Part I

The New Digital Landscape

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The Flat Classroom and Global Competition

The new classroom is a flat screen. The leading edge of a transformation in learning through technology can be seen in corporate learning, military training, distance learning, K–12 education, and a plethora of medical, legal, governmental, and other certifications. In 2009, 29.3% of college students were taking at least one online course, up from 21.6% in fall 2007 (Allen & Seaman, 2010). New technology offers new learning environments, expanded potential for environmental and social good, and economies of scale. E-learning is the experience and expectation of our entering students, and it will continue to compete with traditional universities for eyeballs as well as dollars.

At the same time, higher education remains one of the few industries where the price, even though increasingly out of range for many consumers, fails to cover the true cost of delivering the product. A new for-profit sector has removed much of the "overhead" of traditional universities, and is delivering learning more cheaply. In higher education, the pricing gap between cheap and expensive products is colossal, yet there is little evidence that the price difference even remotely reflects the quality of learning. While a handful of elite universities will remain able to charge elite prices because of their brand equity, history, alumni networks, high demand, and limited supply, the vast majority of American universities are about to face a perfect storm of new global technological competition that will put even more pressure and scrutiny on tuition prices. In a reversal of recent trends,

a likely outcome is a reduction in both what it costs to deliver a quality education and what people are willing to pay.

The Ubiquity of E-learning

Outside of the academy, online learning is well established. Corporations and professional organizations have been using video conferencing and e-learning for years in even the most sensitive areas. From Nestle to NASA, corporations and governments use online learning modules, live Web-based classes, and self-paced courses to train employees in equipment operation, sales techniques, emergency procedures, and performance reviews.

Complicated and important things are being taught online. The American Association for Thoracic Surgery has a large and up-to-date E-Learning Center (www.ctsnet.org) with articles and videos on a variety of procedures. Watching a video (available on mobile devices) seems a much better way to learn a new surgical skill than from drawings in a journal. The European Organization for the Safety of Air Navigation (www.eurocontrol.int) offers its Common Core Content for the Institute of Air Traffic Control as online modules. Over 2,000 online aviation schools will teach you to fly, maintain, or dispatch any size airplane or helicopter (www.aviationschoolsonline.com). Google assembled its tutorials, videos, and courses on Web programming into one place but then decided to make this "Google Code University" free, open-source, and available to the world (www.code.google.com/edu). There are courses on programming languages, Web security, and how to make phone apps. These courses are offered by universities, individuals, and companies around the world, but if you do not see what you need you can invent a new course and share it.

Even ethics is being taught online. Most research institutions have a commitment to the ethical treatment of human subjects and require ethics training for principal investigators even for unfunded projects. Government agencies mandate training in

human subjects protection before funding can be awarded. Most institutions use the online course developed by the Collaborative Institutional Training Initiative (CITI), which began its Web-based training program in human subjects protection in 2000. By 2010, over 1.3 million researchers at 1,130 institutions and facilities had completed a CITI course. In 2004, Georgetown University created an online tutorial in scholarly research and academic integrity for all incoming freshmen to take *before* they started classes at Georgetown (https://library.georgetown.edu/tuto rials/academic-integrity). It uses complex real scenarios to teach students the importance of academic honesty, the nature of scholarship, and how research fits into university life.

Developing online learning for corporations is big business. Many large companies have internal learning and development (L&D) departments. The global market for self-paced e-learning in 2009 was $27.1 billion and is predicted to grow by 12.8% a year (Ambient, 2009a). Not surprisingly, the technology industry has led the way; your computer support people take online courses before they install your new software, and Apple and Microsoft offer significant online resources and courses. Is your company ready for International Financial Reporting Standards (IFRS)? Deloitte has e-learning modules that feature "real life scenarios to demonstrate application of the standards, 'coach me' sections to explain the principles and theory, worked examples to show aspects of the standards in action, reference materials, and a printable certificate if you pass the assessment at the end of each module" (www.deloitteifrslearning.com). Deloitte's learning modules have been downloaded over one million times by major corporations and thousands of users in over in 130 countries.

As is the case with classroom instruction, the quality of online courses is uneven, but at its best interactive technology provides not only content, but also practice and individualized feedback that can be difficult to administer in a typical classroom environment. One small e-learning company (www.IsoDynamic.com)

specializes in online courses on complex subjects that require just this sort of navigated feedback. A six-hour course for the Maryland Library Partnership, for example, teaches customer service to librarians using role-playing scenarios that allow users to try new skills in a low-risk environment. Courses in the mental health area include tutorials on administering rating scales for autism and depression in which users practice their skills by observing subjects on video, responding to questions, making assessments, and receiving immediate feedback.

Foreign language learning is also well established on flat screens as a $1.3 billion industry in 2009 (IbisWorld, 2009). One of the largest areas in e-learning is English language learning, predicted to become a $1.69 billion industry by 2014 (Ambient, 2009b). Teaching Mandarin to Westerners using face-to-face instruction on Skype is such a major industry in China that the seventh (!) International Conference on Internet Chinese Education occurred in 2011. It will be no surprise to anyone who has called for technical help in the last few years that American accent training is another growing industry: voice recognition software has been used to teach correct pronunciation since 2005.

The U.S. government is also a heavy user of flat-screen classrooms. The National Institutes of Health (NIH) requires that all principal investigators pass an online clinical research training course (www.cc.nih.gov/training/training/crt.html). The U.S. Food and Drug Administration (FDA) offers online courses through its Center for Drug Evaluation and Research (CDER). CDERLearn (http://www.fda.gov/Training/ForHealthProfessionals/default.htm) offers online training as "one way to share FDA expertise with many more people than face-to-face classroom sessions would allow." Researchers can learn how to bring an unapproved drug into compliance, whereas physicians can learn how to communicate risk to their patients. Many state and federal agencies, like the federal General Services Administration, outsource

their training, compliance, and professional development to Web-based e-learning companies.

The U.S. Army continues to use simulators with huge screens, realistic cockpits, and hydraulics, but it also now employs a wide variety of simulations that run on regular computers (including the free *America's Army*, www.americasarmy.com, which doubles as a recruitment vehicle) and mans its own gaming unit. The Department of Defense (DOD) has subsidized college tuition for active-duty service members since 1947; with over 400,000 men and women in the U.S. Army, Navy, Marines, Air Force, and Coast Guard the DOD spent $474 million on college tuition in 2008 (Golden, 2010). While traditional colleges still serve the majority of these students, many of these potential students are in remote areas, and online education and for-profit universities have been particularly aggressive in recruiting their business. Many service members already complete fully online degrees, but many others will be looking to transfer these credits toward degrees at four-year schools.

Learning management systems (LMS, formerly known as course management systems or CMS) software is now standard even in elementary schools. Parents expect daily updates on grades, but, more importantly, students expect to find assignments, tutorials, and help online. Today's students have been learning on-screen for years before they start school, and the homework tutor is more likely to be a flat screen than a parent. In addition to the millions of videos and podcasts from YouTube and iTunesU, there is also University of Illinois professor Bill Hammack, the engineering guy (www.engineerguy.com). From public broadcasting (www.PBS.org/teachers) to museums (www .moma/org/modernteachers), institutions of all sorts are creating, and often giving away, educational content and resources (see www.TeachingNaked.org for a growing list).

The most popular homework tutor, and in fact the most popular educator online (Young, 2010), is Salman Khan, a young

Harvard MBA with degrees in computer science from MIT whose online Khan Academy has 70,000 students a month from all over the globe watching 35,000 videos a day (www.KhanAcademy .org). Khan began with a complete math curriculum (organized into what he calls "playlists") from basic addition through calculus, linear algebra, and differential equations. With over 3,100 videos (now including his newer ventures into biology, chemistry, physics, finance, and even history), mostly in high-definition, Khan aspires to provide a free education to anyone in the world in 10-minute chunks.

With over two million lessons delivered per month and grants from the Google Foundation ($2M) and Bill Gates ($1.5M), the Khan Academy is a growing revolution. In addition to its huge body of content videos, Khan has introduced a (free) software package including a detailed knowledge map that can track progress and guide students to new problems tailored to their level. Students have to get 10 correct answers in a row to move on, and they collect badges for various levels of effort or accomplishment. For students, it is like a giant video game. Parents and teachers can get detailed and live information on students' performance, including every problem done, time on task, what videos they have watched, and where they might be stuck. Teachers can also see the progress and proficiency of an entire class on color-coded maps, with green for mastery, yellow for working on it, and red for students who might need teacher intervention. In trials, teachers have already begun to invert their teaching model. Rather than suggesting Khan lectures as a supplement, teachers are using Khan as the primary content, delivered online when students are at home so that they can do "homework" in the form of practice exercises during class time (Thompson, 2011).

For established schools, these resources are a wonderful new supplement, but for the estimated one to two million home-schoolers, online resources are a revolution. One million high school students were enrolled in online courses in 2007, and that

number is growing even more rapidly than enrollment in college online courses (Van Der Werf & Sabatier, 2009). One study at Harvard predicts that half of all high school courses will be delivered online by 2019 (Christensen & Horn, 2008). That revolution will transform existing high schools and make the option of home schooling much easier and more attractive. Then those students will want to get college degrees.

The point here is not that online learning is better but just that it is here. Outside of traditional higher education, online resources have been transformative: you can already become a pilot, pharmacist, veterinarian, lawyer, or a rabbi online. With other industries believing that learning can take place on a flat screen, online learning challenges higher education's traditional course delivery model and its ability to increase tuition. The breadth of technologies, the capabilities of recent software, and the amount of free content will surprise most faculty. Most university professors and administrators are keen on additional resources for students, especially free ones. As long as these technologies expand what we already do (and since most do not threaten traditional colleges), we can probably be convinced to use online resources as a supplement. This tepid embrace, however, will change. With the high price of traditional models, new technology that puts interactive information, video, or gaming at the user's fingertips is already competing for some of higher education's traditional students. A large global market wants cheap, high-quality, online education, and American students increasingly want more flexibility and convenient schedules. Someone will meet that demand. American not-for-profit higher education needs to adjust to meet this new competition.

The Inevitability of Competition

The global market for online education is being most aggressively pursued by for-profit universities and e-learning companies. While

American higher education has recognized that online video content, LMS, e-mail, and educational gaming are transforming students and classrooms, we have been slow to recognize these same forces as a source of competition. American universities are eerily like General Motors in the 1970s. We are far enough ahead of the rest of the world, in both brand recognition and quality, that it will take time for the competition to make a serious impact. But like Detroit in the 1970s, our very success makes it harder for us to see how radical are the coming challenges, and few universities are yet taking seriously the threat of new products and changing consumers.

The advantages of a new technology are often hardest to see if you are surrounded by a previous technology that works. Americans, with our tremendously successful landline infrastructure, were slow to adopt cell phones, even though we had the money to invest in new technology. The benefits of cell phones were more quickly realized in poor regions of the world with no landline infrastructure. The importance of a cell phone (even a phone with poor reception and no Web or video) is most obvious to a person who has never had any phone. Likewise, the revolutionary importance of Wikipedia is much more apparent to the isolated individual in the third world than to university scholars surrounded by lecture halls and libraries. No one at Yale needs a virtual physics lecture, but for the majority of the world, Open Yale Courses (www.oyc.yale.edu) provides the first access to this experience. The Internet, like the book before it, is making a wealth of knowledge available to the people who could previously not afford the privilege of any higher education.

The Internet also enables increased competition between professional and amateur and between accredited, licensed, and unlicensed. There is still a wide quality gap between the best professional work and the worst amateur work, but before the Internet there was no way for even the best amateur, unaccredited, or unlicensed work to get into the public domain. In the past, only college professors could get teaching materials for college

published: now anyone with an Internet connection can post review sheets or tutorials. As in all fields, some of the best amateur work is proving popular and highly successful. Most parents don't care whether the advice comes from a PhD; they care only if the kids can finish their math homework. Thus, the Khan Academy is popular because it works, not because Khan went to Harvard and MIT (although that probably helped with the early marketing). The Internet has challenged traditional universities with a completely new and global source of competition that cannot be regulated away.

Higher Education Online

Numerous new studies demonstrate that students want even more online learning and that even the most traditional colleges and universities will need to start providing it. The 2011 Sloan Survey of Online Learning received responses from 2,512 of the 4,523 degree-granting institutions in the United States. (Since smaller colleges are less likely to report, this response represents 80% of higher education enrollments; Allen & Seaman, 2011). Since 2003 (when the annual report began) the growth in online education (10.1% in 2010) has greatly surpassed the growth in overall higher education (0.6% in 2010). By fall 2010, 6.1 million students (31.3% of all college students in the United States) were taking at least one college course that was delivered at least 80% online, 560,000 more students than in 2009. Bad economic times generally drive more students to higher education, but online courses are attracting more than their share of students. While 48.8% of institutions saw increases in demand for face-to-face instruction, 74.5% saw increased demand for online instruction.

The Minnesota State College and Universities system plans to increase the percent of course credits delivered online from 9% in 2008 to 25% by 2015. The University of Minnesota has published two large studies, one about faculty and one about students. The student survey (Walker & Jorn, 2009b) discovered that students

still wanted face-to-face instruction but were generally comfortable with educational technology and were highly supportive of mobile technology. The percentage of students in Minnesota state institutions who had taken at least one online course soared from 11.3% in 2001 to 45.1% in 2009. In contrast, the parallel faculty survey (Walker & Jorn, 2009a) found that the percentage of Minnesota faculty who are teaching online (about 9%) or even using online technology in their courses (about 70%) is virtually unchanged.

Large public institutions continue to offer the most online courses and enroll the most online students. The institutions with more than 15,000 students make up 14% of all institutions with online offerings, but they educate 64% of online students. Institutions with over 1,000 students make up less than half of the total institutions with online offerings but educate 94% of online students. Smaller institutions may join the competition, but for the moment the online arena is for large players. While 65.5% of all reporting institutions say that online learning is a critical part of their long-term strategy, a growing proportion are for-profit universities, which now enroll 9% of all undergraduates in the United States ("Growth in for-profit," 2010). The for-profit sector has created new competition with an increasing number of fully online degrees, but a number of traditional nonprofit universities (including Boston University, Northeastern University, Penn State, and the City University New York [CUNY]) are now offering online bachelor's, master's, and even doctoral degrees. Online education is here and growing faster than traditional higher education.

The *Chronicle of Higher Education* report on the student of 2020 (Van Der Werf & Sabatier, 2009) predicts even more fundamental changes. It concludes that there will be fewer traditional students to go around and that both three-year degrees and five-year programs (with a remedial first year) will proliferate. Students who choose a traditional four-year degree will be more likely to be part-time and will want the flexibility and convenience of hybrid class

schedules with night and weekend meetings, online learning, and the ability to take courses at multiple universities at once—something that technology will facilitate. They predict that **"colleges that have resisted putting some of their courses online will almost certainly have to expand their online programs quickly"** (p. 4, bold in original). For universities that are largely residential, "hybrid" courses will dominate and become the norm: lectures, office hours, and assignments will be held online more and more.

Online products are only at their first stage: we've yet to see or even imagine what the luxury online education course will look like. Honda, Toyota, and Datsun hardly looked like a threat to the established Detroit brands in 1970. As gas prices stabilized, and with most Americans still wanting bigger cars and a brand they could trust, Detroit resisted change. No one in the American auto industry imagined the potential of improved quality and the introduction of luxury models on the part of the cheap competition. Honda introduced Acura in 1986, followed by Toyota's Lexus and Infiniti from Nissan (which replaced the Datsun brand) in 1989. The University of Phoenix is already the world's largest university and may be the Honda of our age. What will its Acura look like?

With less financial aid available at for-profit than at not-for-profit schools, student debt is much higher for grads of the former: in 2007 the average debt at graduation was $18,800 at a four-year public institution, $23,800 at a private nonprofit, and $38,300 at a for-profit. The for-profit world is results focused and growing exponentially (currently 4% of all BA degrees) and more focused on online education (Allen & Seaman, 2011). Students seem willing to go into debt for convenience, because for-profit education is attracting students despite higher cost. Whether because of results, convenience, or marketing, for-profit bachelor degrees are another new source of competition for traditional institutions.

With the economy and the public already putting pressure on traditional colleges, these huge technological shifts and the

increased competition could hardly come at a worse time. But we can't turn back the clock. Now, before a market correction of falling demand and prices hits as well, would be the perfect time to examine our most fundamental assumptions (our common sense) about how higher education is organized, how learning is achieved, and how we pay for it.

Learning or Credentials?

While higher education is under pressure for change as a result of new technologies, equal pressure comes from increasing expectations from parents, students, and public officials, all of whom are interested in the value and quality of education: where do students learn the most? While teachers, parents, students, administrators, and policymakers have begun to understand that change is happening, the impact of technology has an unlikely accelerator in the completely nontechnological new interest in accountability.

U.S. News and World Report ranks American universities mostly on the basis of input factors (selectivity and SAT scores) with a nod to potential quality factors (class size, retention, and graduation rate). The current output factors are indirect at best, like the rate of alumni giving (which assumes that alumni give in relation to the quality of their experience). This is a bit like trying to buy a car by comparing which uses the most expensive materials; it is at best an indirect measure of reliability and does not tell you about workmanship or value. Parents, students, legislators, accrediting agencies, foundations, and even universities, however, are showing a growing interest in the quality and value of the education: at which institutions does the most learning take place, and how do we know?

As public trust has declined and parents worry about increasing tuition, accountability in higher education has become a part of the ongoing national political cynicism about schools

in general. With Congress concerned about foreign competition, U.S. Secretary of Education Margaret Spellings formed a Commission on Higher Education in 2005. The report (Miller et al., 2006) focused on access, affordability, quality, and especially accountability. While they were controversial, the calls for accountability resonated, and universities, accreditors, and state legislators all began to look for ways to measure real outcomes. Several groups began collecting and publishing data, and the Collegiate Learning Assessment test of critical thinking and writing skills is now used by hundreds of schools. Studies on faculty productivity have taken this drive for accountability to new levels, especially in Texas, where published reports prompted the University of Texas System to make substantial changes. In August 2011, the system announced it would increase transparency, raise four-year graduation rates, expand the use of technology, and allocate $10 million for a Productivity and Excellence Framework that would give students, parents, and legislators access to an interactive, online database, with detailed measures of productivity and efficiency (Mangan, 2011). Further, as Congress moved in 2010 and 2011 to regulate the for-profit college industry, they extended many of the new regulations to all colleges. Accountability and regulation will continue to increase even for not-for-profit private colleges.

One result of the Spellings Commission report was the founding in 2007 of the Voluntary System of Accountability (VSA) by two large associations of public colleges and universities and with support from the Lumina Foundation. Members of the VSA commit to developing websites (www.collegeportraits.org) that deliver consistent information in a consistent format about student learning and experiences. Such transparency will help improve the comparison shopping experience, but will it become an accepted way to measure quality for either faculty or the public?

The increasing pressure for accountability cuts both ways. Current faculty common sense tells us that a four-year campus

experience delivers more content knowledge with better writing, communication, and critical thinking skills than the online alternative, but we will eventually be forced to prove that our graduates have these skills. In an additional challenge to traditional higher education's monopoly on postsecondary learning, the idea of using online content or work experience as an equally valuable substitute for traditional college degrees has found advocates and developed an infrastructure. The paradox is that assessment, the very tool needed to assure wary parents that learning happens in expensive private colleges, will also allow the much cheaper competition to demonstrate the same benefit. A transparent and fair way to assess the relative skills of potential employees has long been sought by employers, and a grade point average and transcript are a poor substitute. E-portfolios and standardized assessment will level the playing field but also will suggest some radical unintended consequences.

In *DIY U: Edupunks, Edupreneurs and the Coming Transformation of Higher Education*, Anya Kamenetz (2010) demonstrates ways students can already assemble an education from the available free online courses. Those who work at (or paid for) high-tuition universities will continue to be skeptical; if a cheap for-profit degree can't be as good, how can a do-it-yourself degree provide real learning? For most people, however, self-teaching is a common path to success. Leonardo da Vinci, Benjamin Franklin, Abraham Lincoln, Thomas Edison, Herman Melville, Woody Allen, Frank Lloyd Wright, Bill Gates, Louis Armstrong, Steve Jobs, and J. K. Rowling all assembled skills and learned where they could. Now there are many more opportunities for self-learning, and we will soon have better ways to evaluate the quality of that learning.

E-portfolios have become a widely accepted way to chart and capture student learning on college campuses. Most common in schools of education, they are routinely used by school districts to screen potential teachers. Universities think of e-portfolios as

administrative tools to track student or faculty performance, but they also provide a portable and potentially universal assessment tool that employers can use to hire graduates.

Learning Counts (a collaboration of the Council for Adult and Experiential Learning, the College Board, and the American Council on Education) and Knext (a Kaplan Higher Education project) are two new online portals for assessing workplace skills for college credit (Glenn, 2011). Credit for experience is not new, but these portals allow students to build a portfolio that is assessed by professors and then have (in theory) a portable and universal tool for demonstrating what they know. Why not, then, bypass the credit entirely and simply submit the portfolio to employers? (The Open Badges project from Mozilla, and funded by the MacArthur Foundation, aims to do just that; see Chapter Ten.)

Detroit in the 1970s did not predict that Japanese auto manufacturers could make better luxury cars or that consumers would want cheaper, smaller, and more gas efficient cars, and they certainly never imagined that consumers would pay more for hybrid or electric cars. Detroit resisted fuel efficiency standards that would have forced it to make better cars that could compete effectively. When the U.S. Department of Transportation and the Environmental Protection Agency began requiring window stickers with fuel efficiency for all cars in the late 1970s, consumers could decide for themselves. If an expensive university education is better than *DIY U*, we had better find ways to prove it.

A Pricing Structure That Will Not Survive

At the moment, the price of learning is radically differentiated. MIT Open University, the hundreds of schools on iTunesU, the Khan Academy, Google Code University, Udacity, Coursera, EdX, and many more are giving away content, while the brand-name products are increasingly unaffordable to most Americans. When free blogs and other sites began offering amateur content, the

journalism industry thought that people would continue to pay more for their higher-quality product. Academia can hope that people value a traditional college experience more than they did newspapers, but in the meantime we need to examine our pricing structure very carefully. For the moment, higher education has a huge advantage in that we sell status and credentials and not just learning. But that advantage is temporary.

For the consumer, there is increasing choice in a new and largely unregulated free market. A high school student looking to take a three-credit introductory college course in economics, for example, has the choice of paying:

1. Nothing and taking the advanced placement high school course, which might or might not transfer as college credit
2. $120–300 ($40–100/credit) for an online course at a local community college, which combines the responsibility and flexibility of being more self-directed with the potential for transfer credit into a four-year college
3. $600–1,200 ($200–400/credit) for an online course at a for-profit college
4. $900–1,500 ($300–500/credit) at a four-year regional university
5. $3,000–6,000 ($1,000–2,000/credit) at a major private university

While it will certainly look better to see a transcript from Harvard University, most employers will focus on the institution that granted the ultimate degree, so there is limited value in paying full price for every course. Parents and students are increasingly looking for summer school courses at local community colleges with the idea of transferring the credit to their four-year home institution: it is simply a cheaper way of getting the same degree. One clever California father discovered that his sextuplets could each collect a year of college credits from the

local community college while in high school and then a year of University of California credits while enrolled—and paying tuition—at the local community college. So each of his children received college degrees three years after high school and each received the coveted University of California degree, but he paid for only one year each of University of California tuition.

It is reasonable to ask where the most learning will occur. Is there really 10 times more learning at a four-year college, or is it just 10 times the price? Will a Nobel Laureate (or his teaching assistant) really be a good teacher for introductory economics? Will the course on a college campus have more interaction than an online course, or will the teacher just stand and deliver? Colleges need to be prepared to answer these questions.

University pricing resembles wine pricing: there is enormous price variation in the market, but it is difficult to tell how different the actual products are. Both wine and higher education are subject to complicated rating systems and a belief that the experts can truly tell the difference, but the abundance of exceptions seems to undermine the basic value proposition. With more than 6,000 blind tastings as evidence, the relationship between wine ratings and price is small and actually *negative*: on average even wine experts enjoy more expensive wines *less* when they do not know the price (Goldstein et al., 2008)! It does not matter if expensive wine is not actually better, but it tastes better if we think it costs more. Similarly, it ultimately does not matter if a student learns more with an Ivy League education. As long as everyone else believes that a given education is better, it will be in high demand and continue to bestow genuine benefits. In the same way that a bottle of wine is about the quality of the experience, a college degree, in the current market, is really more about buying a credential or a degree than it is about buying learning. Both consumers and providers have been willing to continue their shared misconception, since little else could justify the massive price variation in both wines and education.

Value, however, is an increasingly important proposition in the college marketplace. Parents and students already make decisions based upon cost. As competition increases and accountability provides easier ways of comparing outcomes, traditional education will need to provide justification for its added expense. Knowledge is now freely available on the Internet, and physical campuses cannot beat the online competition for cheap delivery of content by providing live versions of online lectures. Fortunately for colleges, employers clamor loudly for graduates with better communication and thinking skills, exactly the stated focus of many college curricula. Competition in a free market is a good thing, and in many ways physical colleges are ideally placed to provide a better learning experience.

Creating Value

American universities, however, need to reexamine core beliefs. A liberal arts education was genuinely transformative for faculty—that is why we became faculty—but this is not generally true for undergraduates, most of whom find that a liberal arts education only confirms the beliefs and assumptions they had when they entered college (Blaich & Wise, 2011). A liberal arts degree (the BA received by most American undergraduates) can indeed prepare students for a life of in-depth analysis and critical examination, but we cannot take it for granted that our curriculum or teaching methods are producing these skills (Arum & Roksa, 2011; Palmer, Zajonic, & Scribner, 2010).

If critical thinking matters, then developing it needs to be one of our central learning goals. It is at best a paradox, at worst appalling, that although we say we want to develop critical thinking skills, we structure most of higher education around delivery of content. The reason for this mismatch is that college teachers in general have no formal preparation for teaching, so they teach as they were taught, going back in an unbroken chain to the

founding of Bologna, Paris, and Oxford universities in the 11th and 12th centuries (predating the invention of the printing press). We need to adjust our classrooms to focus less on content and more on application of material to new contexts, development of intellectual curiosity, investment in the material, evaluation, synthesis, challenging personal beliefs, development of higher-level cognitive processing, oral and written communication skills, construction and negotiation of meaning, information literacy, connection of information across disciplines, teamwork, and reflection on the significance of content. The Association of American Colleges and Universities has, in fact, already developed a set of essential learning outcomes as part of its Liberal Education and American's Promise campaign (AACU, 2007). All of these skills are best developed through interaction with faculty in small group situations (Astin, 1993; Kuh, Kinzie, Schuh, & Whitt, 2005). Technology, largely used outside the classroom to deliver content, can be an important tool to prepare students for classroom discussions and to increase the class time available for those discussions and other active learning. A college education can (and should) change minds and lives, but it will require some curricular and structural changes to make this happen.

The central argument here is that to add value and compete in the next centuries, universities will need to do much more than just deliver content: that will be done more efficiently and cheaply online. To provide the sorts of critical thinkers that employers, governments, and the public now insist on, universities need to rethink both the use of technology and the design of the liberal arts education. The accountability movement will only increase the importance of achieving and demonstrating student learning. But even without external pressures, as faculty, we should care if our methods are working. Knowledge can open minds, but research demonstrates that application, integration, and personalization of content opens more minds more effectively (Fink, 2003; Zull, 2004). We need better pedagogy; only more learning

will provide the extra value to justify the high cost of a bricks-and-mortar education. While the top 20 brands may be able coast along without much immediate change, most universities need to both provide and demonstrate that they deliver better learning to survive in the new competitive environment.

Education in the New Global Marketplace

There is still a difference between listening to an MIT professor on your iPod or completing an MIT Open CourseWare course and attending MIT. Open CourseWare, however, has dramatically reduced the value of a bad lecture. In 2007, if a student were sitting in a bad or boring lecture in freshman European history or physics—the kind given in large lecture halls on almost every campus in America—the student had few options. There was always the textbook, and there might be a learning module online somewhere that explained the material or a set of notes posted by another student or perhaps even an eager teaching assistant, but there were few alternatives to sitting through the actual lecture. Now there are dozens of competing lectures from the most prized teachers at our most elite universities.

Technology has changed the marketplace, and traditional universities face competition from both directions. On one hand, large public and for-profit universities bring an economy of scale to a huge new online learning market. On the other hand, universities can and should play an important role in free projects designed to do social good (like the Khan Academy or Udacity) or simply to harness the potential of social networking (like YouTube and Wikipedia). An online MIT course might not be the same as attending MIT, but it still provides a resource that can improve lives and help the global economy.

There are, then, four current business models for higher education, not all of which will survive. The first is the free model, which major universities, governments, and philanthropists seem

willing to support: the University of the People founded by Israeli entrepreneur Shai Reshef with $1 million of his own money has hundred of professors volunteering to teaching students from all over the world (www.uopeople.org). After 23,000 students (of the initial 160,000) completed Sebastian Thrun's free online artificial intelligence course (which he offered simultaneously to 200 paying students at Stanford), Thrun gave up tenure at Stanford to start the free Udacity.com. In February 2012 he launched the first two free classes, both in computer programming, with the goals of attracting 500,000 students. These projects will continue.

The second is the elite university model in which the product is really a brand and a credential. A large or powerful alumni network does indeed have career value, so the investment may pay for itself in networking. This model will survive as parental and employer demand continues to be higher than supply, and there may be no need to demonstrate learning as a return on investment. The third is the model that for-profit and community colleges have adopted: results-oriented, flexible, convenient, jobs-focused training. Students are clearly willing to pay for it, and demand will continue to rise.

The vast majority of U.S. colleges and universities, however, are none of these and continue to pursue a fourth model that is about to change. Traditional institutions without an elite national brand are increasingly expensive. They are often residential, and their business model has relied upon the number of 18- to 24-year-olds increasing every year. In every region except the South (due to a growing Hispanic population) this demographic trend is over, and the number of high school graduates will continue to fall (Van Der Werf & Sabatier, 2009). The only enrollment growth will come from older learners, part-time students, and students who want online courses. Such a shift will pit traditional universities that have historically been slow to adapt against new free resources or largely for-profit institutions that have made flexibility and adaptability a trademark.

The future will surely bring more convenience and more options for students. The marketplace will contain more for-profit and global and even free universities. State system tuition will continue to increase faster than private university tuition in the short term, but some state systems are aligning with their community colleges to offer more ways to get cheaper four-year degrees. Faculty may object to universal articulation and transfer agreements, but legislators and parents love their efficiency and low cost. While elite institutions may be able to increase tuition, most traditional universities will face the choice of either freezing or even reducing tuition to compete with cheaper options or demonstrating that there is additional learning and value that comes with the additional cost.

One way or another, new technology is drastically changing market conditions and the nature of our product. The good news is that the worldwide market for education is enormous. The bad news is that a large swath of American higher education (whatever its additional value) simply costs more than most of the market can pay, and our current financial model requires constant tuition increases that exceed inflation. In the short term, American higher education (especially the strong regional universities) can carry on selling a high-priced product to the elite few who can pay or using dwindling state subsidies while they last. Ultimately, however, the unique set of circumstances that has allowed both a lack of accountability and constant tuition increases is disappearing quickly. Technology has created new competitors, new expectations, and a global market for higher education. We have a window of opportunity to reinvent ourselves, but with a culture that values process and self-governance, universities are not good at rapid response to market conditions.

Technology offers an abundance of content. Technology also offers myriad new learning environments, multiple points of entry to every concept, an easy and cheap way to increase instantly the diversity of our student populations and our course offerings,

instant connection and constant interaction with students, massive quantities of data about what students are doing and how they are learning, and more resources for improved teaching than ever before. The challenge for universities is to take advantage of the new possibilities that e-learning provides to improve and prove learning across the curriculum.