiful facilities – Each of the seven colleges, five community campuses and other district office locations provides employees with a vibrant, state-of-the-art environment.

Excellent benefits and competitive salaries – DCCCD's competitive compensation and benefits plans, including medical, dental, disability and retirement, are designed to attract, inspire and retain the best and brightest.



Dallas County Community College District
BROOKHAVEN • CEDAR VALLEY • EASTFIELD • EL CENTRO • MOUNTAIN VIEW
NORTH LAKE • RICHLAND • DALLAS COLLEGES ONLINE

dcccd.edu/recruiting