

Blackboard



Future Forward: The Next Twenty Years of Higher Education

Higher education is a dynamic and rapidly evolving landscape. As a pioneer in educational technology, Blackboard understands how important thinking about the future can be. This is why we are partnering with the education community to better understand the future of higher education. Enabling student and institutional success in this fast-changing environment is an integral part of our mission and something we are deeply passionate about as an organization.

The world has changed in the twenty years since Blackboard began. In 1997 the internet was still in its infancy with only around 119 million users. Distance education, a concept that began in Sweden during the mid-19th century, was only beginning to transition from analog to digital delivery. And a mere 3.67 per 100 people subscribed to mobile phone service. Today, we live in a much different world with over 3.49 billion internet users and half of all web traffic generated by mobile devices. And colleges and universities around the world are turning to digital learning as a way of expanding educational access and improving quality—almost 80 percent of students recently surveyed by Global Shapers reported having taken an online course.

Blackboard is proud to be a part of this digital revolution. Today we are excited to explore new technologies and services that have the potential to greatly improve student and institutional access and success, whether it be artificial intelligence, data analytics, universal accessibility, natural language processing, or adaptive learning. We are committed to innovating for an even brighter, more informed future of education. In that vein, we're proud to provide the public with this collection of interviews with higher education leaders on the future of higher education in the United States. We hope these interviews will spark conversation, learning, and the exchange of ideas about the future of higher education that is so necessary for its advancement.



BILL BALLHAUS
Chairman, Chief Executive Officer and President
Blackboard Inc.

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INTRODUCTION

Twenty years ago, when technology-assisted learning was still in its infancy, Blackboard launched one of the first learning management systems. Since then we have been committed to helping learners and institutions thrive in a complex and changing educational environment. We understand that educational technology and services improve access and make higher education possible and available to all learners regardless of time, place, or learning style. What better opportunity than our 20th anniversary to take stock of where we have been and, more importantly, look ahead to our future.

Looking back

Blackboard began in 1997 with the merger of CourseInfo LLC, one of the first LMS developers, and Blackboard LLC, a nascent educational technology consulting company working with IMS Global Learning Consortium. That merger was prompted by the realization that in the still young digital age, institutions needed a platform to best leverage the power of digital. Shortly after the merger, we released our first learning management system, Blackboard CourseInfo, a game changing platform for learning. As we worked with more and more institutions, we began to understand the need for and challenges inherent in an integrated set of technologies.

Learning has never been about only one time and place; it's about the lifecycle of the learner from K-12 to post-secondary and professional life. In an effort to help institutions navigate an increasingly complicated environment and find ways to best meet the evolving needs of their stakeholders, we expanded our suite of products and services beyond the learning management system in order to meet the holistic needs of learners and institutions

throughout the entire lifecycle of the learner. Over the last 20 years we've grown from offering a learning management system to offering a comprehensive set of technological and service solutions including community engagement tools, mobile apps, enterprise consulting, and enrollment and retention services. In 2000, we introduced what eventually became Transact, our unified transaction, security, and financial solutions technology, and in 2010 we launched Blackboard Collaborate, our synchronous, online collaborative video conferencing system.

That same year, in an effort to help institutions better understand their learners, we launched Blackboard Analytics, a data warehousing and business intelligence system. As analytics has become more and more important for institutions, we've expanded our tools in this area culminating in the launch of our predictive analytics system in 2016- Blackboard Predict. Most recently, we are helping institutions assure universal accessibility in their classrooms through Blackboard Ally, a LMS agnostic technology. Ally automatically generates alternative accessible versions of course materials, provides instructors with feedback on the accessibility of their course content, and provides the institution with an institution-wide course content accessibility report.

We've also learned that some of the best innovations that end up in higher education originate in other places. Over the last 20 years we actively sought the best ideas and practices from other sectors including K12, corporate training, and government training and operations. By expanding our depth and breadth, we have a better understanding of

learners, educators, and institutional needs.

When we began working with institutions twenty years ago, digital learning was still in its infancy. Learners were largely confined to using desktop computers, and broadband was just being introduced into the home. Limited by slow connections and low processing power, digital education largely kept learners tethered to their desks and internet connections with static content. Completely asynchronous, learners could feel isolated from the rest of their classmates. But the emergence of smart phones in the late 2000s, especially the growth of 4G LTE networks, has revolutionized learning. We've seen rapid miniaturization coupled with monumental increases in computing power, which should come as no surprise to anyone familiar with Moore's Law. And when we add into the mix ubiquitous public Wi-Fi and cheap cloud storage and services, we see a society that spends more time on mobile devices than desktops.

The ubiquity of mobile has also led to an explosion in the data we create. In 2015, 11 billion connected devices produced an estimated 12 zettabytes of data (a zettabyte is the equivalent of one trillion gigabytes). And data production is increasing exponentially; by 2025 there will be an estimated 163 zettabytes of data produced by 80 billion connected devices. Simultaneous to this tsunami of data is the exponential increase in both consumer and scientific computing power. Between 1951 and 2017 consumer chip speeds increased by almost 16 billion percent and scientific computing now has the power to make over 93 quadrillion functions per second. These sorts of exponential advances in computing power coupled with the explosion of data are making artificial intelligence (AI) a reality. And that AI is being harnessed to do everything from determine when students are most at risk of dropping out to assisting the registrar with

scheduling to powering chatbots that can be used to provide on-demand student support. In short, AI takes all of that data and helps us act on it.

Looking forward

The last twenty years have brought monumental change; what will the next two decades hold for higher education and Blackboard? We believe that the way people learn and interact with campus services is dynamic and constantly evolving. Our mission is to help learners of all levels and organizations of all types to thrive in this dynamic new world. When we look forward to 2037, we're especially excited about the ways in which educational technology can help solve some of higher education's most difficult challenges around student access and success.

One of higher education's greatest accomplishments across the globe over the last twenty years has been expanding access to more and more learners—first with the advancement of online education and now with the immense gains being made by mobile technologies. Now more than ever we access the internet and the world through our smart phones. By the end of 2017 an estimated 44% of the world will own a smartphone, and 59% will own one by 2022.¹ That translates into 2.32 billion smartphone users in 2017 and 2.87 billion in 2020.² And we are increasingly using these smartphones to access the internet-- more than half of 2016's global web traffic came from a mobile phone.³

This explosive growth of mobile technologies has profound repercussions for broadening educational access as it allows learners to access education opportunities where broadband connections may be spotty and undependable. Just as importantly, though, we see the rise of mobile as an opportunity to

help institutions redesign learning experiences that allow learners to both learn on demand and also use their mobile devices as portals to all aspects of their student life. In this future, smartphones become a conduit for immediately connecting with advisors, paying college bills, making appointments, checking financial aid status, finding careers, connecting with alumni mentors, and even providing advisors with real time information on how they are feeling about their studies.

At Blackboard, we understand that access is more than just whether or not a learner can physically access the course and learning material; access is also about ensuring that the content is available in an appropriate format for that learner. We believe that all learners can benefit from universal accessibility—the idea that providing alternative formats for learning materials helps every student regardless of accommodation status. Leveraging AI and increasingly sophisticated machine natural language processing will increasingly allow us to automatically produce transcripts, closed captioning, and descriptive text in order to improve accessibility for all learners.

But access without success is not enough; as higher education leaders, we must do a better job of helping students everywhere succeed. We believe that begins with helping institutions understand the goals and personal situation of each unique learner so as to better meet those needs. There is no one size fits all solution to help with learner success, but we do believe that analytics will help institutions better understand their learners and create the personalized pathways that will improve retention and success.

“But access without success is not enough; as higher education leaders, we must do a better job of helping students everywhere succeed.” Katie Blot

Advances in artificial intelligence are allowing us to move from descriptive to predictive analytics. Although we’ve started to harness the power of predictive analytics, we believe in a future where predictive analytics can be used to provide students with support services before they encounter problems. With robust analytics, institutions will be able to more accurately flag at-risk students allowing advisors and faculty to proactively work with those students. And we believe that one of the most important keys to student retention and success in the future will be the use of data for personalizing the learning experience. In the academic experience of the future, learning systems will adapt to users, not the other way around. Learners will receive proactive suggestions for materials and extra practice on concepts they are having difficulty mastering—all without leaving the learning environment. In this future, courses and semester credit hours will no longer be the primary way that learning is organized; instead, competencies will be modularized so that students and instructors can personalize programs of study.

It’s also clear that technology is changing how we view the world, and that change will just accelerate. We believe that we are on the cusp of drastic changes in how learners encounter the world. Digital technology has already

shrunk the world, making it possible to live in a global community where learners can be on different continents and still collaborate in real time. But our future holds much more. Through advances being made in augmented and virtual reality, learners will be transported to different times and places and vividly experience new worlds. And the virtual will substitute for the real in other ways. Although it's a far cry from Star Trek's holodeck, the potential to use holographic imagery to allow students to examine and manipulate three dimensional forms, especially in highly technical fields such as medicine or engineering, is exciting. Simulations, which have been present for several decades, will continue to grow in sophistication and transition pedagogy to a more experiential focus. And robotic telepresences have the potential to bring together experts and students in a unique and dynamic way in the classroom, laboratory, or even work environment.

In the pages that follow we'll get a glimpse into this future through the eyes of higher education leaders as they reflect on the possibilities and the challenges of the next 20 years in American higher education. As you read their reflections you'll find several themes emerge over and over:

- Our current system is unsustainable and ill-suited for a globally connected world that is constantly changing.
- Colleges and universities will have to change their current business model to continue to thrive, boost revenue and drive enrollment.
- The "sage on the stage" and the "doc in the box" aren't sustainable; new technologies will allow faculty to shift their focus on the application of learning rather than the acquisition of knowledge.
- Data and the ability to transform that data into action will be the new lifeblood of the institution.
- Finally, the heart and soul of any institution are its people. Adopting new technologies is only a small piece of the puzzle; institutions must also work with faculty and staff to change institutional culture.

The last 20 years in educational technology have been thrilling, but we know that the best is yet to come. Technology isn't a silver bullet and is only one part of the future of higher education. Ultimately the best and most effective technological changes will be those that free up the human resources at institutions so they can better serve learners. At Blackboard we believe we are part of a global movement to expand access to higher education, and we know that higher education is changing the lives of learners as well as their families. We're excited to use the breadth and depth of our portfolio and our commitment to innovation to continue to drive the market to new discoveries and practices. We take our responsibilities as a leader seriously and are excited to take this opportunity to bring together higher education thought leaders to dream about what the next 20 years will look like.



KATIE BLOT
 Chief Strategy Officer
Blackboard Inc.

MIKE ABBIATTI, ED.S.



Executive Director

WICHE Cooperative for Educational Technologies (WCET), United States

Q What have been the most important developments in higher education in the last 20 years?

A I think that there have been two major technical advances that have made all the difference in the world for us in education: one being the increase in processor speed and two being a decrease in the cost of memory and storage. And there have been three transitions here in the United States and globally that really put us where we are today. Number one, automation, was a big deal at first when all we did was automate some of the standard processes. We moved from there into what we call technology-mediated teaching and learning. Well, again, that just kind of helped to speed up this idea of being able to deliver electronic content. What we've evolved to now is what I think of as a third phase, where we provide access to curated digital content and credentials. This is the phase of truly technology-enhanced teaching and learning which means that now we're not just speeding up the processes, we're not just doing the same thing faster. Now the technology is enhancing the teaching and learning experience, and we can provide more deep and rich content to students anywhere in the world.

Q What are you most excited about?

A I'm most excited about artificial intelligence

(AI), and I mean true artificial intelligence, not just plain machine learning. We're still far away at this point, of course, but AI is something to enable us to take the true value of virtual reality and augmented reality and the whole mixed reality concept to a completely new level.

Q What are the risks and challenges that institutions should be paying attention to?

A I think that the most visible set of challenges we're dealing with right now has to do with the technologies we use to provide cyber-defense for our institutions. The biggest challenge is going to be staffing because we just don't have that pipeline that everyone else is talking about to really be able to maximize and secure all the new technologies.

What you have to understand is we've now entered an era where technology is now a very long term, iterative process that's going to require changes in policy. It's going to require tremendous funding and tremendous amounts of thought on exactly why and how we want to deploy these technologies. The real landmine here is the mound of data that we collect every day, all day long, and we don't have the technology nor do we have the intellectual capital on our campuses to actually turn that data into knowledge and that knowledge into decisions.

Q How can institutions manage the huge cultural shift that technology brings?

A The campuses that I have seen that are successfully making this transition are making decisions based upon the why not the how. How is the easy part; technology issues can usually be solved by writing a check. But the why is a different story. Why do we need

this technology? Why should we invest in this technology? The institutions that take the time and answer those questions are successful because you locate the landmines and you either defuse them or you know where they are and you can go around them.

Q How do you think AI is going to impact higher education?

A You and I were around when all this online learning stuff started, and we went through the pain and through the transition of the student expecting the faculty member to do everything. Now the student is accepting more responsibility and the faculty member doesn't have to be the all flowing font of knowledge. Faculty are now thinking, "Wait a minute. I'm much more effective if I'm able to really curate digital content." So, I think what's going to happen is there are going to be roles that the faculty will cede to AI engines. My personal opinion is the AI-driven bots are going to take a lot of that tutoring piece off of the table for the professional faculty, and I think that because of the tremendous technophile nature of our students. They're going to accept that because now the human-machine interface is getting so much better than it used to be. When I speak to Amazon's Alexa that's almost like speaking to another human.

Q What will a college or university look like in 20 years?

A It's not going to look a great deal different than it does today. After all, remember this is education. We're still going to have brick-and-mortar campuses. I had many kids all in college at the same time, and I didn't send them there just strictly for academic maturity; I sent them for social maturity, physical maturity, and to get them out of my house. All of that is still valid, and

parents, as long as they're paying the bill, will prefer students to go to brick-and-mortar campuses. All brick-and-mortar campuses will have, however, electronically delivered content. Graduate work, in many cases, will be primarily electronically delivered. There will be closures, but that will be strictly for financial reasons.

Q Are there adjacent industries that higher education should really be looking at?

A The Googles of this world, the IBMs of this world. On the services side, the Amazons of this world. They're critical to us in higher education. When we talk about acquisitions and mergers, we're going to see more acquisitions and mergers like we saw in the Kaplan case recently. I think that you're going to see really effective public-private partnerships. I think you're going to see tools that the Googles and Amazons will offer us that will be much more effective and efficient on both sides of the teaching and learning conundrum. But we have to be careful because that age-old diatribe about trying to operate a university as a business will continue.

"My greatest hope is that we restate and refine our mission in higher education to be much more focused on student outcomes." Mike Abbiatti

Q Any closing thoughts?

A If we can, in some way, move higher education into an organization that has a true conversation across the continuum of the organization so there is a real serious student focus, then I think we will be in good shape. We've got to be able to unify and

create the dialogue across the industry in order to understand exactly what it is we're trying to do. **My greatest hope is that we restate and refine our mission in higher education to be much more focused on student outcomes and less focused on where we're going to find the next dollar.** Failure to do so will mean that the big campuses get bigger, the small campuses get smaller, and diversity at every level will be less instead of more.

SUSAN ALDRIDGE, PH.D.



President

*Drexel University Online,
United States*

Q What have been the most important developments in higher education in the last 20 years?

A We've been able to expand access to education in a variety of different ways—not only in terms of institutions offering access to education through regional campuses. This technologically enhanced environment has given us enormous opportunities for global access as well as enhancing the entire teaching and learning process. The technological advancements have revolutionized the way in which we think about how we teach, how our students learn, and the transformation of the learning process through experiential learning in a digitized environment.

Q What are you most excited about?

Next-generation digital learning environments. In my opinion, these environments will be contextual, adaptive, role-based, and self-organizing virtual ecosystems that foster learning and engagement, collaboration and community in a way that is both scalable and sustainable. These ecosystems will empower universities to become virtual gateways to continuous education and collaboration, through which learners of all ages and stages in life may move in and out at different times, from different locations, and for different purposes – to support the lifelong learning needs of today's workforce.

Under this new scenario, higher education will be viewed as a lifelong pursuit, rather than a degree-driven activity (as it is now at most institutions). As such, learners will require convenient and continuous access to a much broader digital learning environment that connects formal with informal learning options across space, time, and multiple spheres of influence - from structured degree and certificate programs, to stackable credentials, to customized training courses, to personal resources.

That will mean moving beyond conventional course delivery to create a student-centric learning model, grounded in a dynamic virtual experience. Course delivery of the future will be far more active and authentic, customized and connected. Consequently, we will need to focus more on technology's experiential value as a robust learning enhancement rather than on its transactional value as an expedient to education access and delivery. To

accomplish that goal, we will be forced to create next-generation learning environments that optimize the virtual cornucopia of evidence-based,

“What’s more, next-generation digital learning environments must bridge the divide between the faculty-directed instructivist model our colleges and universities have always favored and the learner-centric constructivist paradigm their students have come to expect and the economy now demands.” Susan Aldridge

digital learning tools and applications at our disposal – from virtual and augmented reality, to gamification, robotic telepresence and artificial intelligence.

What’s more, next-generation digital learning environments must bridge the divide between the faculty-directed instructivist model our colleges and universities have always favored and the learner-centric constructivist paradigm their students have come to expect and the economy now demands. So, students will have far more control over and responsibility for both their learning experience and their learning process, while the faculty’s role will change from the conventional “sage on the stage” to one that is far more “guide on the side.”

Q What are the risks and challenges that institutions should be paying attention to?

A The conventional, course-based learning management systems that most of us use have long served as the transactional

foundation of online education. They are designed to organize, package, and deliver our unique academic products, using a relatively standardized set of e-learning tools for submitting assignments, giving exams, coordinating class discussion, and evaluating student performance. That said, they are far from adequate when it comes to creating next-generation digital learning environments that support connected education.

For one thing, most of them are neither personalized nor student-centered. In fact, as protected gateways to the virtual campus, they are designed to leave classroom content and control firmly in the hands of the institution – or, more specifically, the course instructor. Consequently, there is little or no room for students to integrate and share other relevant learning content or customize their classroom environment and experience around professional interests and learning preferences.

Likewise, few of these systems make it easy for students to create and maintain e-portfolios that empower them to plan their academic trajectory; document their knowledge and skills; track their progress; share their work with others; and evaluate their academic performance. At the same time, the conventional LMS makes it hard to create a sense of classroom community, even within the discussion forum function, that allows students to freely interact with both their professors and their classmates. Finally, most innovative technologies are difficult, at best, to optimize and embed within conventional LMS platforms.

To support a more dynamic and student-centric digital learning environment, we will have to develop flexible systems

that lay the groundwork for connected and collaborative learning, grounded in a set of design principles that combines best practices in learning science with cutting-edge technologies in a networked world. As a more personalized approach to education, it facilitates experiential or hands-on learning within dynamic and meaningful contexts and communities of practice, both in and beyond the virtual classroom. Thus, connected learning is a paradigm that differs fundamentally from the traditional, teacher-directed, one-to-many online instructional modality that our current learning management systems were developed to support.

Q How long will it be before such a system becomes standard? What challenges will institutions and educators face in making the transition, and how might they begin strategizing for a next-generation future with these new tools?

It will be at least 10 years before systems such as this become the standard rather than the exception. Yet to achieve this timeline, we will have to begin fostering a very different campus culture that embraces technology for its experiential value rather than its transactional expediency, while viewing education as a lifelong pursuit rather than a degree-driven activity. That said, we will need to nurture a campus mindset around learning as a student-centric experience that is personalized, continuous and connected – which will mean moving away from the traditional LMS by creating new and more flexible systems and platforms that provide learners with greater control over that experience.

Of course, in cultivating this culture, we

must also promote an effective process for innovation that is intentional, inclusive, and continuous, in that it purposefully engages everyone who has a stake in the outcome (including students) in a way that is responsive rather than reactive. In my experience, open and equitable dialogue facilitates valuable and ongoing discovery by enabling campus community members to define concerns, address impediments, and examine alternatives from within a broader context or systems perspective.

Equally important, it encourages both individual and collective ownership of the innovation process itself, which is essential if we ever hope to power through the challenges that always come with a major shift in mindset. Likewise, participatory communication paves the way for design thinking to focus everyone on creating next-generation digital learning environments and experiences, regardless of the delivery format.

Like connected learning, design thinking is more approach than method in that it exploits the process of design to inspire fresh perspectives and novel approaches around turning our institutions into virtual gateways for lifelong learning. Consequently, every member of the campus community becomes a designer, invested in building, piloting, evaluating, and refining new and better forms of connected teaching and learning. This approach also empowers us to think big, start small, and scale as we go, using continuous feedback to add value with each successive round of improvement.

Q What will a college or university look like in 20 years?

A I know that some people fear that traditional

campuses will cease to exist only to be replaced by these digital environments. While not every campus in the United States will be viable 10 or 20 years from now, for many, many reasons it won't be because of the digital or the virtual environment. It's not an either-or situation – campus or digital. Our students are going to expect a combination of both for years to come. They will continue to want the real advantages of a beautiful campus experience with its many great opportunities to grow, learn, and network as part of an on-ground community. At the same time, they're going to expect the options that these rich, robust, technology-enhanced environments afford, by providing single sign-on access to a world of virtual opportunities, even as they live together in dorms and study together in student unions.

Q Are there adjacent industries that higher education should really be looking at?

A The hallmark of our success is how closely we align to the industries, or the professional environment, in which our students are already or will be working in. Just this week, we have had major companies coming to our campus to look at exploring every opportunity for research, collaboration, and new ideas. Not just in terms of our curriculum, but in terms of prototyping and demonstrating new technology.

In this digital environment, companies are looking for college graduates who are well-versed in digital technology and social media, creative problem-solving, and strategic decision-making. As a university, we must teach these skills while also providing students with the authentic experience they need to seamlessly translate them into real-world scenarios. And we are doing that with such innovative technologies

as virtual and augmented reality, artificial intelligence, and robotic telepresence.

For example, we're teaching gaming. In fact, we have one of the highest ranked gaming programs in the world at Drexel, and we are using some of these talented students to help us integrate multisensory games and simulations into our online courses. At the same time, we are connecting our researchers in the field of augmented and virtual reality to our faculty in physical therapy where they've designed games that can be adapted to patients who need therapy but can't always get in to see a therapist.

Q If you knew five years ago what you know now, would you do anything differently?

A Yes, I think we would have started the discussions about new technologies a lot earlier on the campus. That would mean we'd be five years ahead in the thought process about how students are learning. The other thing I probably would have done would have been to begin conducting the research earlier. We do not have a sufficient amount of research around how students are learning in this technology-enhanced environment. Without research, I think it's going to be a difficult battle for some institutions because they still see technology as merely a shiny object, rather than a critical element for robust, experiential learning.

MARIE CINI, PH.D.



Senior Academic Innovation Fellow

*University of Maryland
University College,
United States*

Q What have been the most important developments in higher education in the last 20 years?

A I think it's been the greater development and adoption of online education. You know, it started in the '90s, but it took a little while before there was wide acceptance and then it seems to have hit a tipping point. But now we've moved into a period of time where people aren't even asking as much about quality as they are if a school is doing online education.

Q How do you think this rise of online education has impacted higher education?

A Well, I think a few different ways. One is that I think administrators are figuring out ways to mainstream online education. Second, it's also called on faculty to have different skills and learn more about teaching. I think that's actually had a really good impact because we often hear hear faculty say, "I learned so much about teaching by going online and now apply that back to the face-to-face classroom. The third thing is that it's almost getting to a fever pitch now about how do you get into online if you're not in it already. You saw the Purdue-Kaplan deal; there's probably going to be a few other big moves as institutions try to figure out how to capture a big chunk of the online market.

Q What are you most excited about right now?

A The rise of learning science. We've always had learning research; it's just that most people didn't use it, and it stayed over with the researchers. But now there's much more of a broad understanding. There really are better ways for you to learn, and I'm hearing more and more that people want to use learning science and learning research to support their learning model in higher education. I think we'll be seeing that more and more as we try to improve the learning experience for students, and that's very exciting.

Q What are the biggest challenges facing higher education right now?

A I think it is a difficult time for decision-makers to know how to move boldly forward. It's almost funny, nobody's doing five-year strategic plans anymore. We used to do ten-year plans, but now it's "What's our guiding set of principles and then let's sort of generally go towards that." I think it's really hard to move an entire institution, to know how to keep it sustainable and serving your core student population. Trying to figure out how to keep moving forward is not as simple as it used to be when you hired faculty and they showed up in the classroom. It's time for a whole new leadership model. I'm not sure what that is, but we have to start reimagining our organizations and our institutions and even our leadership.

Q What should institutions be paying attention to right now?

A I would say there's several things. There's the role of faculty in general, and the way we've framed it has just made faculty either angry or fearful. We all say faculty roles are

changing, but nobody's really getting the faculty involved. As faculty we need to know more about the curriculum; we need to know about what true learning is. We need to learn about the life of an institution and how we are part of it as opposed to coming into an institution just fighting against everything happening. That old model of faculty and administration being at odds about everything is just not good for the future of higher ed.

We're also not helping our leadership understand and prepare for these turbulent times ahead. For example, how do you deal with risk? Should you be a giant risk taker like you're in Silicon Valley or is there a more measured way to do it? I guess I'm really focusing on people; I think technology is secondary. Our society is changing quickly and we can't stop it, but we can, as human beings, start to think through how we can deal with that from a human level. It's not so much what are the tools we use but how we use the tools.

We have to start thinking more intelligently about these tools, especially if they're free. The tools are collecting your students' data and maybe that's not so bad, but we should always think about it. As for the data privacy question, I think we're all sort of a bit asleep at the wheel. I think we have to do a better job of helping our students understand what data is being collected and why data about them is being collected.

Q What should the learning environment, especially for adult students, look like?

A Right now if you're an adult in higher education the predominant way that you get access is through a learning management

system, but I think in the future we need to step back a little bit. The only reason that we use learning management systems the way we do right now is because they're the best thing we have right now in terms of access. But we know there's been some research that shows the least prepared students are probably not the ones who will do well in online education. So what should change?

We've got to get back to supporting adults who don't have a good opportunity because

“The real value of our faculty and our advisors can be for that true value add—the mentoring, the coaching, helping students improve rather than helping them to relearn fractions.” Marie Cini

their lives are so complex. In my mind, that would be a combination of the best technologies delivered on their iPhone, because everybody has one of these phones, and also through a community base and some sort of face-to-face component if students wanted it. That could be via web conference or it could be a drop-in center at a library, but I just think we're missing these other components of support.

We're moving quickly to the internet of things, and more people are going to have an Amazon Echo or be a Google home. The opportunities that they could bring are incredible but also a little frightening. They could be a mechanism for students to get some very quick, low-level kind of tutoring or an extension of their advisor. I mean you could be making dinner and say, “What am I supposed to take next summer? Sign me up

now. Pay for it now with my PayPal.” I think AI will become more and more sophisticated, and we will have artificial intelligence or a cognitive tutor that can really help students get the pieces that they need. But we still need human beings. **The real value of our faculty and our advisors can be for that true value add—the mentoring, the coaching, helping students improve rather than helping them to relearn fractions.**

Q What will be the role of faculty as technologies change?

A We’re actually doing a bit of this at my institution where we’re helping faculty rethink their role, and I’m teaching in this new model because I really want to experience it. What we’re moving towards in our graduate courses is working with a more problem-based approach to learning. My role is to really be kind of a, and I mean this in a positive way, hovering mentor. I can’t just sit back and depend on them to let me know when they need help. Now you might say you can’t scale that, but you can scale that when you use technology to help students learn or review what they already know and to practice things that they should know. I think with these kinds of technologies that we’re talking about it, will be easier and easier for faculty to help students reach that point of mastery.

Q What will a college or university look like in 20 years?

A Brick-and-mortar institutions won’t go away, at least not in the mid-time horizon, if ever. I mean in many ways I think people are even more interested in brick-and-mortar. But there will still be huge numbers of students that never set foot on their college campus. I think that’s actually had a really good impact

because we often hear hear faculty say, “I learned so much about teaching by going online and now apply that back to the face-to-face classroom. I think that brick-and-mortar institutions are also going to need to struggle with how to use place better. Now if you walk onto a college campus you know the buildings aren’t used that well.

Q Are there adjacent industries that higher education should really be looking at?

A I think we need to look at artificial intelligence and the cognitive teaching that we’re in the middle of developing. And we also need to look at different approaches to learning management. Facebook is noodling around with some features that, although they say they will never be an education provider, could be used for that purpose. We as education providers probably need to start assuming there will be a day when Facebook or Google or Amazon does become an education provider, and they will be a powerhouse. So, I think we should start partnering with them to think about ways to do things at scale. The days of just going it alone on your little hill are over. It’s too easy to see these big organizations as the enemy; we need to partner so that we can also help guide them. I think there’s probably more going on there than we can imagine, but it’s where I think a lot of breakthroughs are going to happen. They’re not happening as much on our campuses anymore.

MYK GARN, PH.D.



Assistant Vice Chancellor for New Learning Models

*Board of Regents of the
University System of Georgia,
United States*

Q What have been the most important developments in higher education in the last 20 years?

A Probably the institution of the learning management system. I think a lot of us originally thought the LMS was going to be the killer app for education, and now it looks like it's being disrupted by new apps. But the LMS was the first time we really had a place to bring a lot of our activities together and get a coherent feeling for what we were trying to do. I think the fact that the LMS didn't change things all that much was a lesson that it takes several iterations of these kind of killer apps for a tsunamic change. So in 20 years we're not nearly as far as we thought we were going to be 20 years ago.

Q What are you most excited about?

A It is the continuing development of platforms and pedagogical insights for me, especially competency-based education. The last couple of years have seen a strong confluence of several different trends—the trend towards adaptive technologies which started a while ago including the publisher shift that we saw about two years ago going from content-forward to platform-forward.

Q What are the biggest challenges facing higher education right now?

A Well, as with any technology, it seems like we can imagine it doing far more than we can afford to have it do for us, and that's especially a problem at middle-tier and lower-tier institutions. We used to think about the cost of entry into post-secondary education getting lower and lower to near zero for new entrants. But what we're really seeing for traditional academic operations in colleges is that the cost of entry is going up; they're being assailed for the cost that they're passing on to the students and are generally getting less and less state support. And the fact is these technologies take a tremendous amount of upfront investment and risk, neither of which small institutions are able to afford. So we're likely headed to a period where we have digital haves and have-nots and another period following that where the digital have-nots just can't compete.

Q Is it only a resource issue? Do you think that if there was an abundance of resources that we would be able to move forward or are there other pieces of this challenge beyond just the resources?

A Well, of course, there are other challenges beyond the resources. The cultural challenge is one that we realize is incredibly significant, and the challenge for innovators who are at institutions trying to change that culture is tremendous. **What we know is, as they say out in Silicon Valley, technology eats culture for breakfast. Actually, I think they say strategy, but in truth it's culture and we know it does that. Technology doesn't care about culture; it just keeps moving.**

Q How do you think that technology is going to be used to move us ahead?

A I don't think we have many technology limitations. Again, our biggest limitation is being able to afford what we can envision because the technology can get us there. We are in the midst of a period of digitization which has taken place over the last 50, 60, 70 years. We have been digitizing our administrative systems for years. But we're just at the beginning phases of digitizing the instructional enterprise.

What excites me about competency-based education is it really begins, for the first time, to explicitly describe and list the competencies, content, activities, and assessments that go along with learning. And with tools like IMS's Caliper we're going to now have platforms that let us leverage big data. We don't have a paucity of data on the instructional side. People are doing a lot with predictive data but that's static; we don't have good learning-level, real-time data to work with. It's going to take another five to ten years before we really get into systems that are sophisticated, enable us to do interesting things, and know that what the systems are telling us to do is correct.

Q What are the risks and challenges that institutions should be paying attention to?

A Clearly we know there are challenges with the security of data, with the privacy of data, and the way data is used. I think we're likely to see cultural shifts in our acceptance of that. Right now we're in a period where most people really haven't been negatively impacted. We're probably just one good disaster away from seeing a shift in people being willing to opt in and let

“What we know is, as they say out in Silicon Valley, technology eats culture for breakfast. Actually, I think they say strategy, but in truth it's culture and we know it does that. Technology doesn't care about culture; it just keeps moving.”
Myk Garn

their data be shared.

In the academic endeavor right now we have critical inertia, and that's a cultural inertia. It's a challenge for us. I think things like competency-based education, which really are ways of making explicit what we do and know implicitly, let us begin to structure programs in ways that provide empirical data and evidence that we can use to study, to understand, to improve the way we work. I think those are things that fit into the current culture and can help prepare us because those are the kinds of precursors to real significant digitization and understanding how digitization can work in our favor.

Q What will a college or university look like in 20 years?

A A colleague and I did a presentation a couple years ago hypothesizing a movement we called slow learning, kind of a change back to the bucolic days of the liberal arts campus. There are educational programs that are very much attuned to different types and styles and paces of learning than those that are technology infused. I think those are going to be niche markets, and there will be opportunities for students who want to do that at the higher end where cost, access, and flexibility are not as big of a concern as the cachet and networking and

the other cultural reasons that people go to the top-tier institutions. I think, though, at the second- and third-tier institutions that really need to meet audience needs and need to be accessible and affordable, flexible technology is going to have to be a part of that.

If we can't find ways for technology to help address educational costs then those institutions are not going to be competitive. And even if they do embrace those technologies, the cost of those technologies running at scale with security, confidentiality, functionality, and agility are going to be costly. I think we'll see a lot more consolidations in the future. I think as humans we like to go places where other humans are, and we're going to see much more the idea of a university center. I can see some of our smaller colleges becoming centers; in fact we're doing that in Georgia where we're consolidating institutions together so they do become more regionally dispersed and accessible for folks.

Q Any closing thoughts?

A Right now we're working with Georgia State University to begin mapping what we're calling the academic genome which is the competencies, assignments, content, and assessments in our general education core. Because of the nature of our system where we have transferability, we think mapping that core has the opportunity of really opening up what other people do. If you look at the human genome, there were a number of patents for genes and genetics related inventions after mapping was complete, so we think we can trigger the same kind of thing with an academic genome as an open-

source tool.

But I think we also need to spend a lot more time looking at learners who need more time to learn. When we look at traditional age, underserved minority students with low academic engagement and agency, that model of personalized and flexible learning can develop equity both for students as well as smaller institutions that can't afford to develop these new models on their own. Helping smaller institutions and their students benefit from these kinds of projects is what I'm excited about.

ROBERT HANSEN, PH.D.



Chief Executive Officer

*University Professional
and Continuing Education
Association (UPCEA),
United States*

Q What have been the most important developments in higher education in the last 20 years?

A For me, it's just obvious; it's online education. I'm not saying that just because you're Blackboard. It is obviously online education. It's the most important development because it profoundly expanded access to higher education, not only bridging distance but time. It has changed the nature of who is going to college and how they get educated.

One of the things that is frustrating to me is the argument that online learning is just another modality. **Online learning**

is much more than that. It's arguably the most transformative development since the G.I. Bill and, before that, the establishment of land-grant universities.

I have a theory about the argument that online education is just another modality. I think it tends to come from insiders who are now a little intellectually bored by a phenomenon they know so well. It's not yesterday's revolution; it continues to be revolutionary because it keeps reinventing itself. And not everybody is as advanced as the global campuses of the world. For every Penn State World Campus or Washington State Global Campus or Northeastern University School of Professional Studies there are thousands of institutions that are nowhere near where those schools are, and they still see online as a sort of distant shore across a dark, deep ocean that they are not even sure they want to cross. They know they're supposed to cross it, but they're worried about getting lost at sea.

I don't think we should underestimate the profound impact online education has had and will continue to have on higher education. It's not just another modality; it's an entirely new industry. I think it's fair to say that online education may have started simply enough with just assignments being posted on Blackboard and whatnot, but now the more sophisticated institutions have courses that require incredibly sophisticated multimedia productions that look more and more like the TV or film industry.

Q What are you most excited about?

A I think it's the bookend of the online narrative I just talked about. The most exciting thing about online is changing the audience that you serve. When I went to college in the late '70s and early '80s, everybody went away and went to a dorm

unless you were going to a community college. The last 10 to 30 years have seen a dramatic increase in the percentage of people who are non-residential, non-first-time full-time students, and now it's almost 85% of our student population. That's such an exciting development because instead of just thinking that from 18 to 22 you go

“Online learning is much more than that. It's arguably the most transformative development since the G.I. Bill and, before that, the establishment of land-grant universities.” Robert Hansen

to college, now everybody has a chance for lifelong learning. I think that's really, really exciting.

Another thing that I'm excited about, of course, is the Association I represent and the members I serve. We were founded in 1915, 102 years ago, as the association for serving the adult learner in higher education. Adult learning began as correspondence courses even before the Association began in 1915 and then came the extension movement and then night schools in urban areas. Then there was the advent of satellite campuses and interactive television and, finally, online education. I think it's fair to say that for most of the past century our association members have been on the margins of academic affairs because universities were—and still are for the most part—organized around traditional students. We have sort of been seen as the skunk works of education: a little bit of out of sight, out of mind, and allowed to be entrepreneurial. But now the world of higher education has come to understand the fundamental importance of our mission

in building a sustainable “business” model.

Q What are the biggest challenges facing higher education right now?

A I think the biggest challenge is the stubborn refusal of institutions to acknowledge that the 20th century university paradigm no longer works, or at least it doesn’t work anymore for the majority of our institutions. I’m not speaking on behalf of our members, but I think it’s fair to say that institutions are still almost entirely faculty-centered and not market-driven. Faculty, like so many university leaders today who come from faculty ranks, are so often ill-equipped to compete in the Wild West that we’re seeing today, and it’s not their fault. They’re trained to be biologists and historians and philosophers and musicians and English professors, and in the past there was very little need to be entrepreneurial. What’s required of university leadership now looks very much like what’s required in the fast-paced world of private industry.

Q How do you see technology enabling us to meet those challenges?

A I would highlight two things, and one is adaptive learning. I think adaptive learning is going to be absolutely huge moving forward. The reason why I hope it will be huge is because it almost guarantees successful learning. If you have a well-designed adaptive learning program, it is going to be hard to fail as long as the student sticks with it. And adaptive learning guarantees competency-based learning because it’s going to be based on demonstrated competencies, and more and more employers will demand this.

The other point I would make is about risk.

I think that as educational technologies get more competitive, they will create winners and losers in the global economy. The U.S. has a marvelous inherent advantage with our high tech sector. We are the best in the world; we’re absolutely dominant. But I can see other countries harnessing their tech sector for national education goals. The U.S. doesn’t have a Ministry of Education so we can’t really harness our technology and force it to advance our national economic competitiveness by leveraging it in a clear, comprehensive, strategic way.

Q What will a college or university look like in 20 years?

A I don’t see the elite institutions changing much. My daughter goes to William and Mary, and I’ll bet you anything in 20 years it will just look the same except there will be air-conditioning in the dorms. The great liberal arts colleges are going to look the same. The great land-grant flagship institutions are going to look the same. But when you get into the directional schools at the public level, the Eastern Illinois or the Northern Illinois, they’re already struggling so mightily to maintain their business model. Regional comprehensives are in deep trouble. If you are tuition dependent and you haven’t figured out how to serve the adult market yet, you’re in trouble.

I think that’s going to be increasingly difficult as the more resourced institutions develop successful and competitive online programs, precisely because they will be well resourced and quality online programs are expensive to develop. How do the small private institutions compete? It’s going to be extremely difficult for them, so I do think some of them will go out of business. I’ve never been a believer in Clay

Christensen's prognosis that the majority of our schools will go out of business because I don't think the states will allow that. But I can see changes in organizational structures. I can see an archipelago of regional universities being put together into a single, comprehensive net under the flagship institution. In a sense they would be disappearing as individual institutions but there will still be a campus and dorms. They just may be underutilized. So, I think there will be winners and losers.

Q Are there adjacent industries that higher education should really be looking at?

A I would absolutely look and see what Google and Apple do. LinkedIn is already moving into education with Lynda, and I fully anticipate that to continue. But I'm an agnostic about to what extent they are going to penetrate the market and the genuine threat they pose. I could imagine them developing beautifully produced, state-of-the-art MOOCs and certificate programs with fantastic learning outcomes that are industry recognized, and people will like them. But I am a little skeptical about their ability to become degree granting institutions that would be recognized by the marketplace as being of value. I think that there is going to be a lot of staying power for our nation's strong university brands. Maybe a Google degree could be seen as competitive with or even superior to some regional university degrees at some point, but I think our top colleges are going to have a better brand, and that is going to have staying power.

CHRIS JENNINGS, M.P.S.



Instructional Lead
Google Analytics Edu,
United States

Q What have been the most important developments in higher education in the last 20 years?

A This is a little bit of an obvious answer, but I think it's important. The availability of online education has just been incredibly profound. In fact, so profound, I think it's already something we take for granted. When I worked at the University of Texas Telecampus in the early 2000s, students from rural areas of Texas would send us really moving emails about being able to assess high-quality education because it was online. I mean, this changed their lives.

And more recently, we're seeing this on a global scale with MOOCs which allow people with no physical proximity to a university to take university-level courses. It's amazing to me that people in rural villages with no Internet can travel to a nearby city and download course content onto their phone and study it, develop mastery, go back and take a test and certify themselves as proficient in electrical engineering or computer science, and go out and get a job. I think it's going to have this hugely transformative effect on the world. **We are, essentially, democratizing education and enabling those who are sufficiently motivated to educate themselves with a virtual community of collaborators for support. For me, this is truly phenomenal. It has the potential to empower millions of people throughout the world.**

Q What are you most excited about?

A Working at Google, I'm most excited about the potential for data to transform education at scale, and I think this is happening in a couple of different ways. For learning producers and instructional designers, data are the way that we understand whether a curriculum has been successful. And particularly, in online education, we have this ability to collect virtually any metric or data point we need to understand whether we're meeting our learning goals. Going forward, I think instructional designers are going to be very involved in measurement planning, data collection and implementation, and data analysis to understand whether the courses they're designing are working as intended. Data actually empower instructional designers to be learning scientists or learning engineers, because it gives them tools they need to evaluate and improve course content. But data also have the potential to personalize education. The more that we know about a user, the better we can start dynamically tailoring our course content to individual learners. And if we can do this at scale, we'll have created something incredibly special. I feel like we'll have created a course that's designed for an individual rather than a generic classroom. Ideally, using data signals to tailor course content should make learning a much more intimate experience. It could almost start to resemble an apprenticeship model of learning rather than the traditional classroom lecture. There is the caveat, of course, that we need to be sure to use this data very judiciously and honor the need to keep personal information secure and private.

“We are, essentially, democratizing education and enabling those who are sufficiently motivated to educate themselves with a virtual community of collaborators for support. For me, this is truly phenomenal. It has the potential to empower millions of people throughout the world.” Chris Jennings

Q What are the risks and challenges that institutions should be paying attention to?

A I think we need to be mindful about having very strict privacy controls and should put a lot of that control in the hands of the user. Users need to be dictating how much information they're willing to give to enable that trade-off of strong personalization and help that a university could offer. Students are growing up in a personalized world. Algorithms are customizing their music and their news feeds and their shopping. And I think they're going to expect that of education. Universities will become stewards of that personal information and will need to use that information in judicious and benign ways.

There are a number of challenges that I think we need to be meeting right now in higher education. One is figuring out how to help unprepared students that are coming into college with a range of different skill levels and learning needs. As a result, colleges will need better automated models and methods to assess skill and knowledge gaps. And once those gaps are identified, institutions need to be able to fill those gaps with some kind of personalized self-study curriculum to make sure all of their students have a baseline of knowledge and self-awareness. I also think colleges could do a

better job of using data to monitor students' progress throughout their college career in order to understand where students are struggling and providing them with help.

I'm still seeing a surprising amount of skepticism toward technology in parts of the academy. I can understand why there's this Luddite fear of technology. Technology is evolving the educational model. But the genie's out of the bottle, folks. Higher education needs to look at the benefits of this technology and figure out how to leverage it to guide students in much more sophisticated ways along the learning path.

Q What will a college or university look like in 20 years?

A I think the traditional classroom lecture model is broken, and it's going to appear more broken to learners who never knew a world without the Internet. I was reflecting on how college hasn't fundamentally changed that much since I went to undergrad 25 years ago. And that's stunning if you think about how much the world has changed in 25 years. But colleges still seem to be holding on to this antiquated model.

When I think about colleges of the future, I really think that they're going to need to train students much more holistically. Colleges will need spaces that facilitate both self-driven individual instruction as well as flexible spaces for collaborative social experiences where students can work together to learn. And these spaces will need to be integrated together so they can work seamlessly. I must admit, I do think that those colleges that persist in the old model will eventually go extinct. Colleges of the future will need to create an entire learning experience for students that empowers

them to teach themselves while at the same time monitoring what those students learn. Students should leave an evidentiary record of what they've studied that can easily be referenced and built upon, even after college, as they become lifelong learners. It should be the mission of every university to make students lifelong learners and encourage them to build on the foundations that colleges provide.

Q From your perspective at Google, what do you think higher education institutions should be looking at in terms of technologies and changing business practices?

A I hope that some of the organizational principles that have made tech companies like Google or Apple or Facebook successful will inspire education. I think the principle of user-centered design is very, very powerful and vastly underutilized in education. Thinking about how a student experiences their education completely and making changes based on what benefits those users, I'm not sure that universities have shifted their paradigm to think like that quite yet. All instructors should just make this their mantra: Do what's right for the learner. All curriculum should be designed off of data that's collected, and all curriculum should be designed to collect more data in order to understand its efficacy. These data points should be generated throughout a student's educational experiences, and instructors need to be looking for the red flags in that data to assist students when necessary.

I don't think that we've seen true disruption at the university level yet. I think that might still be to come. There was a fear that MOOCs might disrupt higher education for a few years, but they haven't been profitable

enough to do so. I sense that that disruption might be coming if universities don't start being a lot more user-centered and data-driven right now. It might not happen in the next few years, but I would imagine it would happen in the next 20.

AMY LAITINEN, M.P.P.



Director, Higher Education

New America, United States

Q What have been the most important developments in higher education in the last 20 years?

A I think one of the most important developments has been an increasing awareness that higher education isn't necessarily fine the way it is. I think for years and years we just trusted that higher education was doing a great job and that the real problem was getting into college. Getting out of high school was the hard thing, but if you got into college, you were going to be fine. I think there's a growing recognition that you're not necessarily going to be fine and that the problem isn't necessarily with the individual. I think there's been more of a shift to institutional responsibility and a recognition that higher education, as it is structured, just isn't cutting it for huge numbers of people.

Q What are the risks and challenges that institutions should be paying attention to?

A There are myriad challenges. There's still a belief in what Tressie McMillan Cottom calls "the gospel of higher ed" which is this large, unabashed belief in the power of higher

education. I want to share that aspirationally, but it's not enough just to share it. We have to actually make it live up to the promise. There are lots of different sub-problems that we must address like access and readiness. Fundamentally, we should ask, "How does higher ed do or not do a good job of what it's supposed to be all about—learning?" I don't think we have grappled with that enough. I'm glad I'm not trying to fix it, because I wouldn't know how. It's complicated, it's tricky, and God bless those people who are figuring it out.

I don't mean that to sound flip, I just mean I think it's hard, because we first must acknowledge that we have a problem, and then we should take steps to fix it. I think we have done a good job of acknowledging the problem, but the solutions still aren't completely clear. Hopefully we'll start to see some things that work at scale so we can help the folks who are in most need of the benefits higher education can provide.

Q Are there technologies or processes that you think can enable us to change how we're delivering higher education to provide better access?

A This is probably being very simple-minded, but I think that just internet-enabled technology enables you to provide education and meet students where they are physically. That's just the delivery mechanism, though. **It's not just enough to put something online for autodidacts who already have the time, energy, and prior skills to be able to learn on their own. You really need to figure out how to embed all the supports that a student will need to be successful, and I don't know if we've cracked that yet.**

I think folks are experimenting with not just different technologies for delivery, but different places for delivery. You still have a technology-enabled component, but maybe you deliver part of the instruction to a work space and make sure it's relevant to what the student is doing. This way employers can help define the competencies and maybe even promote someone based on the accumulation of those competencies. I think we need to make sure that the technology

“It’s not just enough to put something online for autodidacts who already have the time, energy, and prior skills to be able to learn on their own. You really need to figure out how to embed all the supports that a student will need to be successful, and I don’t know if we’ve cracked that yet.” Amy Laitinen

can reach people where they are but also give them what they need, and I think it’s been better at doing the former rather than the latter.

Q What are the risks and challenges that institutions should be paying attention to?

A If you’re not really paying attention to the quality, there’s always danger and the potential for credential devaluation. If you just churn out credentials that don’t mean anything, you can say you’re providing access, but you’re actually providing nothing of value. So, while we need to be focused on completion, we have to look at who’s completing what. Who’s getting which credentials?

We’re looking at the credential gap between

different populations, whether it’s gender, race, or ethnicity. There’s some stark differences between a completion rate for white students and African American students or Latino students. But you need to go beyond just credential completion and look at what credentials are being completed. Let’s look at employment data so we make sure that students aren’t getting credentials that leave them near poverty level wages for years and years and years. For example, look at what happens with women of color in some cases. We count them as successes on the one hand because they have received their degree, but it may be a degree that really doesn’t pay off and puts them in worse shape than when they started. I’m not talking about a social worker who’s making \$35,000 a year; I’m talking about somebody who’s making \$8, \$9, \$10 an hour with a bachelor’s degree. I think that’s a real danger, especially when we see how these credentials are distributed. So, we have to look at completion, but we also have to look at the outcomes for those who complete and look at the equity distribution of those credentials.

Q What will colleges and universities look like in the future?

A It’s hard to prognosticate, but I definitely see closures. Whether it’s 20 percent of existing institutions, I’m not sure. But it certainly seems clear to me that the private, not-for-profit schools that aren’t the elites, the mid-tier schools, are going to struggle, and we’re going to see some of those institutions start to close.

We’re already seeing closures, but I think we’ll see more. But higher ed institutions are durable. Higher education has been around in largely the same state for centuries and

should have changed radically long ago, but it hasn't. I think institutions will be resilient, but there will obviously be some closures especially as alternative providers pop up. All of this is informed through a federal policy lens rather than through a practitioner lens, though. I'm getting calls from congressional offices every week and talking to folks who want to do something about boot camps or other college alternatives. They are feeling the pressure do something that is speaking to the labor market needs in their state. And because of that, I think we're going to see more alternatives to the traditional degrees. The question is for whom. So far, the boot camps have really just been displacing graduate degrees and haven't really threatened bachelor's degrees yet.

In the past, we had employers who did the training themselves and paid for it, but that's no longer the model. I think once we see large amounts of federal dollars start to flow to these non-institutional providers, the game will dramatically change. As there's more and more pressure to put federal money into this, we'll see more alternative providers pop up. In an ideal world, this would be great. But if it's not done well and we don't pay attention to quality, it will just be another way to funnel money to "innovation" that helps the people who are getting the money but not necessarily those who are receiving the education.

Q Are there adjacent industries that higher education should really be looking at?

A With all the virtual reality that's aimed at gamers and higher end immersive experiences, why can't that be used for immersive learning? Students learn best when it's relevant, meaningful, and they feel engaged. You can create virtual reality

worlds and have students problem solve in that virtual world.

Q What are you most excited about?

A What's exciting is the possibility of rising to the challenge that faces all of us. On my best days, I feel excited that higher education will rise to the challenge. But on my worst days, I feel like we won't, and we will continue to leave millions of students behind and watch our country become a second world country. It depends on the day, but there certainly is an incredibly important challenge, and I think we have a lot of smart folks in this country who care about addressing it. I'd like to think that these folks can come together from their various perspectives and figure out creative ways to address this challenge. I hope we can.

JUSTIN LOUDER, ED.D.



Associate Vice Provost

Texas Tech University, United States

Q What have been the most important developments in higher education in the last 20 years?

A I think the biggest development is the ability for students to go to school whenever and wherever they are. And that's something that really started back in the 1800s. It has involved higher education institutions saying to students that sitting in a classroom and listening to a lecture for three hours a day, three days a week is no longer the only way you can get an education. It's allowing the student to learn where they are and when they're able to. I think that shift has been a

huge impact and a huge benefit to modern day higher education.

And that shift is all because of technology. In the last 20 years, we've had interactive video conferencing or interactive satellite campuses. We've even had correspondence and mailing VHS tapes to students. Now we have synchronous and asynchronous technologies allowing for online education. All of this means that students can learn where they are and when they need to.

Q What are the risks and challenges that institutions should be paying attention to?

A One challenge is faculty are not taught how to teach in their doctoral programs. We learn how to be subject matter experts in our chosen field, but we're not necessarily taught how to teach because the faculty that taught us in doctoral programs were also not taught how to teach. We have a challenge to make sure that our faculty are not only outstanding subject matter experts but also know how to teach using different modalities and technologies so a student has a high-quality education.

I think the thing coming forward that we need to look for and either embrace or learn how to work with is micro-credentialing and the different groups offering these credentials. For example, at one point a student needed a bachelor's in computer science to get a job in the computer science field. But now they can go to a coding boot camp and get some of the same instruction and still get the job that five or ten years ago they had to have a bachelor's degree for. **Finding a way for "traditional" higher education to work in that space and to work with students to get these micro-credentials or certifications that can**

stack together is a challenge we will need to face.

Q Do you see technology playing a role in enabling us to meet these challenges, and are there risks to those technologies and ways that institutions need to prepare for them?

A I think many of us, as institutions, don't do a good enough job developing and teaching students on mobile devices. We still expect the student to do an online class from their laptop or from a desktop computer or, sometimes, a tablet. You have a lot of students who don't have access to the internet at home but they have an internet-enabled cellphone or mobile device. Yet, many times, we're not designing classes to meet those students where they are. Granted, Blackboard and many other LMS providers have a mobile platform, but if the faculty member is designing a class to be viewed on a laptop or desktop and isn't thinking about aspect ratios, then it's going to be very difficult for the student to do the class on a cellphone.

Q How can institutions manage the huge cultural shift that technology brings?

A There are some faculty and departments that are still resistant to even technology-enabled classes and students using laptops in classes. We have an interesting issue now with faculty who are staying in the past and faculty really pushing the envelope, and institutions have to figure out a way to support both faculty groups. I think if you provide support to faculty, and if you have the infrastructure that encourages innovation in your instruction, then that will help. We can't have a top down approach, and I would never want to do anything that

“Finding a way for ‘traditional’ higher education to work in that space and to work with students to get these micro-credentials or certifications that can stack together is a challenge we will need to face.” Justin Louder

would impede academic freedom. That means you will have pockets of innovative faculty who can also become your advocates to help move the entire campus forward. That’s the only way you’re going to move towards some of these innovations.

Q What will a college or university look like in 20 years?

A I think that’s a really interesting question especially coming from the type of institution I’m at. I’m still at a very traditional higher education institution where co-curricular activities are still very much the cornerstone of the experience a student gets. I think sometimes people on my campus probably think that I want all of our degrees to be distance ed degrees. That’s not going to happen. There are some programs that have to stay traditional.

I think in 10 to 20 years, we’re going to see some schools that are no longer relevant and no longer able to keep their doors open. You’re going to see some smaller regionals that may not be able to keep their doors open because state and federal support has dropped so much. I also think we will probably see more deals and more agreements like the Purdue-Kaplan agreement. And I think you’re going to see more synergies between public and private partnerships like Arizona State and

Starbucks so higher education institutions can stay relevant in the next five to ten years.

I think where we are going are more public-private partnerships where public institutions and for-profit private institutions partner on specific projects. We’ll still have college football and college athletics and rec centers and the student unions because there will still be that population of student that wants the traditional higher ed experience. But I think the days of seeing 50,000 or 60,000 kids on a campus are probably numbered as more students will have to get a job and won’t be able to go to school full time. It will be interesting see what the landscape will be in 20 years.

Q Are there adjacent industries that higher education should really be looking at?

A Two companies come to mind and really stand out—Facebook and Amazon. Facebook is important because that’s where much of the population is. I think the expectation will be that those kinds of social media providers will start providing some of our education. The other company is Amazon. Their recent purchase of Whole Foods really surprised everybody. Now you have a massive digital retailer that has made billions staying in the online world going backwards into brick-and-mortar. I think if you look at what you can do on Amazon now, who’s to say in three years or five years, you won’t say, “You know what, I want to take this class. I want to purchase it through Amazon,” and it’s done through Amazon with their own LMS? Who’s to say they’re not already working on it?

Q What are you most excited about?

A I think what really excites me is the use of data to really help the student succeed. What I really like is adaptive learning, the ability for the course to work with the student to make sure that they're successful. I think that is so exciting because that could someday do away with need for remedial education. That's pretty powerful because you could remove the stigma associated with remedial education.

The other thing I'm excited about are the alternative credentialing providers. I'm excited in both kind of an apprehensive way because you don't know what that's going to do to your institution but also a hopeful way because it takes the content and credit where students are and moves them to where they need to be.



**DARRELL
LUZZO, PH.D.**

**Senior Vice President,
Educational Product,
Technology, and**

Innovation

Laureate International University, United States

Q What have been the most important developments in higher education in the last 20 years?

A I believe one of the most important developments in higher education in the last 20 years has been the fact that digital learning opportunities have increased access to educational opportunities for many individuals who, heretofore, may not

have been able to access higher education opportunities. This really aligns with what Laureate is trying to do; we are working with hundreds of thousands of individuals who otherwise might not have the means of getting a degree. I think in the last 20 years online learning has become more reputable and, in many parts of the world, more acceptable—which has allowed us to expand access.

Q What do we need to do to move to the next level because there are still pockets where the technology is not accessible? How do we bridge that final gap?

A Now you're talking about investment. Do organizations like the World Bank or OECD or other entities have the ability to help address the infrastructure problem from a technology development standpoint? I believe there are ways that countries and governments and non-profit entities can help address that issue because it's an important element.

There are also still myths that permeate many people's opinions about online education. I'll give you an example: there are still countries where online education is not accredited. For example, whereas in Spain online learning is well accepted as an effective method of teaching and learning, Portugal does not allow online education, and India has been relatively unclear on the issue. There are efforts being made to address these challenges through financial and technology investment, but the other thing we need to do is educate against the myths that still permeate many parts of the world.

Q What are you most excited about?

A I think what I'm most excited about right

now is technology integration in digital teaching and learning, even outside of higher education. By looking at other industries we can understand what the best innovations are for a higher education setting. We are focused on four at Laureate. Probably in an increasing order of excitement to me are game-based learning (or gamification), adaptive learning, augmented and virtual reality, and cognitive tutoring.

We believe that many of the principles that underlie game-based learning and gamification of learning have applications to higher education and have not been fully leveraged to enhance learning. The second thing I am excited about is adaptive learning, although I do have some disappointments here. I think the disappointment that I have around adaptive learning is that we are not further along in recognizing the full potential of adaptive learning in higher education. I know many companies are developing the technology for adaptive learning, but we have not yet seen the one or two adaptive learning tools that are the clear winners. So that's a little bit disappointing, but we are investing in this area. The third innovation that excites me is augmented reality (AR) and virtual reality (VR). I don't believe we understand fully all of the potential AR and VR applications in education, but I think there is promise there. And although it may be very expensive right now, the investments in those technologies need to be made now so we can evaluate their effectiveness in teaching and learning over time. I also think you can combine some of these technologies such as adaptive learning with augmented and virtual-reality and game-based learning.

But I think one of the most exciting

recent developments at Laureate is the development of cognitive tutoring through artificial intelligence (AI) inside the digital classroom. Utilizing AI to provide expanded support to students and help them when they are struggling in a course could be a real game changer.

You could take something like IBM's Watson to evaluate student data and offer opportunities to support student learning. I believe AI applications in higher education

“One of the most exciting recent developments at Laureate is the development of cognitive tutoring through artificial intelligence (AI) inside the digital classroom. Utilizing AI to provide expanded support to students and help them when they are struggling in a course could be a real game changer.” Darrell Luzzo

could really create opportunities to improve student success. It's very early but I think there are extraordinary possibilities in this space that are worthwhile. That's what excites me most right now.

There are two use cases with cognitive tutoring that I think about. One is it's Saturday night and my discussion board posting is due Monday. I log into my discussion board and the AI tutor asks me if I am sure I want to post right now because the last time I posted on a Saturday night I didn't do that well. The intervention would be driven by all of the knowledge that Watson would have about the student.

The second use case involves making

asynchronous learning synchronous. It's 3:00 a.m. and I need to understand a concept that I am just not "getting." I've gone through all of the material that has been uploaded into my course and I'm still not getting it. An AI powered tutor asks me if I need help or—better yet—recognizes I need help. Ultimately, this type of "teacher on demand" recognizes that you are struggling and have viewed all of the course materials. But because it knows that you tend to like YouTube videos or TED Talks, it suggests other resources available via the internet that you can use in that moment.

Q What are the risks and challenges that institutions should be paying attention to?

A I think there is a need for more appropriate levels of financial investment in cognitive science and promising educational technologies. The challenges are going to become that some of these innovations are going to require significant investment, and that will probably mean co-investment through partnerships.

I wish I could say that I have the secret sauce for changing culture. I think the reason why I didn't talk about culture is that the culture at Laureate, the world that I live in, is very different. At Laureate innovation and the promise of digital teaching and learning are well recognized and championed. There are still regional or national cultural issues in parts of the world, but within the Laureate Network we believe that to be relevant as an institution of higher education we need to invest in high quality digital solutions. Back in 2013, approximately three percent of all teaching and learning across our campus-based institutions was digitally delivered (or what we refer to as our "hybridity rate"). By the end of 2016, we had achieved a 16 percent hybridity rate across the Laureate

Network. We have a goal of achieving a 25 percent hybridity rate by 2019.

I believe it was Clay Christensen who just a few years ago stated that within five years there will be a profound number of institutions that close. In the next five or 10 years, I don't think many brick-and-mortar campuses are going to close. Maybe it's because people all over the world still want to go to a campus. I still think, though, that brick-and-mortar institutions would be much better positioned if they were to recognize and value the proliferation of online solutions. I don't think our advancements in digital teaching and learning mean the end of brick-and-mortar institutions by any means. In fact, research has repeatedly shown the value of a combination of learning modalities, with some face-to-face instruction and some online instruction for students. I believe these types of hybrid and blended approaches to learning are going to be important for all campus-based institutions to consider.

The other risk I see is the risk of putting all of our energies into one technology basket. We should be investing in multiple pathways of learning and multiple modalities. Right now we're talking about online education, but 25 years ago we really weren't. What will we be talking about 25 years from now?

Q Are there adjacent industries that higher education should really be looking at?

A I've actually been surprised there hasn't been a greater preponderance of investment in education by core tech industry players like Google or Apple or Facebook. When you talk to investors about education, a common refrain is that it is ripe for disruption and investment. It's interesting that there hasn't

been something more tangible coming out of these other industries. Maybe that is because they know that the road to accreditation is a bumpy one, but there isn't anything that stops those conglomerates from buying institutions that already have that accreditation. It's surprising to me that companies like Google, Apple, and Facebook haven't entered the market in greater ways than they have.

Are there things that they are doing or approaches that we ought to be incorporating into education? I believe we are trying to incorporate some of these things like artificial intelligence or social networks and the investment in augmented reality. There are some interesting possibilities with augmented and virtual reality, some deeper applications than what we are seeing right now where the value will be within the learning context. I do believe that a lot of what we are seeing in adjacent industries is beginning to be incorporated into higher education.

Q Finally, what keeps you up at night right now? Is there something that really concerns you?

A I get concerned because there has to be something done about the continued rising cost of higher education. We hear people talk about education in the same terms as the real estate bubble in the United States, and we can't afford for that to happen to education. There can't be an education bubble that bursts because the impact would be tremendous for our workforce.

FELICE NUDELMAN, M.F.A.



**Chief Global Officer,
Innovation and
Partnerships**

*Antioch University, United
States*

Q What have been the most important developments in higher education in the last 20 years?

A Technology. I think that in a 20 year span we've gone from a fairly isolated and limited use of technology to a much more pervasive use across all areas and segments of education. As one example, look at libraries and the way content is delivered and distributed. This ability to scale access to content and distribute it beyond the walls of one building has helped transform how we think about libraries. We have also made great strides in how we use and share other forms of information. Our use of technology as a tool for reporting and data collection and analysis has driven higher education in new directions. We know so much more than we did before about the student experience; we can use that information to provide evidence of what works, what doesn't hit the mark, and to test and learn about new approaches.

Q Do you think that we've been successful in expanding access through technology?

A I think expanding access for underserved students is where it gets tricky because the answer is yes, we have a greater ability to provide access for more people who desire an education. Technology has opened the door so that we can scale education delivery

models. But we need to be mindful of how we deploy these models. In many cases, we confuse access with quality and success. We err on the side of using technology to build the most cost effective model for the largest number of enrollments, without understanding how to best meet student needs. Those who often get hurt the most by this approach are the most underprepared students. It's almost like we have developed a class system that provides access to affordable education but it often is isolating, does not have the necessary support systems, and is not student-centered. So I think, yes, we have improved access, and there is some innovative work being done,

“This is the time to be in higher ed because there’s opportunity to think differently and that’s where it gets exciting.” Felice Nudelman

but I think that often times the way we’ve used technology is not the optimum way of delivering content and curriculum.

Q What are the risks and challenges that institutions should be paying attention to?

A Cost. I think what I’ve seen in higher ed over the years is that there’s a greater and greater cost in the maintenance of facilities and technology, in new program development, and in marketing to remain competitive. And there’s a huge cost in terms of the type of services that you have to provide compared to 20 years ago. So there’s a lot of cost that’s laid on top of educational delivery and not as much that’s

put into the delivery or exploration of new pedagogical approaches and modalities. There are a number of schools that do it very well, and there’s good evidence of success through retention and graduation rates. But for a lot of schools there’s a misconception that there are these silver bullets out there, and people chase after them thinking they are the answer. There are never any sort of silver bullets but sometimes we chase after things instead of really looking at what would be the best delivery modality, the best pedagogy for the student.

Another challenge we face is how to best revitalize programs or let go of programs that are beyond their relevance. We don’t revitalize our programs as frequently as we should. It is a challenge because we have some phenomenal faculty who have been teaching in a certain program for many, many years and you don’t want to lose that faculty member, or make them feel undervalued. But we also need to motivate everyone at our institutions to focus on our core mission and then innovate around it, bringing the most up-to-date resources to our learners. It’s extremely difficult to balance the faculty role with new program revitalization and delivery.

Q Do you see a place where technology can be used to help with these challenges and move us forward?

A I think there are roles that technology can play in terms of sharing resources. Look at the ability to share libraries; we’re part of OhioLink and have access to an incredible library system shared among all the universities in Ohio. We could do more with sharing library services; we could share library expertise and staff if we set up

systems or consortia among certain types of institutions or within states or regions. We could share academic programs and faculty. Not every institution might be able to build a language department but I guarantee within every state there's at least a couple of institutions that have an excellent foreign language program. Technology can help provide opportunities to collaborate; the challenge will be to create reasonable business models. I think that there are new roles that technology can play, but the difficulty is that we like to think that we're all very unique (and we are). The challenge is creating the business model that will support a robust student experience.

Q What are the risks and challenges that institutions should be paying attention to?

A There are always challenges and risks. The easiest one to overcome is ensuring that technology supports student engagement. We have tools to see the level of engagement and success, and we can also monitor when students need additional help. The risk is keeping information secure and making sure staff are trained and up-to-date on best practices. There is also a risk if we get enamored with models that are not high-quality and do not build a solid community of learners and provide the supports for student success. We need to know that the students are really engaged and achieving their goals; it is too easy to build online programs that isolate students and lack human and community engagement. The risks associated with this might be churn, lower quality education, and lower sense of affiliation with the university. Finally, there's a lot of information out there that can be misused, and there's always a danger in how people

utilize other people's information. Another risk with technology is the ease with which cyberbullying and intimidation can occur.

Q What will a college or university look like in 20 years?

A I think there will be some mergers and closures in some states where the population no longer supports the number of institutions. I also think it will continue to be hyper-competitive with new non-traditional education providers willing to innovate and enter the space. **But I think this is the time to be in higher ed because there's opportunity to think differently and that's where it gets exciting.** My hope is that more universities will embrace partnership models. If the goal is to be student-centered and really create high quality education, why wouldn't you partner with business, or the chamber of commerce, or the union on the delivery of education and the creation of new types of educational programming. We are still going to have a very strong core of traditional educational experiences, as well.

What does excite me the most right now is that even though there are many institutions that are really struggling, there's a number of people coming into education who are open and willing to think differently, and that's a fun group to be with. When you look at it on a global level, it's a fun time especially when you start marrying technology with content distribution and new pedagogical and unbundled degree models. It's a pretty exciting world out there.

Q Are there adjacent industries that higher education should really be looking at?

A I think there are some really cool things

going on in the arts— look what some artists are doing and how they’re using new types of technology for virtual experiences. I saw a demo at the Global Silicon Valley conference where artists were able to bring the audience into the emotion of music and dance through 3D virtual reality. That’s exciting but it hasn’t really permeated into higher education. I think those would be exciting and different ways of increasing learning and bringing culture to people.

We should also pay attention to what’s going on in the medical field and its use of technology to train professionals, monitor patients, and create new cures. When you have companies experimenting with 3D printers and stem cells to create human lungs, that’s pretty exciting.

Q Any closing thoughts? If you could change anything right now, what would it be?

A I would wave my hand and have people lose their fear of change and recognize that you can innovate and do new things and still stay true to the core mission and values. My hope is that we harness our collective energy to help our students succeed and become fully engaged citizens.

PAM QUINN, ED.D.



Provost, LeCroy Center
Dallas County Community College District, United States

Q What have been the most important developments in higher education in the last 20 years?

A I believe the biggest challenge in higher education has been changing from the centuries old model of classroom-based education to the transformational, growing market of online and digital education. Couple this with the growth of technological advances, shrinking education budgets, and increased competition, and higher education leaders are struggling to keep up. Although we’ve undergone tremendous change in the past 20 years, there is a lot more we can do to improve quality and better scale for online learning.

It’s amazing to me how quickly 20 years seems to have passed. Our original online classes were called modem classes, and we had to deal with students that thought that the mouse was more like a sewing machine pedal and were using their disk drives as cup holders. Fortunately, students and many faculty have caught up and today we face new challenges. In online education, we’ve moved to where it is more mainstream. While those working in online education originally focused on access, we’re now addressing quality in digital education and how we can best take advantage of this new learning space.

Q What are the risks and challenges that institutions should be paying attention to?

A I think the big challenge has to do with the transformation of education at all levels. However, while education is changing, state budgets are shrinking and higher ed costs are increasing. Figuring out how to do more with less will require changing how we work. In my state, community colleges have seen the state reimbursement dollars drastically reduced over the last 20 to 30 years. At one time, state reimbursement was one of the largest parts of our revenue, but now we depend primarily

on local taxes as our first source of revenue, tuition as our second, and the state as our third. With a new normal in less state funding, we are going to have to figure out how to remain viable, change how we serve students, and improve learning outcomes.

I also believe there is more competition out there. I'm not sure that traditional institutions totally recognize some of the competition that is coming from the non-traditional sector. I think we've got the issue of long-term sustainability as we figure out how to make all of these things work together.

The Internet has changed many businesses and it is changing higher education. When you put bigger, better, faster, and more ubiquitous technology on top of all of this, the entire educational scene is ripe for change. Most administrators and faculty can see all of these trends merging, but no one knows exactly how this will turn out. Some institutions will thrive and survive, and others may not get through this as we currently know them.

Finally, most of what you read says that the best way to structure classes is a hybrid model. However, some students truly can't or won't go onto a campus. For those students, we need to adopt best practices in online learning and scale what we do today. For the most part, educational institutions have just ramped up the classroom model and still aren't taking advantage of scale and new models for online education. Although the paradigm is changing, most colleges have not made the big change to where it can take us. Because we've been so stable for so long and because we've done such a good job doing what we've done, the idea of giving all of that up for a different paradigm

is not necessarily welcomed.

Q Are there specific technologies or ways that technology can be used to enable meeting these challenges as we move forward, and are there risks or things institutions need to be doing to prepare themselves for that future?

A I think many sectors of higher ed are thinking about change, but those dealing with workforce, business and industry are probably preparing to align themselves more closely to where our students are going after graduation. If you think how everything is going to be connected in the future, linking our physical and digital work through the Internet of Things will really change us.

Education will become more personal and more engaging. Artificial intelligence and virtual reality will be used in digital learning. Adaptive competency-based education will allow students to move quickly through content they already know. Personalized curriculum will meet student needs, and faculty will become learning facilitators helping students at their level of learning.

Business intelligence and predictive analytics are giving us a lot more information about our students than we've had. Technology will allow us to track other forms of learning such as certifications and badges that are currently not part of the official education system. New record keeping technology will let students provide employers with all their training experiences whether it is formal or informal. Traditional educational providers are going to have to figure out how to remain competitive in this new world with non-traditional providers.

Q What do you think a higher education institution is going to look like 10 or 20 years from now?

A Education is becoming more personal and engaging, and artificial intelligence and virtual reality will help make that change a reality. Adaptive competency-based education will let students move through content more quickly and at a level meeting their personal learning needs. This approach will improve student learning outcomes.

As for college campuses, I imagine there will still be a physical presence needed because of varying needs of students. Since the needs of many community college students may not be best met in online environments, they will still need face-to-face interactions. Small liberal arts colleges will still attract the group of high school graduates that need and want that environment. There may truly become flipped campuses where students are doing all of their learning online come to campus to work in teams, get specialized help from faculty, or get personalized learning support. In the future, faculty will work less in front of a group of students and more on a personalized basis with individualized curriculum. Higher ed leaders and faculty need to be studying where all this is going to help guide their institutions through the challenges facing us.

Q Are there adjacent industries that higher education should really be looking at?

A I think higher ed is ripe for change. If companies like Google or Amazon, that are beating the pants off traditional ways of doing business, got into the education world, I think that, coupled with publishers who already have content, transformation could happen rapidly. I could just see

“Our society as a whole needs to be educated or retrained. It’s no longer the world where some are going to need an education and others won’t. Everybody needs some higher education.” Pam Quinn

something coming together with the entertainment value of Disney and the power of IBM. That could change the field of higher education pretty quickly.

Q What are you most excited about right now?

A I get really excited when I talk to some of my colleagues that are doing different and very special things for students. Think of how Western Governors University and Southern New Hampshire University have changed their model for serving students, especially working adults. I’m interested in open educational resources and competency-based education. As content is readily available and technology improves, we need to change and take advantage of providing the best learning opportunities for all students and learners.

Our society as a whole needs to be educated or retrained. It’s no longer the world where some are going to need an education and others won’t. Everybody needs some higher education. If we want strong communities in progressive states in a competitive country, we’re going to have to bring everybody along. Using technology to improve and scale education will allow us to do more for learners. I’m actually excited about all of this and want to make sure our leaders are promoting the right conversations. We all need to find ways to

change and be part of the solution. It's a challenging and exciting time.

PAT SCHMOHL, M.S.N.



Dean, Health Care
*Quinsigamond Community College,
United States*

Q What have been the most important developments in higher education in the last 20 years?

A I think it's got to be the use of the mobile phone in learning, and what I mean by that is the accessibility our students now have. When I first started teaching, we would talk about things in the classroom and students would have to go home and look them up in the encyclopedia to find information. Now when I teach class, people are pulling up their computers and are able to research something right on the fly. That means I am actually able to guide their learning in the classroom compared to providing them with notes. Technology also allows us to use classroom time differently. We try to work with our faculty and encourage them to do assessments outside of the classroom through Blackboard as well as to post things for students ahead of time.

Q How do you think technology has changed pedagogy and the relationship between learners, faculty members, and content?

A For the last six years I've been doing professional development and working with

faculty, and I see open-minded faculty trying to get students more actively learning. I see more lab instruction. I was a paramedic instructor, so as a paramedic instructor I got to lecture to students, I got to work in the lab, and then I got to be a clinical instructor. When I was in the lab with students and we were giving medicine, I was able to talk with them about why we were giving this medication as compared to a lecture where the students were not as engaged. I felt like they were learning more than when I was just lecturing.

Q What are you most excited about?

A What excites me the most is what I'll call real-time assessment across multiple courses and the program. Imagine if you had a rubric of eight different points and you could use that rubric to evaluate your students' readiness for their college coursework. Now you could put students into the right courses based on the results and faculty would know the areas where students needed improvement and work with them in those areas. And what if you could do real-time assessment across all of the freshman composition courses? You could see how students are trending and you would be able to pull information in real time and say, "These students are starting to have trouble in this area, and we've got a tutor that can help them." Then you wouldn't have to wait until the end of the semester when they have a C-. So, that's what gets me the most excited—the opportunity to build real-time assessment and courses.

In the classroom, the other large area that excites me is the use of simulation, especially high-def manikins that are so lifelike that after five minutes you don't even realize it's a manikin. We use these manikins in

healthcare simulations, but they would also work in fire science. This is exciting because it really helps the students learn and apply what you're discussing in the classroom.

Q What are the risks and challenges that institutions should be paying attention to?

A The biggest challenge I see is this—people asking why do we need higher education. It's so hard to show that someone can think critically, and write effectively, can speak effectively, and act ethically. All of these things are what make a person liberally educated, but we are getting pressure to turn out workers. People say all the time that they want an employee who can think critically, but it's so hard for a college to show that this person can think critically. It's easy for us to show that they can pass the nursing test or that they can start an IV or run a fire engine, but it's hard to show critical thinking. **I think the biggest challenge facing all of higher education are the demands that we get people ready to enter the workforce. Because if we don't liberally educate people at the same time so they can become better citizens then that's going to impact us more and more.** Sometimes we allow our certificates and our associate degrees to water down the general education liberal arts curriculum, and it's going to be harder for us to recover and show why we need the liberal arts.

Q Do you think that there are risks posed by using technology more and what sort of risks might those be?

A I feel one of the risks is that you can make numbers show anything you want. The more assessment we do then more reporting we have, and people could get access to the numbers and make them show whatever

“I think the biggest challenge facing all of higher education are the demands that we get people ready to enter the workforce. Because if we don't liberally educate people at the same time so they can become better citizens then that's going to impact us more and more.” Pat Schmohl

they want to show. We're going to have this risk if we start doing this and someone comes in with an agenda that is not what faculty want. So we need to make sure that we're always working towards a common agenda when we use this technology and everyone knows that we're trying to get to point “A.” We've got to limit the data to who needs to see it, not administrators or legislators or policymakers; because when someone can pull one fact out of the data it could derail what we're trying to do. And we also have to assure faculty that all of this technology and assessment data is not going to be used against them.

Q What will a college or university look like in 20 years?

A I always feel that there's going to be a college or university. People will need to become better critical thinkers, better written communicators, and we need skills in the workforce. What that college is actually going to look like, though, that's tough. Because if you can make a virtual simulator that I can put on and it looks like I'm in the classroom and it lets me look to my left and talk to someone or look to my right and talk to someone, I don't know if we need to have a physical classroom. We will still need to have human-to-human interaction for training and learning, so I think colleges

and universities are going to be around, but some are probably going to go away.

Q Are there adjacent industries that higher education should really be looking at?

A When I go on Google and am searching for something like my kid's soccer cleats and then go to Facebook and see the ads for soccer cleats, that shows how the information being collected with Google and Amazon can change my interface. In higher education, we've got to remember that it's not about us but it's about the students. We need to look at what those other industries are doing and how they're being customer centered, and we need to be student centered. We have to say we need to look at what the student needs and modify on-the-fly so that were not having someone sitting in a room and talking to 20 people about 20 different things when we know that this one person needs only one piece of information. We need to be more customer centered like these other companies; we need to use the data that we collect and be more adaptable. We have to change so students feel like we're listening and know we really believe it's about them and not us.

ERIN SMITH, PH.D.



**Executive Director,
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Learning**

*Northeastern University,
United States*

Q What have been the most important developments in higher education in the last 20 years?

A From my perspective, it is the power of technology to expand access to education for anyone, anywhere, and on any device. I think that the concept of how and where learning happens and how that learning is captured, experienced, and validated has changed. When we think about the power of technology and if you think back 20 years, the idea of dial-up internet and what that actually allowed learners to do versus now where it is just ubiquitous for us to be digitally connected, is an immense shift. The power of that network and the technology's role in enabling those connections has definitely transformed our ability to connect with learners.

Q When you think about our greatest developments, do you see challenges that access has created for us? Or are our challenges in a completely different arena?

A I spent most of my career trying to think through and validate online learning. The very first conversation that I felt like I had when I joined Northeastern was about how and where learning occurs and not making a differentiation between learning that happens in the classroom versus learning that happens outside of the classroom. One of the first questions that I had was about how we bring place to life. What becomes the purpose of place given that our students are engaging with us through technology and enabling connections across time and space in a way that's really interesting? That was an ah-ha moment because the discourse had changed. It was no longer a question of the validity of online learning; it was how do we create the ecosystem of learning around the student, recognizing that learning is a lived experience.

Q What do you think community is going to look like in the future as we explore online learning and digitally-enhanced learning?

A The way that we talk about community is very different than the use of discussion boards in an online classroom. The discussion board is potentially a technology-enabled community facilitator, but it is a specific conversation that is happening in a specific context. I think when we can liberate that idea that community is not a transaction in the sense of completing an assignment, we tap into something more resonant and more human. For Northeastern, we think a lot about humanics. We're not talking about technology in place of that human connection, but rather technology as an enabler for that connection. **Technology will evolve, but the need for connection and the desire for sharing and learning and advancing our global society will become very important. That's where that human aspect will persist and technology can be a tool to help us map the network and reveal and enable those connections.**

Q What excites you the most?

A We have a phrase that we use at Northeastern that describes students when they start their courses—"I am here." That idea of presence is really interesting when we think about networks and communication and knowledge sharing. "I am here" means I'm seen and recognized; I add value to the community. That idea means that I'm present even though our connection may be virtual. I'm excited to see how that kind of idea will persist. We have a very strong global presence as a university, and that idea that we can collectively say

"Technology will evolve, but the need for connection and the desire for sharing and learning and advancing our global society will become very important. That's where that human aspect will persist and technology can be a tool to help us map the network and reveal and enable those connections." Erin Smith

"I am here and I'm part of something" is an emblem of the idea of humanics as well as learning in a way that's connected.

One of the things I'm really excited about is the big evolution around data. We're now able to utilize technology, specifically data modeling, to help us identify trends and test hypotheses against a larger sample than what an individual unit in a traditional university has at any given moment. That shared data becomes useful when we think about improving efficiencies in our business process around personalized service, but it becomes transformative when we are able to personalize learning for students.

Q Are there ways that you think are especially interesting in how we can begin to use that data, and are there challenges that institutions need to begin to address as they leverage this immense amount of data that we create every day?

A I think it's going to come down to the power of the question. Our ability to answer the questions becomes possible because we have increasingly more powerful tools to help us identify challenges, query data, and test solutions. But it has to start with the question you're trying to answer. Our ability to ask questions of that data, with the

purpose of serving our learners and learning from their experience, or connecting their experience to our employers and industry partners, is where the power is. And that means all of the members of our ecosystem need to be data stewards. How well our peers and fellow members of the university are equipped with data literacy is really, really important.

Q What will a college or university look like in 20 years?

A I think it's going to be competency-based and content will come in more bite-size chunks of time. I also think that idea of skills and competency is what's going to be the major organizing principle around how we structure our classroom experience.

I also think it will be about intentionally embracing both place and the digital experience. At Northeastern we're opening campuses in other places as we think about the learners that we're serving. We're looking at the ways we can help learners exchange ideas and experiences and learning opportunities across the network. But that means making our footprint intentional. It's not like we're duplicating what we have on our Boston campus. What we are creating is reflective of the community we are in and the needs of the learners and their industry partners. An institution's ability to be agile and to employ learner-centered designs, whether it's coming out of the building or the digital space, is important.

Q Are there adjacent industries that higher education should really be looking at?

A I'm really excited about this application of design thinking into our learner experience. As, essentially, an instructional designer,

that's where I'm thinking about the ability to transform the learner experience. Those are tools that are available that help promote the creativity and innovation and discovery within our own area of this ecosystem.

I'm also really fascinated with how employers are training their internal talent. When we think about and reframe the role of the university around talent development, I feel there's a lot of opportunity for us to think about how universities can be that strategic partner in helping to grow the next generation of leaders. At Northeastern we have a partnership in the form of our EQUIP grant where we think about what students in an advanced manufacturing program are learning on the shop floor. How do we think about learning differently? What challenges does that bring forward? It's an intentionally designed, very agile experiential learning experience. Our ideas of what it means to go to school and the structures that we have in place to help structure a learner's pathway through a program are going to have to change.

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