



EXPANDING EDUCATIONAL OPPORTUNITY

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FOREWORD

Blackboard understands that the way people learn is dynamic and that the education landscape is continuously evolving. Our mission is to partner with the global education community to enable student and institutional success, leveraging innovative technologies and services. And one of the things that technology can do is to help “Expand Educational Opportunity.”

Whether it is providing anytime / anywhere access to learning, expanding the availability of courses to all students regardless of location, fostering additional faculty and student engagement, enabling personalized learning, or making online learning more accessible to students with disabilities, Blackboard is at the forefront of working with institutions to provide technology and services that focus on the learner and improve student outcomes.

As a leader in enabling technology to help learners, educators, institutions and companies thrive in a complex and changing environment, we help our clients see the possibilities to come. We have the experience and expertise to make a positive difference throughout the world.

We’re proud to sponsor this eBook. We hope these essays help you open more doors for students and expand educational opportunity for everyone, wherever they are, whatever their needs, and however they learn.



Regards,
Katie Blot
Chief Strategy Officer

Blackboard®

At Blackboard, we’re shaping the future of education with big ideas that are transforming the landscape. Every day we help millions of people around the world find new ways to learn, connect and advance. With innovative technologies and solutions we bring them closer to the knowledge they seek and the potential they can achieve. Blackboard is the leading provider of learner success-focused technology solutions and services to the education market. We help our clients overcome diverse and complex challenges through our broad portfolio of solutions and services that make education more accessible, engaging and relevant to the modern day learner.

INTRODUCTION

We've spoken with 20 educational leaders to learn more about how institutions tap technology to improve education and make it available for all students, including those with differing abilities. We asked them the following question:

Please share a specific story (or perspective) about how you or your institution used technology to provide greater access to students with specific needs (e.g., physical disability, location, or inability to get to campus.) What key piece of advice can you offer to someone else trying to implement your approach?

A generous partnership with Blackboard makes it possible for us to share with you experiences that institutions have had implementing these technologies, how they've worked to overcome problems, and the outcomes they've seen from those efforts.

These experts offer their perspectives on challenges, successes, and lessons learned. They discuss everything from design and development strategies to the changing role of higher education and educators. Most of these professionals agree that when you expand availability to education by using accessible technology, whether it is video captioning, text to speech, or more advanced technologies, even students who don't identify as having disabilities use these services and that they increase student success rates and improve learning overall.

I trust you'll find these experts' successes and advice useful and that after reading this, you'll have solid strategies to help advance your use of technology to broaden access to education for all students.



All the best,
David Rogelberg
Publisher



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Online Learning

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AGILE PRINCIPLES IN EDUCATIONAL TECHNOLOGY



**DAVE
BOLMAN**

Provost,
University of Advancing
Technology

Provost Bolman has focused his career upon addressing the profound need within Arizona and the nation for a substantial and diverse creative class workforce. As its long standing provost Dr. Bolman has built the University of Advancing Technology (UAT) into a unique all-STEM institution that marries the best of traditional small private college learning with the genetics of innovation that come with agile technology organizations.

“Think about how much technology has changed education,” says Dave Bolman, provost at the University of Advancing Technology (UAT). “What I think is exciting is that the first wave of the technology change led to online learning, and online learning was a separate space. That was a toe in the water to getting people to accept that there are different styles of learning, but key pieces were missing because these courses weren’t engaging.” Technology has shifted in terms of accessible education, according to Bolman. “It’s melting away so that learning spaces can be physical, face to face, real-time online, group, or asynchronous. It turns into a mélange of students being able to choose the kind of learning style that works for them in any single class.” >>



Learning spaces can be physical, face to face, real-time online, group, or asynchronous. It turns into a mélange of students being able to choose the kind of learning style that works for them in any single class.



KEY LESSONS

- 1 The first phase of building access to education was getting learning online. Organizations should now focus on using technology to reach students wherever they are, regardless of their physical proximity to an institution.
- 2 Don’t try to overthink educational access. Start with something small that will yield immediate results, and then use feedback from users to build deeper, wider solutions that meet their specific needs.

AGILE PRINCIPLES IN EDUCATIONAL TECHNOLOGY

Bolman points to students who have mobility, visual, or auditory challenges. “You don’t have to sacrifice meaningful interaction with your instructors or peers because we can do it in the live stream. We can do it in many ways. Pick your path—there are more choices than people realize. The technology has brought the barriers down.” The pick-your-path philosophy works for students as well, Bolman says. “The platforms themselves are designed so that students can get their information and participate in learning in five or six ways based on their learning style and even their life needs.”

In fact, Bolman says, “The platforms are driving a shift that’s mirroring what’s going on in the world. What’s happening is that—at the college level—education isn’t just about giving students the knowledge they need to be workforce ready, ticking off those 40 classes they have to complete to earn their degree. It’s also about embracing certain behaviors so that they’re doing the things they’re going to do at work. Because students have the option to be present physically, the barrier for students with disabilities has largely been lowered.”

At UAT, technological advances in learning permeate the entire institution, whether students are physically present or attending virtually. For example, all students are required to build an IT project every semester as part of their final grade, and students who aren’t physically on the UAT campus have access to the same design studios as those who are. “They are operating at the highest levels, routinely creating and evaluating those creations against the benchmark, ‘Is this something somebody would actually want to use.’ Technology made that happen. The fact that technology isn’t something exclusive or difficult means that students leave a bachelor’s degree program with behaviors associated with master’s degree programs.” >>>

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AGILE PRINCIPLES IN EDUCATIONAL TECHNOLOGY

The key to putting these programs in place, says Bolman, is to “follow the Agile approaches that software developers are using. Don’t try to overengineer things at the beginning because by the time you get to the end, you will probably miss what people actually want. Instead, do the simplest thing you can first. See how people use it, and then build based on how people use the technology.”

Bolman says that using Agile principles can help institutions shorten the development cycle and implementation plan. He’s often asked how schools can keep up with the rapidly changing pace of technology. “Part of the answer is, don’t treat this like we’re in Detroit manufacturing cars. Treat this like we are a small, Agile software company.”

The other aspect, according to Bolman, is listening to the feedback after users get involved. “If you do, you quickly find which things people don’t actually care about. You have less waste than if you engineer something, and then try to shoehorn an entire culture into it 18 or 24 months down the road. We have the tools in front of us right now to make the change. You just have to get good at figuring out how to take advantage of them.” ■

WHEN MOVING EDUCATION ONLINE, THINK TEACHING, NOT TOOLS



**STEVEN
D'AGUSTINO**

**Director of Online Learning,
Fordham University**

Steven D'Agustino holds a doctorate in Education Leadership Administration and Policy and is the director of Online Learning at Fordham University. He is the editor of several books, most recently *Creating Teacher Immediacy on Online Learning Environments*. His other publications include *Toward a Course Conversion Model for Distance Learning* and *Providing Innovative Opportunities and Options Through Online Credit Recovery and Afterschool Programs*. He has written several grants to give historically underserved populations access to technology.



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For Steven D'Agustino, coordinating the online learning strategy at Fordham University has been as much about spirited conversations as it has been about technology implementation. Many of those conversations have been on topics like the changing role of instructors and the growing importance of design in education. Although these discussions have broad implications for the future of online learning, they have already had a positive impact on certain specific situations.

"When we're looking at replicating what happens in the traditional classroom setting in an online environment, we're making a lot of assumptions about the effectiveness of instruction in traditional settings, which is a faulty assumption," says D'Agustino. "What the online environment gives us is an opportunity to rethink these basic assumptions about teaching and learning." >>>



What the online environment gives us is an opportunity to rethink these basic assumptions about teaching and learning.



KEY LESSONS

- 1 When moving instruction online, it is critical not to lose the value of academic conversations, which are often spontaneous, that take place between students or between student and instructor.
- 2 The model of the teacher being the expert, imparting knowledge, is shifting to one similar to a docent or curator, guiding students, providing feedback, encouragement, and assessment.

WHEN MOVING EDUCATION ONLINE, THINK TEACHING, NOT TOOLS

"Something I've been thinking about a lot lately is what's called *instructor immediacy*," he says. "This is the sense that the instructor in the online environment emerges as an actual person. In a traditional setting, a student comes to class, where the more educated person tells them things. Now, with access to all of human knowledge in my telephone, it's not about accessing information—that's somewhat been destabilized. A decentering has occurred because of this democratization of access to information." What's lacking are the humanistic touches that traditionally come from direct instructor-to-student and student-to-student communications, which, he says, are an essential part of learning at a Jesuit institution.

A good example at Fordham is how some faculty are using traditional digital tools in new ways, such as an English professor who is helping students get more out of her commentaries on essays. Instead of making typical written comments in a Microsoft Word document, this professor is reviewing papers by using screen-capture software so that her audio comments play alongside her markups and provide a more holistic experience for her students—one that is much more like being in the room with the instructor as he or she goes through the essay. This technique has proven more engaging and ultimately more satisfying to both student and instructor, giving students the opportunity to watch the instructor use her expertise, modelling intellectual skills.

"It is central to view disciplines as activities, not as distinct sets of facts and theories," says D'Agustino. "Biology, Law, Economics are activities. We do them. A helpful way to think of this is to replace Philosophy with Swimming as the subject. How would a student learn how to swim? Not by studying the history and theories of swimming (although these may eventually emerge as important) but by being in the water." >>>

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With access to all of human knowledge in my telephone, it's not about accessing information—that's somewhat been destabilized. A decentering has occurred because of this democratization of access to information.

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WHEN MOVING EDUCATION ONLINE, THINK TEACHING, NOT TOOLS

Not all faculty have embraced these creative techniques, however, and D'Agustino is often changing minds about the role instructors play in the classroom, not all of which translate well to online situations. "When I work with faculty, helping them put their class online," says D'Agustino. "They often say, 'I'm going to need a video camera and a microphone and a green screen and you're going to record me, right?' Because in a general sense, they still see themselves at the center of instruction. There's this talking-head approach in which 'I'm just going to say stuff, you're going to record me, and then we're going to put that online.' Essentially equating teaching with telling."

Consequently, says D'Agustino, instructors know that they need to occupy a new space, but they don't have a clear sense of what that space is. For D'Agustino, that new role may be more comparable to a docent or curator—someone who deploys their disciplinary expertise to curate content, arranges that content in a virtual space and guides the student, providing context and personal interaction. "A theologian, a philosopher, a historian, a medievalist, and an English professor might all read the same text," he says, "but the key is that they see very different things when they look at it."

So, from a technology standpoint, D'Agustino prefers applications and services that promote interaction, although he cautions that such tools and services don't need to be expensive or complex. In addition to the creative use of screen-capture software some faculty members are deploying, options are emerging in the form of asynchronous discussion tools—the merger of a discussion tool and a presentation tool that allows students to post audio, video, or text-based comments on a chunk of content, such as a series of slides or images, a video—anything. "It's a simple way to create a kind of learning community," says D'Agustino.

We are in a transition period, says D'Agustino, where ad hoc use of tools is still commonplace, though not always advisedly. "One thing I'm struggling with a lot," says D'Agustino, "is retrofitting tools that aren't designed for teaching. I go to many conferences, and there's always someone presenting sessions like, 'Teaching with Twitter' and 'Facebook in the Classroom.' These are really neat things, but Twitter is not an instructional tool. It could be used as an instructional tool, sure, but I could use my wrench as a hammer, too."

"People have been learning things for a long time," says D'Agustino, "so we need to center this conversation on effective instructional practices, not in the realm of technology." Applying a simple technique such as the English professor's expanded use of existing screen-capture software demonstrates that the student-teacher relationship can still be personal, even when the two are not physically together in the classroom. ■



Amy Craton started working on her degree over 50 years ago, but life got in the way. At 94 years old, she set out to complete her degree program. She tried to attend classes at the local community college, but her hearing was deteriorating and she found it difficult to keep up. Online classes and materials helped Amy complete her degree at her own pace and from the comfort of her home.




LinkedIn

PAUL J. LEBLANC
President, Southern New Hampshire University

ANYTIME, ANYWHERE LEARNING AND THE VALUE OF SYNCHRONICITY



**JOHN
VIVOLO**

**Director of Online and Virtual
Learning,
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John Vivolo is director of Online and Virtual Learning for New York University (NYU). He partners with faculty to devise pedagogical and technical practices known as *best practices for online learning*. Working to create interactive learning experiences, John also researches new methods and technologies to incorporate into online learning. In addition, he coordinates efforts to scale up online learning at NYU and manages a team of instructional designers and technologists to help faculty create next-generation online learning.



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In more than 13 years of specializing in online education, John Vivolo has seen great advances in the design, delivery, and technology associated with remote learning. He still struggles with a few issues, though. One is the balance between the obvious advantages that time-shifting courses provides to working students versus the proven benefits of direct student-to-teacher and student-to-student interaction. Another is that format and technology issues still matter, perhaps even more now that mobile devices are for many students around the world a primary point of access.

"We've seen data indicating that international students prefer that we output our modules (individual lectures) into HTML5 so that they work on mobile devices because often these students view their lectures on those small screens," says Vivolo. "Many more students are gravitating toward mobile devices, as well, so we make sure that we build mobile-friendliness into our classes—at least our newer classes. It's a little harder with the older classes that weren't developed with that sort of software." >>>



We've seen data indicating that international students prefer that we output our modules (individual lectures) into HTML5 so that they work on mobile devices because often these students view their lectures on those small screens.



KEY LESSONS

- 1 Even when providing on-demand classes that suit a student's schedule, there should be online office hours, discussion groups, or other ways to encourage student-to-teacher and student-to-student interactions.
- 2 Faculty are the subject matter experts, but they may benefit from help from instructional designers and technical personnel to design courses.

ANYTIME, ANYWHERE LEARNING AND THE VALUE OF SYNCHRONICITY

In addition, although bandwidth has generally improved, New York University (NYU) serves a global cadre of students and so must consider that online connectivity may be poor in certain geographies or communities, making any sort of webinar-style class difficult at best and near impossible if you try to hold live discussions or interactive study sessions.

As for the problem of synchronicity among students and faculty, NYU has some recent experience in that area. For many years, NYU took part in a program called *Live Virtual Learning*, which had classes going online at specific times using very high-quality audio and video and which encouraged interactions similar to what might happen in a classroom. “The system that we were using,” says Vivolo, “was delivering clear, high-quality video, and the students were able to communicate directly with the other students and the faculty with low-latency, so it wouldn’t be much of a delay. There would actually be this great collaboration between the remote students and the on-campus students in a live classroom environment.”

Demands for schedule flexibility and the difficulty of producing such a high-quality online experience brought about an end to this program, however, and most classes are now prerecorded and can be delivered at the student’s convenience. So, Vivolo and others at NYU have developed specific guidelines for instructors that encourage some interactivity, but the bulk of the course work is done at the student’s convenience. >>>

“Faculty are always the content experts, but the actual person who records video, records audio, creates content, and writes everything is increasingly the instructional designer.”

ANYTIME, ANYWHERE LEARNING AND THE VALUE OF SYNCHRONICITY

All this places a burden on faculty, many of whom have been trained exclusively in traditional classroom-based methods. “Technologically, we have to be able to see what works best to curate the best learning environment and the greatest ease of use,” says Vivolo. “Many schools still rely on faculty as the primary actual physical developers of course content, not just the content experts. Faculty are always the content experts, but the actual person who records video, records audio, creates content, and writes everything is increasingly the instructional designer.”

“Here at NYU, we’ve tried to take the burden of the technology away from the faculty and say, ‘Listen, we’ll do this stuff for you. You want a piece of animation for your class? Just scribble on a piece of paper what you want, give us notes, record a video in our studio, and we’ll build that for you so you don’t have to worry about that.’ Some faculty are very interested in doing things themselves, and we help them with technology. For many aspects of online course creation, however, there is a high learning curve, so faculty can become bogged down in how hard it is to actually do these things.” ■

TAP THE CLOUD TO EXPAND EDUCATION FOR EVERYONE



**ALAN
GREENBERG**

Senior Analyst and Partner,
Wainhouse Research

Alan D. Greenberg leads Wainhouse Research Learning and Talent Technologies practice, where he covers technologies used for distance and online education and e-learning. He has published reports, white papers, and research notes on many collaborative technologies and consulted on many statewide networks, consortia, and universities. He was a U.S. Distance Learning Association 2010 Outstanding Leadership Award Winner and holds an M.A. from the University of Texas at Austin and a B.A. from Hampshire College.

"The idea of delivering education to people who are remote or don't have access to the same resources as those in other areas is not new," says Alan Greenberg, a research analyst and partner at Wainhouse Research. "Twenty-five years ago, every single state had some type of high-speed network that was running educational and other content from universities and colleges to schools, government, and institutions. Now, the world has evolved so that you don't have to have satellite or super-expensive distance learning classrooms to actually reach people."

Greenberg says several factors have intersected to bring education to the place it is today. "One is the consumerization of technologies, including educational technologies." For example, Greenberg points to the various device platforms, applications, and availability. "That's created an opportunity to extend reach beyond just distance learning. You're now thinking, 'How can I customize? How can I address specialized learning needs and the different approaches that learners have toward learning?'" >>>



It's imperative that schools trust the cloud or hosted services because they don't have the people power to run technology and they don't want to go through all these constant refreshes.



KEY LESSONS

- 1 Technology evolves at such a rapid rate that most institutions struggle to maintain current versions of applications. Cloud technologies reduce this burden by handling updates and upgrades without disruption to users.
- 2 Successful technology implementations require thorough planning, stakeholder buy-in, and outside assistance to ensure that you're not only tapping into the most useful features of an application but also that the implementation is one that users will adopt.



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TAP THE CLOUD TO EXPAND EDUCATION FOR EVERYONE

The result is that institutions are using technology differently not only to address access to education but also to improve education for students on campus and off. "Technology is hitting its stride in terms of helping educators address the needs of local and remote learners," Greenberg says.

"As technology has become ubiquitous and more accessible to teachers and learners alike, it's no longer about serving students on the other side of the state or the country. It's now how we are serving everybody." Greenberg points to a project he orchestrated with the University of Wyoming several years ago. "The university is based in Laramie and is the only four-year institution in the state. It discovered that more than 40 percent of the enrollments in its Outreach School consisted of local, Laramie-based students who just wanted the convenience and fun of taking an online course. The university was trying to scale its programs and figure out how to create a business model that made sense because it hadn't planned for that level of local access for its programs."

To help build on the technologies currently available, Greenberg points to the cloud as an enabler. "Schools have started to realize that the technology refresh rate has decreased. What used to be a 10-year technology refresh rate is probably now down to two or three years. It's imperative that schools trust the cloud or hosted services because they don't have the people power to run technology and they don't want to go through all these constant refreshes." >>>

“On the one hand, you've got to move quickly because things are moving quickly; on the other hand, you've got to take the time to do it right.”

TAP THE CLOUD TO EXPAND EDUCATION FOR EVERYONE

“The single biggest issue is that a lot of schools don’t understand or may not be as effective as they could be in introducing, adopting, and deploying educational technologies,” Greenberg says. “For instance, everybody is focusing on analytics and predictive analytics. They know they ought to be able to use data more effectively, but the options are overwhelming. Right now, data may reside in many different locations: They don’t know how to pull the data together. They don’t know how to make data effective in terms of turning them into information that can influence how you mentor students, how you teach students, how you help students find jobs, how you intervene when necessary. I think that’s the next big challenge for colleges and universities: How do they use analytics intelligently?”

Greenberg’s best advice is this: “Plan as much as possible, involve as many stakeholders as possible, and yes, use a consultant. Draw on other educators, other institutions, other best practices. Try to find out what’s been effective, then adapt it to your own culture. On the one hand, you’ve got to move quickly because things are moving quickly; on the other hand, you’ve got to take the time to do it right.” ■



I use Moodle and Blackboard Collaborate to provide students across Virginia with opportunities to learn in a virtual educational setting. In a virtual learning environment, I am able to provide a more student-centered approach to best meet the learning preferences and needs of my students. To ensure student success, I provide a wide range of multimedia resources in formats organized visually in a color-coded Symbaloo webmix. Accessibility features are also provided to further support my visually and/or hearing impaired students.



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CHRISTI COLLINS

Teacher & Online Adjunct Instructor,
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INNOVATIVE ONLINE EDUCATION IMPROVES CLASSROOM EDUCATION



JOSEPH MONTCALMO

Director of Academic
Technology and Instructional
Design,
The Peabody Institute of the
Johns Hopkins University

Joseph Montcalmo has spent his career building, developing, and deploying educational content and collaborating with fellow educators. In his current role, he is involved in every aspect of academic technology, from online learning to classroom-based technology. He has created online learning business plans for multiple universities, has experience with learning space design, and is an online adjunct faculty member. Joseph has presented on such topics as effective collaboration, academic technology, and approaches to successful leadership.



Twitter



Website



LinkedIn

The Peabody Institute, part of the Johns Hopkins University, is the oldest conservatory in the United States. “There’s so much knowledge here, and the faculty have so much to share,” says Joseph Montcalmo, director of Academic Technology and Instructional Design at Peabody. “The only limitation on how much students can get out of the university is that they have to come to one of our campuses to learn, both for one-on-one lessons with instruments and for classwork.”

To help overcome this limitation, Montcalmo’s approach to designing online learning is first to determine the needs of the student, and then to build courses to fulfill those needs. For example, Montcalmo says that one of the many areas, or *buckets*, his team focuses on is remedial education for international students. “What we’ve come to realize,” he says, “is that these students really need an online course that introduces them to what the United States is like and what Baltimore is like—how to open a bank account, how to get a cup of coffee, how to pay your rent, what taxes mean. We want to get such things out of the way so that they can focus on music when they get here. These students also may not have a mastery of the English language, so we have to address that need at the same time.” >>>



We need to chunk learning into smaller pieces and figure out how to intersperse activities and reading and things that will keep the brains of these really smart students engaged.



KEY LESSONS

- 1 Effective online learning courses must be created with specific goals in mind, but they don’t have to adhere to what is considered traditional learning. Innovate online learning both by topic and by technology to satisfy specific needs.
- 2 Broadening education first requires the understanding that increased access to education will necessarily change the way educators think about presenting learning materials to students in physical and virtual classrooms.

INNOVATIVE ONLINE EDUCATION IMPROVES CLASSROOM EDUCATION

Cloud-based technology plays an important role in the courses Montcalmo is developing. “We are putting streaming technologies into classrooms so that we can stream concerts, rehearsals, and master classes. Also, through an incentive grant, the dean put out some money for faculty and students to come up with innovative projects. One such project was to reach prospective students and outside constituents through a 360-degree video that shows experiences around the university, letting people feel like what it’s like to be here.” The result, when it’s complete, will be full immersion for distance and potential students in a classroom using 360-degree video and a mobile device.

Of course, technical innovation isn’t easy. Montcalmo explains, “The faculty we’ve worked with to build our online course work so far have been able to figure out how to deliver what they know in the classroom in new ways so that they can deliver it online. That doesn’t mean that it’s not a challenge to figure out how to get faculty up to speed quickly enough that they can be proficient in developing effective online materials.”

That’s an important distinction. Montcalmo says it’s essential to create online learning that isn’t just an imitation of what already exists in the classroom. “There’s an argument that even lecture-based education in the classroom is starting to erode. If you look online, it certainly is. Students have a shorter attention span. We need to chunk learning into smaller pieces and figure out how to intersperse activities and reading and things that will keep the brains of these really smart students engaged.” >>>

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Online education is infectious in its need for organization and best practices, and that infectiousness ends up permeating all the education in an institution when it's done right.

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INNOVATIVE ONLINE EDUCATION IMPROVES CLASSROOM EDUCATION

"Once faculty start thinking that way and building their online courses, it starts trickling back into their traditional teaching. A good portion of the faculty who have learned how to do online learning in a way that works for them and their students end up doing things like flipping the classroom, where they use more of their classroom time for discussion and push some of those lectures into chunked-up pieces online. They tell their students to watch those online pieces as homework before they come to class."

"Online education is infectious in its need for organization and best practices, and that infectiousness ends up permeating all the education in an institution when it's done right. With online education, you're forced to build all this stuff out before the class starts; you're forced to adhere to best practices in a way that you might not in a classroom, where you might be tempted to walk in and wing it a bit more." ■

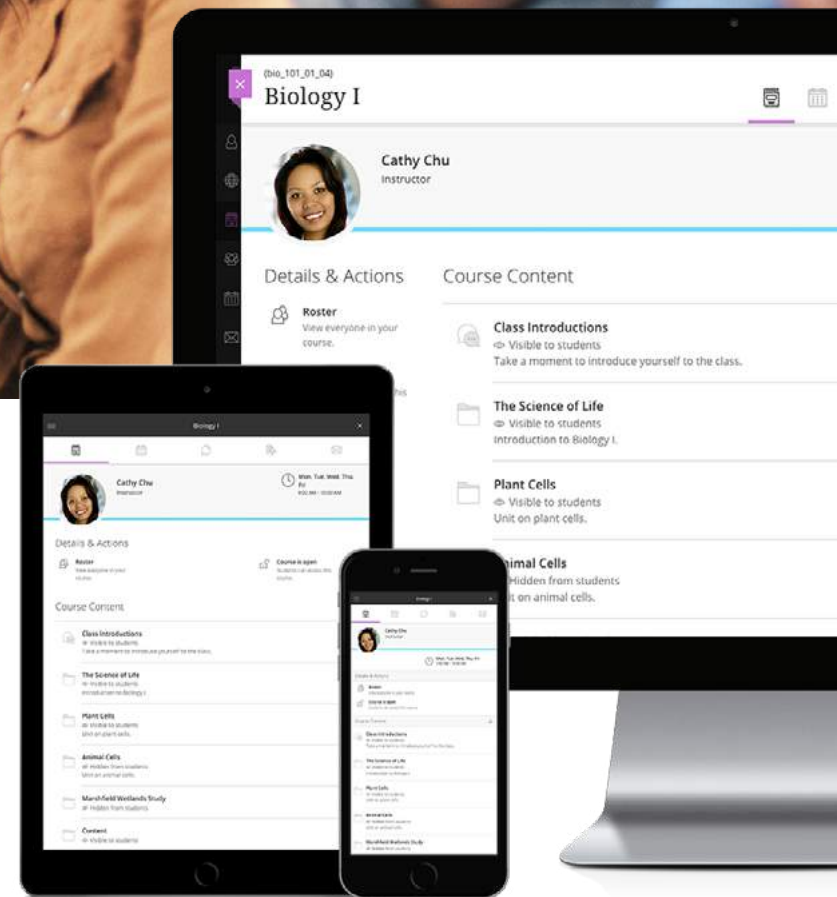
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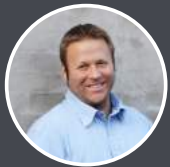
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CLASSROOM TECHNOLOGY SHOULD FACILITATE ACTIVE LEARNING



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**Director of Innovation,
Future Ready Schools/Alliance
for Excellent Education**

Tom Murray is the director of Innovation for Future Ready Schools, a project of the Alliance for Excellent Education. He has testified before the U.S. Congress and works alongside the U.S. Senate, the White House, and the U.S. Department of Education. Tom serves as a conference keynote speaker and was named one of "20 to Watch" by NSBA and Education Policy Person of the Year by the Academy of Arts and Sciences in 2015.

Tom Murray believes that as ed tech spending increases, it's important to look at what actually works. "Institutions realize educational value when they apply technology for active learning rather than passive consumption or observation," he says. "When students can use technology to explore, design, and create, that's where the magic happens." Murray and his colleagues have observed that technology investments are absolutely worth the money in those cases because the metrics on learning growth demonstrate that learning is actually occurring. Murray calls that concept *return on instruction*.

One example of a truly authentic learning experience is the Hand Challenge, created by Dr. Chris Craft. For this project, his students started with the big question, What problem do you want to help solve? "In the course of the discussion, it came out that a lot of children around our country were missing limbs, either because they were born that way or because of other circumstances," Murray says. >>>



When students can use technology to explore, design, and create, that's where the magic happens.



KEY LESSONS


- 1 Technology for the sake of technology does not achieve meaningful learning outcomes.
- 2 Educators must make learning their primary focus when selecting and implementing technology solutions.

CLASSROOM TECHNOLOGY SHOULD FACILITATE ACTIVE LEARNING

“Dr. Craft’s students actually went through a design process to design hands for children who didn’t have them.” The class used an interdisciplinary STEAM approach—that is, science, technology, engineering, arts, and mathematics—in which they worked with art, science, and math.

That kind of incredible learning experience is very different from cases in which a district orders a three-dimensional (3-D) printer and everyone sits around watching something print for an hour, with no real learning taking place. “When it comes to technology, it is not the tool’s fault how it’s used,” says Murray. “It’s up to the educators to make it meaningful.” A Google Chromebook can be a digital worksheet storage hub, making little difference at all, or it can be a pathway to unleashing student genius. A 3-D printer can simply be an expensive way to print things that you can hold, or it can be a pathway to changing the life of a child on the other side of the country. It really comes down to that pedagogy piece and how the technology is used.

Accordingly, Murray feels that it’s imperative that school leaders and decision makers remain hyper-focused on the learning experience they desire. They should determine which technologies provide the best conduit to help achieve their goals, of course, but they must remain focused on the learning itself. His organization, Future Ready, offers educators and institutions the Future Ready framework, which offers districts free, research-based resources for implementing all this work so that they can begin implementing technology successfully. ■



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When it comes to
technology, it is not the
tool's fault how it's used.
It's up to the educators to
make it meaningful.

TECHNOLOGY TRAINING INCREASES ACCESS TO EDUCATION



**KEITH
HOELL**

**Director of Online Education,
Briarcliffe College**

Keith Hoell is the director of Online Education and associate professor at Briarcliffe College in Long Island, New York. He is also an adjunct lecturer at St. Joseph's College and Medgar Evers College of the City University of New York, teaching in environments that use various learning management systems. Keith is a published author with John Wiley and Sons, having written two Microsoft Official Academic Curriculum textbooks on database management.



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Keith Hoell, director of Online Education for Briarcliffe College, not only works with fellow academic administrators to ensure academic oversight, but is also charged with ensuring technological access to all Briarcliffe's courses, both online and in the traditional brick-and-mortar ground classroom environments. "We run online classes for a mixed population, for both ground and completely online students. We have students who have disabilities. We have students who have never stepped foot in the state of New York before, where Briarcliffe College is located. We provide education to students outside the State and to those in other states who graduate from completely online programs for associate and bachelor's degrees. Then, we have students who live in New York State who also have never set foot on our campus."

"There are many reasons why students would be attending online," he continues. "A lot of it has to do with flexibility, especially if the student has a disability or may not be able to travel to the campus." Despite having access to education virtually, says Hoell, online learning should still be a worthwhile investment. " »»



Engaging students is really important from a retention aspect and also helps drive students to take online classes. I don't think a student wants to take an online class just to post to a discussion board once a week.



KEY LESSONS

- 1 Academic rigor is broadened and accessibility to education made easier when technological requirements are the same across the institution, regardless of whether students take classes online or in a classroom.
- 2 One challenge of technology in higher education is ensuring that staff have basic troubleshooting skills to ensure that students can connect to courses and resources, regardless of the technology or equipment they use.

TECHNOLOGY TRAINING INCREASES ACCESS TO EDUCATION

“We want to ensure a very full student body and a high level of academic rigor. The way we retain our students is through engagement, so for our online programs, besides requiring students to complete online weekly assignments, we also require them to attend a one-hour live lecture per week through a webinar environment.”

The webinar environment isn’t just for online classes, however. Hoell says that the College encourages even brick-and-mortar classes to use this feature as an additional resource to engage students. “It’s an audio/video interface that allows students to see the faculty and faculty to engage students by speaking directly to them. Faculty can still conduct a brick-and-mortar class if a class cannot meet due to extenuating circumstances, like inclement weather.”

Webinar environments aren’t the only technology necessary for accessibility. Hoell says that the technological requirements for accessibility reach across the Institution and are often used by all students. “We are accredited by The Middle States Commission for Higher Education, and as a necessary requirement for any education accreditation agency, we need to produce reports that help us assess the effectiveness of our technologies. Through those assessments, we’re seeing that we have better retention in those courses where we do accommodate accessibility. It’s also leading to student success.” Most importantly, Hoell says that broadening access helps engage students of all types. “Engaging students is really important from a retention aspect and also helps drive students to take online classes. I don’t think a student wants to take an online class just to post to a discussion board once a week.” >>>

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The challenge is ensuring that we can transfer the same skill sets, assignments, and other resources that allow students to meet objectives for the ground classes to the online environment—to ensure that all objectives for the ground classes are met in the online environment.

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TECHNOLOGY TRAINING INCREASES ACCESS TO EDUCATION

Of course, increasing access to education does require doing things a bit differently. “Another separate challenge is ensuring that our assignments for our online courses meet the same objectives for the same courses that are offered on ground. We offer some of the same exact programs online as we do on ground—the same courses, the same requirements. The challenge is ensuring that we can transfer the same skill sets, assignments, and other resources that allow students to meet objectives for the ground classes to the online environment—to ensure that all objectives for the ground classes are met in the online environment. We have succeeded in that area by ensuring close faculty coordination and strong academic governance.”

Closed captioning technology and transcription is also used by the College to accommodate hearing impaired students during webinars. Hoell continues, “Another big challenge is ensuring that you have a strong training program for faculty so that they know exactly how to set up the intricate captioning technology and other elements to accommodate students with disabilities and so things don’t go awry when the course goes live.” To ensure that faculty are well trained, Hoell says that he and his team provides them with a sandboxed environment in which they can practice using the technology before it goes live. He also warns that institutionally sponsored technologies aren’t the only challenges. “Some of the technology to meet accommodations doesn’t always come from the school side but rather from the student side. It’s important that your staff and administrators be familiar with basic troubleshooting for how accessibility equipment connects to a computer. I think that basic technical training for instructors, staff, and student support personnel at your institution can help with troubleshooting some of those higher-level devices, like screen readers and braille display technology.” ■



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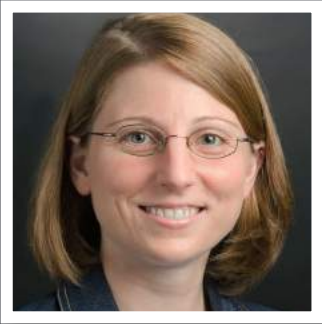


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PATRICK MULLANE

Executive Director, HBX, Harvard Business School

HOW LECTURE-CAPTURE TECHNOLOGY SUPPORTS STUDENT LEARNING



**LAUREN
ERARDI**

**Director of Academic
Technology,
Quinnipiac University**

Lauren Erardi is the Director of Academic Technology at Quinnipiac University. She received her EdM in educational media and technology from Boston University and her BA in education and psychology from Middlebury College. Her professional responsibilities revolve around supporting, inspiring and collaborating with Quinnipiac faculty to integrate technology as a vital component of the teaching and learning process.



LinkedIn

Lauren Erardi believes that educational technology can help learners of all styles and abilities meaningfully engage with class content. She has pursued this mission in her role as director of Academic Technology at Quinnipiac University, which implemented a room-based lecture-capture solution to make learning opportunities accessible to all students. This technology, which allows faculty to record their lectures automatically so students in the class can play them back later, offers students powerful new opportunities to deepen their understanding of course material.

Of course, on-demand recordings of class lectures are convenient for students who miss class as it allows them to stay on track with the course content. But, Erardi notes, lecture-capture technology also caters to different learning styles. "Students who learn differently often benefit from re-watching the lecture recordings to make sure they didn't miss anything," she notes. Erardi has received overwhelmingly positive feedback from students who feel class content is now more approachable. >>>



Students who learn differently often benefit from re-watching the lecture recordings to make sure they didn't miss anything.



KEY LESSONS

- 1 By making lecture recordings available on demand, educational institutions can better support learners of all styles and abilities.
- 2 Lecture-capture technology can help students master course material, prepare for an exam, and even participate in a class from overseas.

HOW LECTURE-CAPTURE TECHNOLOGY SUPPORTS STUDENT LEARNING

Lecture-capture recordings can also be a helpful study aid come test time. Students can review and interact with the recordings by pausing, rewinding, and even speeding up the playback, if desired. The ability to revisit what they heard in class can help students gain a solid understanding of the course material in their own way, on their own time. Erardi believes this is especially true with areas of study like medicine, finance, and economics, in which students must understand complex or abstract concepts to master the subject matter.

Erardi says that the lecture-capture tool was especially helpful for a student in the law school who was in South Africa for a semester. “She wanted to take an elective class that was offered only once a year, and it happened to be scheduled during the semester she was abroad,” Erardi explains. “Lecture capture made it possible for our student to participate in the class and engage with the content from overseas. The lecture-captures were streamed ‘live’ and the recordings were available on demand, so she didn’t miss a beat, even though she was physically out of the country.”

The goal of higher education and learning as a whole, Erardi believes, is to ensure that learning opportunities are available to everyone. “Ultimately, what makes me so excited about using video in the classroom is that it caters to learners with different learning needs, whether it’s the physical ability to get to the classroom or just catering to how different people learn,” she says. This is one way in which Erardi and her colleagues have been able to achieve their aim of making classes universally accessible to all learners and people with all abilities. ■

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Lecture capture made it possible for our student to participate in the class and engage with the content from overseas.

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SCALE BEYOND BENCHMARKS TO ACHIEVE SUCCESS



**LARRY
JOHNSON**
CEO/Founder,
EdFutures

Dr. Larry Johnson is an acknowledged expert on emerging technology and its impacts on society and education. He is the author of more than 175 papers and reports and has delivered 225 keynote addresses to distinguished groups and organizations all over the world. CEO and founder of EdFutures.org, past CEO of the New Media Consortium, he also founded the Horizon Project and directed it for 15 years. In 2015, he was named one of the "Top 50 Influencers of Education in the Asia/Pacific Region."

  
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Larry Johnson, founder and chief executive officer of EdFutures, is no stranger to technology challenges. As the founder of the Horizon Report for the New Media Consortium, he's seen how educators and institutions across the globe struggle with technology. "One of the things that I've been able to do because of my background and network is talk intelligently about how things are, and are not, different around the world," he says. "Increasingly, it's not the differences but the similarities that are important. As we become more focused on using technology, the issues and challenges become the same for all of us."

"One thing I see changing, with tremendous influence, is how people learn informally and how they learn through their devices. Particularly, smartphones are an interesting phenomenon." Johnson notes that most of the developed world now has access to smartphones. "Everybody pretty much has access to the Internet and their favorite apps, whether they're into cooking or wine or science. It's all in the palm of their hand." >>>



As we become more focused on using technology, the issues and challenges become the same for all of us.



KEY LESSONS

- 1 Institutions trying to determine where to start implementing technology to increase access and improve student success must be open to trying tools and reaching students on the channels they are already on. Begin with small programs and draw on best practices, benchmarks, and lessons learned.
- 2 Half the battle for increased access and success is the technology. The other half is determining how to scale small successes to reach larger populations.

SCALE BEYOND BENCHMARKS TO ACHIEVE SUCCESS

The challenge, says Johnson, is that the option to learn any subject from any location has created a fundamental shift in the access to education. "Schools and universities haven't really found a way to be in that space the same way that Google is or that social media are. We're just beginning to see what that means because it doesn't always mean people learning the right things." What Johnson means is that far too often, people are learning, but they're learning wrong or inaccurate information, which can be challenging to universities trying to educate toward a benchmark such as a degree or certification.

The problem, Johnson believes, is how educational content is created. "I don't really see formal education in the space of delivery outside basic web pages or learning management systems. They're all pretty much mobile friendly and have responsive design and all that," he explains. "But if you can't get to class and you're looking to learn online, it's a different experience. I think people do find success with it, and they're able to balance their busy lives and work and family, but it's a different experience. In delivering learning, we've come a pretty good distance, particularly with the kinds of services that expand access and connect people with different abilities to the tools they need to be productive. I think we've got a long way to go, however, to make access mean success in education." >>

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The short answer to 'how should institutions be using technology to increase access to education' is 'every way they can.'

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SCALE BEYOND BENCHMARKS TO ACHIEVE SUCCESS

"There are no real panaceas out there," Johnson says. "The short answer to 'how should institutions be using technology to increase access to education' is 'every way they can.'" Higher education must be open to trying all sorts of tools and reaching students on the channels they're on. For example, Johnson says that universities that are good at social media tend to use it to support programs or activities, but they haven't necessarily figured out how to integrate social media into formal learning activities. "That's kind of an obvious area because people love social media. But we need to be in that space, and we need to be effective at it. We can't look like we're trying to do what we've always done."

Universities are seeing success with increasing access to education and creating successful elements of online education programs, Johnson acknowledges. Usually, however, those are small programs targeted at a specific segment of the population. "The whole 'solving the issue of how do you scale a good idea in education' is very, very tough," he says. "George H. W. Bush called these successes *points of light*. Something we've been trying to do for a long time is figure out how to make those points more visible." Replicating those programs has turned out to be impossible. I think we need to be realistic about what best practices can do. We need to take that next step and say, 'All right, now that we've got these benchmarks, how do we make progress in our own institution?' There must be a realistic understanding that the challenge is large. We have quite a few solutions, models, and exemplars that we could use. How do we build on those successes, even if they're moderate? What we do know is that it's just very hard to scale those successes." ■



Due to many factors it has become increasingly difficult for students to attend college fairs or visit campus to learn about their postsecondary options. This is particularly true for first-generation and under-represented students. Virtual college fairs on CollegeWeekLive provide a free, easy opportunity for students, parents, and educators around the world to learn about colleges and universities from any internet-connected device. CollegeWeekLive has partnered with AVID, a global nonprofit which works with under-represented students, to coordinate a virtual college fair each semester for AVID elective students. During the three events so far, over 35,000 students have logged in to chat with college and university admissions counselors.



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CHARLIE BAIN

Manager of College Partnerships, CollegeWeekLive

TECH GUIDES PATHWAYS FOR STUDENT SUCCESS



MARTHA KANTER

Executive Director of the
College Promise Campaign and
Senior Fellow, NYU; former U.S.
Undersecretary of Education
(2009–2013),
New York University

Martha Kanter leads the College Promise Campaign, a national nonpartisan initiative to increase college access, affordability, quality, and completion in American higher education. She specializes in policy efforts to identify and apply innovative, evidence-based interventions; financing models; and behavioral incentives at the local, state, and national levels to raise high school and college graduation rates across the country.



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Martha Kanter, executive director of the College Promise Campaign and a senior fellow at New York University's Steinhardt Institute of Higher Education Policy, says that three of the most important questions for institutions implementing technology applications are: 1) Who is being educated? 2) Who is on track? and 3) Who is dropping out or left out? These questions, she says, "Are tied back to the rules that are put in place when you craft a tech-based system and use a multitude of applications and analytics. Technology-based vendors must work closely with experts on campus to ask, 'Where do we want students to go next?'" That process, according to Kanter, is one that should start well before students come to campus.

"Every College Promise program we talked to across 190 communities and states is leveraging the use of technology to increase access for students - whether through social media, text messaging students about the opportunities, or through course management systems." >>>



The best outreach efforts help students understand that we want them to go to college. That outreach helps to build confidence and college aspirations, especially for students who may not think it's possible.



KEY LESSONS


- 1 Improving student success in secondary education begins with communicating to students of all abilities that there are options for the future and providing the technological resources needed for those students to prepare for that future.
- 2 Three key questions for institutions to ask before implementing technology applications are: 1) Who is being educated? 2) Who is on track? and 3) Who is left out?

TECH GUIDES PATHWAYS FOR STUDENT SUCCESS

Kanter says communication with students, faculty and tech leaders at all levels of education is key. Students need to understand that college is an option, and if they want to go, there is a pipeline they can access to help them make informed choices about which college or university is best for them.

To communicate effectively, Kanter points out that institutions are, “Using accessible technologies to increase their outreach directly to students. The best outreach efforts help students understand that we want them to go to college. That outreach helps to build confidence and college aspirations, especially for students who may not think it’s possible.”

This outreach includes students who face a variety of challenges. Kanter explains that a wide range of diverse students have the potential to succeed in college. For example, Kanter says that more than 10 percent of students have disabilities, more than half of students are from low-income families, many are the first in their family to seek a college education, and many are from underrepresented populations (e.g., undocumented students, veterans, etc.).

“Technology is a great pathway to reach these special populations for whom more education is critical for success in the 21st century,” she says. “We need to really think through the use of the technology and tools needed for these students because they’re going to require different approaches and customized, personalized pathways that are targeted at getting them to the next level.” 

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Think through the technology goals with your institutional research and evaluation plan from the beginning. Design the educational strategy with technologies that enable student success.

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TECH GUIDES PATHWAYS FOR STUDENT SUCCESS

Kanter says one of the greatest challenges institutions face is how they can serve everyone. “Universities are going to use middleware or their own software, or they are going to buy a platform,” she explains. “You have to think about how the technologies can be used to achieve the intended results. You also have to consider the unintended consequences of potentially creating *more* barriers.”

This is where Kanter suggests that it is necessary to come back to the three questions she laid out. “Think through the technology goals with your institutional research and evaluation plan from the beginning. Design the educational strategy with technologies that enable student success.” That means starting with the question, “Who are you educating?” and then follow that with the question, “How do they access your educational opportunities?”

“What is the pathway to student success from a technological standpoint?” Kanter asks. “What’s the technology infrastructure that will increase student support and academic success? Is the delivery of courses and services fully online? Is it blended? Is it face to face? What technologies (hardware and software applications) will keep students persisting until they complete their certificate or degree? What does the research tell us? Where’s the evidence?” Asking these questions up front will help universities avoid systems that create what Kanter calls the “dead-end or revolving-door” by keeping student success in the forefront when deciding what’s next with technology. ■

Better collaboration for more effective learning

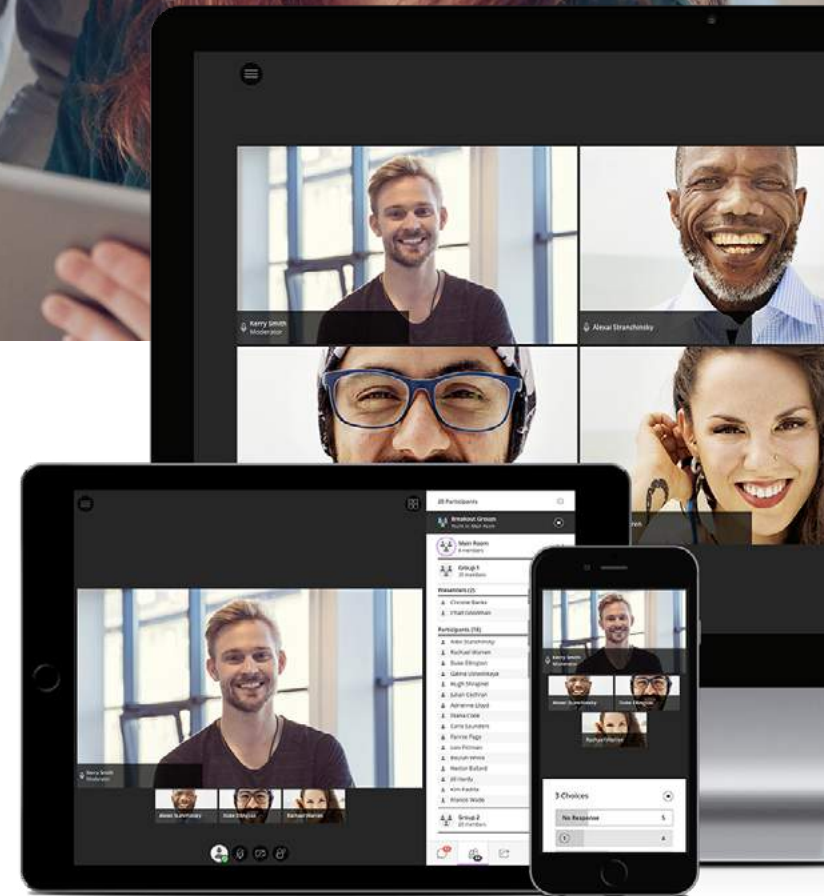


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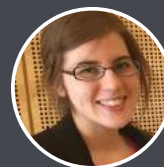
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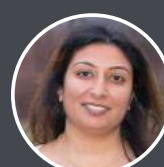
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PLATFORM ACCESSIBILITY: MILESTONES REACHED, BUT A NEW FRONTIER



**RAY
HENDERSON**

Founder,
Lessons Learned Ventures,
LLC

Ray Henderson is an educational technology entrepreneur, strategic advisor, and seed state investor. As an operating executive, he helped conceive and launch several of the most recognized products in the education technology market. He's an evangelist for open technology standards, including Common Cartridge and LTI. Today, he is developing promising young companies through Lessons Learned Ventures, LLC, a boutique ed tech investment and strategic advisory firm.



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Over the course of his career, Ray Henderson has been a developer of digital learning products and platforms. He's observed the industry in the period from its first awakening around the need for assistive technology, to today.

Henderson notes, "In the 1990's as the ed tech industry really began to explode, we were so focused on inventing first generation digital platforms that we were oblivious to the need for assistive technologies." But after these early products gained traction on campus, educators and advocacy groups brought attention to the issue. Responding to this, Congress created the Section 508 amendment to the Rehabilitation Act of 1973. This landmark legislation required publicly funded institutions to provide comparable access to digital information. "Section 508 was a real awakening to the needs for assistive technologies," Henderson says. "It had an immediate impact on product developers across industry, and caused a lot of change in both product roadmaps and quality assurance programs." >>>



Section 508 had an immediate impact on product developers across industry, and caused a lot of change in both product roadmaps and quality assurance programs.



KEY LESSONS

- 1 Learning Management Systems vendors have come a long way in supporting assistive technologies.
- 2 Machine learning technology may provide educators with insight on how to further improve the accessibility of their courses.

PLATFORM ACCESSIBILITY: MILESTONES REACHED, BUT A NEW FRONTIER

Initially, the industry faced legislation that lacked clarity. There were no precise definitions for what a 'comparable experience' was, nor templates to follow. "We were scrambling to understand the issues, just as universities were. We began to collaborate with university accessibility labs to understand practical steps we could take to improve the experience based on what they were seeing on the ground." Among the most important developments at that time was the development of sophisticated screen readers that provided text-to-speech capabilities for visually impaired students. Henderson notes that this brought significant clarity to platform developers. "Screen readers gave us products we could bring into our testing labs and simulate an experience in detail. We were able to not only focus on regulatory compliance, but designing an experience with products with greater empathy for those who needed assistive technology to use them."

In Henderson's view the industry has now reached a key milestone of basic platform compatibility, but faces an important remaining challenge. "It's now rare that a core platform for digital products from a major publisher or one of the major Learning Management Systems throws significant red flags," he notes. "But as issues are resolved in the platforms, they've exposed a new category of concern." Many learning platforms provide faculty with authoring tools. As they use them, they are introducing new content for learners. And with each added piece of text, new image, or video introduced, there's new potential for challenges beyond the core platform. "Learning platforms have enabled authoring and helped educators respond to the need for more dynamic coursework. But this change brings with it a new problem – of how to ensure this content is accessible." >>

“
Learning platforms have enabled authoring and helped educators respond to the need for more dynamic coursework. But this change brings with it a new problem – of how to ensure this content is accessible.”

PLATFORM ACCESSIBILITY: MILESTONES REACHED, BUT A NEW FRONTIER

Amidst growing appreciation for the problem of making sure dynamically authored content is accessible, especially as there are now millions of educators authoring course elements, Henderson notes the promise of recent innovation to solve it. He points to Cambridge UK-based Fronteer, a company focused on solving this problem. "Fronteer is a highly innovative company and is applying the latest machine learning technology to help solve this important problem." He explains that Fronteer's product is capable of reviewing course content authored into LMS platforms and providing personalized reporting to faculty authors about where their content might be made more accessible. It also provides institutions with a comprehensive view about courses that contain content that may not be accessible. "Fronteer's approach has made an intractable problem solvable at scale and represents a real breakthrough in digital learning." He is also encouraged by Fronteer's recent acquisition by Blackboard. "Blackboard recognized this innovation early, and can now add their global scale and support to this much-needed technology. This clearly ranks among the most important new developments in accessibility in the last decade." ■



College students with full-time jobs and distance learners who are unable to attend a physical campus benefit from being able to strengthen their knowledge or review core concepts from their home, during their commute, or between shifts at work. A mobile-optimized learning platform helps learners carry their courseware in the palm of their hand, and using W3C-WAI guidelines helps make learning platforms accessible to all students. Meeting students where they are is the best way to empower their education.



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ANDREW SMITH
LEWIS

Co-Founder & CEO, Cerego



KOREY SINGLETON

Assistive Technology
Initiative Manager,
George Mason University

Korey Singleton is manager of the Assistive Technology Initiative (ATI) for George Mason University (GMU). The ATI is tasked with guiding and implementing a university-wide strategy for addressing the electronic and IT accessibility needs of GMU students, staff, and faculty. For more than 20 years, he has been an advocate for the accessibility and assistive technology needs of individuals with disabilities in K–12, higher education, and state and local government.



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| LinkedIn

Korey Singleton is an assistive technology (AT) specialist who has broad experience helping students with all levels of disability, especially those with visual impairments. From his post managing AT services at George Mason University in Washington, D.C., he has collaborated with interdisciplinary teams to provide specific solutions for students, staff, and faculty who need worksite modifications, classroom accommodations, and other technology solutions. Helping students with known disabilities can be rewarding, but Singleton has recently noticed that when made more widely available, some AT is being used by students who may not traditionally seek help but have need nonetheless.

“We essentially make sure that students with disabilities here at George Mason University have equivalent access to all the technology resources used at the school,” says Singleton. “But we are happy to sit down and provide training for any student here on campus.” This open approach has resulted in direct benefits to a wider student population. >>>



We essentially make sure that students with disabilities here at George Mason University have equivalent access to all the technology resources used at the school.



KEY LESSONS

- 1 Making tools available to as much of the student population as possible benefits those who may not typically seek help through AT programs.
- 2 Broadly deploying AT can be an effective recruiting tool for students who may need additional help but do not always self-identify as having a disability.

One good example Singleton cites is the growing use of literacy support solutions, which include all variety of language, vocabulary, and reading tools such as text-to-speech applications, that have been particularly successful at George Mason University. In addition to making it easy to convert printed text into audio, these applications typically incorporate spell check tools and other kinds of literacy tools like dictionary support and verb checkers—all elements that can be supportive for students who have learning challenges.

The university has successfully negotiated site licenses for many of these applications, which makes them available to any student who has a university user name and password. The results have been positive. Singleton's team regularly sees 50 to 60 students using the text-to-speech and other capabilities of the software each quarter. New users are always coming on board.

"These tools are designed for people who have a print impairment, but can see and interact with a computer (unlike visually impaired students)," he says. "They just may have difficulty reading standard text, whether it be in a book or on the screen." Because it reads different formats, text-to-speech software can read from a website, a Microsoft Word document, or a PDF document and can convert electronic text or typewritten text into audio files, which allows students to listen at their convenience. "It's an alternative strategy to help a broad group of students learn and take in information as opposed to making them sit down in front of a printed resource or at a computer," says Singleton. >>>

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I find that a lot of the people who consult our office to learn about AT are not registered with the disability services office or even have a documented disability. They are just trying to find the most efficient strategy for accessing their instructional resources.

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One thing the university did to make it easier for people to take advantage of text-to-speech capabilities was install a few high-speed scanning stations around campus. Students wanting to take advantage of these text-to-speech tools are encouraged to have their books cut so that they can run them through these scanners; in 15 to 20 minutes, they can convert a 400- to 500-page textbook into a PDF document that the software can then read to them.

"I find that a lot of the people who consult our office to learn about AT are not registered with the disability services office or even have a documented disability," says Singleton. "They are just trying to find the most efficient strategy for accessing their instructional resources." ■

ADA COMPLIANCE LEADS TO BETTER LEARNING DESIGN



**KAREN
RUBENSTEIN**

Director of Academic
Technology Services,
Morgan State University

Karen Rubinstein is the director of Academic Technology Services (ATS) at Morgan State University in Baltimore, Maryland. She and the ATS staff strive to enhance teaching and learning through the identification, evaluation, adoption, and integration of technology into online, hybrid, and traditional courses.



Website

Several years ago, Morgan State University started offering online courses, says Karen Rubinstein, director of Academic Technology Services. "But then we had to go back and make sure that all the software that we use has Americans with Disabilities Act (ADA) statements and is compliant—even our student registration. Now, we always take steps to make sure that the vendors we work with have compliant products. We make sure we're cognizant of that."

Rubinstein says that beyond basic compliance with the ADA, her university tries to provide assistive technology that will be useful for all students. One such technology is a software program that reads web interfaces and documents. "This software allows us to reach students who might have a reading disability or who prefer to hear something being read over reading it themselves. It also applies to different learning styles. It's not a screen reader; rather, it's for students who have a learning challenge or even for those who just want things to be read to them." For example, Rubinstein says that one of her graduate students uses the technology to listen to course-related documents when traveling in the car. >>>



Determine all the different units on campus that can contribute to the effort. You might discover bits and pieces of technology that you didn't realize were there and that you can bring together under one umbrella.



KEY LESSONS

- 1 Compliance with legislation such as the Americans with Disabilities Act is one way institutions can begin to offer assistive technologies, but it should go deeper than those basic requirements.
- 2 Compliance and needs assessments should reach deep into an institution's different business units to determine whether existing technologies are appropriate for and can be extended to increase accessibility for the whole school.

ADA COMPLIANCE LEADS TO BETTER LEARNING DESIGN

"When we're evaluating different software, we want that software to meet the needs of the smaller group, but we always look to see how broadly it can be applied, how well it will serve the needs of everyone at the university. So, this technology is a great tool for anyone who wants to use it regardless of whether they "need" something like that."

One challenge that Rubinstein highlights is the decentralized nature of some institutions. Because not all the business units of an institution are connected, technologies may be in use in one department that another department might be missing out on. "Try to take a broad and inclusive approach to creating a needs assessment. Determine all the different units on campus that can contribute to the effort," she says. "You might discover bits and pieces of technology that you didn't realize were there and that you can bring together under one umbrella, at least as far as awareness and communication, so that you can start to have a more organized and intentional implementation."

"Then, put together teams from the different areas to create a plan so that you can begin to implement those existing technologies university-wide rather than having one school do one thing and another school do another thing." Unity is a requirement for successful implementations, and a great first step to implementing technology institution-wide is to create a single technological front. She explains, "There must be a centralized effort: Just try to get that organized. Our school has always been decentralized in many respects, so it can be a challenge. The same is probably true for many other colleges and universities." >>

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Number one, make sure that you're not excluding any students from participating in your school because you can't accommodate their needs. It's the right thing to do.

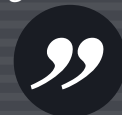
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ADA COMPLIANCE LEADS TO BETTER LEARNING DESIGN

“At the most basic level, being an accessible institution is quite simply the right thing to do. Number one, make sure that you’re not excluding any students from participating in your school because you can’t accommodate their needs. It’s the right thing to do. And number two, we’re also a state school, and that obligates us to comply with the ADA. More and more schools are being sued, and we don’t want that situation, so it’s important to strive for compliance,” she says. “But you should do this anyway—even if you’re not obligated by law.” ■



While working at a school in NYC for students with language-based learning disabilities, I saw the true power of technology. The school provided access to a wide variety of digital tools to help the teachers teach and the students learn. These were simple things like a microphone that enabled an incredible History teacher to read and record the entire textbook and transfer the audio to the students' iPods so they could listen along while reading. Video cameras and editing software made it possible for severely dyslexic readers to embrace the language of film and create wonderful short movies based on their understanding of the texts we were reading. Technology access is the gateway to knowledge and a key tool in unlocking the potential creativity in all learners.



ADAM BELLOW
Co-Founder, Breakout EDU

CONTENT IN MULTIPLE FORMATS PROVIDES THE GREATEST ACCESS



**KRISTA
GREEAR**

**Assistant Director,
Disability Resources
for Students,
University of Washington**

Krista Greear's drive to help students and love of technology and data make her a great fit for her position managing the Access Text & Technology program and Captioning program for all 3 University of Washington (UW) campuses. She has served in higher education disability services, providing students with alternate text, since 2007, with four years as a part-time employee at Central Washington University and the rest as a full-time employee at UW.



Twitter



Website



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A core realization that has come from Krista Greear's many years of helping students who have learning disabilities is that access and associated learning can work only if the material is in a format appropriate to each student. "What technology is doing for our students with disabilities," she says, "is allowing for greater flexibility by giving them choices as to how they consume content." This flexibility may be as simple as changing a TIFF file to a Word document or as complex as text-to-speech translation, video captioning, or converting a PDF file into HTML markup. Fortunately, solutions are available to help institutions create the most accessible content possible, and this help isn't just benefitting learning-disabled students.

"What I love is that essentially, technology is being created for students or end users who have disabilities, but it benefits everyone," says Greear. She cites Apple's built-in text-to-speech and other, similar capabilities as a great starting point. For example, the University of Washington, where Greear manages accessible document conversion, has provided all students' access to an online file-conversion tool that takes in common file formats and converts it to a more accessible version. >>>



What technology is doing for our students with disabilities is allowing for greater flexibility by giving them choices as to how they consume content.



KEY LESSONS

- 1 More emphasis needs to be placed on the issues of creating more accessible content, but sometimes something as simple as providing multiple formats of the same material can greatly improve effectiveness.
- 2 The longer-term strategy toward highly accessible content creation will require a partnership among subject matter experts, experts on learning disabilities, instructional designers, and IT teams.

CONTENT IN MULTIPLE FORMATS PROVIDES THE GREATEST ACCESS

This simple service has made it easier for faculty and students to turn graphics files into text-based documents that can be used with software for audio output. This conversion also makes searching the document possible, another universally designed (and desired) feature.

Another access-improving technology that Greear's team is testing is more of a "content accessibility service" integrated with the university's learning management system. In addition to providing the technical back end to convert documents between formats, this service helps instructors improve their existing content as well as create more compelling and useful content to combat access challenges. "Although these tools are specifically designed for students with disabilities," says Greear, "anybody, regardless of disability, can go in and choose to consume their content in a format different from what they may have been given. We also get all sorts of data and reports about how accessible each course is, which is helpful for me as an administrator because I can use data to tell my story and promote change."

Another hot topic these days among Greear's associates is captioning for videos. Thanks to recent lawsuits, many higher education institutions are looking at the vast body of video course material they deploy and developing captioning and audio description options. "Video is really hot right now, and people see the benefits of it," says Greear. "So, at the bare minimum, there must be a captioned version, where text is included on screen so that someone who is deaf or hard of hearing can participate." This process ideally should lead to the further step of including audio descriptions, which describe what's going on in the video for visually impaired students. >>

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What I love is that essentially, technology is being created for students or end users who have disabilities, but it benefits everyone.

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CONTENT IN MULTIPLE FORMATS PROVIDES THE GREATEST ACCESS

Do all these new tools mean that instructors have to become producers of technically complex and often layered materials? “I do not expect instructors to become accessibility experts,” says Greear. “I don’t think that’s reasonable. But I do expect instructors to understand the basics—understand why, for example, an image-based PDF file is worse than a text-based PDF file.” The important job moving forward, she says, is that of instructional designers or learning technologists. “This is where IT and display services have to become partners on campus,” she says, “because we are each different subject matter experts and we have to bring everyone together to create a more inclusive environment.” ■

EMPOWER STUDENTS WITH DISABILITIES THROUGH ROBOTICS



**MONICA
YATSYLA**

**Manager of Instructional
Design Services,
Hofstra University**

Monica Yatsyla is the manager of Instructional Design Services at Hofstra University. She focuses on trending teaching techniques and academic tools. Her team of instructional designers conducts faculty workshops and one-on-one faculty consultation on technology and pedagogy to engage students in the learning process as well as increase instructor efficiency. Monica and her team help faculty develop courseware to enhance content while incorporating hybrid, online, and flipped instruction teaching models into their current practices.



Twitter



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Monica Yatsyla believes that when colleges and universities make a proactive effort to listen to the needs of their students with disabilities, they can create powerful solutions that make an incredible difference in these students' lives. At Hofstra University, where Yatsyla is manager of Instructional Design Services, she works within the IT department and partners with the Student Access Services team on an initiative that promises to make educational opportunities more accessible to students who until now have faced difficulties pursuing their education.

As is the case at many institutions, several students at Hofstra are dealing with chronic illnesses and are frequently unable to attend class. After a certain point in the academic year, their professors feel that they have fallen too far behind and recommend that these students withdraw from the class. Deborah Hancock, the assistant director of Hofstra's Student Access Services Office, says that in response to feedback from these students on the challenges they were encountering, "We asked Monica to come in and talk with us about how we could better support these students." >>>



Why don't we roll this technology into a classroom so that students whose illness or disability physically prevents them from attending class can still participate?



KEY LESSONS

- 1 Leveraging technology such as double robotics can allow students who can not physically attend class the chance to not only participate virtually, but also move around the class as needed, even participate in smaller group discussions.
- 2 Strong partnership and collaboration among campus departments are essential to improving educational accessibility for students with disabilities.

EMPOWER STUDENTS WITH DISABILITIES THROUGH ROBOTICS

At first, Yatsyla explored the idea of using videoconferencing technology to let students participate in class from a remote location. With more than 200 classrooms with varying technological configurations, however, that option presented several barriers to success. So, Student Access Services chose to try a technology called *double robotics*, also known as a *telepresence robot*, which is essentially an iPad on a stand that has a wheel—a bit like a Segway. Yatsyla asked, “Why don’t we roll this technology into a classroom so that students whose illness or disability physically prevents them from attending class can still participate? The students could simply connect to that iPad from wherever they are.”

Rather than being a static presence in the classroom, the robot is expected to provide some freedom of movement, as well. It could move around at a student’s prompting and be part of a lecture or a small group in the class, and then return to its original position at the front of the room. Hancock is optimistic about how the double robotics solution could empower students with disabilities. “We hope that this new technology will give our students a feeling of independence from home, from the hospital, or from wherever they may be able to function the best at a given time,” she says. Hofstra also hopes that the robot’s visibility on campus will help build awareness of disabilities and the importance of accessibility.

Yatsyla emphasizes that strong collaboration from the Student Access Services team and the IT department made this solution possible. For that reason, she says, “Any department on the university campus has to have a good relationship with its IT organization.” With a commitment to supporting the needs of students with disabilities, any educational institution can improve the quality of its educational experience and make meaningful educational opportunities truly available to all students. ■

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Any department on the university campus has to have a good relationship with its IT organization.

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In my university classes, I always tell my preservice teachers that as practicing teachers “they will move mountains.” With use of technology and dedication to providing access no matter what barriers we face, they exemplified this by helping videoconference in one of our students who was ill and needing to travel for treatment. Though separated by distance, she was able to be a part of our experience and our community, and, in turn, model how learning should be within reach of all students.



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JENNIFER WILLIAMS
Professor, Saint Leo University

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APPLY UNIVERSAL DESIGN TO INCREASE ACCESSIBILITY



**SHERYL
BURGSTAHLER**

Director of Accessible
Technology Services,
University of Washington

Dr. Sheryl Burgstahler founded and directs the Disabilities, Opportunities, Internetworking, and Technology Center and the Access Technology Center at University of Washington. These centers promote the use of technology and other interventions to support the success of students with disabilities in postsecondary education and careers and the development of facilities, software, websites, multimedia, and online learning programs that are welcoming and accessible to individuals with disabilities. Sheryl is the editor and lead author of the book *Universal Design in Higher Education: From Principles to Practice*.



Website

"Many students with disabilities don't take online courses right now," says Sheryl Burgstahler, director of Accessible Technology Services at the University of Washington. "But they don't always expect that those courses are going to be accessible." Burgstahler says that this is the crux of an issue she spends a lot of her time dealing with. "I work with students who have disabilities and help people who work with students who have disabilities. For that student population, there are sometimes reasons they can't be on campus on a certain day. Online courses can be empowering, but a lot of technology isn't accessible to students who have disabilities, so it actually creates a barrier."

One way Burgstahler suggests adapting offerings so that all students have the same opportunities is to use universal design strategies. "I apply UD strategies to make the courses accessible to people who have disabilities. Even if I don't have any of those students in my class, I'm ready for them. My biggest piece of advice is to be proactive about making your course welcoming and accessible to a student with a disability." »»



I apply UD (universal design) strategies to make the courses accessible to people who have disabilities. Even if I don't have any of those students in my class, I'm ready for them.



KEY LESSONS

- 1 Institutions must plan for and consider all students when implementing accessibility technologies.
- 2 UD strategies can help institutions build learning capabilities to make courses accessible to all students, regardless of location or technological capabilities.

APPLY UNIVERSAL DESIGN TO INCREASE ACCESSIBILITY

Burgstahler points to the example of captioning videos. Some video players (e.g. YouTube) automatically add captioning, but Burgstahler explains that those captions are often incorrect. “The computer gives you a draft of the captions, and then you edit those drafts,” she says. “It’s important that the person who owns the video does that because no one else can. So many of the video captions are inaccurate, and it’s a shame that we aren’t taking better advantage of that wonderful technology.”

Other examples of reduced access include documents not properly formatted for screen readers. Burgstahler says that documents “need to be formatted so that the text is available to the screen reader technology that a person who is blind is using. The same is true for people with dyslexia and other disabilities that affect their ability to read. The text has to be available to their device so that it can read the text to them because people with those conditions can benefit from both seeing and hearing the text.” In contrast, online instructors often post scanned images as PDF files, where the text is not available to a screen reader in a form it can translate into speech. “And it goes on and on,” she says. “The idea is that you need to think ahead about what somebody might need. Then, you just do it proactively.”

Thinking ahead and being prepared for students of all abilities is a goal for technology used in education says Burgstahler. “I think that UD provides a framework for making technology and other offerings available to people who have disabilities. UD encourages us to think proactively, and we think of all students as part of our diversity on campus. We expect that they’ll come, and so we prepare ahead of time.”



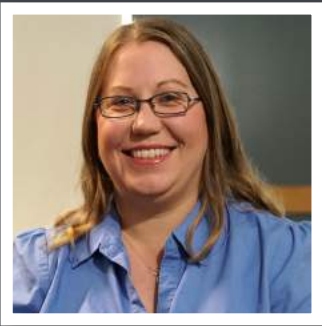
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APPLY UNIVERSAL DESIGN TO INCREASE ACCESSIBILITY

The outcome of viewing technology and pedagogy through a UD lens is significant. She says, “It’s going to make programs more welcoming to people with disabilities. The better job we do of making a course accessible, the more these students will benefit from that course, whether it’s a hybrid course so they’re onsite some of the time or strictly an online course. Accessibility minimizes the legal vulnerability of institutions, as well.”

Legal requirements such as the Americans with Disabilities Act of 1990 (ADA), the 2008 amendments to ADA, and Section 504 of the Rehabilitation Act of 1973 require access to education and other services for individuals with disabilities. “Our universities (private or public), our community colleges, and kindergarten through grade 12 schools must comply with those laws. When a course is not accessible to a student with a disability, the institution has to scurry around to provide accommodations or it falls out of compliance,” she says. However, she points out that it is easier and can be ultimately less expensive to improve access by applying UD principles when a course is being designed. The result is more than just improved student success rates. “I think accessibility technologies improve learning for all students, and students with disabilities benefit in the same way.” ■

ACCESSIBILITY STARTS IN PROCUREMENT



**KARA
ZIRKLE**

**Accessible Technology
Specialist,
Miami University**

Kara Zirkle has worked in accessibility for more than 16 years through positions in nonprofit, government, and higher education organizations. She has focused on assistive technology assessments; training (specifically, on Section 508 and WCAG 2.0 compliance); and developing accessibility infrastructure, including procurement, course accessibility (distance learning), and document and web accessibility. Kara has focused on higher education for the past 10 years, working at George Mason University before moving to Miami University in Ohio.



Twitter




Website



LinkedIn

Kara Zirkle, Accessible Technology Specialist for Miami University, says accessibility considerations should start at the procurement stage. “A [new study](#) stated that by incorporating accessible technologies, organizations increased production by 80 percent,” she says. “From that perspective, if we can incorporate accessible technology on the front end, imagine how those technologies can help those students who don’t disclose that they have a disability or even those students who don’t have a disability but are struggling to make the transition to college. It’s usability as well as accessibility.”

It is not always easy to start with accessibility in mind. “Time, resource, and budget constraints can make building accessibility into courses difficult,” says Zirkle. “Working with instructional designers is key. As an accessibility specialist, it is sometimes difficult to determine what type of training or education individuals need. You can best spend your time finding the largest gaps and training areas that can increase accessibility immediately.” 



Time, resource, and budget constraints can make building accessibility into courses difficult.



KEY LESSONS

- 1 Accessibility is more than just including alternative forms or documents or captioning videos in existing content. Instead, accessible technology should be instituted from the beginning of course design and creation to ensure true accessibility.
- 2 Building accessibility into the planning and infrastructure of an organization can reduce long-term costs and result in not only better accessibility within the institution but also better accessibility within education as a whole.

ACCESSIBILITY STARTS IN PROCUREMENT

One area that Zirkle points to as a good area to start building accessibility is the mobile responsiveness for websites and applications on which so many students rely. “Mobile design guidelines and accessibility guidelines overlap by about 75 percent. If vendors or faculty want to design for a more mobile perspective so that students can bring whatever technology they want into the learning environment, then they are already incorporating accessibility,” she says. “It plays into so many hands that everyone benefits. There’s no way someone *cannot* benefit. Just showing captioning is great.” For example, Zirkle says that captioning, when done well, can help students who are learning English as a second language.

Zirkle says that starting to build accessibility during the procurement process makes the most sense. “The procurement perspective is a good line in the sand. It gives you a timeframe to start ensuring capabilities for accessibility or working accessibility into contracts. You can then build yourself up within about a year and a half to two years because you have to look at all the renewals and everything else that comes in.”

“If we can build it into the infrastructure and the planning, we reduce the cost to everyone,” she points out, “whether it’s the university or the vendor. Working accessibility in from the beginning is going to be the easiest course, whether it’s online courses or captioning or whatever else.” Zirkle also suggests that beginning to implement accessibility during the procurement process can reduce the demands on educators’ time. “There is always a need for resources and support. The more faculty are asked to add to their plate the less likely they are able to complete everything to the level they would like to achieve.” >>>

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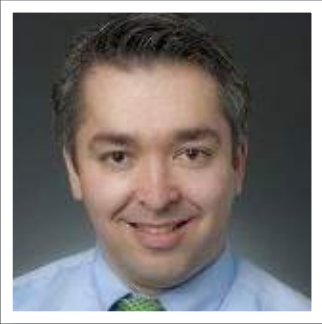
The procurement perspective is a good line in the sand. It gives you a timeframe to start ensuring capabilities for accessibility or working accessibility into contracts.

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ACCESSIBILITY STARTS IN PROCUREMENT

Approaching accessibility early and holistically can have huge returns according to Zirkle, “The return on investment is much larger than just the university that’s incorporating accessible technology,” she says. “When you’re talking about procurement and accessibility testing from a university perspective, you sometimes get into a larger question of ‘how does one university ensure quality assurance of testing versus another university?’” These questions push accessibility technologists like Zirkle to look at education as a whole and ask what more can be done to improve accessibility. That question often leads to greater results than anyone might have imagined at the onset of creating accessible education. ■

ACCESSIBLE CURRICULUM BEGINS WITH THE INSTRUCTOR BUT REQUIRES A TEAM EFFORT



**DEVIRIM
OZDEMIR**

**Instructional Design
Coordinator,
Des Moines University**

Dr. Devrim Ozdemir is an experienced scholar in the field of instructional design and technology. His work focuses on the development and improvement of competency-based graduate professional degree programs. He works one on one and collectively with faculty to develop courses, using learning analytics and big data to help the degree programs assess student learning and competency.



Website

As an experienced academic who has more than a decade of instructional design and technology experience, Dr. Devrim Ozdemir takes a scholarly view of how technology is improving access. His many published works have solidified his views that innovative learning strategies to improve access are ideally placed at the beginning of the learning process, not tacked on at the end. This holistic view of instructional design means that better access and the better results that follow are more completely embraced by a wider variety of students, including many who might not have sought out specific help but who benefit from greater access when exposed to best practices. “A good example,” says Dr. Ozdemir, “is captioning and subtitles for videos (or other multimedia formats).”

“Perhaps the primary audience for subtitles, considering accessibility issues, is those who have hearing disabilities,” says Dr. Ozdemir, “but what I realized was that if we’re talking about technical concepts that half the audience has never heard of, subtitles help everyone. If we’re talking about teaching a course to six or seven countries in which the primary language is not English, it helps there. It also helps our adult students who might have a sleeping baby in the house to follow the video without having to listen to the audio as closely.” >>>



[Good instructional design] doesn't only help those who have disabilities but is also a win–win situation for the instructor.



KEY LESSONS

- 1 Thinking about accessibility throughout the course design process results in tools that help more students, including those who may not fit the typical profiles of students who need additional accessibility.
- 2 Each institution has to build a process and structure that works for its unique environment, but fostering a team approach in which subject matter experts, skilled technicians, and those who understand instructional and universal design come together to build courses should be the ultimate goal.

ACCESSIBLE CURRICULUM BEGINS WITH THE INSTRUCTOR BUT REQUIRES A TEAM EFFORT

In addition, says Dr. Ozdemir, although some instructors may look at the process of adding captions and subtitles as an additional burden, he suggests that they, too, will benefit from the process of making their material more accessible. “I think it helps the instructor, too,” he says. “When I create subtitles, I make the task easier by starting with a good video script before shooting the video. When I start with a video script—a typed document—I can synthesize my ideas more clearly. It allows me to become a more organized instructor. That way, I can create or provide better-quality material. So, it doesn’t only help those who have disabilities but is also a win-win situation for the instructor.”

When accessible technology like captions and transcripts are available to all students, not just those with identified disabilities, each student can determine what works best for him or her. “Individual students will make the decision as to what is going to work for them,” says Dr. Ozdemir. “I think some will prefer seeing the whole transcript, to read it first, because that way they have control over the pace of the presentation. Some will have more familiarity with the topic, will be comfortable with the pace that the presenter provides. Some of them will just speed up the video if the instructor is speaking too slowly.” >>>

“

I really do not see curriculum design as a siloed approach, where instructors create their own content—alone—and then a separate special unit takes care of adding the accessibility component for the development of new course content. I see it as teamwork.

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Dr. Ozdemir acknowledges that it's not realistic to expect instructors to become accessibility experts following every best practice and to necessarily do the work of adding captions and subtitles for every pre-recorded multimedia from external resources (though he is quick to suggest this can be an easy task if proper planning and training occurs first). Instead, he sees the process of good instructional design as a shared responsibility. "I think that these things are not the duty or task of one individual," says Dr. Ozdemir, "but rather that every party has some level of responsibility. I believe that learning-management system administrators have some responsibility to make sure that the system-wide applications are accessible (the right colors have been selected, Web Content Accessibility Guidelines have been met, etc.) and that instructional designers add value, too, and not just for physical disabilities but also cognitive disabilities. Then, there are areas that require subject-matter expertise that neither the technical staff nor the instructional designers will have a good grasp of such as developing, selecting, sequencing and segmenting the content; I think that that is the part that instructors need to take care of."

"I really do not see curriculum design as a siloed approach," says Dr. Ozdemir, "where instructors create their own content—alone—and then a separate special unit takes care of adding the accessibility component for the development of new course content. I see it as teamwork where every party works together during the creation of new instructional content." ■

OPEN, MEANINGFUL CONVERSATIONS WITH ASSISTIVE TECHNOLOGIES




**KEVIN
DALIN**

**Consultant and Rehabilitation
Technology Specialist,
Tech4Impact**

Kevin Dalin founded Tech4Impact, an Iowa Targeted Small Business, to provide services that make life accessible, such as assistive technology, training, and digital presence. He earned a master's degree in rehabilitation counseling at Drake University and a bachelor's degree in mechanical engineering at Milwaukee School of Engineering. He is a Certified Rehabilitation Counselor and active in the advocacy community, participating on Iowa's Statewide Independent Living Council and the Iowa Olmstead Consumer Taskforce.

   
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"Being inclusive is an important and challenging facet of integrating technology, especially when including individuals with disabilities," says Kevin Dalin, a consultant and rehabilitation technology specialist for Tech4Impact. As more individuals with disabilities seek higher education, providing coursework in as many different modalities and in the most accessible way possible becomes even more important. This includes integrating technology and/or assistive technology into the classroom as well as integrating ideas from Universal Design.

The challenges, Dalin explains, often lie within the solutions. "Today's technology holds incredible potential in making life accessible. Assistive technology can be added to make usable what was once impossible to use. However devices often have built-in accessibility features that go unused. Technology features and hardware are perpetually being updated. It is increasingly more difficult to keep up with these changes, which can leave disability resource staff pinched. Therefore, a plan for continuing education through conferences and/or webinars should be developed for key staff." 



Technology features and hardware are perpetually being updated... Therefore, a plan for continuing education through conferences and/or webinars should be developed for key staff.



KEY LESSONS

- 1 Universal Design applies to more than just assistive technologies, and all staff members should be trained in Universal Design principals so that they can help expand education access.
- 2 Keep "simple and intuitive use" in mind to pick the most universal platform, and develop a plan to support students with technical questions at times they are most likely to need the support, such as when they are completing homework.

OPEN, MEANINGFUL CONVERSATIONS WITH ASSISTIVE TECHNOLOGIES

Dalin points out that one of the easiest but sometimes overlooked aspects of providing greater access to students is remembering the principles of Universal Design. For example, considering screen levels and seating arrangements, describing images of presentations, implementing levered door knobs are all basic examples of being inclusive. A plan should be in place to ensure training of all educational staff from building maintenance to educators and support staff on the seven principles of Universal Design: Equitable Use, Flexibility in Use, Simple and Intuitive Use, Perceptible Information, Tolerance for Error, Low Physical Effort, and Size and Space for Approach and Use.

Dalin recalls participating in an online educational platform to discuss class concepts: "Just being able to access coursework through my mobile phone app as well as on my computer and have all that information downloadable and accessible was really critical," he says. "I also found that students were having a more meaningful conversation online versus in class. One of the interesting dynamics in a classroom is that people like myself may have concerns about saying the wrong thing or not being able to finish their thought. By providing a discussion online, there was an opportunity for me to read and process what another student posted. I felt my responses were more thought out and meaningful - it really deepened that conversation." Not all students found the experience the same, as they encountered technology issues that can be frustrating. As powerful as technology can be, integrating the many different pieces of hardware and software that we use today can lead to time spent troubleshooting when things go wrong. Keeping "simple and intuitive use" in mind to pick the most universal platform, a plan should be developed to support students with their technical questions during the times they would likely need the support, such as when they are completing homework.

Developing plans to provide continuing education on current technology, ongoing training in Universal Design for all educational staff, and support to students when technology issues occur are key elements in integrating technology into the classroom. ■

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Being able to access
coursework through
my mobile phone
app as well as on my
computer and have
all that information
downloadable and
accessible was really
critical.”

ACTIVE LEARNING CLASSROOMS INCREASE STUDENT ENGAGEMENT



**MICHAEL
LAMPE**

**Instructional Design
Specialist,
University of South Carolina
Upstate**

Michael Lampe is an instructional design specialist at USC Upstate's Department of Learning Technologies where he has worked on projects that encourage active learning classroom design, redesign online teaching certification courses and initiate discussion on gaming in higher education. He is also an adjunct faculty member for USC Upstate's School of Education, teaching an educational technology course. Michael has a Master's in Education from Marquette University and is currently pursuing his Doctorate of Education at USC focusing on Educational Technology.



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Michael Lampe believes that higher education today has exciting opportunities to increase accessibility for learners of all types while integrating technology into the classroom. The University of South Carolina Upstate, where Lampe is an instructional design specialist, has made great strides in this direction through its development of active learning classrooms. The traditional classroom design assumes that an instructor will be lecturing at a podium while occasionally displaying slides on a single projector to students seated silently in desks facing the podium. An active learning classroom, in contrast, encourages students to interact with each other throughout the class and empowers them to display their content directly from their own personal devices onto monitors placed throughout the classroom.

This display capability is one of the most important elements of an active learning classroom from a technology and accessibility perspective. "We've created a philosophy of display anywhere at any time, whether it's a faculty member or a student," Lampe says. His institution's active learning classrooms typically have four to eight displays circling the edges of the classroom. >>>



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KEY LESSONS

- 1 Colleges and universities that are designing active learning classrooms have an opportunity to take advantage of educational technology that benefits learners of all types.
- 2 Active learning classrooms allow students to take greater ownership of the educational process by supporting their close participation in class.

ACTIVE LEARNING CLASSROOMS INCREASE STUDENT ENGAGEMENT

Students sit at tables known as *Pods*, and each pod can accommodate four to eight students. Students are asked to bring their personal devices to class, which they can then plug into their respective pods. “During class, the faculty member can say, ‘OK Tom, you did a great job on this assignment. Could you plug your iPhone in and project the work on Apple TV to show the class what you did?’”

From there, the instructor can tap **Display All** on his or her touchpad to broadcast Tom’s screen to all the displays in the classroom, sharing his work with his peers. Students get greater ownership over the educational process, says Lampe. “When you allow students to display their own device to share what they did in a real-time setting, students become more personally invested in the class and are more likely to hold themselves accountable.” Unlike the technology used in traditional, static classrooms, the devices used in these active classroom settings offer accessibility enhancements such as voice-over features and contrast settings that may be beneficial to students of differing abilities.

Lampe has a few words of advice to offer colleges and universities planning to use educational technology in active learning classrooms. First, it’s important to identify key stakeholders for the project and bring them together in a committee for a preliminary conversation to uncover opportunities and constraints before the project begins. He also strongly recommends that universities use assessments to measure the success of their active learning classroom implementations. “Assessments help you make informed decisions so that you can create a better classroom the next time around,” Lampe says. Finally, it’s important to keep in mind the unique needs of students and faculty rather than simply following the latest trends. In this way, colleges can take advantage of innovations in educational technology while providing the best possible learning opportunities for all their students. ■

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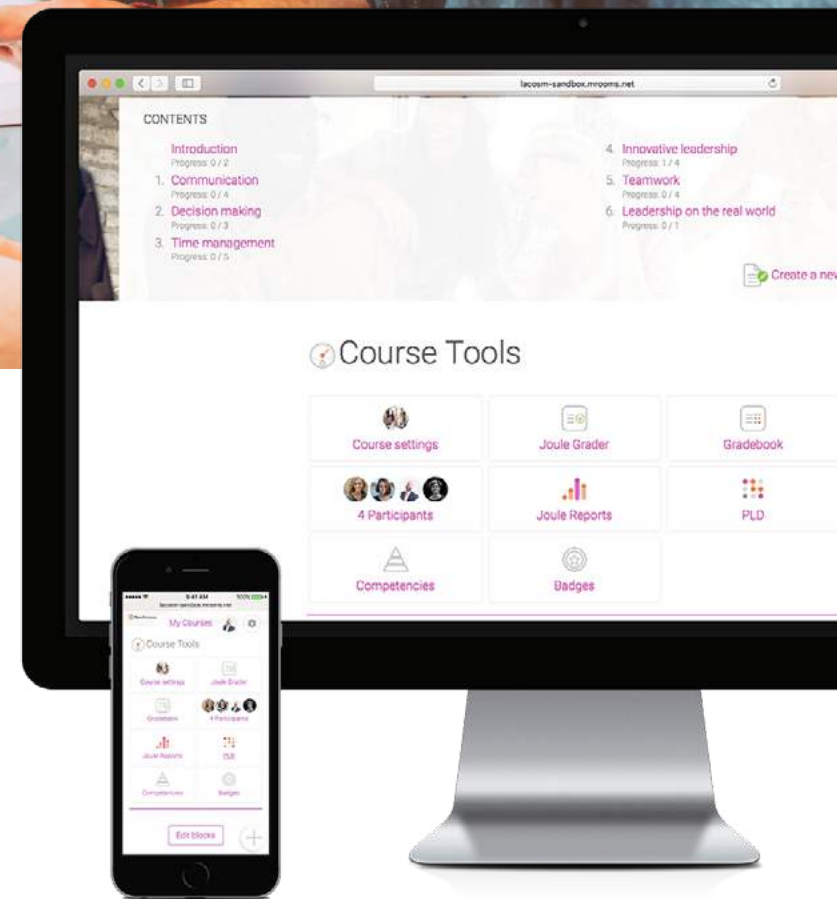
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