Texas Education Review

Leading Change with Technology-enhanced Education at The University of Texas at Austin: Five Guiding Principles

William Powers, Jr., JD
President, The University of Texas at Austin

Leading Change with Technology-enhanced Education at The University of Texas at Austin: Five Guiding Principles

William Powers, Jr., JD
President, The University of Texas at Austin

Face-to-face interactions among students and professors can never be fully replicated in cyberspace. I believe a first-class college education will continue to consist of a cutting-edge experience at a residential university. Nevertheless, rapidly advancing technology is changing virtually every aspect of our lives, and education is no exception. The changing landscape presents challenges, but it also gives us great opportunities. We need to lead change in higher education, both for ourselves and for the future.

Though it might be hard to believe, the internet first came to The University of Texas at Austin more than thirty-five years ago. In 1977, Texas researchers were able to access and share computer resources remotely through ARPAnet, which was the basis of the modern internet. From the mid-1990s, various divisions such as Continuing & Innovative Education pioneered online "distance learning," but the initiatives were *à la carte*, and enthusiasm for online education was uneven across the campus. Over the last decade, however, advances in streaming video, the development of smart phones and tablets, and the exploding popularity of social networks have fundamentally changed how we communicate with each other, consume news, shop, and learn. Moreover, we have learned a great deal about how our students learn.

We have seen this change coming, and for the past several years, I have collaborated with many national leaders in the emerging field known as blended and online learning. In 2010, I began organizing the Public Flagship Network, which started with a core group of leaders from ten great public research universities, to collaborate on these issues. We have developed an informal consortium of key Texas higher education leaders including universities, community colleges, and university system leaders, and have been working together on multiple initiatives related to educational delivery models. This summer I had the opportunity to speak at the Forum for the Future of Higher Education at the Aspen Institute about these initiatives and the implications of new technology for American higher education. UT's Center for Teaching and Learning has been instrumental in helping us lead the way.

The exploratory phase of this large project is quickly coming to fruition, and now we have reached the stage at which decisions must be made and the work of implementation must be embraced by a larger circle of faculty and administrators. Because we are in a very different place than we were even a year ago, I want to share some thoughts and guiding principles as we move forward.

First, I am always impressed by the high regard in which our faculty and staff are held. UT Austin is a recognized leader on this frontier. Online course materials, software, assessments, and other resources developed by our faculty, students, and staff continue to enhance education here and across America:

- Our professors routinely use new technology to "flip" large courses. This means reversing the traditional order of learning so that students use web resources, like video lectures and interactive problems, to learn the content and skills first. When they report to the

classroom, students are ready to discuss what it means, focus on the most challenging ideas, and work together on hard problems. These efforts have contributed to substantially improved student performance in our introductory courses in chemistry, biology, statistics, and psychology. Similar course redesigns are underway in economics, psychology, government, engineering, mathematics, and classics.

• In psychology and government, faculty members are using new technologies developed by Jamie Pennebaker and Sam Gosling in our psychology department to produce synchronous massive online courses (SMOCs). These technologies can enable thousands of students on and off campus — including students from high schools, community colleges, and other universities — to interact with each other in real time and receive instant feedback to online quizzes.

• We are developing "on ramp" course materials and technology to help students in high schools and community colleges prepare for the demands of a leading public university. This year nearly 1,500 high school and community college students are piloting interactive courses developed by our faculty in Mathematics, Rhetoric, and Computer Science. The content and technologies for the OnRamps courses were specifically designed so that they can be adapted for use by high school teachers and college and university faculty and so that a broad network of students and faculty can contribute to their improvement over time. Starting next year, these courses will be scaled to thousands more students across the state and beyond.

•   We are building massive open online courses (MOOCs) and a new educational delivery and research platform called edX with Harvard, MIT, UC-Berkeley, and other major research universities. Our first four MOOCs launched just this month to more than 100,000 participants around the world. In the next few months we will launch another five, including Jeff Hellmer's jazz appreciation course that incorporates next-generation adaptive technologies, and Jonathan Valvano and Yamesh Yaraballi's Introduction to Embedded Systems that will pioneer the incorporation of a lab component into a MOOC. This work is supported by our partnership with the UT System's Institute for Transformational Learning, which has provided $1.5 million to fund these MOOCs and another $4 million to support the development of new online courses in Liberal Arts and Natural Sciences.

We are working at the leading edge of nearly every form of blended and online learning. But, of course, there is more to be done. UT Austin's mission as a premier public research university demands that we empower our faculty to design and deliver 21st century education. And it is not just technology that is developing quickly, but our understanding of how we learn. The fusion of technology with learning science is enabling us to customize course materials and exams to identify and target students' individual needs.

For us, the purpose of investing our creative effort and resources in this work is clear: to transform our students' lives, inspire their intellectual excitement, and prepare them as leaders, all of which is underpinned by the work and recommendations of UT's Commission of 125.

It is consistent with our mission as a leading public research university to discover new knowledge. It also will

become a key dimension of the design and business model of a 21st century public research university.

It is also consistent with our unique mission as a public flagship university committed to providing broad access to world-class educational opportunities that enable students from diverse backgrounds across the state and beyond to realize their potential.

To ensure that this work continues to be consistent with our broader mission, five general principles should guide us:

1. **Our faculty and academic units control the curriculum.** Our faculty and academic units are responsible for ensuring that online resources, courses, certificates, and degrees reflect the content and rigor appropriate for a leading national university. Without compromising our deep commitment to the academic freedom of a world-class faculty, we should recognize that these technologies amplify the visibility and impact of individual faculty and staff as representatives of the University on a global scale. Our online curriculum should mirror the rigor of our traditional curriculum, and our online courses should feature the same high-caliber faculty. Conversely, data captured and lessons learned from our online programs should also enhance what we do on campus.

2. **We need to support and reward faculty**. Virtually all innovations in society are made by those doing the daily work. Put another way, they can be supported from the top, but they are developed from the bottom up. In our case, that means by the faculty. Our incentive structures need to encourage faculty innovation in this area. Just as faculty members who write textbooks or create devices benefit from their work, we should ensure that faculty who create online content can benefit,

as well as their departments, colleges, and the University. Even when the University sponsors the creation of these resources, our general position should be that faculty own the copyrights for the content they create and grant licenses to the University to use and adapt their content, consistent with Regents' Rules and the law.

Beyond that, we must support our faculty in creating scalable online modules, courses, certificates, and degree programs that reflect our commitment to academic excellence. We must also quickly implement a new technology and support infrastructure to nurture this innovation and research. Over the next few months we must work aggressively to ensure that the necessary infrastructure to sustain these innovations will be there.

3. **The model must be financially sustainable**. As a public university, our main goal is not to make money from courses, but neither can we afford to lose it. Many innovative programs have collapsed because they were not sustainable for their universities and in some cases even made course delivery more costly. The business model of the 21st century public research university cannot simply be a streamlined 20th century model. Creative uses of online resources are not the only solution, but they will be an important part of the new model due to their potential to generate revenue, improve productivity, and dramatically increase the number of students who benefit from our faculty. Ideally, innovations in the use of online courses and course materials will enable our faculty and students to shift their focus from the basic transmission of content toward the transformative learning experiences that characterize a leading research university. We must

support our deans, chairs, and individual faculty members as they develop creative solutions to these challenges.

4.   **We should share content.** Blended learning will never be sustainable if every professor or every university must reinvent the wheel. We have never expected our professors to write all of the textbooks from which they teach; likewise we cannot expect all teachers who use blended learning to generate all-original content. Rather, we should produce content and technology that is sharable across many different platforms. A faculty member might begin with building content for a flipped class on campus, then experiment with using the same resources in an online course. Another might build simulations for a MOOC, then develop training modules to help instructors around the world use that content in their own flipped classes. Yet another faculty member might repurpose interactive content created for an advanced undergraduate course into stand-alone modules that help professionals stay abreast of developments in their field.

These kinds of adaptations can multiply the impact of our online resources, amortize their development costs across multiple projects, and facilitate other educational innovations. Our policies, technology and support infrastructure, and partnerships with other universities and private entities should all be configured to ensure that UT Austin is a world leader in helping faculty develop, implement, adapt, and scale up these innovations. Where appropriate, we also should learn from, leverage, and grant credit for high-quality online content and technology created by other leading universities. Online content and technologies compete directly with textbooks, but they are more likely to enhance than replace our faculty by

liberating them from the more routine aspects of teaching, relieving pressure to organize course materials and design problems, and enabling them to focus more where they uniquely add value.

5. **We must never stop innovating.** Centuries ago, the innovation of printed books created new possibilities in university classrooms because teachers could assign a greater variety of material than merely their own lectures. Similarly, interactive course materials created by our faculty and our colleagues at peer institutions, learning analytics that help us identify and address individual students' needs, and social media tools with the ability to engage great numbers of learners around the world, set the stage for innovations that will define 21st century education. We must support our faculty and academic units in this creative and vital work. We have already been working with faculty on these issues for several years and will be working closely with the Faculty Council to ensure that the University is one of the best places to work in the field of educational design and delivery.

   And in our work to develop and innovate, we must never forget the students, who are, in one sense, the experts. Online experience is second nature to them in a way it might not be to those of us born in an analog age. Students will increasingly expect that their education will be high-tech as well as high-touch. They will want to be part of a university that holistically and effectively incorporates technology into education. Students will be our partners and we will leverage their native-user sensibilities to continuously improve their education. Indeed, many of our faculty members already enlist their

students to create new interactive tools and multimedia products, which can then be used as teaching tools to better communicate scientific discoveries and help more students succeed.

What is more, for residential students these new educational delivery models can help us enhance many aspects of what is most distinctive about a UT Austin experience — not merely the accumulation of credits but participation in research labs, design studios, study abroad, writing seminars, internships, and so on.

As I mentioned earlier, we now have reached a new stage in our evolution. We must make decisions that will lay the groundwork for the decades ahead. And we must bring larger numbers of faculty and campus leaders into this effort. Over the coming months, I will ask our administrative leaders and faculty to work closely with me to identify and address the policy challenges inherent in these efforts. We will also collaborate closely with our peer institutions and outside entities to strengthen and accelerate this work.

The foundation of a UT Austin education will always consist of interactions among our world-class students and faculty. New online content and technologies developed by our faculty, students, and staff will strengthen our students' on-campus experience, improve learning, and accelerate graduation. These innovations will create new educational models that can transcend the time and space restraints of traditional academia. They will allow us to diagnose and address individual students' learning needs. They will enable more flexible educational pathways with even more emphasis on transformative learning experiences that align to needs and opportunities in the 21st - century workforce. They will increase productivity, generate revenue, and save students and their families money. These

innovations will also dramatically broaden UT Austin's impact, not only through our own offerings but also through strategic partnerships with other universities, community colleges, and high schools across the state and around the world.

This will not be an easy transformation, but it is critical, and so it is worth our investment of energy and resources. I am confident these efforts will help support and sustain UT Austin as a leading public research university into the future. In the end, educational innovations from UT will serve far more students than the framers of the Texas constitution ever could have imagined when they mandated a university of the first class.

————————

William "Bill" Powers, Jr. has served as the 28th president of The University of Texas at Austin since 2006. His goal of making UT the best public research university in America has been supported by a sustained emphasis on undergraduate education, including the strengthening of a core curriculum and the inauguration of a School of Undergraduate Studies. In October 2013 Powers began his one-year service as chair of the Association of American Universities.