THE CENTER FOR DIGITAL EDUCATION'S

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Winter 2017

The Evolving INSTITUTION

Purdue's Kaplan acquisition points to big changes for traditional universities

Inside:

- Building classrooms for the knowledge age
- Learning to live with shadow IT
- Partnerships power nation's first STEAM campus

VOLUME 2 / ISSUE 4 / CENTERDIGITALED.COM

CONTENTS

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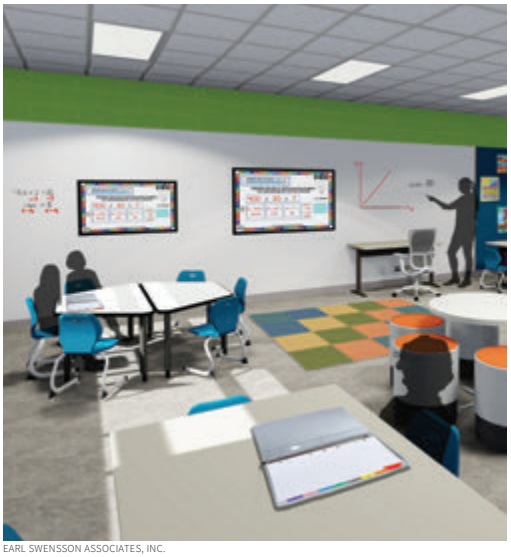

EARL SWENSSON ASSOCIATES, INC.

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COVER IMAGE: FLICKR/SAHAN GAMAGE

THE CENTER FOR DIGITAL EDUCATION'S converge

Greek philosopher Heraclitus of Ephesus coined the phrase "the only thing constant is change." In today's education ecosystem, truer words have never been spoken. The FCC's recent Net Neutrality ruling along with the changes in the U.S. Department of Education under the Trump administration have left education leaders perplexed and wondering just where does education fall as a priority in our nation today. The Center for Digital Education through *Converge* is committed to sharing stories of success and transformation as education leaders take on this challenge of change while holding steadfast to their commitment to provide the best education to the students whom they serve.

This issue is full of bright ideas in both K12 and higher education. Our cover story looks at Purdue University's courageous move to broaden its reach by purchasing Kaplan University. Purdue president Mitch Daniels gives his thoughts on where Purdue is heading and the broader expectations for traditional universities in today's education landscape.

We also cover one of my favorite topics, space design in schools, as we interview superintendents from across the country to explore how they and others are rethinking physical spaces to support innovation in learning and teaching. This is a fabulous story of limited resources meeting unlimited imagination.

Speaking of unlimited imagination, our story on innovation in Maury County, Tenn., is a spectacular demonstration of imagination in STEAM and how one district connects businesses with schools to increase a student's opportunity for success.

Our examination of shadow IT hits home with me. When I was a director of technology at Vanderbilt University, I made a lot of IT decisions without necessarily consulting the CIO. Our article explores the delicate balance between department level IT decision-makers and the CIO's role in managing overall campus IT resources. It's a great story with a great ending.

Finally, if you need inspiration, check out what Clayton Banks is doing in Harlem to improve tech and math skills for youth, and to improve connectivity throughout the community.

As we move into 2018, I encourage you to be full of enthusiasm for the promise you are providing to thousands of students enrolled in your schools, and I applaud you for the continued effort and dedication you offer to your constituents. Maya Angelou once said, "I did then what I knew how to do. Now that I know better, I do better." I hope that after reading this issue you will be inspired to do better. The Center for Digital Education stands ready to support you and share your amazing stories in the year ahead.

Dr. Kecia Ray

Executive Director, Center for Digital Education

CENTER FOR DIGITAL EDUCATION

The Center for Digital Education is a national research and advisory institute specializing in K-12 and higher education technology trends, policy and funding. The center provides education and industry leaders with decision support and actionable insight to help effectively incorporate new technologies.
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Does Purdue's move into online learning signal a greater shift in education?

By Mark Toner

With all the talk about the increasing costs of higher education, the most significant shift in the postsecondary landscape this year may have come about for a single dollar.

That's how much Purdue University said in April it would pay to acquire the for-profit Kaplan University, with the goal of spinning it off as an online-only entity still provisionally known only as "New U." Purdue followed that announcement with plans to provide online job training to as many as 10,000 U.S. employees that Indian technology outsourcing giant Infosys intends to hire in the United States over the next few years.

The Indiana university's moves — specifically the acquisition of a for-profit provider by a public institution — have not been without controversy; at press time the acquisition was still awaiting approval by Purdue's accreditor. Purdue President Mitch Daniels, who is the former governor of Indiana, has repeatedly called these efforts natural extensions of the public research university's mission, akin to past shifts such as creating satellite campuses to reach non-residential students.

"It's correct to look at all these activities together in terms of the modernization of the land-grant mission," says Daniels. "We see that as not only consistent with our historic mission, but also a necessary component of it in this era."

It's also clear they represent a dramatic effort to leverage online learning to reach an audience untapped by most traditional four-year institutions: the 36 million working adults with some college and the 56 million with no college credit who are primarily seeking career credentials, advancement or ongoing learning opportunities.

Purdue's actions, and the less dramatic but equally significant shifts toward online and career-focused programs at institutions across the country, come at a time when the public and policymakers are pressuring higher education to look beyond four-year degrees. Meanwhile, the for-profit sector is undergoing its own seismic shifts. Daniels calls these trends "an opportunity and a duty."

These developments represent "the next stage and maturation of online education," says Trace Urdan, a managing director at Tyton Partners, who has followed the sector for two decades. In turn, online education will

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> "Since we want and need to preserve the best system of higher education in the world, we need our institutions to find the way forward in new ways that continue that standing."
>
> Mitch Daniels, President, Purdue University

become an increasingly important part of serving a changing population of postsecondary students.

"Being adept at digital education as it quickly evolves is going to be important — if not necessary — at institutions like ours," Daniels says.

In some circles, Purdue's actions are being touted as a game-changing strategic shift that higher education institutions simply must make to remain relevant and sustainable. And indeed, many colleges and universities are moving in similar directions. A recent survey by online education management company 2U Inc. found 9 out of 10 deans anticipate growth in their online offerings.

In other circles, the reactions have been less enthusiastic. On Twitter, the Century Foundation's Bob Shireman famously likened the acquisition to the horror movie Get Out, "with Kaplan's predatory brain transplanted into a Purdue body." Purdue's announcements have raised a range of questions both inside and outside the academy, including ones involving faculty, quality, corporate influence, and the financing and ultimate sustainability of higher education institutions.

But stepping back to look at the Purdue-Kaplan acquisition reveals familiar pressures, and a larger-scale approach to strategies that other institutions have attempted. For example, both Arizona State University and the University of Southern California — nonprofit institutions — have worked with for-profit providers to develop and deliver online programs. In similar fashion, the Purdue-Kaplan acquisition creates a new nonprofit online institution, with the remaining for-profit part of Kaplan serving as a traditional online program management (OPM) provider. Aside from its ownership structure, the acquisition in many ways reflects the typical "buy vs. build" decision that other institutions face when they deliberate the expansion of their online offerings, according to Urdan.

"There's a lot of blurring of the lines between for-profits and nonprofits," says Paul LeBlanc, president of Southern New Hampshire University (SNHU), a nonprofit institution that has been a leader in developing online programs. "One narrative is that not-for-profits are taking the online space back. A more nuanced read is that nonprofit higher education is taking more ownership of the online space with the help of online players."

That's in large part due to shifts in the for-profit sector, which has been driven in part to seek partnerships with nonprofit institutions after the beating it has taken in recent years.

"Speaking broadly, the for-profit brand has been severely damaged over the last eight to nine years," says Urdan.

Encouraged by the perception that the Trump Administration will be more flexible than its predecessor, for-profits also are attempting to strengthen their positions wherever possible. The University of Phoenix's parent company went private to insulate itself from quarterly earnings pressure, and Strayer and Capella announced plans to merge in October.

"We're going to see lots of similar dramatic transactions," Urdan predicts. "Probably every single one of them is going to look a bit different."

For traditional institutions, that represents a challenge and an opportunity, according to Brian C. Mitchell, the former president of Bucknell University and Washington and Jefferson College. "We shouldn't be afraid of investigating the kinds of approaches that Daniels is doing — but we should be very clear-headed, focused, programmatic and business-minded," he says. "We don't have the luxury of spending 20 to 30 years on the peaks and valleys of failures."

For traditional institutions, reaching new kinds of students has been a driver for expanding online offerings — and for good reason, says Mitchell, now a higher education advisor and director of the Edvance Foundation. "We cannot continue doing programmatically and financially what we're doing," he says. "How does technology fit into the overall financing of higher education?"

Typically, traditional institutions have started with online graduate programs to test the waters and avoid pushback from alumni — who still often see online degrees as diluting the value of their own diplomas. But now, Urdan says, "a broader range of institutions are comfortable with and interested in providing online education, and not just in a rarified way to a small set of graduate students, but [focusing on] undergraduate degree completion and working adult education."

That latter trend is pushing traditional four-year institutions into the workforce development arena that community colleges and for-profit providers have traditionally dominated. (Infosys, for example, has tapped both Purdue and North Carolina's community college system to provide workforce training as it prepares to hire greater numbers of U.S. workers.)

With growth in demand for postsecondary credentials, "a lot of the training needs are moving upstream," says Martin Van Der Werf, associate director of editorial and postsecondary policy at Georgetown University's Center on Education and the Workforce. Indeed, nearly half of respondents to the 2U survey said non-traditional online offerings — including both graduate and certificate programs — offer the greatest opportunities for growth.

To that end, Purdue's New U will initially focus "on the enhancement of career skills" and closely monitor job placement metrics, according to Daniels. And SNHU now is building a master's program catering to the specific needs of teachers employed by for-profit K12 Inc.

"Any time any entity says, 'we want your help improving,' that's what we look for," LeBlanc says.

Rising costs, non-traditional students and the ongoing policy push for postsecondary credentials are all contributing to the growing focus on adult education. In speeches this fall, U.S. Education Secretary Betsy DeVos called for a "major shift" in higher education, pointing to the need for more workforce training programs.

"We need to stop forcing kids into believing a traditional four-year degree is the only pathway to success," DeVos said at a meeting focused on apprenticeship at the White House in November. (Thus far, the Trump Administration appears to mirror its predecessor in its support for two-year degrees and postsecondary workplace certificates and credentials as much as it diverges from the Obama-era focus on regulating for-profit institutions. Republicans were introducing legislation to reauthorize the Higher Education Act at press time.)

While these pressures place greater emphasis on career-focused offerings, it's important for traditional institutions to recognize their strengths and weaknesses, experts say.

"The growth and existence of the [workforce development] market happened to some extent because colleges and universities were somewhat ossified," Urdan says.

It's important to avoid diluting the mission, adds Susan Metros, a senior fellow with the Center for Digital Education (CDE). "Community colleges have been doing that type of education for a long time — they have faculty who are professionals, programs, partnerships and internships," she says. "For a more traditional institution, I understand where you might see it as a way to increase your bottom line, but I don't think you're necessarily going to be that good at it."

At the same time, traditional colleges and universities long have had career placement and internship

FLICKR/DAVID ELLIS

> "We need to stop forcing kids into believing a traditional four-year degree is the only pathway to success."
>
> Betsy DeVos, U.S. Education Secretary

programs that can provide a starting point. So can unique online degree programs that build career prospects by merging disciplines — such as dentistry and business, law and medicine, and health and public policy, according to Metros.

"We don't really need another online MBA," she says. "People are doing that really well and at price points that are affordable. But there are really compelling programs at the intersections of degrees."

Another opportunity is forging partnerships with non-traditional providers such as Trilogy Education Services, which offers non-credit coding boot camps in conjunction with more than 20 universities. But as with all things, the question of mission remains paramount.

"We're in a process right now where higher education is increasingly becoming more vocational," says Georgetown's Van Der Werf. "What goes along with that is the internal argument taking place inside colleges and universities since Day 1: Are we here for education for the sake of creating better citizens or in the job of preparing people for careers?"

According to Mitchell, though, the answer to that question rests in integrating workforce needs with the broader skills higher education has always excelled in providing.

"Educate broadly so students can go to not just Infosys, but the three to four jobs beyond that," he says.

These shifts are a tall order for institutions, and the harsh reality is that while the traditional higher education model is increasingly unsustainable, not every institution will be able to adapt to the changing landscape, experts say.

"Like in a lot of transitions, the early adapters are going to be the winners," Van Der Werf says.

"The ability to reinvent yourself is really hard," adds Urdan. "In the process, we will see a lot of schools close."

Urdan predicts the pace of consolidation in the for-profit sector will accelerate, driven by the perceived hands-off approach of the Trump Administration — as well as fears of what might happen if the pendulum swings back and a new president opts to regulate the sector more strongly.

As for traditional institutions, while faculty concerns about Purdue's recent moves have drawn media attention, university leaders say that's not the biggest issue.

"It's not just a question of how you sell the faculty on this and get the board to support it," SNHU's LeBlanc says. "It's do I have the capacity and wherewithal of changing who I serve and how I do it?"

Becoming an online-serving institution means having non-traditional customer service hours (or as cynics would put it, providing customer service in the first place), as well as developing new expertise around acquiring and supporting online students, LeBlanc says.

Whether through acquisition or partnerships, working with OPMs may help reduce risk for institutions, according to CDE's Metros. Doing so, however, also introduces new risks, including being tied to the provider's vision and models over the length of a contract, as well as the perception of cookie-cutter programs that cut away from the institution's unique value proposition — which already can be diluted in a crowded online marketplace.

"People see the short-term benefits, but they don't realize the long-term issues," Metros says.

If they choose to negotiate with OPMs, institutions should remember they hold considerable leverage, according to Georgetown's Van Der Werf. "They're in a position of strength and should negotiate pretty hard in these kinds of agreements," he says.

And Purdue's Daniels, whose history of championing online education goes back to his tenure as governor of Indiana, when he brought Western Governor's University to the state, is the first to stress the importance of institutions finding their own way.

"I'd never suggest any of these things are right for other schools," he says. "[But] I hope every institution is thinking about new approaches and ideas. ... Since we want and need to preserve the best system of higher education in the world, we need our institutions to find the way forward in new ways that continue that standing."

Southern New Hampshire University is a nonprofit institution that's been a leader in providing online education.

WIKIPEDIA

TRANSFORMING HIGHER EDUCATION

HOW TO CREATE A PLAN THAT'S SECURE, SUSTAINABLE AND STREAMLINED

Transforming higher education processes starts with laying the right foundation for your organization's workflow. Many higher education institutions have embarked on education transformation initiatives; however, there is still room for improvement to build a more stable transformation foundation.

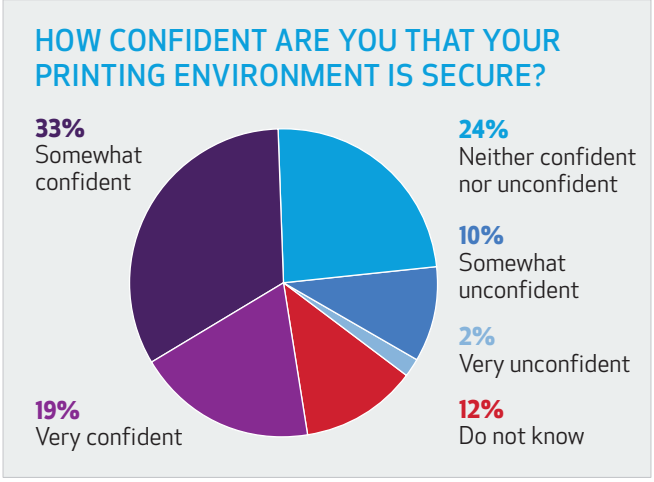
According to a recent Center for Digital Education (CDE) survey, the top higher education workflow-related challenges include the need for more training and professional development, workflow solutions, better access to information and documentation, and increased automation.[1]

The purpose of this paper is to discuss three foundational layers of digital transformation — security, sustainability and streamlined operations — and how higher education institutions can enable a more seamless transformation effort.

SECURITY

As higher education becomes more dependent on online student registration, and digital content and curriculum, protecting student data has become more critical. The CDE survey found securing student data is a top priority for most higher education institutions, yet only 19 percent of survey respondents said they were confident that their current security protocols and technologies protect student information.

Security is a critical foundational piece to transformation efforts, but many higher education institutions are primarily focused on network protection, essentially ignoring end-point devices. Major security gaps arise when multifunction printers (MFPs) and other devices with varying, decentralized security mechanisms are connected to the network. This issue is exacerbated by the fact that the IT team is not always responsible for print and document management.



There are three security practices that can help kick-start your transformation efforts: implementing role-based information access, protecting personally identifiable information (PII), and ensuring end-devices are secured. Universities and colleges need to implement administrative, technology, and physical controls and training to mitigate these risks. Let's take a closer look at each of these areas:

IMPLEMENTING ROLE-BASED INFORMATION ACCESS

Applying a role-based information access system limits the levels of information access different roles have across an organization. This is a critical first step in a higher education cybersecurity initiative.

In order to institute role-based information access, you must deploy tools that authenticate user identity; decide who can access specific applications and data and how they can use it; and help prepare for compliance audits by showing who accessed files and applications, made changes, printed copies, and transferred files to external storage.

PROTECTING PERSONALLY IDENTIFIABLE INFORMATION:

Systems and processes must be established to prevent PII from being stored, shared, or printed in an insecure manner.

As a starting point, higher education institutions should have:

- Identity and access management (IAM)
- Role-based user access
- Single sign-on (SSO)
- Self-service password management on end-point devices
- Two-factor/multi-factor authentication
- Audit trails and logging software

SECURING END-USER DEVICES:

Physical machines and infrastructure, such as local computers and servers, storage media, printers, scanners, copiers, and multifunction devices are often overlooked in the rush to secure networks, applications, and associated data. Physical controls include:

- Industry best practices for equipment and storage life cycle management
- Software tools and third-party services to decommission old hard drives
- Pull printing features that hold a print job in the queue until the user is authenticated at the machine
- Printer-embedded security software for networked printers

Optimizing the life cycle of your assets begins at conceptual design, and continues through shut down and decommissioning. Failure to institute a life cycle management plan for your end-point assets can lead to future vulnerabilities created by legacy equipment and software that are no longer supported with important updates. Develop a plan that includes relevant equipment life cycles and decommissioning processes that will enable you to swap out equipment before it becomes a liability.

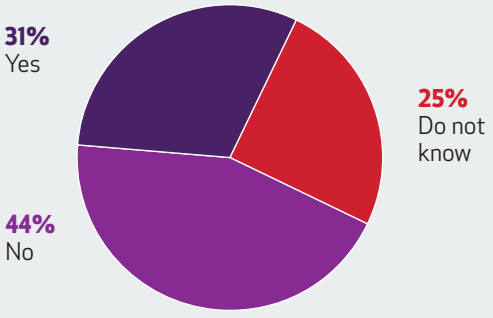
Securing end-point printers can be accomplished by deploying a secure print system, enacting application policies for data that can be printed, and training employees on acceptable use. For example, Canon's uniFLOW is designed to help colleges and universities reduce costs and ensure confidential information is kept secure by enabling IT administrators to control output management — making it easier to secure end-points on a network in a centralized manner.

SUSTAINABILITY

The CDE survey found that 31 percent of higher education respondents are operating under a green mandate. This may be the beginning of a growing trend within the higher education space.

Focusing on sustainability reduces costs and increases organizational efficiencies. For many, an important step towards sustainability means printing only what needs to be printed, when it needs to be printed. Canon strives to achieve the highest environmental standards, with features that help colleges and universities reduce costs and minimize the time necessary to manage devices.

ARE YOU OPERATING UNDER A GREEN OR ENVIRONMENTAL MANDATE?



A recent study by the USGS Water Science Board found it takes up to three gallons of water to produce every piece of paper printed,[2] which means each higher education employee uses the equivalent of up to 30,000 gallons of water per year.[3] Higher education institutions that adopt a print management system allow employees to access their most commonly used documents electronically. Another example is Canon's collaboration with Google Drive.™ Using Google Drive, students can access, store, and retrieve large numbers of documents, which reduces the number of documents printed and lowers costs.

STREAMLINED OPERATIONS

Thirty-seven percent of higher education respondents in the CDE survey indicated that automation and workflow management simplify instructor/staff workloads. Another 36 percent said automation and workflow management help free up employee time for more critical tasks.

Streamlining workflows requires identifying processes that can be digitized and eliminating manual and repetitive operations. For example, the use of scan and capture technologies instead of paper could help a college serve its students faster. It could also mean cutting repetitive processes, increasing accuracy of information, and making information accessible anywhere.

When done correctly, workflow management can reduce operational costs, boost employee morale, and increase organizational efficiency. For example, 40 percent of higher education survey respondents said automation and workflow management simplifies employee workloads, while 39 percent said it reduces printing budgets. It also frees employee time for more critical tasks (36 percent), and helps achieve transparency (26 percent), and environmental objectives (24 percent).

Higher education institutions across the country are focused on new technologies to help reinvent and transform the way they deliver services to students, but their efforts may fall short if they don't first focus on laying a stable foundation. Educational institutions that focus on securing, sustaining, and streamlining their operations to each individual end-point will have a foundation that can be used to realize new benefits.

STEPS FOR EVALUATING YOUR WORKFLOWS TODAY

① **IDENTIFY HOW DATA GETS IN YOUR SYSTEM**
Does data have to be entered manually?

② **IDENTIFY THE FLOW OF DATA THROUGH YOUR SYSTEM**
Once data enters your system, where does it flow? Does it have to be entered more than once?

③ **IDENTIFY HOW EMPLOYEES INTERACT WITH YOUR DATA**
Do your employees have to access data from disparate systems?

④ **IDENTIFY POINTS WHERE DATA LEAVES YOUR SYSTEM**
Do you have to print data to share with students? Can you email it?

Higher education institutions should also keep in mind that cost does not always equal value. The CDE survey revealed that 38 percent of respondents feel that cost is the number one organizational barrier hindering modernization from print-based to digital workflows. This could mean universities and colleges might opt for lower-cost print options. But scrimping on security, quality, or other features can cost more in the long run. For example, failing to incorporate security mechanisms and a rigorous security policy may result in security gaps that expose an organization to significant financial risk. Choosing lower-quality devices may result in frequent replacements, adding to capital investment costs and an organization's carbon footprint.

STEPS TO CONSIDER:

① Form a transformation working group

Engage stakeholders from different parts of your organization — including customer service agents, finance officers, and business unit managers — who represent the users involved in your daily workflows. Use this group to have a recurring conversation to identify, frame, and execute your transformation strategy. Use these meetings as an opportunity to elevate challenges to address and new ideas to test. At a minimum, assemble this group each quarter to have a regular dialogue.

② Do a landscape analysis

Before you develop a transformation strategy, conduct a review of your environment. This includes mapping all your managed services, software applications, and hardware down to your end-point devices, which includes printers. In addition to mapping the devices, it is also important to understand the business processes supported between each of them. Use this landscape analysis to benchmark your current devices and processes against changes you implement as a way to measure and track your organization's progress.

③ Develop a strategy that secures, sustains, and streamlines your processes

After you assemble your transformation team and map your existing landscape, it's time to create a strategy to guide your transformation. A transformation strategy should be composed of at least three short-term goals and three long-term goals within each of the key transformation elements — security, sustainability, and streamlined operations. Short-term goals should be designed to be accomplished before your next meeting (i.e. one-month to three-months); whereas, long-term goals should be able to be accomplished within a school year. You can create goals by functional area or departments and assign them to corresponding transformation group members to provide additional ownership in the process.

④ Measure and adapt

As your transformation efforts progress throughout the year, regularly review and report on your progress with your transformation working group. Let each member that was assigned goals have an opportunity to share challenges, progress, and learnings. Sharing this knowledge as a group will allow you to keep information centralized to adapt quickly if you need to change direction.

TAKE THE PRODUCTIVITY CHALLENGE

For help with your transformation journey, Canon Solutions America has created the Productivity Challenge to help you get started. The Productivity Challenge is an online self-assessment tool that helps organizations understand how they benchmark against industry optimized organizations in five key areas: Print Management, Document Distribution, Document Management, Accounting, and Sustainability. Take the challenge today at http://bit.ly/productivitychallenge.

1. Unless otherwise noted, all data is from a Center for Digital Education survey of 162 higher education leaders, conducted in October 2016
2. USGS Water Science Board / WaterFootprint.org, http://water.usgs.gov/edu/activity-watercontent.php
3. Mashable.com, http://mashable.com/2014/04/22/earth-day-paper-infographic/#wvEPSbSRukqn
4. 2015 Center for Digital Government survey

SPACE RACE

How districts are retooling classrooms to teach for the knowledge age

By Adam Stone

At Maury County Schools, half an hour south of Nashville, classrooms of the future are taking shape. As the district designs a new elementary school and middle school — both scheduled to open in August 2019 — it's rethinking learning spaces to make them more digital, connected and collaborative.

The new classrooms will have no formal "front." Instead, they'll be dominated by floor-to-ceiling interactive whiteboards. Wireless displays and flat screen televisions located throughout the room will let teachers present information or highlight student projects on the fly. Students will be able to push their tables together or aside entirely and work collaboratively on the floor.

"We can't keep building schools like we have for the last 200 years," says Dr. Chris Marczak, the district's superintendent. "We are not in the industrial age; we are in the knowledge age; and education has not adjusted to adequately prepare students for that workforce."

In Marczak's vision, flexibility exists not just within a room but between rooms. In the new elementary school, kindergarten and first grade will occupy a

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> "We can't keep building schools like we have for the last 200 years. We are not in the industrial age; we are in the knowledge age."
>
> **Dr. Chris Marczak, Superintendent, Maury County Schools**

Classrooms in Maury County's new schools will feature floor-to-ceiling interactive whiteboards, wireless displays and flat screen televisions.

shared space in one wing, and second through fourth graders will share space in another wing. Common areas will join the various learning spaces.

Welcome to modern classroom redesign.

The next generation of K-12 classrooms will deliver a range of tools. Emerging classroom design considers furniture and fixtures, and then dives even deeper: Design supports peer-led learning, empowers digital discovery and gives the teacher new means for connecting to students. The best of these spaces are a tour de force of technology-driven, individualized education.

Forget the traditional classroom with rows of desks and a teacher upfront. Think instead of projectors linked to tablets. Put all the furniture on wheels to form ad hoc working groups. Write on the walls. Wirelessly connect everyone and, increasingly, everything. By the time you're done, the space bears virtually no resemblance to that old room, and the teaching isn't going to be the same either.

"It's the idea of engagement," says Dr. Mark Potter, superintendent of Liverpool School District in New York, which has spent $150 million in renovations over the past decade. "What does education mean to kids and how do we make it more meaningful? How can we help them understand the purpose and the value? A good part of that comes from being in a place where they can be excited and feel like they are part of the conversation."

The Physical Space

Physical space may not be the most glamorous aspect of digital education, but it's here that school districts can sometimes make the biggest impact at the least expense. Moreover, smart design of the physical space supports the more whiz-bang digital aspects of the modern classroom, making this a key starting point in the overall design discussion.

Take for instance the work of the Great Prairie Area Education Agency, a state-chartered entity that provides guidance to some 3,700 teachers in 33 school districts in Iowa. As part of its Room 21C classroom design initiative, the agency aims to create "a learning environment specifically designed to promote both collaborative and personalized learning through the use of technology." To this end, it lays out new guidelines for the modern schoolroom:

✔ The classroom furniture must be mobile and flexible.
✔ Each collaborative area must have access to a digital display.
✔ Each collaborative area must have a writable surface.

Project leaders came to this mantra after seeing all the ways in which digital tools were not being effectively adopted in the old spaces.

"We saw schools that had gone to 1-to-1 computing, but really

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nothing had changed," says Sally Lindgren, director of technology and innovation. "People were still teaching the same old way, with kids doing very low-scale things, basically copying and pasting."

How do the three tenets play out in practice?

"There is mobile and flexible furniture: Chairs and tables are on wheels and can be reconfigured to meet the need depending on content," Lindgren says. "Every cluster of tables would have some kind of display — a monitor, or a flat screen on the wall that could connect to technology. There is a writable surface, which can happen in a lot of ways, from Post-it notes to writable paint on the walls to big white boards that are mobile and flexible."

The Teacher Effect

In Fremont Unified School District in California, a new $51 million elementary school set to open in 2019 also will feature open spaces, collaborative areas, flexible furniture and digital connectivity. These new classrooms are designed to support new ways of teaching and learning.

"Teachers should have the ability to configure the classroom in different ways at different times, depending on the educational outcome they are focused on," says Therese Gain, director of facilities and special projects. "We are moving toward project-based learning, so we don't just want the teacher standing at the front of the classroom lecturing."

Marczak, from Maury County Schools, describes conventional teaching methods as being overly prescriptive. "All third grade here, and all fourth grade there. You stay in your lane, you stay in your room and teach your kids," he says.

In the new rooms, where space is shared and digital technology connects everyone, teachers can steer kids out of those narrow lanes.

"It used to be that the ones in front were most engaged and the teacher had no idea what was going on beyond the first two or three rows," he says. "Now the teacher is flowing freely around the room, and the kids all know what is happening."

Because the teachers are operating in a different mode, students in turn have the chance to learn differently.

"It goes back to collaboration and teamwork," says Fremont's Gain. "If you have 30 students and each one is writing on their own pad of paper, that's the old method. If you have teams of kids coming up with thought-provoking questions, you want to give them the means to capture that together."

This is where technology enters the picture. As an element of the overall classroom design, technology emerges as the facilitator. Projectors and tablets become the unifying entities that enable collaboration.

> "Teachers should have the ability to configure the classroom in different ways at different times, depending on the educational outcome they are focused on."
>
> **Therese Gain, Director of Facilities and Special Projects, Fremont Unified School District**

Setting the Digital Stage

For those seeking to embrace the digital aspects of classroom design, there are multiple points to ponder to ensure a smooth implementation.

For example, a tablet for every student means you have to buy a lot of tablets and provide the infrastructure to support them.

"There are obvious things like making sure the room has enough power," says Stephen Nelson, an architect and director of Educational Architecture with Larson & Darby Group. "In older classrooms there might just be one or two outlets. Now you need something more — maybe you need a cart with a charging station and the power to support that."

By collaborating on such questions early on, designers and administrators can build in appropriate infrastructure from the start. At the same time, school leaders can do more than just count power outlets: They can establish policies that support effective use of technology.

"If you hand out devices to kids, part of the deal is that they bring it to school charged. That's part of their homework," says Steven Turckes, global preK-12 practice leader at Chicago architectural firm Perkins+Will. Policies also should address BYOD: If students tote their own devices, the school needs rules around when and how these are put to use, to ensure ample bandwidth and charging station availability.

Administrators can avoid costly upgrades in the future if they tackle such questions up front, rather than incorporating digital needs as an afterthought. For instance, wireless bandwidth demands can expand quickly in schools that embrace technology.

"At first we put a wireless hotspot in the hallway to serve four classrooms, but that is becoming outdated," says Nelson. "When you have four classrooms with 20 or 30 kids in each class, it creates slowdowns. So now we are putting a hotspot in every classroom, especially in the upper grades where the number of devices greatly increases." (It's not just the school-issued tablets — BYOD smartphones increasingly are hogging bandwidth.)

Technology permeates Great Prairie's Room21C. There's networked lighting, a two-way audio management system, a theater-sized screen with a 3D projector, all controlled by an iPad. Wireless infrastructure makes it all shareable.

"The students can work on their display, and the teacher can cast it wirelessly to any display in the room, so students have a new way to engage with one another. The room design promotes collaborative, active learning," Lindgren says.

To do this effectively, the space itself must support the new uses

of technology: Beyond power and bandwidth, the shapes of spaces makes a difference in how technology is used. Liverpool School District has a 1-to-1 Chromebook initiative for grades 3 through 12, and it has created open, common spaces as part of the school design to make best use of those devices.

"If we want kids working in small groups and using their devices to plan a presentation together, I don't want them restricted in where they can go," Potter says. "We have benches built into the hallways so they can work together and still be connected to the classroom."

Pervasiveness of screens and projectors as a means of collaboration also puts appropriate lighting front and center.

"There is always a push to use daylight in classrooms and less fluorescent or LED lighting to save energy and provide a warm

Bandwidth and power demands expand quickly in schools that embrace technology.

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environment for the kids. But with that comes glare," Nelson says. "We need to balance those concerns."

Specialized window materials and shading can help, and there's a move away from the typical wall-of-windows to waist-high configurations.

One cost-saving way to tackle the issue is to look at building orientation: Western-facing windows will draw afternoon sun and the possibility of glare. Architects and educators continue to wrangle with the question, and with the related issue of lighting in general. Here a clearer solution does emerge: Put everything on a dimmer switch that lets teachers fine tune classroom lighting.

"You want to dim the lights to make the presentations visible, but you don't want them so low that students in the back fall asleep. You want them alert and you want them to be able to see what they are writing if they are taking notes," Nelson says.

The Human Factor

All these design choices reflect a larger mission. Digital devices, connectivity, lighting and furniture aim to empower a particular vision of the way in which education will unfold.

To succeed in deploying digital classrooms, administrators need to communicate that mission and vision effectively across the faculty. Among those looking to craft the classroom of the future, the most successful will approach the task with teacher involvement and acceptance high on their radar.

Lindgren finds turning the tables often helps drive change. "We are giving educators the opportunity to come to our space for meetings or for professional development, and then we present those in a collaborative manner, putting our educators in the position of being learners," she says. "By modeling this different way of engaging materials, that really helps it to catch on."

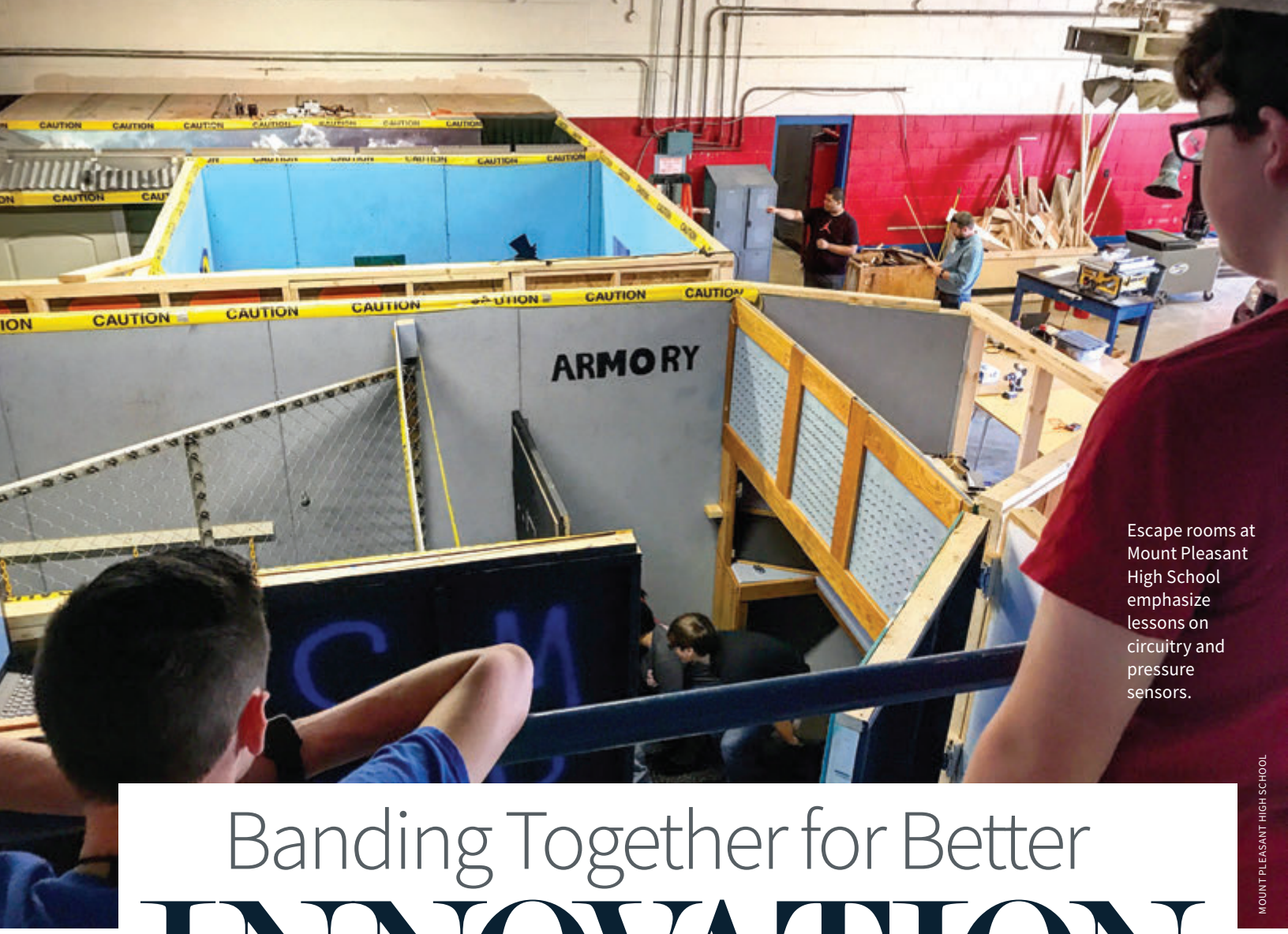
Marczak fosters teacher acceptance by making the spatial experience a part of an overall push toward project-based learning. His district has a four-year contract with Discovery Education — a subsidiary of Discovery Communications, the parent company of the Discovery Channel — to implement a sweeping digital curriculum initiative called DIPLOMA (Digital Integration Plan for Learning on Mobile and Accessibility). Besides deploying laptops and other electronic devices to students and teachers, the initiative will implement one- to three-week projects in place of traditional worksheets and lectures.

As part of that process, teachers at Maury County Schools will have "three solid years of intensified professional grassroots work around this kind of learning," Marczak says. The hope is that they will come to accept the new space as a tool for implementing the new pedagogy.

At the same time, the district's administration is trying to be flexible as people adapt to the new style. "For the first couple of weeks it was difficult because it was something they had never done before. We gave them the freedom to fail and to try things at their own pace," he says.

Even as the new spaces challenge teachers to try new things, some would argue that if you take a step back, none of this is really all that new. Group learning? We've talked about that for years. Digital devices? Rapidly on the rise. Individualized spaces and experiences? That's been on the books too. All that's really new here is the coming together of all these threads in a single physical space.

"This is a change that has evolved over time," Potter says. "Now the classroom is just making it a little easier to apply all those concepts."



Escape rooms at Mount Pleasant High School emphasize lessons on circuitry and pressure sensors.

MOUNT PLEASANT HIGH SCHOOL

Banding Together for Better INNOVATION

Small Tennessee district leverages community partnerships to launch nation's first STEAM campus. By Matt Villano

It's hard not to get jazzed about what's happening with public education in Maury County, Tenn.

On the surface, three of the schools in the Maury County Public Schools district — Mt. Pleasant Elementary, Mt. Pleasant Middle and Mt. Pleasant High — have come together to create the country's first K-12 STEAM campus, known as the Mt. Pleasant Arts Innovation Zone.

Behind the scenes, however, something far more enthralling is underway. Instead of trying to engineer change on their own, district administrators and individual school principals embrace community partnerships as a conduit for innovation. To date, these programs have involved an international pharmaceutical company, the National Aeronautics and Space Administration (NASA), dual enrollment at a local university and more. According to district officials, the partnerships have brought in more than $1 million in capital resources and cash this year alone, with more partnerships on the horizon.

The results of this commitment to science, technology, engineering, arts and mathematics are plentiful and omnipresent. Students score better on tests and they take pride in the work they do. Educators are

excited, too, and say they can do more with less, and that students are engaged from the moment they enter class until the moment they leave.

"We have managed in a very short time to completely transform the way we approach teaching STEM and STEAM," says Dr. Ryan Jackson, executive lead principal of the Mt. Pleasant Arts Innovation Zone. "We're now incubating in our kids a creator's mindset from the very beginning."

MOUNT PLEASANT HIGH SCHOOL

Hands-on projects, like when students created "escape rooms" featured here, reinforce STEAM concepts and have changed the way the district views learning.

The first big splash in STEAM curriculum in Maury County took place at Mount Pleasant High School during the 2016-2017 school year.

The project comprised two separate "escape rooms," which are physical games where players are locked in a room and must solve puzzles and riddles within a set time limit to escape. Escape rooms have become an increasingly popular form of entertainment, particularly for groups of teenagers.

Both escape rooms at Maury emphasized lessons on circuitry and pressure sensors, and incorporated recycled materials from an old storage room and other places around the school. One of the rooms, which sported a theme from the movie, "Con Air," even necessitated students learn new jobs, doing everything from welding to painting murals on the inside walls.

All told, more than 150 students participated in the project.

The rooms opened in spring 2017 and the school dubbed the challenge of solving them, "Escape the Mount," a direct reference to the high school's nickname. Over the course of a few months, more than 1,000 people ran the rooms, including students, parents and members of the community. At one point, the escape rooms even had their own hashtag on Twitter: #escapethemount.

"So many students took pride in what they had built; the turnout was amazing," Jackson says. "This project was the thing that made people stop and realize, 'Learning can be fun.'"

As students were preparing to Escape the Mount, Jackson and colleagues sought other opportunities to bring students and community members together to advance the district's curriculum. The next big step forward: A drone program that was part of the Lexus Eco Challenge — a contest sponsored by the car manufacturer.

Mt. Pleasant's submission effort was the brainchild of Armin Begtrup, Mt. Pleasant High School's mechatronics instructor. The Lexus challenge tasked students with solving an environmental problem, and Begtrup helped them actualize a plan to build amphibious drones that could collect water samples from a nearby park and test them for the Zika virus. Within weeks from brainstorming a solution to the problem, the students were collecting data.

The drones garnered headlines in local press, and representatives from pharmaceutical giant Sanofi — which had backed a foundation involved in cleaning up the park — saw the coverage and reached out to become a partner in the endeavor. Ultimately, the Sanofi Foundation for North America donated $5,000 to support mechatronics research projects taking place at the high school.

"We saw this as a great opportunity to support the Mt. Pleasant community," says Peter Lalli, interim head of the Sanofi North America Corporate Social Responsibility (CSR)

division. "The focus on community and STEM education — as well as its connection to health and environment — ties perfectly into our CSR strategy."

Begtrup also engineered another partnership — this one with researchers from NASA — that will put Mt. Pleasant at the forefront of a program through which students will create materials used on the International Space Station.

Specifically, students are helping create space-age material for a panel that will house electrical equipment and be part of a larger system on the space station. Begtrup says that as part of the curriculum, Mt. Pleasant students have studied new welding techniques, met with mechanical engineers in the graduate program at Vanderbilt University and melded materials together in newfangled ways.

Dr. Chris Marczak, superintendent of schools for Maury County, says this type of firsthand experience on a project that could end up in space is the kind of opportunity students will remember for life.

"How many high school students get to say they worked on a project with NASA?" Marczak says. "All of this is pretty special, if you ask me."

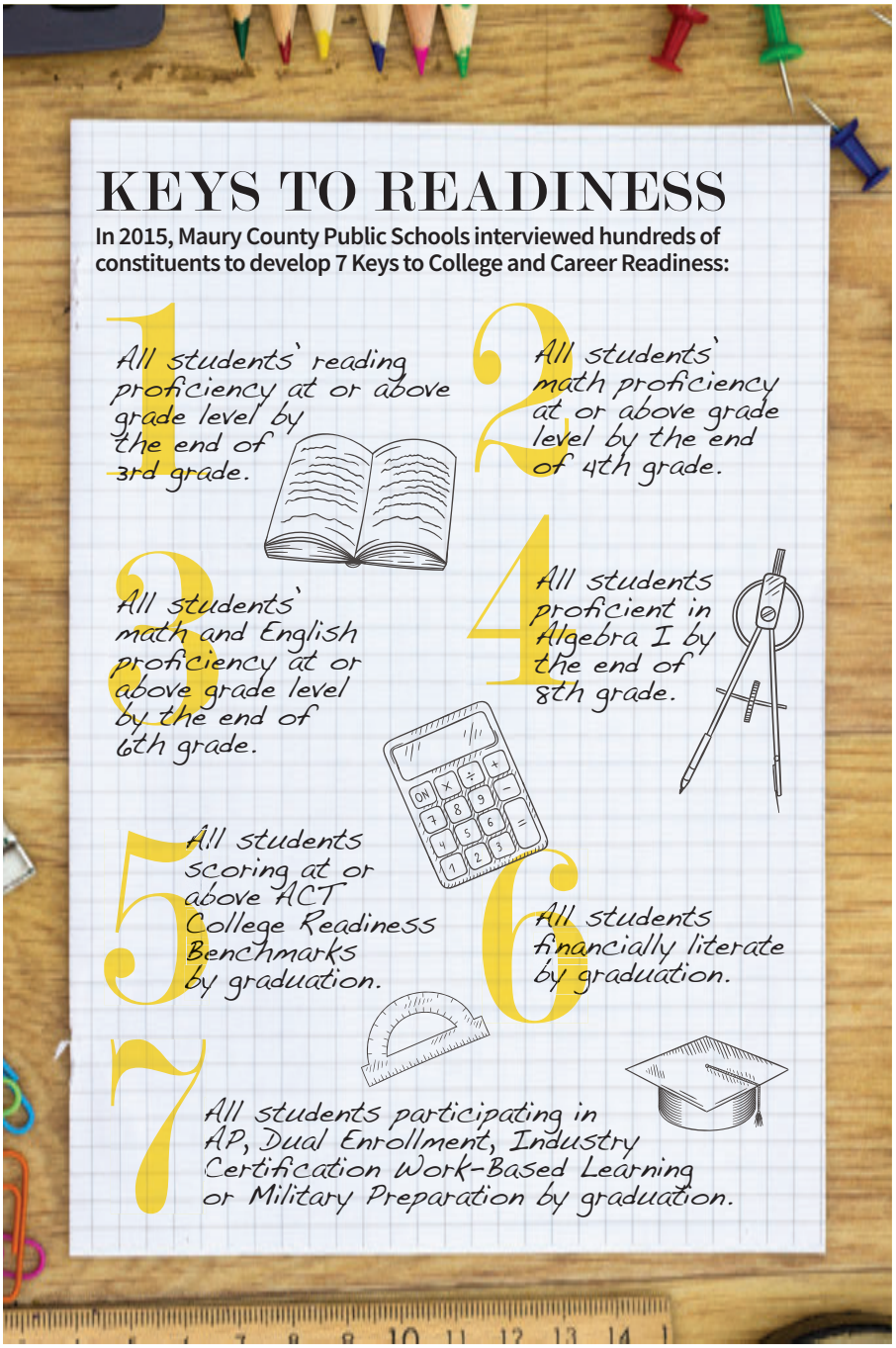
Marczak also notes that these efforts align with the Maury County Public Schools Keys to College and Career Readiness, which were created in 2015 (see sidebar).

More partnership-driven STEAM innovations in Maury County are on the way. According to Jackson, during the 2016-2017 school year, Mt. Pleasant High School received a $500,000 grant from Clarcor, a local filtration firm that subsequently was bought by aerospace company Parker Hannifin. That money will fund an Innovation Lab, which is currently under construction and will sit in the space formerly occupied by the escape rooms.

Another developing partnership features Moore College of Design, and aims to have Mt. Pleasant students design and construct outfits for the hometown theater department, as well as for theater departments at other schools.

The school system also partners with the Maury County Chamber and Economic Alliance on the Grow Maury Initiative, a public/private effort to unite the community toward educational achievement and workforce development. The initiative brings education and business leaders to the area to discuss ways to empower students and rally the community behind academic growth.

Says Jackson: "The new way of thinking around here is that purpose equals power."



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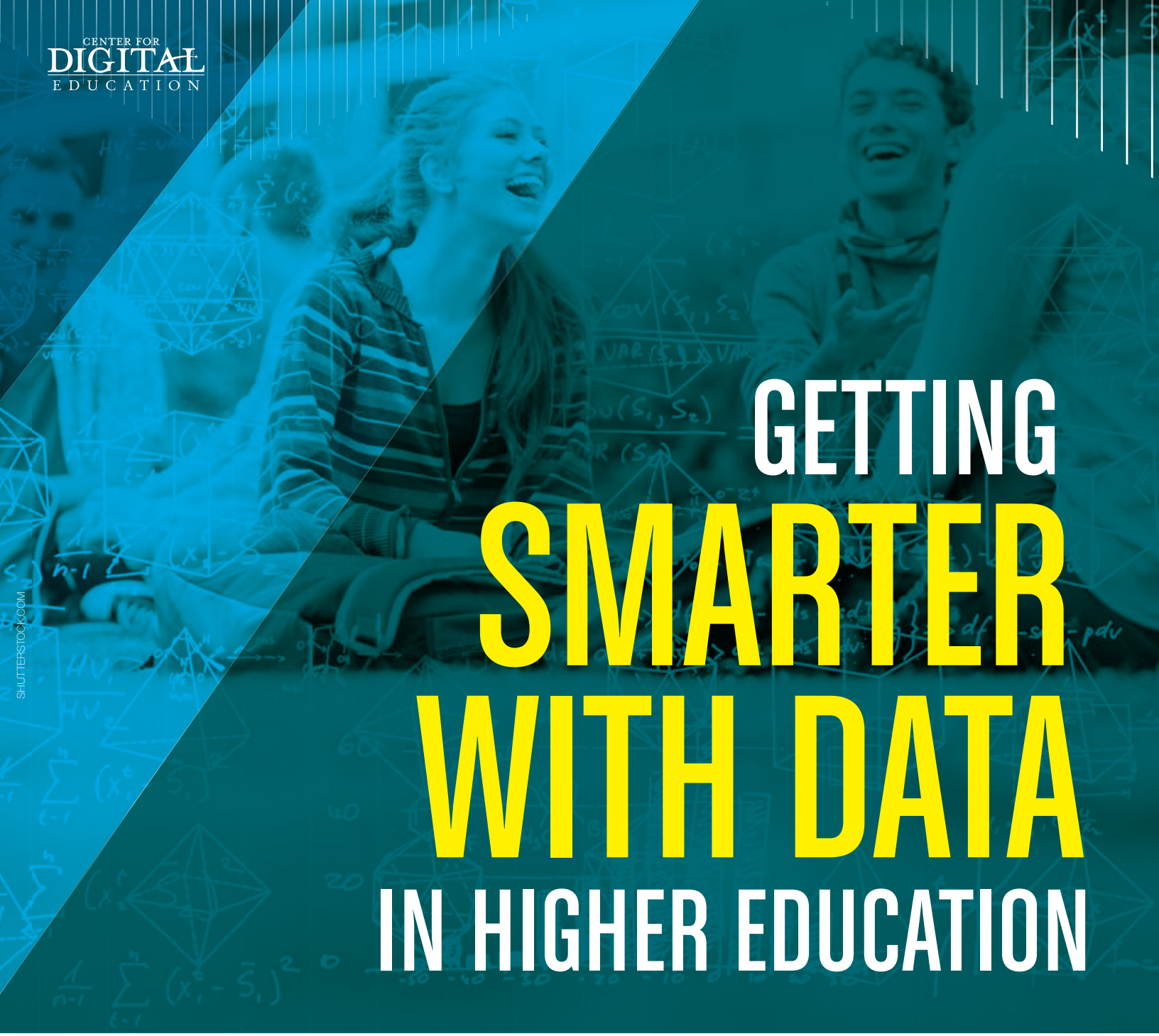

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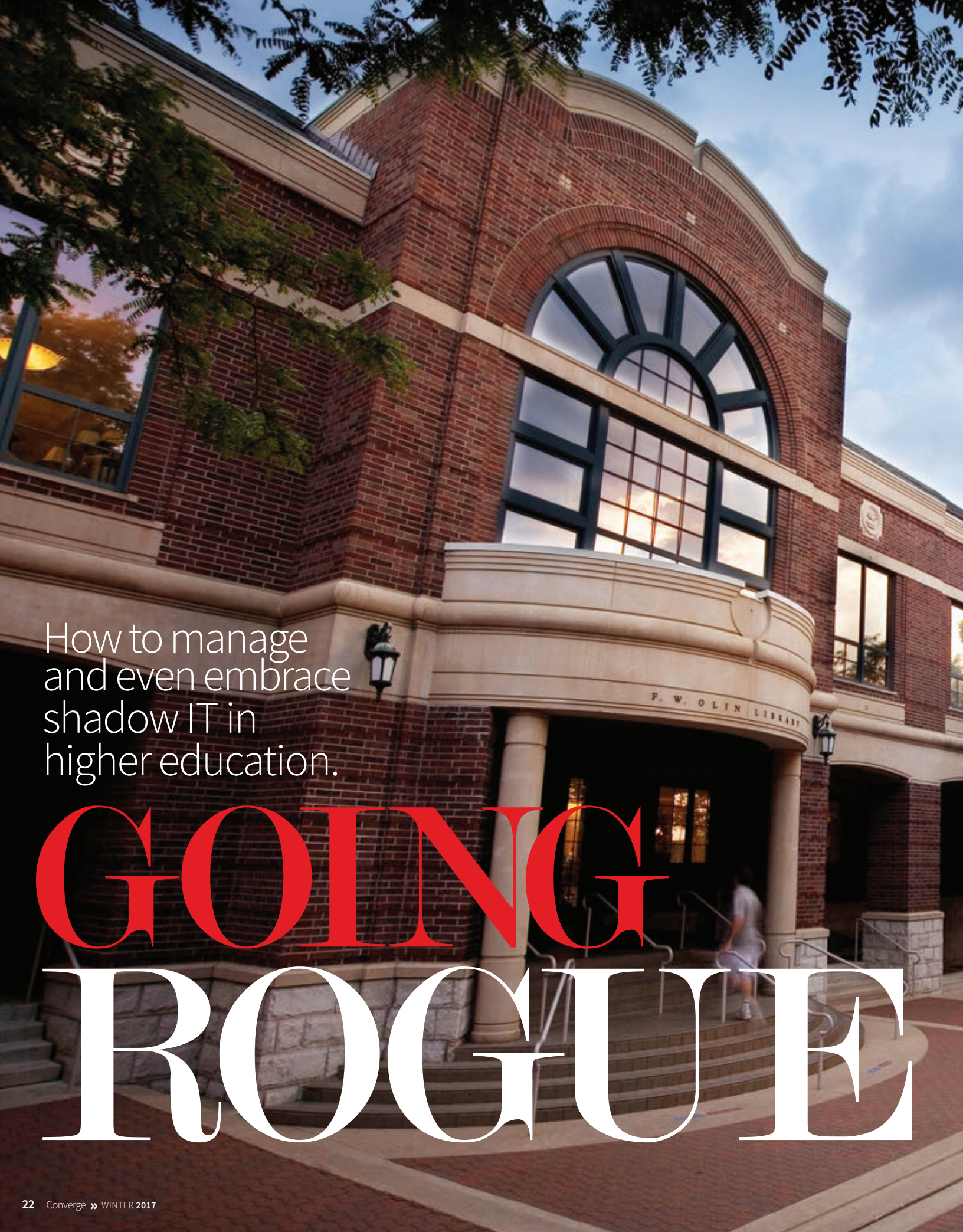


How to manage and even embrace shadow IT in higher education.

GOING ROGUE


DRURY UNIVERSITY

By Adam Stone

To call the IT situation at Penn State decentralized would be an understatement.

"We have over 30 email systems," says CISO Donald Welch. "Colleges and administrative units run their own servers of all different types. They also run their own networks, firewalls and college-specific applications."

Known as "shadow IT," the practice of individuals or entities within an organization outfitting their own technology needs happens in the corporate world, but academia is especially prone to it.

Shadow IT presents security risks. It can be duplicative and drive up the cost of technology. But experts say there are ways to keep it in check.

IT Goes Rogue

At Drury University in Missouri, with its 1,400 day and 2,800 nontraditional students, executive vice president, COO and CIO David Hinson has seen his share of this phenomenon.

"In the past I have had situations where we had one department running an entire accounting system outside of our accounting system," he says. "I've seen people establish their own mailing lists or their own communications load."

At the University of Texas, departments will set up autonomous IT shops, hiring their own programmers and network administrators.

"But where it really comes into play is in data, where people have their own unique data sets," says University of Texas CIO Stephen diFilipo. "Because there is so much access to the cloud, they just set up a license for a service and then when someone else comes in to get student data from that system, there is no practical way to do that."

The cloud is a prime culprit in the spread of shadow IT. The ready availability of digital services often tempts researchers or departments looking to fill a need quickly and inexpensively.

University culture also is to blame. Academia prides itself on an ethos of autonomy.

"A university's strength has always been in its culture of independence, of freedom and the ability to pursue ideas wherever they might lead. It has not been about protection and constraint," says Larry Ladd, director of the higher education practice at consulting firm Grant Thornton.

That can make it hard for the IT department to enforce overarching policies and protections. Yet in the absence of those protections, shadow IT can put the entire enterprise at risk.

Hidden Perils

Hinson worries about rogue data sets, including efforts at the collegiate or professorial level to build and maintain databases outside the university IT infrastructure.

"There are regulations around the use of data, so it puts the institution in legal jeopardy and creates operational challenges if this information doesn't exist anywhere outside the data set you created," he says.

Others see a threat to security.

"Maybe this shadow IT is opening another path into the university networks, for example," Ladd says.

Shadow servers and other off-the-grid technology could unwittingly create a conduit for bad actors to access broader university systems.

Cost is an issue, too. Universities can save money by consolidating their IT buys, whether for hardware or services — an opportunity that is lost when departments purchase outside the IT shop. The shadow systems also create a potential support burden.

"Departments think they are independent and they don't need the university, but then something goes wrong and they call the university IT people, who don't know how

David Hinson, Executive Vice President, COO and CIO, Drury University

"In the past I have had situations where we had one department running an entire accounting system outside of our accounting system."

the system works and don't know how to help them," says Ladd.

Students, alumni, partner institutions and others may pay a price as well: University systems touch a range of stakeholders, any of whom may be negatively impacted by shadow IT.

"The risk is that as each unit goes off and does its own thing, stakeholders might find themselves getting different messages, perhaps conflicting, from across the enterprise," says Joy Walton, a managing director in the higher education practice at Huron Consulting Group. "It can make the experience of communicating with the university very confusing."

Fortunately, a number of potential remedies exist.

Finding the Fix

At Drury University, Hinson says the frontline of defense comes on the policy side.

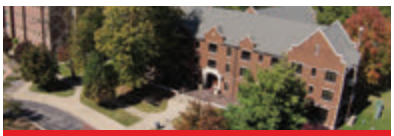
"Strong governance can prevent a lot of this," he says. "Policies can say things like: You shall not do this with student data. You can also have committees and advisory councils. Here at Drury we have a technology advisory council with a number of subcommittees, including information security."

Many in and around academia say committees will likely have a greater impact than strict policies.

"Authority might get you 20 percent of the way, but really you have to lead people because they want to follow. You have to build trust; you have to influence them to understand why this is in their best interest," Welch says.

One way to do that is for central IT to get stakeholders the technology they need.

"We want to take commodity services and consolidate them in a central organization or in the cloud so we can focus as few resources as possible on those commodities, such as networks, email, servers, file storage and enterprise applications," says Welch.



If university IT leaders cannot stop shadow IT altogether, then at least they can position themselves as big-picture thinkers. It is in the leadership role that CIOs have the greatest chance of containing the potential hazards around rogue technology.

Others take the opposite approach. At the University of Texas, diFilipo doesn't call it shadow IT. He calls it "distributed" IT.

It's not the job of the CIO to buy technology for everyone: There are procurement people for that. Why not let colleges and research labs go out and get the tools they need? IT's job, he argues, is to tie it all together.

"The responsibility is to maintain an overall alignment, to ensure the technology programs are aligned with the university's overarching strategic plan," he says.

IT leaders need to ensure consistency around issues like security, data management and compliance. But they don't need to sign off on every server.

diFilipo's approach may seem a bit laissez faire to some, but it acknowledges a fundamental reality. Academia — whether professors, research labs or whole departments — does not yield easily to central authority.

If university IT leaders cannot stop shadow IT altogether (and they probably can't), then at least they can position themselves as big-picture thinkers. They can explain why security has to go a certain way; they can show end users how different systems interlink to create potential vulnerabilities. It is in the leadership role, experts contend, that university CIOs have the greatest chance of containing the potential hazards around rogue technology.

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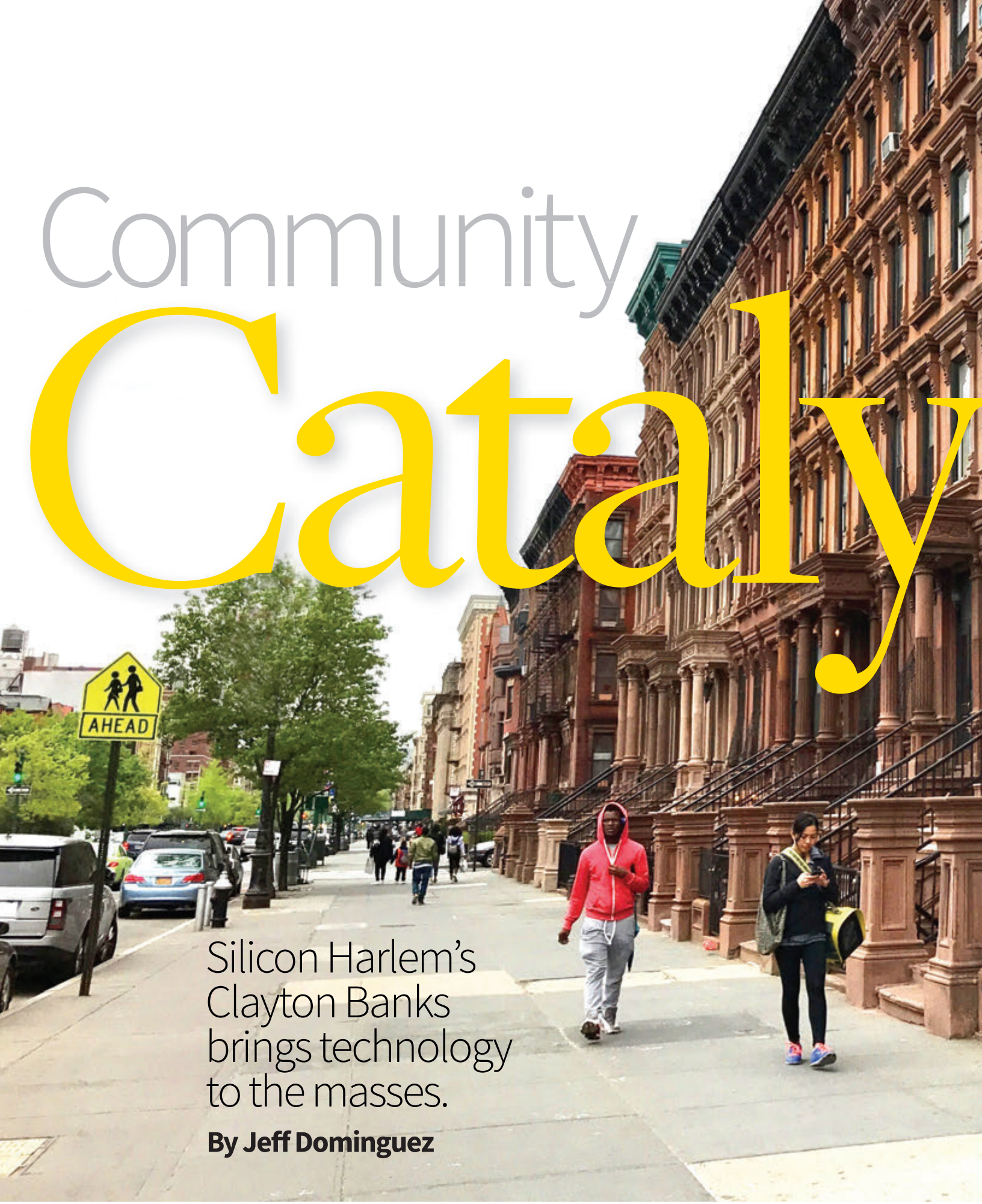

Silicon Harlem's Clayton Banks brings technology to the masses.

By Jeff Dominguez

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FACEBOOK/CLAYTON BANKS

Clayton Banks

When you read the list of his accomplishments in working with Harlem youth and the effort he's devoted to advocating for the underserved, you might assume Clayton Banks is laboring on behalf of a nonprofit organization. But you would be wrong.

Silicon Harlem, the organization Banks co-founded in 2014, is a for-profit social venture designed to transform Harlem into a technology and innovation hub and deliver internet access to a place where very little currently exists.

Banks' work stems from a simple observation. "I had been going to technology meetups and conferences, but they were all in downtown Manhattan. I said, 'Wow, why do I always have to go to Brooklyn or Soho to do anything? Can we do one of these in Harlem?'"

Banks and his team hosted their first technology meetup in Harlem in February 2013. It was a modest affair, and Banks expected about 25 people to attend. Instead, at least 500 showed up.

"We realized this is not about how smart we might be or how many white papers we write or how many times we go to Congress and testify,'" says Banks. "This is about galvanizing the community."

The group began hosting monthly meetups in Harlem and built a database of participants. Almost immediately, Banks was approached to help develop a technology ecosystem, and the idea that Harlem could become an actual tech hub leapt from the realm of the theoretical to the land of distinct possibility.

That first year, Banks and his colleagues decided they did not want to be a nonprofit. "We wanted to build a business model that would self-sustain, so we wouldn't have to focus so much on repeatedly raising funds, which is the burden of a lot of nonprofits," he says.

The plan came together in 2014, and the group incorporated as Silicon Harlem LLC.

FACEBOOK/CLAYTON BANKS

Three hundred students have participated in Silicon Harlem's after-school program — the Apps Youth Leadership Academy (AYLA) — and all of them have attended college.

The mission and focus of Silicon Harlem lies in two areas. "First, we work diligently on education," Banks says. "How do we get tech training, skill building and mathematics curriculum in schools? Because we're finding that these disciplines are woefully lacking in a lot of schools, largely because they don't have the curriculum or the people who can teach it."

To address this problem, Silicon Harlem partners with the New York City Department of Education (NYCDOE) to provide after-school technology programs.

"I teach kids how to code and how to build video games. In doing this, we transform students from consumers into makers," Banks says.

His passion for his work is evident.

"Students are inspired by their work with Clayton," says Samantha Joseph, director of Youth CareerConnect at NYCDOE, the program through which Silicon Harlem's courses are implemented. "I'm also inspired by his vision for his company, by his belief that access and exposure can have a profound impact on young people, by the way he interacts with his students and by the way he interacts with me. It's genuine, and I don't see this kind of attitude often enough. It's infectious."

Approximately 300 students have participated in Silicon Harlem's after-school program — the Apps Youth Leadership Academy (AYLA) — and 100 percent of the seniors have attended college.

Angelica Luna's experience shows the program's potential. Luna joined AYLA with little interest in technology, but soon became a top student. Then she landed a coveted technology internship which opened the door to even more opportunities.

"She wrote me and said, 'I'm at About.com,'" says Banks. "'It's a great internship and it's thanks to you guys

YOUTH CAREERCONNECT

that I even started to think about technology and computer science. Now I'm around people who are doing all types of coding, and I'm loving it.'"

During her senior year, Luna surprised Banks with the news that she had accepted a full-ride scholarship to Smith College and planned to major in engineering and computer science. And this past summer, she interned with the National Aeronautics and Space Administration (NASA).

"Those internships were really game-changers for me," says Luna. "But as much as those internships meant to my career, I never would have even thought about applying for them if it weren't for the skills and experiences I gained through AYLA."

Banks recently experienced another gratifying endorsement of his work after teaching 21 kids how to make their own video games during a five-week summer course. At the end of the program, Banks invited the students' parents, guardians and siblings to play the games in an arcade set up in his office.

"You should have seen these kids on day one compared to the final week of the program," he says. "The difference was like night and day. These are kids coming from tough situations, and they emerged from this program with pride and professionalism. To see their faces as they watch somebody they care about play their game is priceless."

Silicon Harlem's second area of focus — a plan to provide portable high-speed broadband — will launch in 2018.

"As many as 40 percent of the households in Harlem and Upper Manhattan don't have broadband, and many of those homes have children," Banks says. "Those kids are finishing their homework at a Starbucks or a library on a cell phone, because some of them don't even have computers."

Banks' team is raising capital to first provide portable high-speed broadband to families who reside in Harlem's affordable housing and who are classified as low income. Ultimately, they plan to make the service available to everyone.

Besides the 2018 broadband initiative, Silicon Harlem is constructing a resilient network in East Harlem — which is in a flood plain — to ensure internet connectivity even during natural disasters.

The company signed a multiyear contract to complete construction of that network and hire labor directly from the neighborhood. "We've got our workers going digital," Banks says. "We're learning how to splice fiber and connect routers and climb up on rooftops and install antennae. They're gaining a set of skills they can turn into a career, and we're very proud of that. We're helping to ensure that people have a good quality of life."

"These are kids coming from tough situations, and they emerged from this program with pride and professionalism. To see their faces as they watch somebody they care about play their game is priceless."

Clayton Banks, Co-Founder, Silicon Harlem

ENSURING STUDENT SUCCESS:

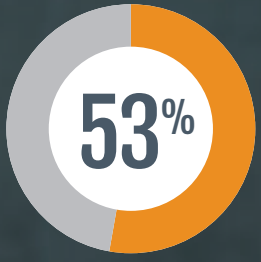
Community colleges on the tech fast track in 2017

Upholding their commitment to provide cost-effective, tech-forward educational experiences for students, community colleges across the country are continuing down the path of digital transformation. For the last 12 years, the Center for Digital Education has tracked this progress through its Digital Community Colleges Survey. The 2016-2017 survey identified the top tech priorities and innovative, emerging trends and practices. Here are some highlights:

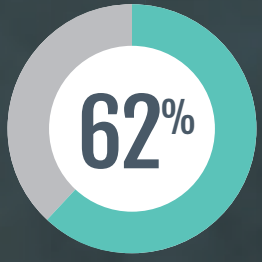
TOP 5 DIGITAL PRIORITIES

1. Mobility
2. Website redesign and updates
3. Cybersecurity
4. Digital content and curriculum
5. IT workforce shortage/server consolidation and virtualization/disaster recovery and business continuity

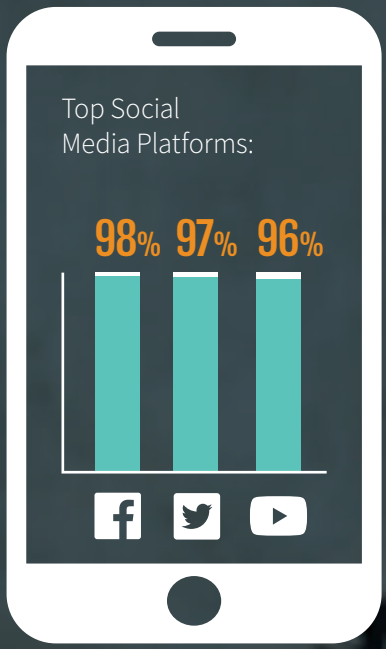
MOBILE AND SOCIAL ON THE RISE



are piloting the use of mobile devices in the classroom (up 8% from previous year).

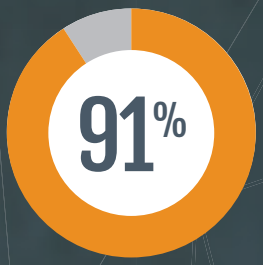


have developed and published social media policies (up 16% from previous year).

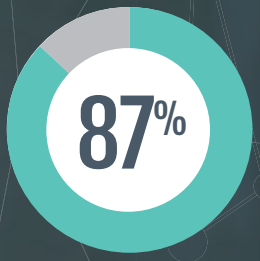


Source: 2016-17 Digital School Districts Survey

PROFESSIONAL DEVELOPMENT A PRIORITY

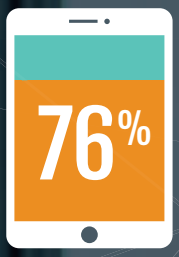


provide professional development on how to integrate technology into curriculum and instructional practices.

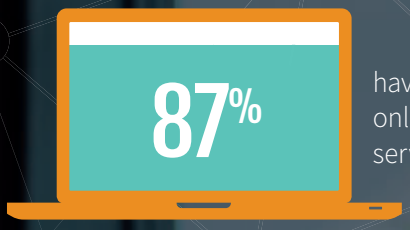


offer technology training that can be accessed online and on demand.

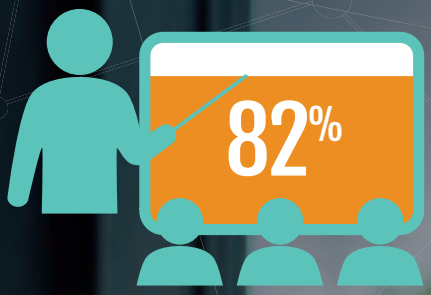
STUDENT EXPERIENCE TOP OF MIND



use dashboards to track student retention.



have expanded online student services.



have classrooms with collaborative technology.

SECURITY IN THE SPOTLIGHT

74%

rate their institution's ability to detect and block cyber attacks as either fair or good.

98%

have an emergency/mass notification system in place.

62%

use video for security purposes.

51%

have either a full-time or part-time CISO on staff.

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