

TECHNOLOGY AND THE NEXT GENERATION UNIVERSITY

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After besting the world in college attainment for much of the 20th century, the United States now ranks sixteenth in the share of adults ages 25 to 34 holding college degrees.¹ In 2009, President Obama announced a goal to regain the world lead by increasing American degree attainment to 60 percent by 2020. This will require progress on several, seemingly incompatible priorities: increasing access to college, helping more students graduate, and improving the quality of the student learning experience, all in a context of scarce public resources. Achieving all these things at once will require public universities to adopt innovative, cost-effective approaches to teaching and learning, most likely using information technology.

This policy brief describes how “Next Generation Universities” are using technology to enroll, teach, and graduate more students.² These institutions have created clear and accelerated pathways to degrees for students, in part by adopting new technologies both to deliver course content and provide student support. A “Next Gen U” embraces a holistic online student experience by offering not only online courses (either hybrid or fully-online) and credentials, but also student services like early warning systems, counseling and support, financial aid, and even library and research services.

Technology-enhanced education also has the potential to lower costs while serving an increasing number of students. But many universities have not been able to fully

utilize technology to improve learning and manage costs. There are multiple barriers to implementing robust online and technology-enhanced delivery models. These barriers include: funding and costs; faculty buy-in and quality; and meeting the needs of next generation students.

To understand why more public institutions haven’t moved as quickly into the virtual world—transitioning to a Next Generation University model—this brief takes an in-depth look at each of these barriers. It explores the different strategies employed by successful universities including Arizona State University, University at Buffalo, University of Central Florida, University of California at Riverside, Georgia State University, and University of Texas at Arlington to overcome these common roadblocks, and how they’ve shaped their institutional policies to help large and increasingly diverse student populations earn degrees.

Barriers to Technology–Enhanced Education

This report examines three main barriers to implementing technology-enhanced education: *Funding and Costs*, *Faculty Buy-In and Quality Concerns*, and *Serving Diverse Students*. Through case studies, we found that some universities have already implemented practices that can be widely adopted by others working to improve access, learning, and graduation.

1) Funding and Costs. One of the biggest barriers to wide adoption of online technologies is funding. Given the diminishing support from state appropriations, many public institutions are increasing tuition and fees to provide their students with the status quo of services. If institutions did not already have the infrastructure in place to fully support online courses and support services, it can be difficult to find new funds necessary to do so.

Some states have funded online programs that allow students to take courses from multiple public institutions. Such programs need permanent ongoing funding to support development and maintenance of courses.³ If states can't or won't invest directly in technology-based innovation, they should give institutions the flexibility to reallocate their own resources without state intervention. Other common sources for funding include external foundation support, partnering with third-party vendors, federal government grants, and "seed" money from institutional budgeting for special projects.⁴

When developing new online courses and degree programs, institutions need to calculate the "crossover point" where revenues will exceed operating costs and allow for a return on initial developmental expenses. (Some universities are developing online degree programs as profit-making entities in hopes they will generate revenue streams to offset increasing costs of their brick-and-mortar operations.) Cost-management is crucial: it is very possible to spend large amounts of money on programs and approaches that yield no better results than stripped-down versions.⁵ There are ways to contain the high cost of development. For example, with the help of Carol Twigg, Executive Director of the National Center for Academic Transformation, Virginia Tech University and other institutions have had great success in redesigning some of their courses using online technology, ultimately improving learning outcomes while cutting development and implementation costs.⁶

Another way to control development and maintenance costs is through sharing mechanisms like consortia. There are many successful online courses and degree programs that have already been developed by individual campuses, oftentimes operating within state systems of higher education institutions. It may be easiest for institutions operating within a state system to enter a consortium where they can sell, lease, share, or swap courses with other campuses.⁷ Consortia may be especially fruitful given that approximately 25 courses generate a third of all enrollments at four-year institutions.⁸ Consortia could ideally spread the costs around to ensure that these 25 courses are offered online, making the pathway to a degree easier for those enrolling in online degree programs.⁹

Institutions could also cut costs by using open source software (OSS) and open education resources (OER). Open resources freely available online—like massive open online courses (MOOCs)—can be harnessed to cut the cost of course development. By plugging in free resources into current structures of online courses, faculty and course developers would not have to reinvent the wheel. The problem is that with the dramatic increase in the amount of OSS and OER, there is no easy way to find high-quality materials, leaving course developers to sift through an enormous amount of options without any indication of quality. To alleviate this issue, some higher education systems, like the State University System of Florida, have created repositories of vetted OER for faculty and course developers to easily search.¹⁰

Promising Next Generation University Practices:

Arizona State University

Along with providing access to students on campus through online courses, Arizona State University also offers complete certificate and degree programs online through the ASU Online initiative.¹¹ It is ASU's hope that ASU Online will become the first national comprehensive public university fully online. In order to fulfill this goal, they partnered with private sector businesses that helped provide

the capital to rapidly scale the initiative. ASU Online began enrolling students in 2007-08, and just three years later about 3.1 percent of total tuition revenues for the entire university—or \$22 million—came from ASU Online. By FY20, ASU projects that approximately 9 percent of its tuition revenue—or \$130 million—will be from ASU Online.¹² In fact, even though ASU suffered from large state budget reductions that resulted in resident tuition increases, growth in non-residents, international, and ASU Online students helped to moderate the increase. ASU provides a good example of how partnering with private businesses can help provide the capital to scale quickly and in return reap the rewards of revenue to insulate state residents from tuition increases during economic downturns.

University of Texas-Arlington

Back in the 1990s, University of Texas-Arlington was suffering serious enrollment declines, having shrunk from 25,000 to 18,000 students.¹³ Then-president Bob Witt instigated a technology-driven distance-education initiative that rapidly expanded once the state lifted a ban on enrolling out-of-state students in 1999 and allowed the university to waive campus-specific fees in 2000. Under the leadership of Associate Vice President of Academic Affairs Pete Smith, enrollment continued to increase through the 2000s to the point where nearly 5,000 students were enrolled in at least one of more than 600 distance education courses by 2008. And of those students, nearly 1,000 were enrolled exclusively online.

Soon after, UTA joined up with private company Academic Partnerships to help establish and market new online programs in high-volume professional areas like master's degrees in teaching and RN-to-BSN degrees. With the partnership in place, the university's enrollment grew by nearly 50 percent throughout the next three years, from 33,514 students in 2008 to 49,750 in 2011. While Academic Partnerships has helped UTA expand access through marketing and recruitment and improve attainment, UTA retains control over program admissions standards and

academic content. Like ASU, UTA has figured out how to serve more students and bring in more tuition revenue through increased and targeted online initiatives.

2) Faculty Buy-in and Quality Concerns. Faculty buy-in is integral to supporting online offerings. Yet according to a recent Sloan survey of public four-year institutions, faculty with no online development or teaching experience think that the learning outcomes of online courses are not as good as face-to-face courses.¹⁴ One way to build faculty buy-in is to be transparent with faculty and include them in the planning and development process of online courses and degree programs. In Minnesota's State College and University System, administrators have found that the more faculty that develop and teach online courses, the more positively they view online student learning outcomes.¹⁵ Another way to gain faculty buy-in is through offering or mandating training in the development and teaching of online courses.

A related faculty concern is that the development and teaching of an online course may require much more time than a comparable face-to-face course. Because of the extra time and energy that go into developing and teaching online courses, many faculty do not think that they are appropriately compensated and thus have no incentive to move online.¹⁶ When faculty were asked in a Sloan survey why they had been motivated to teach online, approximately 80 percent said it was to meet student needs for flexible access. Only 35 percent of faculty cited that they were motivated to teach online by the chance to earn additional income. This indicates that faculty develop and teach online courses in spite of their institution's incentives, not because of them. Accordingly, institutions may be able to utilize an entirely new set of incentives like giving weight to teaching online for promotion and tenure purposes.

Critics of online learning argue that the quality of student learning outcomes is not as good as face-to-face learning. However, research shows that online teaching can perform as well as traditional classroom teaching and in many cases

can improve student outcomes.¹⁷ Additionally, negative opinions surrounding online education may be eroding among academic leaders, especially at public institutions. In a 2012 Babson Research Group survey, more than 75 percent of chief academic officers responded that online education is as good as or even better than face-to-face instruction.¹⁸

Just like classes at brick-and-mortar institutions, some online classes are better than others. Some replicate lectures by capturing a live lecture via video and streaming it online while incorporating online assessments and assignments. Others purposefully integrate technology, adapting it to create an innovative and interactive learning environment that doesn't exist in face-to-face courses. These well-designed online courses can produce the same, if not better, learning outcomes than face-to-face instruction.¹⁹

Organizations like the National Center for Academic Transformation and Quality Matters exist to help colleges and universities ensure thoughtful design of online and hybrid courses. Quality Matters, for example, started in the fall of 2002 as a consortium of 19 public and independent colleges and universities to address quality concerns in online education.²⁰ Over a period of four years, the faculty established an online course review and improvement system, funded in part by the U.S. Department of Education's Fund for the Improvement of Postsecondary Education (FIPSE).²¹ The consortium developed a rubric that includes eight categories like learning objectives and assessment to evaluate the design of online courses.²² The Quality Matters rubric is used by many colleges either whole or in part to ensure the quality of online courses and provide support to faculty looking to teach online.

Promising Next Generation University Practices:

University of Central Florida

Six in ten students at the University of Central Florida take an online or hybrid course each year.²³ This means that

approximately 2,700 students enroll in an online, hybrid, or face-to-face course *at the same time* in any given semester. Online programs at UCF are well integrated into the university rather than separate from the traditional, residential undergrads. Overall, about 32 percent of classes take place online, which administrators estimate takes the place of five classroom buildings.

With this many students taking hybrid and fully online courses, the university has invested heavily in getting professors ready for a digital future. The university's Center for Distributed Learning serves as a clearinghouse for online learning strategies and practices—including using a modified Quality Matters rubric—and is a hub of training for faculty members. Nearly 1,000 faculty members have completed a semester-long professional development program for online instruction, required of any faculty member who wants to teach online. By supporting the faculty with such a strong course development process, UCF has helped to ensure that the quality of online and hybrid courses is high. Indeed, students prefer hybrid courses to face-to-face courses based on student satisfaction surveys.

Meanwhile, because of the support provided and the analysis of student outcomes, many faculty and administrators believe in the positive outcomes of online education. According to UCF's provost Tony Waldrop, "When I was at the University of North Carolina, there were not a lot of people teaching online and not a lot of people wanted to teach online. So when I came here and saw all this online teaching I wasn't sure of the quality." But the centralized work of the university through the Center for Distributed Learning convinced him otherwise.

3) Serving Diverse Students. While online and hybrid courses are taken by traditional and nontraditional students alike, online degree programs tend to serve a more nontraditional student population. According to a recent NCES report, older undergraduates (over age 24); those with a dependent or a spouse; and those who are employed

full time participate in distance-education degree programs more often than their traditional counterparts (namely, those between the ages of 18 to 24 without dependents).²⁴ Institutions need to put relevant support structures in place for these students in order for their degree programs to be stable and successful.

A joint Sloan-C/Association of Public and Land-grant Universities commission considers student support services to be an important component to the stability and success of online learning initiatives.²⁵ Among the different support services available to students, the most useful, according to administrators and faculty, are individual academic advisors, virtual office hours, and 24/7 technology help desks. But while these services are necessary to help students stay enrolled and on track, they can easily become a hidden cost of online programs.²⁶

Promising Next Generation University Practices:

Arizona State University

ASU, like many colleges and universities, found itself struggling with serving under-prepared students, many of whom never make it through non-credit developmental coursework, and as a result, drop out.²⁷ In 2011, ASU partnered with Knewton, a for-profit company which developed an Adaptive Learning Platform for remedial math. Several sections of remedial math at ASU were moved to this platform. Although it's online, students still meet together in a lab and work through the activities with an instructor present. The Knewton interface was developed to have the look and feel of a video game or app making it a comfortable environment for students. Additionally, Knewton is personalized to students, working at their pace. If a student clearly understands a concept by answering problems correctly, Knewton moves on to another concept for the student to master. This allows students to progress through the course at their own pace, allowing them to finish the class and enter credit-bearing work even before the semester is over.

Another technology-driven solution created to meet the needs of next generation students is eAdvisor, which is ASU's electronic advising and degree tracking system. It helps students explore and understand degree requirements for various majors. It also helps students track progress toward their degrees with every class they take and shows them if they start to go off track (i.e. drop or don't register for a course defined as a critical requirement or don't meet a certain GPA). If a student needs to switch majors, eAdvisor shows him how the courses he's been taking will fulfill the new degree requirements. eAdvisor has been so successful at keeping students on track to graduation that now it has been placed in local community colleges, helping ease transfers to ASU so that students don't waste any credits.

Georgia State University

Georgia State's home page for students is a personalized dashboard that includes over thirty important pieces of live student information.²⁸ For example, the dashboard includes live feeds with the courses the student is currently signed up for, their current GPA, tuition bills and financial aid deadlines, and their advisor's name and contact information. The idea is to take the vital information students need—not just on courses and GPA—so students have it all located in one highly visible place. Previously, students would have had to access 18 different websites and systems to get all this information, but now that it is streamlined they can locate what they need, when they need it. And if they need help, they'll know just who to contact.

Similarly to ASU, GSU has developed hybrid versions of two math courses in College Algebra and Pre-Calculus. These hybrid courses were redesigned because they had some of the highest drop and failure rates on campus. With the redesign, students now attend one lecture class each week and spend the rest of the class time online in a structured lab setting. Students work through personalized, adaptive exercises while an instructor monitors the session and is available to answer any questions. The program has been so successful—improving the non-pass rates by 8 to

10 points—that GSU scaled the courses to meet the needs of 3,000 students each semester.

Observations of Next Gen U: Online Courses & Credentials as Institutional Policy

At the six universities studied as part of the Next Generation Universities project, institutions seem to be pursuing online courses and credentials as a strategy that sets out to either generate revenue to support the brick-and-mortar operations of the university or to increase capacity due to physical enrollment constraints. Generally, the institutions we studied fall on the following continuum with two exceptions (University at Buffalo and University of California at Riverside):



At the far end of the revenue generating spectrum is the University of Texas at Arlington, which developed a significant online presence to deal with declining enrollments and revenues. UTA focused their attention on popular professional programs like RN-to-BSN to not only ensure that their online programs would reach a break-even point, but that they would also help to grow and support the university as a whole.

Similarly, Arizona State University uses Arizona State Online to help bring additional revenue to support the brick-and-mortar operations of the university. But as the largest public university in the United States, Arizona State is also helping to meet campus capacity constraints. Students enrolled at ASU often combine face-to-face, hybrid, and fully online courses to ensure that they are able to navigate such a large university and still graduate in four years.

Both Georgia State University and the University of Central Florida use their online courses and credentials more for capacity building. According to administrators, UCF does not see online education as a revenue source. Instead they see it as a way to free up physical space—taking the place of up to five classroom buildings—and to expand access to serve additional students. A senior administrator interviewed said that UCF does not believe that online delivery can make tenured professors more productive or change the student/teacher ratio in a way that would save costs for their institution.

Meanwhile, University at Buffalo and the University of California at Riverside are pursuing a more restrained strategy when it comes to online courses and credentials. Both serve fewer part time students which suggest that the student populations they draw from may not necessarily be clamoring for the flexibility of online courses. Most of the online strategy they are pursuing has to do with enhancing existing courses with technology. UCR, for example, has 3,500 technology-enriched and/or hybrid courses. Additionally, UCR also has a research effort underway to better understand which students are most successful at online courses. Eventually both institutions will be driven to adopt a more coherent online policy either by their state systems or as they continue to serve next generation students who demand more flexibility with course scheduling.

Conclusion

When it comes to providing technology-enhanced education, no single approach is necessarily best for every institution. How institutions overcome barriers—from funding and costs to serving next generation students—largely depends on their needs, their students' needs, and the context of the state. Similarly, whether institutions should fall more towards a capacity-building model or revenue-generating model for their online courses and credentials depends again on how the university expands to meet the needs of a more diverse student population and the state. And while each of the universities we studied is

distinct, they provide good examples of how technology and online education can be used in different ways to achieve the goals of the Next Generation University model—growing capacity to meet the needs of an increasingly diverse student population in an era of limited resources.

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¹ Daniel de Vise, "U.S. Falls in Global Ranking of Young Adults Who Finish College," *The Washington Post*, September 13, 2011, accessed May 1, 2013, http://articles.washingtonpost.com/2011-09-13/local/35273245-1_young-adults-global-rank-jamie-merisotis.

² For more information about the Next Generation University project including how we selected the institutions for case study read Jeffrey Selingo, *The Next Generation University* (Washington, DC: New America Foundation, Education Policy Program, 2013).

³ Katrina A. Meyer, "If Higher Education is a Right, And Distance Education is the Answer, Then Who Will Pay?" *Journal of Asynchronous Learning Networks* 12 (2008): 45-68.

⁴ Sally A. McCarthy and Robert J. Samors, *Online Learning as a Strategic Asset: Volume I A Resource for Campus Leaders* (Washington, DC: Association of Public Land-grant Universities, 2009).

⁵ Katrina Meyer, *The Road Map to Cost-Efficiencies of Online Learning* (Hoboken, NJ: Wiley InterScience, 2006).

⁶ Carol A. Twigg, "Improving Learning and Reducing Costs: New Models for Online Learning," *EDUCAUSE Review* 38 (2003): 28-38.

⁷ Sally M. Johnstone, "Signs of the Times: Change is Coming for E-Learning," *EDUCAUSE Review* 37 (2002): 15-24.

⁸ Twigg, "Improving Learning and Reducing Costs," *EDUCAUSE Review*, 2003.

⁹ For more information about a consortium approach to delivering public higher education, read Rachel Fishman, *State U Online* (Washington, DC: Education Sector and New America Foundation, 2013).

¹⁰ Rachel Fishman, *State U Online* (Washington, DC: Education Sector and New America Foundation, 2013), 17.

¹¹ Information for this section gathered in part through a site visit at Arizona State University, October 23-24, 2012.

¹² "Arizona State University: Strategic Enterprise Framework," Arizona State University, August 2012.

¹³ Information from this section gathered in part through a site visit at the University of Texas at Arlington, February 5, 2013.

¹⁴ Jeff Seaman, *Online Learning as a Strategic Asset: Volume II* (Washington, DC: Association of Public Land-grant Universities, 2009).

¹⁵ Fishman, *State U Online*, 15.

¹⁶ Seaman, *Online Learning as a Strategic Asset: Volume II*, 2009.

¹⁷ Meyer, *The Road Map*, 2006.

¹⁸ I. Elaine Allen and Jeff Seaman, *Changing Course: Ten Years of Tracking Online Education in the United States* (Boston, MA: Babson Survey Research Group and Quahog Research Group, LLC, 2013), 39.

¹⁹ Fishman, *State U Online*, 34.

²⁰ Kay Shattuck, "Quality Matters: Collaborative Program Planning at a State Level," *Online Journal of Distance Learning Administration* 10 (2007): 3, accessed January 9, 2013,

<http://www.westga.edu/~distance/ojdla/fall103/shattuck103.htm>

²¹ Ibid.

²² Lissa Pollacia and Terrie McCallister, "Using Web 2.0 Technologies to Meet Quality Matters (QM) Requirements," *Journal of Information Systems Education* 20 (2009): 156.

²³ Information for this section gathered in part through a site visit at the University of Central Florida, February 15, 2013.

²⁴ Alexandria W. Radford and Thomas Weko, "Learning at a Distance: Undergraduate Enrollment in Distance Education Courses and Degree Programs," *Stats in Brief*, October 2011.

²⁵ McCarthy and Samors, *Online Learning as a Strategic Asset: Volume I*, 2009.

²⁶ Meyer, *The Road Map*, 2006.

²⁷ Information for this section gathered in part through a site visit at Arizona State University, October 23-24, 2012.

²⁸ Information for this section gathered in part through a site visit at Georgia State University, February 6, 2013.





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