

# How Technology can Transform Higher Education in the US

## Overview

Across the nation, colleges and universities are being challenged to transform their systems of higher learning. While each institution is different, they share common problems: They must contend with outdated teaching methods, crushing budget pressures, and the need to deliver a relevant education that adequately and effectively prepares the workforce of the future. As a result, educators are being faced with the need to make significant revisions to less-than-optimal systems, in an environment that is dictating that change needs to be made. Institutions that adapt to these imperatives will thrive, while those that are incapable of change will meet their demise.

While change is difficult, it is also inevitable. It is the only constant in a world that is experiencing exponential population growth, a limited supply of natural resources to meet demand, and accelerating technological innovation. Higher education institutions are central in preparing students to address these challenges and in solving some of the most difficult problems we as a global society have ever faced. It is therefore critical to examine:

- Where change is happening successfully
- What is working and what is not
- How to scale improvement globally

The need to change is a powerful catalyst that often drives innovative approaches to problem solving. Jeff Bezos, founder and CEO of Amazon, has said, "I think frugality drives innovation, just like other constraints do. One of the only ways to get out of a tight box is to invent your way out." Along with many other sectors in our society, cash-strapped universities in the United States are being forced to "innovate themselves" out of some very tight corners.

Cisco customers from beyond the borders of the United States often visit us to learn about our country's higher education system, because there is a perception that we have the best colleges and universities in the world, and that we are the world's most innovative nation. Our visitors routinely ask us how these institutions are using technology to transform teaching and learning, improve administrative management, and drive research initiatives. Outside the United States, there is also a perception that these bastions of knowledge have a lock on the right thing to do, from a technology perspective. This perception is only partially true.

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## Questionable Perceptions: The United States Higher Education System

There is a persistent (and inaccurate) belief that the U.S. higher education system is the world's best. Researchers at the University of Melbourne's Institute of Applied Economic and Social Research examined data from 48 countries and territories across different measures. Their findings stated that "overall, the top-five countries nominally providing the 'best' higher education were the United States, Sweden, Canada, Finland and Denmark...unsurprisingly, the United States dominates the total output of research journal articles, but when viewed as a percentage of articles per head of population, Sweden is top of the ranking." (U21 Rankings of National Higher Education Systems 2012)

What many steeped in the system may not know is that higher education in the United States is struggling under the pressures of demands that can't be met, soaring costs, decreasing budgets, a product (traditional education) that some believe is irrelevant, and a lack of student engagement in the curriculum. Some believe our system is literally teetering on the edge of implosion. There will always be a place for well-known university brands. But smaller liberal colleges literally may not survive, and state systems have no choice but to change.

For America, the future of higher education is stark. Anna Kamenetz, in DIYU, says,

"The price of college tuition has increased more than any other major good or service for the last 20 years. Nine out of ten American high school seniors aspire to go to college, yet the United States has fallen from world leader to only the tenth most educated nation. Almost half of college students don't graduate; those who do have unprecedented levels of federal and private student loan debt, which constitutes a credit bubble similar to the mortgage crisis." (Kamenetz, 2010)

In many ways, our higher education system, while great, suffers from Clayton Christensen's phenomena, described in *The Innovators' Dilemma*: It simply cannot change from within its existing constructs. Some of the most promising advances are coming from outside of the traditional, existing system, with movements such as the Open Education Resources Movement, Massive Open Online Courses, and the edX joint venture. Interestingly, these movements are all being enabled and driven by the creative use and application of technology.

## Shared Challenges

Universities in the United States share similar challenges: inadequate access, dated teaching methodologies, and perceived irrelevance of our current programs.

First, we have a problem of access: We simply do not have enough capacity to meet demand. In the U.S., there were 3.2 million graduating seniors in the class of 2012, 73 percent of whom believed they needed still more education to obtain higher-paying jobs. Since 2007 the number of international students has also increased by more than 20 percent. And, competition is increasingly stiff for places in top academic universities: Harvard accepted only 5.9 percent of applicants, and Yale accepted 6.8 percent. With only 4000 higher education institutions in the United States, it's easy to see that we lack the capacity to continue delivering against the increase in demand. (U.S. Department of Education and the New York Times)

Second, yesterday's teaching methods aren't consistently effective for students today and tomorrow. In a world that is increasingly digital and connected, many students have a low level of engagement in traditional educational settings. Most university instruction hasn't changed much; globally, professors are mostly educating students as Aristotle did over 2000 years ago. In the United States, college presidents are being questioned. Case in point: the University of Virginia president was fired over a disagreement on approaches to changing higher education. This pressure on leadership to change—coupled with the very nature of instructional methodology—is reaching a

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breaking point. At the same time, new, massive open online courses (MOOCs) are showing that different approaches really can work. This is forcing colleges and universities to examine closely the current mode of traditional lecture courses.

Third, there is a perception that higher education is increasingly irrelevant. We are facing a highly complex global economic environment that forces our institutions of higher learning to turn out graduates who can make our countries more economically and socially competitive. We have to adapt quickly to place our students in positions demanded by companies that comprise the network of our economies. This requires speed, agility, an understanding of key market transitions, and the direction that our companies are taking. Cisco shares this interest in obtaining employees who can contribute to a competitive, creative, and effective workforce.

We believe that by thoughtfully applying technology and by sharing what's working well, we can help to more effectively address these shared challenges and transform higher education systems globally.

### Systemic Transformation: The Role of Technology in the Path to the Future

From Cisco's experience with higher education institutions in the United States, those who are implementing change well are laser-focused on three critical areas: the ability to address questions of culture, to modernize teaching and learning, and to scale and propagate change across multiple, often divided, silos within their institutions. Also, these institutions are using technology to manage each area more effectively.

Technology plays a critical role within each of these sectors, and if used wisely and artfully, can help to accelerate innovation and change. For institutions to change as quickly as they need to, they need a solid core infrastructure, wired and wireless networks that enable ubiquitous connectivity, collaboration tools that provide seamless and robust communications, and new social collaboration platforms that support and extend the interaction of multiple communities, and ultimately, create a federated higher education society.

### Navigating Culture

In the United States today, many universities have a clear vision of the future and what they need to do to deliver solid academic experiences. In fact, a number of institutions have lengthy strategic plans, defined goals and objectives, and clear tactics. But more often than not, these plans fall short because they do not take the institution's culture into account.

Shawn Parr, in his Fast Company article "Culture Eats Strategy for Lunch," says, "Culture is the environment in which your strategy and your brand thrives or dies a slow death." (Parr, Fast Company) This couldn't be truer anywhere than in higher education. Like companies, colleges and universities have their own unique (and very powerful) cultures that limit their ability to change.

We have found Parr's major building blocks for a "vibrant" culture to be especially relevant in higher education. He notes that the most successful organizations display dynamic and engaged leadership, living values, responsibility and accountability, and the celebration of successes and failures.

We have also found that the single most important component in helping higher education institutions to navigate often complex cultures is in getting the right people to the table when discussing and designing change. Ensuring that all key stakeholders have a part in planning and execution reduces the effect of silos, and increases the likelihood that change will be embraced. When you build a plan for change, consider including a broad spectrum of stakeholders: the president, provost, or chancellor, school/college deans, leaders from offices of business, finance, technology, and curriculum, interested and motivated faculty members with a following, students, alums, political leaders, unions, and community members.

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However, while it is one thing to have the right stakeholders at the table, it's another thing entirely to provide them with the ability to communicate and collaborate in the most effective ways possible to support their change goals and objectives. Technology is a critical enabler in this area.

Colleges and universities are increasingly using Cisco WebEx<sup>®</sup> to connect and collaborate with team members, stakeholders, and others. Minnesota state colleges and universities are using WebEx to hold classes as well as administrative meetings. Via WebEx, staff and faculty can meet online with disparate team members across multiple, remote areas. (Watch the video at: <http://vimeo.com/6168579>)

Wake Forest University also employs WebEx conferencing to hold staff meetings, bring outside experts into classes, and facilitate collaboration between faculty, staff, students, and the larger community. Increasing their ability to collaborate has helped university administrators and faculty to streamline processes, engage students, and increase access to learning opportunities. (Learn more at: <http://news.wfu.edu/2011/04/15/wake-forest-to-use-webex-solutions/>) Additionally, the Missouri University System is using Cisco TelePresence<sup>®</sup> to connect the presidents of the individual universities, saving travel time and expenses.

## Modernizing Teaching and Learning

Higher education leaders know that in addition to addressing their culture, they also need to modernize teaching and learning. The most innovative educators are using new technologies to do this. But rather than implementing technology for technology's sake, these educators are closely examining their current curriculum and instruction methods, and thoughtfully implementing technology where it makes the most sense and can have the greatest impact.

Students are very comfortable using a variety of technologies, and our higher education customers are finding that a technology-infused curriculum increases student engagement, because it easily adapts to students' individual learning styles. New, "flipped" learning models provide students with lecture content that they can review in advance of class, so they can be fully prepared to engage in discussion when they arrive in class. And instead of listening to a professor deliver static lectures, students can be prepared to have a challenging, interactive discussion that drives critical thinking skills and forces participation in a dialogue. (Learn more at: <http://www.cisco.com/web/strategy/docs/education/classroomconnect053012flipped.pdf>)

West Texas A&M University is using pervasive video technologies to give students with a media-rich learning experience that engages them in their courses, and provides them with anywhere, anytime, any-device access to lectures, course materials, and other learning resources. (For more, visit: [http://www.cisco.com/web/strategy/docs/education/wTexas\\_cStudy.pdf](http://www.cisco.com/web/strategy/docs/education/wTexas_cStudy.pdf))

## Scaling Best Practices

At Cisco, we are seeing outstanding examples of change, some of which are highlighted here. Others, unfortunately, are one-time interventions, and tend to be unsustainable. We've seen a number of video implementations, for example, that have gone nowhere because they were not part of a larger strategy or plan, and training and culture were never addressed. Across the country, outdated, disconnected video equipment lays scattered in classrooms, lecture halls, and IT departments. How can we ensure that these improvements can intrinsically change our higher education system in the United States, and across the globe? We strongly believe that technology can help in this area as well.

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Cisco TelePresence supports the ability to scale collaboration within the university and across university systems. This videoconferencing solution is easier to use than other systems, and provides a high-quality, immersive experience that rivals live interaction in the classroom.

Paradise Valley Unified School District in Phoenix, Arizona, is partnering with National Lambda Rail, a National Research and Education Network, to connect with universities and other higher education institutions to deliver joint classes. With just one teacher and Cisco TelePresence, PVUSD is now providing instruction to students at multiple schools simultaneously. (For more, visit:

[http://www.cisco.com/web/strategy/docs/education/PVUSD\\_cs.pdf](http://www.cisco.com/web/strategy/docs/education/PVUSD_cs.pdf))

Duke University is using Cisco TelePresence to create a virtual lecture hall, and expand the reach of its MBA program beyond the United States, thereby increasing access and generating new revenue streams. Now, their business school students can access professors, guest lecturers, and business leaders from around the world. In this way, Duke is extending the in-person classroom environment across multiple campuses and into the business world. (Visit: [http://newsroom.cisco.com/dlls/2010/prod\\_021010.html](http://newsroom.cisco.com/dlls/2010/prod_021010.html))

Finally, Cisco recently announced WebEx Social, a new, enterprise collaboration platform that combines the power of social networking, content creation, and real-time communications and collaboration. We believe that WebEx Social has the power to drive the sustainable change required by higher education systems across the world.

(<http://www.cisco.com/web/products/quad/index.html>)

Along with Cisco TelePresence, Duke University uses WebEx Social to provide faculty, staff, and students with a single, unified platform to access learning management systems, student information systems, and other applications for academics, extracurricular activities, and career information. WebEx Social is also coupled with tools for voice and video collaboration within the same platform. As a result, the traditional experience is evolving into dynamic, group-based learning that often takes place outside of the traditional classroom setting.

([http://www.cisco.com/en/US/prod/collateral/ps10680/vds\\_a\\_new\\_classroom\\_experience.html](http://www.cisco.com/en/US/prod/collateral/ps10680/vds_a_new_classroom_experience.html))

Our vision is that WebEx Social will be used by higher education systems worldwide to connect and collaborate, and share best practices, course content, resources, and more, helping drive the scale required to transform the entire system. We believe that this tool is an agent for change, and will revolutionize the way in which higher education institutions deliver the business of education.

## Conclusion and Recommendations

Educators share a common crisis in the delivery of higher learning. They suffer many of the same challenges, with regard to access to quality educational experiences, the need to replace outdated teaching methodologies, and the imperative to prepare students to become part of the workforce of the future.

The global higher education community would do well to share a common approach in helping to transform its systems, using technology to modernize teaching and learning so that learners are fully prepared for next-generation careers.

Cisco recommends the following:

1. Identify those in your community who can help to develop a different kind of culture within your institutions. Think of your community in broad terms; select members from across multiple, diverse areas of your campuses, reach out to cities and towns, and include faculty members and students. Ensure that everyone has input into the vision and strategy, and challenge them to identify issues and develop creative approaches

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to evolving learning. Ask all participants to imagine the possible, and then develop solutions to some of the most challenging aspects of the learning experience.

2. Identify best practices that are working in colleges and universities across the world. Learn what others are doing that is working, and identify the technologies and approaches they are using that will resonate with and meet the needs of your faculty, staff, and students.
3. Post these practices in a social collaboration portal, and invite members to join. Create a dialogue for change within this online medium. Meet regularly over video to share ideas, discuss what works, and find ways to improve learning.
4. Expand the definition of your partners, and make use of this community to help build out your vision and strategy. Consider technology vendors, nonprofit organizations, and other institutions that can help you to execute your strategy.
5. Experience today's video and collaboration technologies to see for yourself how much easier they are to use, and to get a sense of how their reach and impact can help you deliver your university's mission.
6. Consider how you will scale your transformation across your system and between systems.

While change can be daunting, the need to change can be an important catalyst for innovation. Many college and university systems are strapped for financial resources. But those organizations that identify and drive innovation from within can often operate on a drastically reduced budget.

Steve Jobs said, "Innovation has nothing to do with how many R&D dollars you have. When Apple came up with the Mac, IBM was spending at least 100 times more on R & D. It's not about money. It's about the people you have, how you're led, and how much you get it."

The same applies to educational transformation: Innovation comes from within, and technology is a critical enabler to help accelerate change.



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