The Year Ahead in IT, 2013
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Those reading this column or any of its annual predecessors (in 2012, 2011, 2010, or 2009) are invited to reflect that the historic challenges facing universities and colleges are less related to technological disruption or market evolution and more causally related to self-induced bruising, glacial cycles of adaptation, and torturous processes that pass for decision-making. Creative destruction, as I've written before, reflects the incessant dynamic and mutation of our network-enabled era of global and virtualized capitalism. Many within the academy, from our “risk adverse” faculty to our “rating agency-fearing administration and boards of trustees,” fear that creative destruction destroys more than it creates.

The irony of course is that while many in the academy live with a collective psychology of scarcity, ours is an era of abundance. History, until the mid-20th century, has largely been a series of narratives about the human condition in which everything from the metaphysical to the mundane has been constrained by a worldview informed by scarcity. Most of the enduring institutional anchors defining our cities, our urbane lifestyles, and yes, our universities are themselves products of a bygone historic era premised on scarcity. As the mutations of the network effect continue to erode the underlying economic structures of that earlier era of scarcity, the explosion of data and the dynamics of knowledge diffusion in the emergent era of abundance challenges all of the received wisdom of the 20th century and its attendant institutional character.

The adaptive capacity for higher education institutions to remain relevant deep into the 21st century is a topic of continuing debate, in books such as Ronald Barnett’s Being a University and Clay Christensen’s and Henry Eyring’s The Innovative University: Changing the DNA of Higher Education from Inside Out. As petrified and ossified as the academy may appear to some, the generative and fertile opportunities for discovery and knowledge development afforded to learners, young and old, continues to grow in exponential fashion.

The learning enterprise for students is changing, most likely forever. A long historical epoch of scarce knowledge and the pursuit of mastery of relevant domains is nearing its final dusk. Competency is less about comprehensive recall, a function that machines and search engines do pretty well. The French philosopher, theologian and technological skeptic Jacques Ellul, asked nearly 50 years ago what role educators will have with the rise of autonomous expert thinking machines.

The most remarkable predictions concerns the transformation of educational methods ... Knowledge will be accumulated in “electronic banks” and transmitted directly to the human nervous system by mean of coded electronic messages. There will no longer be any need of reading or learning mountains of useless information; everything will be received and registered according to the needs of the moment. [The Technological Society, Vintage Books, NY, 1964: pg. 432]
Ellul challenges the likely consequence of this technological “imperative” and is skeptical that it is possible that “what is needed will pass directly from the machine to the brain without going through consciousness.”

The emerging learning enterprise is about designing and creating experiences that provide opportunities to discover and gain 21st-century competencies based on assembly, synthesis, perspective, critique, and interconnected systems thinking. It is precisely the role anticipated by Ellul to create opportunities for conscious self-reflection.

The mechanisms for certifying competency, along with the persistence of learning communities, in varying degrees of proximity to the received assumption of the centrality of the physical brick and mortar campus, represent the value, brand and opportunity of universities in the 21st century. And while the university’s once near-monopoly on the credentialing of a certain set of valued and relevant skills in the post-war era is all but over, the emergent competitive landscape will lead to adaptation and creative destruction.

The year ahead will remain turbulent for universities and opportunistic for learners. The top 10 IT trends impacting the future of higher education in 2013 will enable more learning opportunities. The 10 trends outlined below will also afford those universities and colleges committed to reinvigoration an opportunity to leverage technology to advance university mission and the pursuit and re-dedication to relevance in the year ahead and well beyond.

1. Open Learning Is Dead! Long Live Open Learning!

Much of the oxygen in the world of technology and higher education in 2013 will continue to be consumed by headlines around MOOCs. This is a positive development. The current instantiations of MOOCs are unlikely to have a long and enduring impact but they have catalyzed conversations on the future of higher education in the United States like little else since the GI Bill (The Servicemen’s Readjustment Act of 1944). Punctuated equilibrium is likely to set in some time this year and with it, hopefully, an opportunity to assess the pathways forward.

“Open education” once referred to repositories of nonproprietary, repurposable, and reusable learning materials and experiences. And yes, for most earlier iterations, open education also meant free. Over the past 12 months, open education has largely metamorphosed and been reduced to proprietary and closed educational content offered at no charge. MOOCs have been cast by headlines in newspapers, blogs, and in invitation-only venture capital meetings as a new arms race to give away the once-assumed crown jewels of universities in the form of free classes. The pioneers of the new open learning movement like Coursera, Udacity, and very likely a handful of new, well-funded entrants will continue to provoke angst among university boards of trustees and at the same time catalyze maturing and evolving models of instructional design, course creation, and the pursuit of high-quality online offerings to meet the evident demand in the global marketplace for elite-branded education.

Among market forces, expect to see both open universities around the world and a renaissance of old-fashioned open education offerings attempt to grab some of the reverberation of the overhyped MOOC world. Most of these open educational resources originate and will serve online learners, but over time student use of this content will blend both synchronous and asynchronous online use along with self-directed learning and a multiplicity of face-to-face learning environments. Today, millions of students are experimenting with first-generation open content. Within the next year or two, more than 50 million diverse open educational learners will find compelling motives to access the single largest, dynamic body of student-centered learning materials available.
The thirst for accessing globally available open online learning environments will evolve from a focus on efficiency to a broader and more diverse set of offerings informed by effectiveness. As this transition occurs, new and quite possibly sustainable business models will emerge. Like Hamlet’s famed response to Rosencrantz beseeching that Hamlet tell him where the body is and go with him to see the king, Hamlet says in response, “The body is with the king, but the king is not with the body. The king is a thing.” The same is likely the case with the arc of activities associated with open learning. Open learning in the current overhyped environment is one kind of learning experience but it is not the same thing as a high-quality and sustainable form of learning and inquiry, even when it has elite branding.

2. It Takes a Village to Flip a Classroom

The dominance and near-monopoly of text-based learning is being sublimated by a hybrid of video and supplemental learning materials. The $5 billion textbook industry continues to overwhelmingly resist and impede the emergence of the rich media learning platforms of the future. Over the past century higher education has linked the textbook with a culturally constructed use of time in the form of a lecture as a convenient mode for information transmission. In today’s emergent rich media screen culture of video, games, hyperlinks, and simulation, inverting the traditional classroom time is both logical and inevitable.

Flipping the classroom sets expectations that learners take greater responsibility for their own learning by coming to “class” prepared in advance having viewed and assimilated assigned preproduced video materials. Scheduled class time now affords faculty an opportunity to adopt problem-based, challenge-based, or case-based teaching, enabling learners to become more actively involved in the learning process. And while the convenience of lecture and textbook model produces little evidence of learning that lasts nor transforms the learner, the emergence of high quality video-based learning materials affords even the most reluctant lecturer an opportunity to revisit their pedagogical goals.

In 2013 three models of flipping of the classroom will likely emerge. Following on the pioneering work of the Khan Academy, other solo efforts will continue to emerge across the curriculum. Some of these pioneering efforts will prove to be sustainable. However, rare is the university or the faculty member prepared to make the investment of resources required to support such undertakings over time.

A second path forward could very well be the future of publishing with enlightened publishers leveraging their editorial and production core competencies. Pilot projects among leading publishers suggest some interest in investing video-based content, together with highly integrated hooks, into textbooks in their catalogs. And while Chegg and Amazon Textbook rental models extend the half-life of the traditional book, the new frontier for publishers is to take a leadership position in the creation of 21st-century learning content.

At some point in the future, but not in 2013, textbook publishers will realize they are in the design, production, and distribution-of-education business. The Internet is the medium of dominant distribution and it is, overwhelmingly, a rich, media-centric medium. Public broadcasters might also play a role in the production and distribution of flipped learning content either collectively and/or in partnership with publishing groups or others. They too face the challenge of reconceptualization their collective future while at the same offering value to their current audiences.

A third path for flipped content will be from academic societies. There is a powerful motivation for academic professional associations with strong teaching centered traditions to seize the opportunity and provide an alternative model for the co-creation, and co-production and distribution, of high-quality learning materials. While some professional association might choose to partner with traditional publishing, it is also possible that in the next year we will see the first large-scale collaborations of
academic society members creating their own offerings. Math and Science teachers have collaborated to support http://flippedclassroom.org/ and the International Society for Technology in Education has played an interesting convening role among different disciplinary traditions interested in inverting their learning models.

Between iTunes U, Google education channels, TED talks, PDF talks, institutional lecture capture content, and growing repositories of flipped content, experimentation in creating video search tools, like squrl, for academic content will make for growing value in the educational video environment.

3. The Always-On University

While we were focused on how to contend with laptops in the classroom a funny thing happened. Laptops and personal computers, which we've largely thought of as “new” technology for the past 25 years, became largely irrelevant. In the far rearview mirror, we can now recall with nostalgia the era when desktop computers and laptops were more pervasive than smart mobile devices and tablet computing.

No more. On a global basis and among many of our current students and certainly our future students the reality is that they live, work, and play in a world that few in the academy, including many academic technologists, recognize. Twice as many smartphones and tablets will have shipped in 2012 than desktops and notebooks put together. In 2013 the ratio may be as much three times as many. Over the next year more data will move from smartphones and tablets than computers and laptops in countries like India. And this is just the beginning. Even in economies like the United States, saturated with legacy workplace arrangements and installed infrastructure, nearly a third of adults own an e-reader or tablet, up from 2 percent less than three years ago.

The form factor of choice is a smart phone and/or a smart pad/tablet. But it’s not only the form factor. The user interface of choice is no longer keyboard, mice, and graphical user interfaces. Touch, voice, and gesture represent the new navigation and invitation to explore. More than 2 billion Bluetooth devices and sensors are in circulation this year, and there are more than 1.5 billion Wi-Fi devices, growing between two- and eightfold a year, year over year. And soon we will have wearable computing devices in everything from nanotechnology threads in our clothing to smart and connected wearable eyewear as part of our everyday life. Our campuses are now always on and connected. From infrastructure investments to service models, the always-on university is our new reality.

4. Learning Analytics Meet Learning Sciences

For nearly a decade, the Purdue University “Course Signals” project (and its immediate antecedents) led by John Campbell was a beacon to the higher education community of the value of designing a research program to leverage digital artifacts of student engagement and formative assessment to support student success. A confluence of factors around student success, including demands for accountability, funding formulas based on successful completion, timely remediation and intervention, and the broader social value of a more educated population have converged and the result is a growing expectation of institutional responsiveness.

There has been an explosion of “big data” in research science, consumer behavior, and health care. Framing efforts by the Society for Learning Analytics Research (SOLAR), notable single institutional efforts like Austin Peay State University and multi-institutional data collection efforts led by WICHE’s Predictive Analytics Reporting framework are examples of important early efforts. In 2013 new and promising initiatives will contribute to greater student success and a better understanding of the ways in which our models of learning experiences can be tested. The e-content and e-textbook program
launched by Educause and Internet2 is among the important projects to watch in 2013. Well-designed e-content strategies allow for the possibility of understanding when, where, and for how long students engage on their own, with others and with learning materials.

A more robust learning science informed by both progress in brain research and well-designed learning analytics are prerequisites to the more alluring goal of a learning genome project and the pursuit of a meaningful personalized learning strategy for everyone. Personalized learning ventures like Knewton and startup ventures like Always Prepped and Ontract suggest that in 2013 the market grows more mature and ready for intelligent and savvy use of data for supporting student success.

5. Net+ and University Collaboration in a Cloud-Enabled Technology Era

If ever there was a Tower of Babel in the world of information technology, it would be around “the cloud.” In its most generic sense, the cloud is any aggregated service offering that leverages the Net. As our university networks have become more reliable (but not infallible), robust (but not impervious to denial of service attacks), and resilient (but still subject to the wrath of Mother Nature), the network effect has led to unprecedented efficiencies, economies of scale, and new sources for substantial investment.

After a number of stalled efforts, the higher education community led by Internet2’s Shel Waggener has embraced the value of highly scalable services enabled over our regional and national research and education networks. Net+, as the service is known, offers two kinds of services. The first is the aggregation of demand from among members of the Internet2 community and collective engagement with various ‘cloud’ service providers. These include dozens of vendor offerings, all of them leveraging Internet2’s dedicated research and education network resources. For many vendors, partnering with Internet2 and leveraging the research and education network actually reduces the cost of delivering commercial services and savings are being passed on to universities participating in those offerings.

In 2013, a second set of offerings is likely to take center stage. These will be services aggregated and led by universities and consortiums of universities. Building on important existing interuniversity identity management services, the new offerings will include cooperative telephony services, enhanced video collaboration services, data center services, and library and research services all leveraging collective action among Internet2’s university members to enhance the portfolio of services offered and increase the efficiency of the delivery of those services.

While debates at many universities will likely continue to be informed by the division of responsibility between central IT and in other parts of the university, in reality many of those legacy debates are growing increasingly obsolete. The value of investing in next generation networks is less about access, speeds or raw throughput. As Net+ is demonstrating, the value of our investments is in the enabling and provisioning of service offerings above the campus network to advance the missions of our institution, including research, teaching, and service.

6. The End of ERP (as We Know It)

Some CIOs still wake up in the middle of the night with recurring nightmares, now 15-20 years old, associated with the implementation of ERP (Enterprise Resource Planning). Some presidents and boards can still point to continuing and extended payment schedules for the tens (and in some cases hundreds) of millions of dollars spent on implementations. Indeed, having resisted, avoided, or otherwise deferred the decision, there are some institutions that are still in decision mode on whether to implement ERP for their financial, HR, and student information systems.
ERPs are bloatware and remain more closely linked to a genus of troglodytes than to anything resembling a modern transaction and decision support system. Universities (and most every other large enterprise business) continue to invest precious resources in these large, complex, and highly profitable software environments. A pioneering generation of university campuses has broken with the pack and has chosen to join other industry leaders in helping to shape and implement administrative systems as a service.

Software as a service hit the major leagues more than a decade ago with Salesforce.com. Salesforce has announced work.com and of course this past year Workday went public with great fanfare. Both of these are examples of administrative systems as a service. Modern interfaces (and underlying code) are immediately tantalizing to those who are exposed to them. No hardware, databases, or separate data warehouses on campus. Full mobility offerings are supported from day one. With debt payments still fresh in the minds of many university CFOs, the year ahead will see important but not overwhelming numbers of new university customers joining these efforts.

There are two key service lines that could well accelerate the adoption of administrative systems as a service at universities. Some will wait to see what, if, or when Oracle, SAP, and SCT will have meaningful software as a service offering.

In 2013 university leaders should continue to press Salesforce.com and Workday to deepen their collective and common commitment to higher education by co-creating a working group in what might be called a student life cycle product. A platform strategy for leveraging administrative systems as a service, the student life cycle initiative can start as early as the prospect phase, but more likely would begin (for now) with the traditional registration services. Like many traditional student information systems there will need to be a core offering in course selection, academic advising, student records, and grades management. New offerings linked to assessment, forms of authentic evaluation, and embedded learning analytics would all represent value-added features.

The second missing service line would address the faculty life cycle. A faculty-centric initiative can build on the workflow of HR and finance systems. Such a project could likewise begin from the recruitment phase but would most certainly start with the onboarding of a new faculty member and include teaching, research, and service mission-related data elements. Faculty reports, web pages, personalized research grants, customized library resources, and a full suite of benefits-related services would be the foundation for such a project. Both Salesforce and Workday have flirted with such nontrivial undertakings. 2013 is the year for accelerating a go-to-market strategy. The market is ripe and ready.

7. Learning Spaces—The Final Frontier

I often use historic images to outline the continuity of experience of student learners from the 19th century through to the present. While most of these historic images show only male students, they are otherwise very reminiscent of faces and spaces we know, namely the lecture hall filled with students distracted, conversing with one another, “texting” (sending notes to each other), bored, and oftentimes not exactly riveted by the lecturer. Beyond inverting the class with preproduced video content, there is much to be done in re-imagining and re-inventing the physical learning environments. And while creating a replicable, cost effective immersive adventure in the likeness of Universal Studio’s Harry Potter Forbidden Journey may be ambitious, the era of defining technology-enhanced classrooms as a PC and a projector is past.

The serious conversation about the redesign of learning spaces and the incorporation of technology is a decade old. The empirical evidence affirms that well-designed new learning environments can lead to more active learning that supports both engagement and reflection. These in turn lead to a view shared
by students that they are learning more as well as to positive learning outcomes. New opportunities exist for partnership between student learners, faculty instructors, and facilities and learning technologists to create a deployable mix of learning spaces that blend and afford flexible and repurposeable furniture, technology, and tools to support a range of learning environments.

The transformations occasioned by scientific visualization and gesture-based screen technology have crossed over into our popular culture, from “Minority Report” and “Matrix Revisited” to dynamic weather maps and election night results. We also have multiple experiences associated with interactive immersive technology like Microsoft’s Kinect. Almost all of those common representations miss the key for scientists and their experience in using large scale visualization and gesture tools. This form of learning by doing is actually about a hybrid of science and play. Full-body interactive learning is now entering the world of visitor experiences in environments as diverse as museums to STEM education. The Bill & Melinda Gates Foundation’s Next Generation Learning Challenges initiative has raised the visibility and efficacy of further exploration of these immersive, interactive, and responsive wall and room-sized environments for learning.

In 2013, look for the first number of these next-generation enhanced technology classrooms to be instantiated and available for replication and adaptation in partnership with a wide range of partners.

8. Extending the Boundaries of the University: Gig.U and US Ignite

In their e-book, The Politics of Abundance: How Technology Can Fix the Budget, Revive the American Dream, and Establish Obama’s Legacy (Odyssey Editions, November, 2012), Blair Levin, the author of the National Broadband Plan and Executive Director of Gig.U, and former FCC chairman Reed Hunt make the case for creating what they call a national broadband advantage. The catalyst for creating a national broadband advantage is leveraging our nation’s universities and colleges. As the authors document, students, faculty, and staff -- long the progenitors of much of the economic growth and productivity associated with technology -- have unique opportunities to accelerate the deployment of next-generation networks in communities around the university campus.

In 2012 a number of city-university partnerships consummated relationships to build out gigabit fiber services to the communities around the country. Leading this effort are pioneers at UC2B, Urbana-Champaign, and the University of Illinois at Champaign-Urbana, Lansing and Michigan State’s Gigabit Ready project, University of Chicago and its Chicago south side community and state partners, Seattle and the University of Washington, University of Florida and the Innovation Square project in Gainesville, University of Maine, and the Case Connection Zones in Cleveland at Case Western Reserve. In 2013 most of these initial pilot projects (and a number of others) will be lit, offering new services that will be shining lights of the art of the possible.

These city-university partnerships afford more than infrastructure services. Across the United States 25 cities have partnered with US Ignite to support the building of a next generation of applications that will leverage gigabit network infrastructure. Born in 2012, the coalition of the willing led by US Ignite is catalyzing network scientists, imagineers, hackers, app developers, video engineers, software programmers, switching engineers, and others to build rapid and working prototypes of a new generation of products and services. With support from NSF and a blue ribbon group of technology partners, US Ignite is at the center of next-generation application development.

In 2013, US Ignite will both invest and promote work across the country to support never-before-seen (or imagined) solutions to some of the nation’s most pressing challenges around health and wellness, STEM education, neighborhood and national security, advanced manufacturing, and energy (among other drivers).
Initiatives like Gig.U and US Ignite are important to creating opportunities for innovation and disruptive
technologies that have long been produced in dorm rooms and research labs in our universities and
colleges. Gig.U and US Ignite are also important to catalyze the United States and the economy for
sustainable growth and new jobs. Indeed, it’s hard to imagine a jobs and economic strategy into the 21st
century that doesn’t depend on their success.

9. Open Data Models for Campus

Open access data repositories are growing among researchers in higher education. Major funding
agencies like the NIH require (within 12 months) that peer-reviewed articles be made available through
open access. Unprecedented access to data from dozens of federal and state agencies has helped to
usher in an era of greater openness, transparency, and growing accountability. An integrated open data
framework for universities has been relatively slow in coming. Clarion calls like those issued in 2012 at
the University of North Texas are important but do not go nearly far enough.

Open data needs to be a universitywide commitment. Facilities data are valuable not only for paying the
electricity bill; they can be used by students and faculty researchers working on everything from smart
buildings to local sustainability efforts. Data collected by librarians are important not only for knowing
the number of patrons who use library facilities, but also for understanding trends in the adoption and
use of online and on-shelf resources across disciplines to interlibrary loan borrowing trends and local
library portal search terms. Wireless access points data are important not only for network managers,
but also for everything from digital art to understanding patterns of work and study across the
university. Institutional research data are not only important for reporting to funding agencies; they can
also be used by students to understand their own institution.

In 2013 look forward to a number of leading institutions following the pioneering work at Aalto
University in Finland in designing a comprehensive and integrated open data environment for their
university.

10. IT as a Service and the Future of IT on Campus

Michiavelli noted in The Prince (1532) that “[t]here is nothing more difficult to take in hand, more
perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new
order of things." The rollback of public investment in, pressure for access to, and indeterminate impact
of globalization on postsecondary education all contribute to significant disorientation in our thinking
about the future of the university. Couple those externalities with the commodification of many
technologies once thought to be core to the service catalog on our university campuses and the
dilemma is at once clear and confounding.

As technology leaders in higher education assess how to align our organizations to these twin
challenges, the time has come to consider discontinuous organizational change. Tinkering and tweaking
with traditional organizational issues like the federated models for technology support across the
university or whether or how to merge academic and administrative computing are inadequate and
unlikely to help the institutions we serve with strategic value-add. Expensive external consulting groups
can tell our executives what we already know. Our IT organizations (and many other parts of the
university) are products of a legacy environment that has, to varying degrees, become calcified and
nonresponsive to the needs of the university going forward.

Resistance to the secularization and commodification of IT as a service is futile. Collective and
cooperative action in the form of shared service models is one pathway that is well-worn and will
necessarily lead to the requirement to re-architect our information technology strategies. New skill sets
like vendor relationship and service level management, portfolio and project management, and business analysts are the new IT jobs for the shared services economy of the future.

More fundamental re-examination of our organizations is in our immediate futures. Multiple IT organizations across the country are rethinking the inherited functional organization. The functional IT organization is layered following a traditional stack of services from underlying infrastructure like network engineering, servers and storage, data base and application services, academic and administrative technology subject matter experts, and customer support. Over time, the logic and reproduction of the functional organization has squeezed out innovation in favor of core operational services. In many organizations 90 percent or more of the IT staff and financial resources are allocated to daily operations. Over time, the functional organization model will suffocate and strangle itself. Many IT professionals are as passionate about the academic and research missions of our institutions as our faculty. The functional organization model makes it increasingly more difficult for IT on campus to be a meaningful partner and contributor to the strategic future of the University if and as it gets painted into the corner of being an expensive infrastructure cost center.

The alternative models to the functionally organized IT organization are many. The challenge for IT leaders is to cede a modicum of control and embrace the need to experiment in new, more porous, organizational models that facilitate and support the co-production of innovative solutions that meet the needs of higher education moving forward. Becoming a solutions-focused and internal consulting organization is at the core of what I take to be the opportunity for IT in higher education.

Partnering with third parties wherever and whenever possible to support commodity services is vital to being able to redistribute internal resources to be able to lead the new change agenda. Recruiting a cadre of designers with multiple skills, including many with deep and hard-core technical skills, to engage directly with faculty, students, and staff colleagues is at the heart of the new service delivery model. As every CIO knows, no organization will tolerate the pursuit of fanciful ideas, even if they are “good for the organization,” if the basic utility features of the IT service catalog are unresponsive and nonfunctional. The IT professionals responsible for operations must be the “A” team and at the same time fully aligned to the broader vision and mission of the new IT organization.

No matter what kind of higher education institution you are affiliated with, the year ahead is predictably full of trepidation and constraint. If the organization becomes paralyzed through the psychology of scarcity we will have failed in our mission as IT leaders. The abundant and transformational contribution that IT can make to the mission of higher education is less about resource availability and more about leadership vision and commitment. Leadership in the year ahead is no longer like captaining an ocean liner but more like whitewater rafting that calls for flattened organizations that can change rapidly and with significant agility, embrace decentralized decision-making, and motivate employees, and inspire relationships.

Success is hardly a foregone conclusion. This is distinctly contested terrain. Good luck on the rapids.

http://www.insidehighered.com/views/2013/01/03/predictions-about-higher-ed-technology-2013-essay#ixzz2HPYDATHo

Inside Higher Ed