INTELLIGENT CAMPUS
A RESEARCH REPORT FROM
THE CENTER FOR DIGITAL EDUCATION

Innovative Tools to Increase Efficiencies
THE CENTER FOR DIGITAL EDUCATION SPECIAL REPORT is a one-of-a-kind publication that provides education leaders with research-rich content that includes perspectives from industry experts and public sector peers. It consolidates current thinking, best practices, tips for successful implementation, professional development guidance and more — all within a single source. We hope you enjoy this current Special Report on the Intelligent Campus. Don't miss the next Special Report on Classroom Management coming out in August 2014! www.centerdigitaled.com/reports

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New technological innovations aren’t just impacting teaching and learning for the better, they’re allowing K-20 institutions to improve efficiencies across every aspect of campus. In fact, a paradigm shift toward intelligent technologies in K-20 education is revolutionizing the physical campus environment. Imagine for a moment:

- A teacher enters a building using her access card; her office lights immediately turn on and the room temperature automatically adjusts.
- A student witnesses a classmate being bullied and anonymously reports the incident via a customized texting service, which immediately delivers the information to an assistant principal.
- By eliminating paper copies, a university department is able to convert file cabinet storage space to faculty offices.
- An armed intruder is reported on campus; administrative officials, security, 911 dispatchers and nearby patrol officers have instant access to the campus’ video surveillance feeds via their mobile devices and laptops.

The possibilities are endless — but without tangible results, they amount to little more than “technology for technology’s sake.” When used effectively, intelligent technologies promote greener, safer, streamlined and more technologically progressive campuses.

This Center for Digital Education (CDE) Special Report looks at how innovative technologies are being applied and integrated to create intelligent campuses. We’ll start with an overview of intelligent campus technologies and their use models in K-12 and higher education. We will then examine the impact of intelligent technologies on administration and management, before turning our focus to communications, safety and security. Finally, we’ll provide tips for strategizing and planning intelligent campus technology initiatives.

According to education leaders, the benefits of an intelligent campus are:

- **46%** Makes teaching & learning more effective
- **21%** Improved efficiencies and cost savings
- **16%** Better decision-making
- **13%** More effective campus security
- **4%** Increased sustainability and environmentally friendly campuses

Source: CDE Intelligent Campus Research Survey, 2014
WHO’S DOING WHAT?

Here’s a look at a few of the schools, districts, community colleges and universities that are using intelligent technologies and applications. You’ll read more about these solutions in the pages that follow.
From small K-12 schools and districts to large public research universities, many education institutions are implementing business process automation solutions, which save money by improving learning and administrative workflows. These technologies include: process and workflow sensing and automation; mobile devices and applications; data analytics; student information systems (SIS); course management systems (CMS); enterprise resource planning (ERP) systems; cloud computing; and broadband, wireless and mobile networks.

21% of education leaders are using process automation, sensors, GPS or M2M technologies to drive more effective decision-making on campus.

Source: CDE Intelligent Campus Research Survey, 2014

For example, the CDE survey of K-20 education and IT leaders conducted for this report found that 21 percent are using process automation, sensors, global positioning systems (GPS) or machine-to-machine (M2M) technologies to drive more effective decision-making on campus. In this initial wave of campus technology adoption, educators and administrators are experimenting with and fully embracing technologies to support real-time information delivery to the right people at the right time, as well as the automated execution of decisions based on pre-defined values.

True intelligence begins when these technologies and systems are connected to cultivate an organization where multiple disparate departments and functions perform in synergy. By linking building automation; security; fire; heating; ventilation and air conditioning (HVAC); IP networks for data, voice and video; and other systems, education organizations can arm each individual system with the aggregate intelligence of the whole.

This second wave of adoption, which is only in its infancy, builds on the efficiencies created by the first, fully leveraging technology capabilities to connect all campus stakeholders and systems. In this model, every network-connected device has a “brain” that generates “observations” in the form of data, leading to a wholly automated and intelligent campus that:

• Supports a personalized learning environment, including the extension of the campus far beyond its physical borders and anytime, anywhere access to all of its learning resources
• Combines system automation and real-time data that is shareable across all departments and levels to consistently deliver an exceptional student experience and improve academic and business goals
• Adapts easily to different business models for revenue generation, when required
• Makes learning and resources accessible to all students, regardless of physical, sensory or cognitive disabilities
Promotes sustainable, cost-effective IT infrastructures and services without expensive and regular “forklift” technology upgrades

Protects networks, technology systems and user interactions with multiple levels of security

The technology and systems that enable the intelligent campus are accompanied by a wealth of benefits, but education leaders and IT staff must first address a number of deployment and implementation challenges such as funding, change management, professional development, deployment, procurement, parent and student expectations, technology management, staffing resources, compliance, security, privacy and sustainability. In fact, in the aforementioned CDE survey, education leaders indicated funding as the No. 1 barrier preventing a move toward a more intelligent campus.

IT staff and administrators must also ensure the success of their ongoing efforts to deliver curriculum and encourage learning. Intelligent technologies must support this effort, not distract from it.
In today’s environment of shrinking budgets and resources, K-20 education institutions must develop and support effective practices and technology solutions for continuously improving and managing campus systems and operations, achieving cross-organizational economies of scale and creating opportunities to shift resources.

Intelligent technologies can be applied to many administrative areas to create efficiencies: operations management, facilities and real estate management, vehicle and fleet management, energy management, IT management, and inventory and asset management.

Operations Management: The Business of Education, Streamlined

The quality of a student’s educational experience directly correlates with the efficiency of campus operations. The business of education includes managing budgets, human resources and payroll, assessment and testing, financial aid and student payment, admissions, class enrollment and professional development, among other key considerations.

Education institutions can benefit from technology systems and tools that will help them automate and simplify these processes while reducing (or eliminating) paper.

The Texas A&M Health Science Center (TAMHSC) educates health professionals and researchers through seven major colleges, schools and institutes across the state. In 2008, when TAMHSC built a new 200-acre central campus in Round Rock, its leaders decided to go paperless. Managing and maintaining paper files had become too costly and took up too much space.

Starting in its 180-user finance department and working with other departments in stages, TAMHSC deployed an enterprise content management (ECM) solution to securely store paper, implement business process management and eliminate file cabinets. The finance office no longer accepts paper documents and requires all internal documents, such as invoices, payroll paperwork and contracts, to be submitted electronically.

The Texas A&M Health Science Center used an enterprise content management system to eliminate excessive paper archives and file cabinets.
As a result, it eliminated nearly 69 file cabinets, which saves thousands of dollars in maintenance costs each year, and simplified its records management and retention process. “We’ve moved to only having one copy of the document and are allowing our departments access to many of those folders. They love this because they no longer have to keep their own copy, which of course means fewer files in their offices,” explains Kristin Nace, assistant vice president of fiscal services and budgets.

One of the biggest benefits of the ECM system was the elimination of almost all overnight shipments to regional offices, which saves about $55,000 in shipping costs per year.

IDEA Public Schools, a growing network of tuition-free K-12 public charter schools throughout Rio Grande Valley, Austin and San Antonio, Texas, uses technology to simplify admission and enrollment.

IDEA currently serves more than 15,000 students in 30 schools, and plans to double those numbers by 2017. “All of our work is framed by growth with quality and that can create funding challenges,” explains Cody Grindle, director of software development. “Technology helps us manage growth and funding challenges by making us more efficient.”

Grindle says that IDEA’s online student application and enrollment platform is one of its most critical technology systems. As a public charter school, students join through a lottery system. Without an online tool, this would be a cumbersome process with in-person visits for applying, enrolling and registering for classes. “Many of our schools are in lower-income communities, where time-consuming, in-person processes are a barrier to entry,” he explains. “If you have to take off work to go to campus multiple times to deal with admissions issues, that’s going to turn people away.”

The system streamlines the lottery selection process and eliminates parent and student phone calls from the 15,000 students who are on the enrollment waiting list. “It’s a star breakout technology from the operational perspective,” says Grindle. “It eliminates a lot of wasted time for students, parents and school staff.”
Facilities and Real Estate Management: Shifting from Reactive to Proactive

Schools and colleges often manage and maintain vast portfolios of real estate, buildings, temporary trailers and other physical structures, which can lead to complex operational processes and workflows.

Facilities and real estate management and building automation systems simplify and streamline operations by automating work orders and maintenance processes, centralizing control, monitoring inventory usage, scheduling preventive maintenance, simplifying room and building scheduling, and tracking real estate and building assets. Simultaneously, automation systems provide a wealth of operational data and reports, such as energy consumption and costs, real estate and building valuation, total cost of occupancy, and space allocation. Integrating multiple systems provides a more global view of operations.

Abilene Christian University (ACU) in Texas discovered the value of combining mobility with cloud-based maintenance management to more effectively manage reactive work orders, schedule preventive and deferred maintenance, and track maintenance-related inventory usage. It equipped its maintenance technicians with mobile devices that allow them to access a mobile maintenance management app from the field.

Technicians can access the maintenance management software remotely and review and close work orders without having to go back to their desks. “Over time we have noticed an increase in work orders, but this new approach has drastically reduced response time, resulting in huge time savings for my team,” says Corey Ruff, executive director of facilities and campus management.

Ruff says that before implementing the maintenance management system, the department was more reactive in its approach to maintenance. The new system supports more preventive maintenance, which now accounts for 20 percent of ACU’s total work orders. “This way, they spend less time on emergencies and more time on routine maintenance to extend the life of equipment,” he says.

Dashboards make benchmarking easy, allowing the department to document its performance. “The dashboard gives us a clear picture of our workload and we use the number of work orders per student to justify additional resources,” Ruff explains. “The maintenance department’s work is now being tracked in a system and management can see all the work the department does.”

ACU’s next step is to assess the condition of its facilities and inventory its mechanical equipment. The data it collects from these studies will populate a cloud-based capital planning solution that can be used to forecast facility needs and justify funding requests. Ruff says, “This data will give us a better understanding of our campus’ true needs as well as help us continue to become more proactive in our planning and maintenance approach.”

Education leaders report using video surveillance, GPS and fleet maintenance software to improve vehicle and fleet management.

Source: CDE Intelligent Campus Research Survey, 2014

Vehicle and Fleet Management: Driving Multiple Efficiencies

School districts, colleges and universities own and manage numerous vehicles, including school buses, maintenance trucks, utility carts and security vehicles. Many of them track the location of their vehicles and buses using driver-operated radios, a manual solution that depends on proactive driver communication and open access public radio channels with spotty coverage.

By deploying more intelligent solutions that use innovative technologies to provide real-time visibility into vehicle locations, education institutions
can automatically track vehicle fleets, improve communications with parents and the community, and better protect students and drivers.

Southern California’s Anaheim Union High School District (UHSD) uses a GPS-based vehicle tracking solution to help manage the transportation of students to and from 22 schools in a 45-square mile area. The system helps the district monitor the effectiveness of the route, ridership numbers and driver hours.

By monitoring bus activity during working hours, Anaheim UHSD reduced idle driver time and optimized payroll. Because it can now monitor and evaluate ridership, the district was able to eliminate four bus routes, saving approximately $144,000 per year. “With such significant savings, the system paid for itself for five years in just the first year alone,” says John Jessie, director of transportation.5

Energy Management:
Sustainable Campuses,
Lower Budgets

Because of skyrocketing energy costs and higher expectations for sustainability initiatives, more and more education institutions are looking for ways to monitor and manage energy use.

Energy monitoring across campus facilities helps organizations gather insight into building operations and equipment functionality, including historical and real-time energy use and peak demand times. Applied to enterprise networks, power management can provide a window into idle computers, printers and other networked devices that waste energy and money.

By crunching the data churned out by these systems, campus energy experts can analyze energy consumption and demand, estimate monthly bills, allocate energy costs to specific buildings or departments, and identify areas where conservation measures can be enacted.

Panama-Buena Vista Union School District (PBVUSD), a 23-school district in Bakersfield, Calif.,

Jargon Buster: Location Technologies

Confused about location technologies? Keep reading to learn more about the most important terms.

Automatic Vehicle Location (AVL). AVL systems are used to automatically locate and track vehicles. Most AVL systems rely on satellite-based GPS technologies to wirelessly transmit location.

Global Positioning System (GPS). GPS refers to the satellite-based location technology that is often found in mobile devices and automobile navigation systems. It can also be embedded in a multitude of end-user devices to enable AVL and other location-based mapping and tracking applications.

Real-Time Locating Systems (RTLS). RTLS automatically identifies and tracks the location of objects or people. RTLS may rely on radio frequencies (RFID), infrared or ultrasound technology to transmit information.

Radio Frequency Identification (RFID). RFID tags electronically store information and communicate with RFID readers via short-range radio frequencies. Unlike a barcode, the RFID tag doesn’t have to be scanned — it’s automatically read when it comes within range of installed RFID readers. The RFID reader may be connected to a mobile network or wireless LAN to transmit data it collects. RFID tags are used in applications such as building access systems (tags embedded in identity badges) or enterprise asset management systems (tags embedded in labels attached to equipment).

Machine-to-Machine (M2M). M2M leverages high-speed 3G and 4G wireless networks, embedded sensors and data analytics to allow networked devices to communicate with each other and end users, and to be monitored, controlled and managed remotely. M2M-enabled devices can be used to track location but they can collect many other types of data. Almost any device can be connected to a mobile network and outfitted with an embedded sensor that collects and transmits data to a remote computer for automated or human analysis and review.
uses power management software to automatically shut down computers.

The software provides policies and configurations that enable customization of individual machines. "I can set when to turn a computer off, or add a special rule ... not to do anything between certain hours, or on certain computers, or on specific days," explains Brook McKnight, PBVUSD network manager. "This is important, because we had to account for how different computers are used and what different users expected."

Simply turning off monitors automatically generates significant savings; turning off PCs during nights and weekends saves even more. The district reduced its energy use by about 25 percent, saving approximately $60,000 in utility costs in the first year.

The solution also provides data and reports the district can use to demonstrate reduced energy usage, allowing it to receive a rebate from its utility company, which covered the cost of the software. With the rebates from the utility company and $60,000 in saved energy costs, the software paid for itself.

Creighton University of Omaha, Neb., worked with its energy provider to deploy an energy monitoring system across its 94-acre campus. When complete, the system will connect 28 of Creighton’s 59 buildings and 42 metering points to monitor electricity usage and at some locations, steam and chilled water usage.

The monitoring system will help the university gather insight into how each building operates, such as historical or real-time energy use, peak demand times and the functionality of specific equipment. Creighton energy experts can use it to analyze energy consumption and demand, estimate their monthly bills and allocate energy costs to specific buildings or departments.

The university will be able to use monitoring data to help identify areas where conservation measures can be enacted, and expects its monitoring and conservation efforts to result in a 15 percent reduction in energy consumption over time.
SDN Provides Network Flexibility and Control

Software-defined networking (SDN) doesn’t exactly fall into the same technology bucket as IT workflow and process management, but because it simplifies the way networks are managed, it’s a tool that has tremendous potential to change the way education IT teams manage their networks and data centers.

A networking approach that evolved from work done in higher education research labs, SDN is an emerging technology that operates on many of the same principles that have driven the virtualization of servers, desktops and storage. With SDN, the control of the network is moved from network hardware (switches) to a software application.

By definition, a software-defined network is programmable, which means that network engineers and administrators can change it very rapidly to respond to different network needs, without making hardware changes. This allows the use of inexpensive commodity hardware and provides unprecedented flexibility.

Education networks are increasingly complex and constantly changing. As SDN gains traction in data centers, expect to see more education institutions, especially colleges and universities, use it to get a handle on their complex and constantly changing networks.

IT Management: Innovate without Overtaxing Resources

Many common administrative tasks can be automated by IT management systems, allowing campus IT departments to focus scarce resources on implementing innovative programs. For example, purchasing, computer imaging and setting up email can be standardized, automated and shifted to a software program or the end user. Software asset management tools automate the processes of updating and administering software versions, tracking software usage, managing licenses and enforcing license compliance.

Delaware’s Indian River School District (IRSD) automated endpoint management to streamline support of its fleet of 6,000 computing devices, including 1,500 tablets. With 14 schools in an area encompassing more than 360 square miles, its six-person endpoint management team needed to ensure it could effectively deploy new end-user devices without overtaxing current resources. Work orders were managed via a spreadsheet, and technicians were often stopped in the hall with impromptu, untraceable service requests.

IRSD deployed endpoint and client management software that manages desktops, laptops and mobile devices, both Windows and Mac, through a single control panel, and provides centralized metrics and decision support. Simultaneously, the district adopted a set of standardized IT practices to formalize the remediation process, and automated endpoint administration with processes that could be centrally tracked.

The new tools allow IT staff to diagnose and solve more problems with less travel because they can securely access and control systems remotely. “Before, if there was a system down, it would have taken three days for the rotation of our techs to get back to that problem,” says Daniel Lawver, IRSD service manager. “Whereas now, we’re centrally tracking tickets, and can have the technician address it the next day.”
Now, systems are more available throughout the district because the IT team closes tickets faster. Patches Hill, IRSD technology systems manager, says the team has been able to shift from reactive to proactive.

Another way the system helped IRSD cut costs is by allowing it to automatically shut systems down between 10:00 p.m. and 6:00 a.m. Hill estimates this helps the district save tens of thousands of dollars in power costs annually, which covers the support costs for the new software tools.8

The University of North Carolina at Chapel Hill (UNC) Campus Services department realized tremendous productivity increases when it streamlined its procurement and imaging process for commonly used IT assets, including desktop and laptop computers, monitors and printers. UNC standardized on a fixed number of manufacturers and models, and deployed a customized Web-based, self-service procurement system that displays appropriately configured hardware models based on the end user’s role and department. “The system is making life considerably easier for us and much easier for the customer — they don’t have to wait on IT to order something,” says Craig Hyatt, information technology director for the finance and administration department. “An administrative function like the basic ordering of commodity items isn’t really an IT function, even though managing the acquired asset is.”

Hyatt says that for each PC purchased, the new system saves IT support staff about four hours and saves procurement staff two hours. User feedback on the first phase of the revamped purchasing process was so positive that servers and storage devices were also added to the system.9

“The [procurement] system is making life considerably easier for us and much easier for the customer — they don’t have to wait on IT to order something.”

Craig Hyatt, Information Technology Director for Finance and Administration, University of North Carolina at Chapel Hill

“Asset Management: Maximum Value, Minimum Paper”

Enterprise systems for managing the lifecycle of physical and virtual assets help campuses understand and manage their assets more efficiently, thereby obtaining the maximum value from their resources.

Using real-time location and wireless technologies such as M2M, GPS and RFID, physical asset management systems help campuses track an asset’s location, report costs against assets, develop inventory lists and reports, manage service requests and coordinate maintenance programs. In the CDE survey, only 17 percent of education leaders reported using an automated system to track inventory and assets, while 39 percent reported using a combination of an automated system and manual tracking.

The State University of New York at Albany (SUNY Albany) created a GIS- and Web-based enterprise asset management solution to maintain and access dependable information about campus infrastructure, including, water, sewer, stormwater and irrigation systems. The project relies on GPS technologies, tablet PCs and video cameras to collect asset data, such as condition and location, and upload it to an in-house database. The database also archives relevant purchasing and repair records.

Besides streamlining data collection, SUNY Albany’s asset management system eliminated paper forms and redundant data entry, improved data quality and simplified the annual planning and budgeting process. In the event of an emergency or service interruption involving campus infrastructure, such as a water line break, staff can access a secure website to easily view important infrastructure maps and other information instead of wading through paper maps and files.10 ■
MULTIPLE AUDIENCES, MULTIPLE CHANNELS, MULTIPLE BENEFITS

Education institutions continue to look for new ways to communicate effectively and quickly with students, parents, alumni, employees and community members. Each group has specific communication needs and requires different channels of communication for providing and receiving information. Intelligent technologies expand the institution's ability to communicate instantly with multiple audiences via various channels.

For example, Anaheim UHSD's bus tracking system, mentioned previously, enables the district to more effectively field calls from parents looking for their children. Previously, if a parent called about a bus' location, the school contacted drivers using a radio system that covered only a 25-mile radius and had many dead zones.

The vehicle tracking system transmits bus location automatically to the district, so transportation supervisors always know the exact location of every bus and what time it made each stop. This allows them to quickly respond to parent queries and communicate proactively in the event of weather or traffic problems, without trying to locate the driver via radio. “The first day we had [the system], we used it to find a lost kid,” says Transportation Director Jessie. “We could look up the bus and tell the parent, ‘Here’s where he is right now, and he’ll be home in 10 minutes.’”

Can You Hear Me in the Back?

Nevada's Nye County School District (NCSD) installed in-class audio and a video camera system that improves student engagement by enhancing in-class communication.

The purpose of the audio installation was to ensure all students could hear their teachers. Teachers wear a microphone on a pendant around their neck to help project their voice to the back of the classroom. Former Superintendent Dr. William “Rob” Roberts says enhancing

Education leaders reported using or planning to use the following technologies to improve communications with students, parents and the community:

<table>
<thead>
<tr>
<th>Technology</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Social media</td>
<td>64%</td>
</tr>
<tr>
<td>Information automation</td>
<td>61%</td>
</tr>
<tr>
<td>Learning management systems</td>
<td>51%</td>
</tr>
<tr>
<td>Digital signage</td>
<td>39%</td>
</tr>
<tr>
<td>Other</td>
<td>5%</td>
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Source: CDE Intelligent Campus Research Survey, 2014
audio in the classroom improves student attentiveness, especially for those sitting in the back of the room, and is helping teachers manage the room more effectively.

Another benefit, he says, is reduced teacher fatigue and absenteeism. “I found that upon installation, the teachers who use it aren’t worn out as much at the end of the day because they can speak in a normal tone of voice,” Roberts explains. “They have fewer days that they are sick.”

The district augmented the audio system with on-demand video surveillance on six campuses. NCSD found the combined system is ideal for teacher training, evaluations of student behavioral issues and distance learning. “The teacher can, in conjunction with the principal, set the instrument up so they can record their own classroom instruction and use that in professional learning communities where teachers can work on best practices or mentor a junior teacher,” Roberts says.

Teacher evaluations have become more natural, because the students don’t know when the teaching session is being recorded, and they aren’t distracted by the physical presence of a principal in the classroom.

In addition, the videos are available online to students who want to review the lesson as well as students who weren’t able to attend class in person.12

**Videoconferencing Broadens Classroom Opportunities**

Because of its versatility in the classroom, videoconferencing has tremendous potential to impact communications. Education institutions use videoconferencing in the classroom to improve distance learning opportunities, expand course offerings and increase class enrollment.

Virginia Beach City Public Schools (VBCPS) uses IP network-based videoconferencing to connect students at all of its high schools and middle schools. At each of its 14 middle schools and 11 high schools, VBCPS built distance learning labs that provide dozens of regular and advanced placement classes.

Each distance learning lab allows two-way, full-duplex audio and full-motion video, and is equipped to provide and receive instruction. Two plasma monitors are installed in the front of each room. Also included is a touchscreen that allows the teacher to manipulate cameras and microphones at the sending and receiving sites, an Internet-connected teacher laptop with a DVD player, a document camera and student microphones that allow students to communicate with the teacher at the touch of a button. Via the plasma monitors, the instructor can show images from his or her computer screen, the document camera, or any other camera at the sending or receiving site.13,14

Some universities and community colleges are turning to a high-definition, lifelike form of videoconferencing known as telepresence, which provides an experience so realistic that participants feel as if they’re all in the same room.

Telepresence has been used in high-end corporate applications for several years. It’s more expensive than traditional two-way videoconferencing but is becoming more affordable and as it does, it’s beginning to migrate to the education market. Telepresence shines in academic settings because it removes complex connection processes, simplifies meeting management and eliminates the need for IT involvement. Meetings can be scheduled and connected at the touch of a button.

Telepresence video runs over an IP network. Rooms are specially designed with multiple two-way high-definition screens that provide spatial sound and show participants in lifelike size and video quality, without intrusive cameras and audio equipment.

Moraine Park Technical College in southeastern Wisconsin implemented a telepresence room on each of its three campuses, which are about 30 miles apart. The college has been offering video-based distance learning opportunities since the early 1990s,
initially using lower-resolution video solutions that provided a less realistic experience and were more complicated to set up.

The three telepresence rooms are booked all day and are the most popular videoconferencing solution, according to Peter Rettler, dean of the West Bend Moraine Park campus. “We constantly survey our students to get their opinions on the different delivery modes and telepresence is by far their favorite,” he adds. “They forget they’re in a different room from the presenter.”

The ease of use is popular among faculty members, says Chris Kleman, instructional technology specialist at Moraine Park. “With older technologies, the biggest issue was that students and faculty had to have special training or they couldn’t use the equipment properly,” he explains. “Telepresence is so easy to use that no faculty training is required. And the amount of tech support needed is little to none.”

From the Classroom to the Boardroom

In the higher education boardroom, telepresence can be used to conduct interviews with applicants, collaborate with other institutions and become a valuable partner to the private sector. For example, Lone Star College System (LSC), a six-campus community college system that serves the greater Houston area, is using its telepresence solution for local and regional workforce and economic development.

The LSC-University Park campus is also home to Lone Star Corporate College, which helps develop the local workforce and connect local and regional
employers with the right employees. Corporate partnerships are a valuable source of revenue and telepresence plays an important role by enabling trainings and other meetings on a global level.

“Telepresence helps build our college image and enhances our national reputation. We bring value to our corporate partners by offering telepresence as a service for global trainings and meetings held at our conference center,” explains Shah Ardalan, president of the LSC-University Park campus. “They don’t have to build their own telepresence rooms because they can rely on us to provide a high-quality and reliable experience.”

“We’ve used lower-quality technology in the past but it didn’t provide the same level of integration, reliability, flexibility and ease of use,” adds Linda Head, associate vice chancellor of workforce development. “Telepresence is a high-caliber offering that allows us to meet the needs and expectations of the global corporate customer.”

Ardalan says in the future LSC plans to use the solution to help recruit students and connect them to Houston employers.16

Automating Information Brings Order to Chaos

By automating information delivery to its multiple audiences, education institutions can bring order to the chaos of emergency communications and create a more modern and compelling format for non-emergency information and news.

Many universities are using mass alert notification systems to provide immediate and responsive information in the event of an emergency. For example, through a single Web-based interface, Richmond’s Virginia Commonwealth University (VCU) can instantly send alerts to students, faculty, staff, visitors, parents, media, first responders and others, regardless of location.

Being able to reach people via multiple communication channels is critical, explains Sam Kennedy, assistant director of user services. “Life is situational, so using one method is not going to work,” he says. “What happens when an alert goes out and [students in a classroom] have turned off their phones?”

VCU’s emergency alerts tool allows it to communicate with groups of users via multiple channels, including text messaging, voice calls, desktop pop-ups, digital signage, emails, the public address system, its website, in-room alert beacons and social media, including Facebook and Twitter.17

For non-emergency communications with students, parents and their communities, many schools and universities are turning to emails,
websites and social media. On campus, they’re retiring bulletin boards and fliers and turning to digital signage.

Delta Elementary School in Alaska uses digital signage in its main lobby. “Before school, during lunch and after school our lobby is filled with students, staff and parents. We have some bulletin boards, but most of those get the ‘once over’ and are not looked at again,” says Principal Rick Vandenboom. “With digital signage we are able to have calendar events, pictures/movies of students, relevant Twitter/RSS feeds and current weather conditions.”

The system allows teachers and staff to upload pictures or messages from their classroom or home computer, without taxing IT or front office staff.18

Mobile Technology Tears Down Classroom Walls

Many K-12 schools and most higher education institutions have comprehensive network coverage that provides students with secure access to learning resources wherever they are — in the cafeteria or dining hall, athletic fields, the gym and other common areas.

Savvy organizations are extending the reach of their networks to the next logical level — school buses. Last year, for example, Kentucky’s Madison County Schools retrofitted two school buses to provide filtered Internet access to students.

“Students have a lot of downtime on field trips and athletic trips and we wanted to provide network access for them on the bus,” says Jacob Cecil, network administrator. “Once they get where they’re going, they can take the router with them and as long as they have power and a cell signal, they can use it as a portable hotspot.”

The routers are equipped with 4G mobile wireless access technology. A virtual private network (VPN) concentrator connected to the district’s network provides secure access to the school’s network via a VPN tunnel, which means the district can provide secure filtered Web access to students on the school bus.

“Students love it because they can get school work done instead of sitting around,” notes Cecil. “Teachers and drivers love it because when students are occupied, they’re better behaved.”

The buses, which are available by request to any school in the district, could be used to provide Internet access to students or even the community in emergency situations — think of it as a hotspot-on-wheels. “We have construction going on near some of the schools and we’ve had network cables get cut accidentally,” says Cecil. “This allows us to provide emergency access if someone’s network goes down.”19
A steady media drumbeat of campus-related safety threats gets louder every year. The increase in school shootings has been a call to action, but violence isn’t the only safety threat schools face. Vandalism, theft, bullying and cyberbullying have become unfortunate fixtures in the education landscape.

Educators and administrators are looking for innovative ways of solving safety and security challenges, with an emphasis on enhancing both prevention and response. Intelligent technologies can be a critical part of a comprehensive security plan.

**Real-Time Information, Faster Response**

Like so many other technologies, duress systems, also known as “panic buttons,” have gone mobile. They can be integrated with video monitoring systems so that when activated, emergency personnel can access floor plans with real-time visualization of all badged personnel and video from the campus’ cameras. Typically, they’re worn or carried by individual instructors or administrators, or loaned on a temporary basis to students at risk for bullying.

In Washington, a recent law requires that every K-12 school be equipped with at least one silent panic button. Schools can apply for funding grants, however, they must make the security improvements by the end of 2014. In the town of Grandview, Wash., Grandview Middle School adopted a mobile panic button system that provides teachers and administrators with RFID-embedded badges containing a panic switch. The system leverages the school’s existing wireless network, so no additional cabling was needed.

When a switch is pulled, nearby staff, administrative officials and emergency personnel are notified. Emergency personnel are automatically shown the location of the emergency on a Web-based school map. The badge has a message screen so emergency personnel can send mass notifications to all badge holders during a crisis.

Back in Nye County, Nev., NCSD officials took advantage of integrated panic alarms through their in-class audio and video surveillance solution. Former Superintendent Roberts explains, “When a teacher has a crisis, they have a pendant around their neck with a button, and all the teacher has to do is touch it. When they activate the button, it activates the camera, recording the entire classroom [audio and video] and sends an alert to the principal’s office. There is a screen that tells you which room the crisis is in.”

The real-time video is available for school officials to view online and can be instantly streamed to emergency responder mobile devices. Police officers are able to control the cameras remotely so they can focus on specific areas of the room as needed.

**Integrated Systems Provide the Biggest Bang for the Buck**

Education institutions can extend the value of security platforms by integrating them with other systems for a more unified approach to crisis management and response. The University
of Kentucky (UK) is installing a security system that integrates video surveillance with student identity cards, which track when students enter and exit buildings. Students will now have access to any building at any time.

“This will allow us unprecedented capability for monitoring the campus for crime and protecting our students, employees and visitors in the event of emergencies, including natural disasters or large-scale acts of criminal behavior,” says University Chief of Police Joe Monroe. “We’re trying to leverage technology instead of manpower.”

UK will install 2,000 video cameras with analytics software that automatically detects unexpected motion and alerts security dispatchers. The cameras store the video for a limited amount of time, and police can review footage on demand.

Monroe says the technology will not be used to track students. Student government president Roshan Palli says that students aren’t worried about their privacy. “More than anything else, it would reassure parents and students even more,” he says. “It illustrates the administration’s emphasis on putting students first.”

K-12 institutions are harnessing the power of integrated security solutions as well. Indianapolis Public Schools (IPS) recently enhanced its security system to protect assets, staff and more than 40,000 students in 76 schools and 90 buildings.

The district’s legacy systems were not able to keep up with its ongoing security challenges. As part of a large capital improvement project, the district installed new access control and digital video monitoring and archiving systems across the district and integrated them with a new asset tracking system.

The first step was to upgrade its aging building access control, video surveillance and alarm system. “One of the big issues [was] the opening and closing of buildings,” says Rick Joest, former IPS technology foreman. “When the building was opened, the custodian would call and send an alarm code when he or she entered. With 90 buildings opening up about the same time every morning [the school police] were getting flooded with calls.”

The new deployment automates the process of opening each building, confirming the identity of the person disengaging the security system and reducing the number of calls the school police department receives every morning.

IPS installed additional digital video cameras and connected existing cameras to new digital video monitoring and archiving software, which provides district staff and school police with the ability to view, record, archive and retrieve

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**Education leaders reported using the following technologies for campus security:**

- **76%** Video surveillance
- **64%** Emergency notification systems
- **28%** Wireless lock technologies
- **19%** Elevator control products
- **6%** Other
- **5%** Biometrics

(Source: CDE Intelligent Campus Research Survey, 2014)
digital video from the integrated security console and eliminates the cost (and inefficiencies) of VHS tapes, tape storage and VCRs.

Next, IPS deployed a RFID-based asset management system to tag, track and protect valuable assets, and integrated it with its security system. The system alerts administrators if an asset has been moved and displays its location via the security system management console.22

Stop Bullies and Cyberbullies in their Tracks

Increased public awareness of both physical bullying and cyberbullying has led to the development of anti-bullying technology tools. For example, online incidence reporting software allows students to anonymously report bullying incidences. Advanced systems provide monitoring and tracking capabilities to ensure anti-bullying efforts are consistent and effective. Schools can record actions, follow up with affected students, monitor reported cases and identify repeat offenders and problem locations.

One tool provides students with an easy-to-remember number and allows them to text tips to authorities for real-time bullying prevention. Gladewater Independent School District in Texas set up such an anonymous texting program and blanketed its schools with promotional posters to educate potential tipsters and make bullies think twice.

“We get the emails and text tips immediately on our phones, as soon as the tips are submitted,” explains Cathy Bedair, Gladewater High School principal. “They go to my two assistant principals and me. The tips that have come in so far have been related to bullying, but it can really be used for anything like theft, vandalism, cheating or drugs. It’s a quick and easy way for students, parents and community members to have a direct line to the three of us if they see anything, even after school hours.”24

Cyberbullying is much harder to identify and reduce because the evidence isn’t visible to adults. Social media websites where bullying occurs are notoriously lax about protecting students,25 and as with physical bullying, most victims are reluctant to report incidents.

Some Web filtering solutions can be configured to address cyberbullying concerns. For example, Wyoming’s Lincoln County School District #2 uses a content filtering system that, among other precautions, reports

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Where Can Surveillance Cameras be Installed?

The Department of Justice’s National Institute of Justice provides the following guidelines about video surveillance in schools and colleges.23

Areas where use of surveillance cameras is generally considered acceptable:

- Classrooms (The Institute recommends that teachers be informed of classroom surveillance cameras.)
- Front offices that are visited by students, parents, staff and members of the general public
- Hallways
- Parking lots
- Gymnasiums
- Cafeterias
- Supply rooms

Surveillance cameras may not be used in areas where there is a “reasonable expectation of privacy,” including:

- Bathrooms
- Gym locker/changing areas
- Private offices (unless consent is given)

And although there are no formal guidelines about communication, education leaders considering surveillance cameras should develop surveillance policies and communicate them clearly to students, parents and the community in student handbooks, parent communication and campus signs.
on suspicious searches and messages with hate- or violence-related language that might be related to cyberbullying.26

Many mobile apps for preventing cyberbullying are aimed at parents, not schools, but new ones are emerging. A few are available for anonymous reporting. One provides schools with a customized interface and an access code that allows students to download the app for free. With a touch of the screen, students can capture instances of cyberbullying on their mobile device and anonymously forward them to local authorities.

In higher education, cyberbullying is much more complex due to freedom of speech protections. Many colleges and universities are struggling to deal with student-run, college-specific websites and social media pages, which create anonymously spread rumors.

Much of the activity is harmless, but according to the student newspaper at Johns Hopkins University, these sites can become "a hub for cyberbullying and controversial posts about race and sexual orientation."27 Professors aren’t immune, either; they’ve found themselves under attack for their sartorial choices and teaching styles.

In extreme cases, colleges and universities may be able to use the law as an ally. Tracy Mitrano, the director of IT Policy at Cornell University, said that under criminal law, some speech may be considered an assault. “Colleges and universities would do well to borrow these legal concepts and formulate through campus discussion and debate reasonable definitions and standards to incorporate into campus codes of conduct,” she says. “An individual member of the community may enjoy free speech but may also within the community find their speech implicates other provisions under the campus code.”28

For example, when a Rutgers student died by suicide after being “outed” by other students via webcam, his roommate was eventually tried and convicted for invasion of privacy, bias and intimidation, among other charges.29

Comprehensive Bully Prevention

A comprehensive prevention program should include both technology tools and traditional approaches.

Define cyberbullying. The term cyberbullying is used by schools, parents and the media, however, these stakeholders are often using the term to communicate different situations. Define cyberbullying for your campus to ensure everyone, including students, is on the same page.

Anti-bullying program or curriculum. An effective program encourages positive behaviors, empathy and tolerance; addresses the entire school culture and climate; engages parents, families and the community; and encourages students to reach out for help.

Instructor and staff involvement. Educators, administrators, and office and security staff must be consistent, united and resolved in enforcing anti-bullying policies.

Acceptable use policies (AUP), responsible use policies (RUP) and campus codes of conduct. Comprehensive AUPs and RUPs define who can use a school’s technology resources and when, why and where they can use them. The policy should clearly state that cyberbullying is an unacceptable use of school technologies, computers and the Internet; provide specific examples of cyberbullying; and explain the penalties for breaking the policy. Universities and colleges can build many of the same expectations into campus codes of conduct, allowing appropriate response to violations.

Automation. Technology tools such as the ones discussed in this report allow students to report incidents while maintaining anonymity and provide authorities with an effective way to track and manage bullying incidences and cases.
Deploying any new technology requires careful, comprehensive planning and strategizing. As your education institution explores the possibilities of intelligent technologies to create efficiencies and cut costs, consider taking the following steps.

**Identify areas for improvement.**
Identify your institution’s biggest pain points — processes that receive a high amount of negative feedback. In what ways can you improve them to better serve staff, students, parents and the community?

Think about areas where your institution is bleeding money or lacks funding. Can intelligent technologies be applied to these areas to improve workflows or cut costs? This can help you determine deployment priorities.

**Determine priorities and tasks.**
Based on this analysis, you can develop a prioritized list of technology initiatives. There are several factors to consider:

**Organizational goals.** Choose solutions that are most aligned with key institutional goals such as improving safety, enhancing student engagement, cutting budgets, increasing enrollment, etc.

**Technology strategy.** Choose solutions that support your technology strategy, such as those that have the most impact, save the most money, are easiest or most cost effective to deploy, and so forth. Can a solution be bought off the shelf or does it need to be developed or customized? Understand the device, security and architecture needs of each solution, and make your decisions based on the outcome. For example, to implement telepresence, you must first have a very robust broadband IP network. Can your network handle it? If not, what is the possibility for a network upgrade?

**Compatibility.** Choose solutions that are compatible with existing infrastructure, applications, workflows and back-end systems. If you want to deploy a real-time video feed and you purchased IP-based video cameras three years ago, don’t buy new ones — just find a compatible software application and other tools that provide the functionality you want.

**Integration.** Explore areas where integrating systems saves money and creates even more efficiencies, like Nye County School District did when it integrated in-class audio, video cameras and panic alarms.

After you’ve created a list of priorities, break each project down into manageable initiatives. Detail key activities, tactics and timelines for achieving them.

**Assess technology infrastructure and assets.**
Prepare an honest assessment of your current technology assets, strategies, partners, organizational structure, staff, leadership support, etc. Does your infrastructure support the intelligent solutions you want to deploy, or are there technology gaps?
Evaluate the vendors that you’re working with—are they carrying their weight, and can they help you with your priorities as you move forward? Are IT, office and teaching personnel comfortable adopting new technologies and workflows?

Seek input from all key stakeholders.

Once you’ve determined your priorities, get feedback from students, teaching and office staff, IT staff, parents and community members. Don’t be tempted to skip this step—a deployment can only be successful if all stakeholders are engaged and given a forum for feedback and concerns. Educating these audiences on the benefits of proposed intelligent solutions and involving them in the planning and funding processes helps earn their approval. This is especially important for end-user audiences such as students, educators and office staff.

Develop a budget.

Funding is often one of the largest and most daunting challenges of launching any new technology initiative in education. One of the most important steps for rallying funding support is to develop an ROI analysis that shows how the technologies will help pay for themselves in the long term.

How much money will you save by eliminating paper, reducing power usage, redirecting staff to higher value tasks and other efficiencies? Are there opportunities to use new technologies for revenue generation? Work with vendors to understand the real numbers and use these to build a business case for technology investment.

Determine technology, staffing and other resource costs.

Keep in mind that cloud-based solutions are considered operating expenses, which could, depending on your funding situation, influence your decision to select a cloud service. And don’t forget to consider the long-term budget impact such as ongoing support, maintenance and software licensing.

82% of education leaders reported that creating an intelligent campus is important to their institution.

Source: CDE Intelligent Campus Research Survey, 2014

Tap into private sector expertise.

Trusted vendors are a great source of information about technologies and deployment strategies. Reach out to them in advance of issuing a formal request for proposal (RFP). Vendors can educate you on what works and what doesn’t, preventing expensive and time-consuming wheel reinvention. This will also help you jump-start the vendor selection process.

Determine training and professional development needs.

Make sure that staff are prepared with proper training in advance of launching a project. Some solutions, such as telepresence, may not require much training, but any technology that modifies workflow, such as ECM, or automates previously manual tasks, such as bus tracking, will likely require some training or professional development.

Develop benchmarks and define success.

Determine how you will measure the success of your intelligent technology initiatives. Work with key stakeholders to define the expected outcomes and share them with technology partners. Create a plan for measuring and communicating results—engage school board members, trustees, administration and community members in a proactive manner as you move forward.

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Some people in the education system might worry that the intelligent campus, relying as it does on automated processes and technology, will become a robotic and cold institution. We see it instead as a well-oiled machine. We’ve discussed many examples of K-12 and higher education institutions that are using intelligent technologies and systems. They’re integrating new technologies with existing systems and infrastructure to save money, simplifying workflows for operational efficiencies and using data gleaned from these systems to improve decision-making. Many are on their way to fully leveraging the capabilities of these technologies to connect, automate and manage their campuses.

An intelligent campus leverages technologies in both learning and operations to create an accessible, sustainable, adaptable, agile and secure environment. And it uses data generated by intelligent systems to deliver efficiencies and cost savings, and create a seamless learning, teaching and campus management experience that benefits all participants — students, parents, educators, administrators and taxpayers. Instead of creating a mechanical and unresponsive campus, these intelligent technologies are helping education institutions focus on their most important mission: delivering more effective student learning and outcomes. ■

Education leaders indicate that technology plays an integral part in managing the following areas:

- **Campus communication** (with students, instructors, parents and community) 75%
- **Operations** (student cash cards and accounts, electronic payments, etc.) 59%
- **Campus security** 51%
- **Facilities** (HVAC, energy and lighting) 46%
- **Inventory and assets** (including vehicle and fleet management) 39%
- **Other** 3%

Source: CDE Intelligent Campus Research Survey, 2014

For a list of endnotes, download the Special Report at www.centerdigitaled.com/reports
“Most school districts haven’t yet migrated to digital learning in an ‘every day, every class’ type approach. When they do, they will see a massive growth in data needs, both on and off campus, and this will have a major impact on their ability to support the local curriculum strategy chosen to drive improved graduation and college acceptance rates.”

Scott Bennett, National Strategic Opportunity Manager for Education, Sprint

“Different end users have different needs and environments, and for a technology project to be successful, IT teams have to be able to accommodate all of them.”

Aaron Klechak, CDW Solution Architect, Unified Communications

“Smart data security goes beyond the capabilities of a point product to include a very tight alignment of complementary solutions to create greater value for the institution to detect, respond to and prevent Advanced Persistent Threats.”

Renault Ross, Technical Architect, Information Protection, Public Sector Strategic Programs, Symantec

“Campuses have to function like mini service providers. And like service providers, the No.1 issue they face is network connectivity. They have to ensure that everyone has access to the resources they need at all times.”

Brian Rose, Director of Product Development, Cox Business

“Students don’t understand departmental silos — they expect everything to be connected and all information to be shared. To meet their expectations, schools and colleges must enable data sharing at an institutional level.”

Linda Ding, Education Program Specialist, Laserfiche

“The industry is changing. Consumers in both K-12 and higher ed now expect software and services to be delivered instantly, in real-time and on any device. The cloud is the only model that provides this type of speed and flexibility. Jive is at the forefront of the movement to cloud services in education. Institutions can unify their voice, video, data and mobility applications, and communicate more effectively than ever before with Jive Cloud.”

Brian Moore, VP Education, Jive Communications

“Intelligence must extend beyond the borders of the traditional campus, enabling learners and teachers to leverage resources and technologies from wherever they are to make managing the virtual campus more efficient and effective.”

Breck Dewitt, K-12 & Higher Education CTO & Director, EMC

“The intelligent campus makes use of network automation and real-time systems to consistently deliver an exceptional student experience.”

Richard Nedwich, Sr. Director of Education, Meru Networks
The technological environment in K-12 is constantly evolving. A campus that was once stocked with pens, paper, chalkboards and overhead projectors is now equipped with tablets, laptops, interactive whiteboards and wireless connectivity. As these technologies become part of the learning environment, administrators, faculty and teachers need turn-key solutions that allow them to focus on what’s most important, such as student engagement, rather than spending time on network and device support.

Sprint’s Wireless Campus Manager ensures students have secure access to technology while reducing IT responsibilities and costs for the campus. The Wireless Campus Manager provides several benefits:

- **Device Staging:** provides a turn-key, out-of-the-box deployment approach for your tablets and notebooks that is built to meet your specific curriculum strategy
- **Mobile Device Management:** provides remote management of devices from an application, security and control perspective
- **CIPA Filter:** ensures a secure and safe online learning experience
- **LMS:** supports your curriculum efforts with a robust collaboration platform
- **Usage Monitoring:** protects against data overage charges
- **IT Help Desk:** provides a dedicated education technology help desk to answer questions about your specific deployment

**Networks Managed by Sprint**

Sprint can handle every aspect of your wireless network and mobility launch, including installation of dedicated, on-campus networks. With on-campus and in-building networks solely managed by Sprint, installation, access points, cabling, controllers and backhaul all become Sprint’s responsibility. Plus, Sprint enables your network to be scalable by ensuring it is upgraded with the next generation of wireless technology — without passing the costs of new hardware to the school (a separate In-Building Solutions Agreement with Sprint is required).

Sprint Simplifies the Implementation, Management and Maintenance of the Connected Classroom

To learn more about Sprint’s solutions for K-12 education, visit: www.sprint.com/k12

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Bridging the Connectivity Gap

MORE THAN 40 MILLION STUDENTS in America’s K-12 schools don’t have access to an adequate Internet connection on campus. At the same time, in higher education, paradigms are shifting to include online and hybrid learning as well as other collaborative models.1

In order to deliver digital content, schools need reliable wired and wireless networks that use the most up-to-date standards to ensure students and teachers can access digital learning resources from anywhere on campus.

Cox Business’ networking solutions provide robust bandwidth, which is needed to enable new services to support the use of voice, data and video over one network. A robust Internet connection allows education institutions — large and small — to meet the growing needs of the intelligent campus with uninterrupted service that supports all devices and current and future technology initiatives.

1. www.educationsuperhighway.org/the-connectivity-gap.html
2. Ibid
4. Ibid
5. Ibid
7. Ibid
8. Ibid

86% OF COLLEGE STUDENTS USE LAPTOPS AS THEIR PRIMARY COMPUTING DEVICE FOR ACADEMIC PURPOSES.2

72% OF SCHOOLS LACK ADEQUATE BANDWIDTH TO USE 1:1 DEVICES IN EVERY CLASSROOM.6

NEARLY 50% OF HIGH SCHOOL STUDENTS OWN OR HAVE ACCESS TO AN INTERNET-ENABLED SMARTPHONE OR TABLET.5

ONLY 39% OF PUBLIC K-12 SCHOOLS HAVE WIRELESS INTERNET ACCESS FOR THE WHOLE SCHOOL.4

FEWER THAN 20% OF K-12 EDUCATORS SAY THEIR SCHOOLS INTERNET CONNECTION MEETS THEIR TEACHING NEEDS.3

LESSTHAN 1% OF SCHOOLS HAVE ADEQUATE BANDWIDTH FOR PROJECTED NEEDS IN 2017.2

IN 2013, 90% OF COMMUNITY COLLEGES REPORTED SUBSTANTIAL INCREASES IN ONLINE, HYBRID AND WEB-ASSISTED COURSES.8

For more information about Cox Business solutions, visit: www.coxbusiness.com/education
Innovative technology is revolutionizing K-20 classrooms as districts and higher education institutions take a closer look at what their students need to succeed. Projectors, televisions and the occasional whiteboard previously defined educational technology; however, schools are now focusing on large-scale projects such as next-generation networks, “smarter” energy efficiency and solutions that redefine the educational space.

Wisconsin’s Moraine Park Technical College looks for technology solutions that will give it a competitive edge and improve instruction for its more than 20,000 students and 150 full-time faculty members. So when Moraine Park decided it wanted to implement a solution that would make more classes available to its students across three campuses, it was no easy feat. The answer — high-end video conferencing, also known as telepresence.

In 2010, the college implemented a Cisco telepresence room on each of its three campuses. Faculty and students immediately embraced the technology for its ease of use — something Moraine Park had not experienced with earlier video conferencing solutions.

According to Pete Rettler, dean of Moraine Park Technical College’s West Bend Campus, the college chose telepresence because it blends two classrooms into one, seemingly eliminating the physical distance. Telepresence offers students identical instruction to peers taking the class across town and allows professors to teach both groups of students at once.

Kim Olson, mechanical design instructor at Moraine Park, said he requests a telepresence room whenever possible. According to Olson, telepresence is preferable to other classrooms because you can ensure students are engaged, as no student is ever further than two rows away from you.

Students are also seeing the effects of telepresence. Each semester, Moraine Park asks students to rate their engagement with face-to-face classes (no telepresence), telepresence classes and online classes. When comparing their experience with telepresence to an online classroom, 34 percent of students said they were more engaged in the telepresence classroom.

Moraine Park considers telepresence one of the most innovative tools on its campus and believes telepresence adoption in higher education will continue to grow because it offers both a high-quality experience and new opportunities for students.

CDW-G and Moraine Park Technical College have four key recommendations for bringing innovative technology to your institution:

• Demonstrate and explain the technology to college stakeholders or school board members.
• Take advantage of planned remodeling to simultaneously install telepresence or new technology.
• Ensure that your campus infrastructure can support the technology. Allow the time and budget for necessary upgrades prior to installation.
• Track use of the technology and student engagement; both are useful tools for determining ROI.
INTELLIGENT INSTITUTIONS NEED SMART DATA SECURITY

It's the age old story: An administrator receives an email from a trusted friend — but unbeknownst to the recipient, the friend's email address has been hacked. The recipient opens the email and its attachment, allowing malware to attack your campus network. With the increasingly expanding "Internet of Things (IOT)," it is more important than ever for education institutions to secure their data. It's estimated that there are currently more than 9 billion connected devices worldwide — by the year 2020, there will be 50 billion connected "things." Symantec provides solutions to secure everything.

In 2012, targeted Internet attacks were up by 42 percent. Most attacks occur through suspicious email attachments and links, however, attacks can also occur through infected websites. Mobile devices are not immune from threat either. Seventy-six percent of K-20 students and 84 percent of faculty and staff bring a personal device to campus — every device connected to your network is another opportunity for hackers to threaten the integrity of your data.

Symantec can help protect your campus data from every angle. With the right policies in place and the proper infrastructure, maintenance and protection, your data can be secured. Intelligent campuses provide students with new opportunities to learn and grow — Symantec offers education institutions an opportunity to get smart about securing data.

SECURITY TIPS & SYMANTEC SOLUTIONS FOR THE INTELLIGENT CAMPUS

- Develop and enforce IT policies.
  - Control Compliance Suite: Comprehensive solution to monitor and report on IT governance, compliance and organizational risk posture. Learn more at: www.symantec.com/control-compliance-suite

- Authenticate every device with two-factor authentication and a managed public key infrastructure.
  - User Authentication: Strong authentication for network, Web and mobile. Learn more at: www.symantec.com/user-authentication

- Protect your data with encryption, data loss prevention, and disaster recovery and high availability solutions.
  - Encryption (PGP): Enterprise set of encryption solutions. Learn more at: www.symantec.com/encryption
  - Data Loss Prevention: Enterprise content-aware data loss prevention solution to discover data at rest and in motion across your network, storage and endpoints. Learn more at: www.symantec.com/data-loss-prevention


- Manage and protect the network infrastructure.
  - Endpoint Management (Altiris): Comprehensive configuration management platform. Learn more at: www.symantec.com/configuration-management
  - Symantec Endpoint Protection (SEP): Comprehensive protection from malware and zero day attacks. Learn more at: www.symantec.com/products/computer-security-software
  - Mobile Security and Management: Comprehensive set of solutions to support mobility and BYOD. Learn more at: www.symantec.com/mobile-device-security
  - Managed Security Services: Comprehensive 24/7 security services. Learn more at: www.symantec.com/managed-security-services

2. CDE Smart Infrastructure survey, 2013

To learn more, visit: www.symantec.com
Enterprise Document Management: The Lifeline of an Agile Campus

Use enterprise document management technology to create efficiencies that will keep your operational processes afloat and sustainable long into the future.

In this new Center for Digital Education trend report, learn how enterprise document management can help your institution perform at the highest level through:

- Secure and flexible information access.
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Stay competitive and deliver better results to students and faculty. Get your copy of this exclusive research at laserfiche.com/CDE
And tablets, smartphones, and laptops are just the beginning. IDC estimates that 212 billion devices will be connected to the Internet of Things by 2020.

The wireless LAN is becoming the primary access method, and students expect fast, reliable Wi-Fi everywhere to enable uninterrupted learning. And with next-generation 802.11ac technology promising gigabit throughput today, the transition to an all-wireless access network will only accelerate.

**Intelligent Wi-Fi will Enable an Intelligent Campus**

An “intelligent campus” would make use of network automation and real-time systems to consistently deliver an exceptional student experience and support an institution’s academic and business goals. It would fully support mobile video and voice for learning, both inside and outside the classroom, and facilitate collaboration among students and instructors.

The Internet of Things and BYOD are resulting in a more connected, productive, and informed campus community. Infrastructure must enable mobility and access fairness, not just with coverage or capacity, but user experience. 802.11ac WLAN may prove foundational in supporting the density of devices, the mobility of users, and the bandwidth for applications found on campuses today. Going forward, SDN for Wi-Fi may provide the foundation for measuring and improving student experience through unified wired/wireless policies that enforce SLAs based on user, application, device, location, and time of day.

FOR INFORMATION ON MERU’S INTELLIGENT WI-FI SOLUTIONS, VISIT: http://www.merunetworks.com/highereducation
As campus technologies become more connected, and instructors, students, libraries and researchers share information on a consistent basis, it is essential that education institutions meet the unpredictable and complex storage needs that result.

EMC Isilon’s scale-out storage platform reduces storage complexity and delivers economic value. With EMC Isilon, you can consolidate all of your storage into a single volume and single file system, which simplifies management and saves on operational costs.

While many traditional storage solutions are unable to match the pace of the increasingly digitized education enterprise, EMC Isilon offers unique, flexible storage benefits, including:

- **Pay-as-you-grow:** Predictably manage capital expenditures. Purchase only the storage you need today, with the ability to easily expand tomorrow.
- **Simplicity:** EMC Isilon simplifies the storage infrastructure by consolidating all storage into a single volume, saving both time and money.
- **Agility:** EMC Isilon offers 60-second scaling of performance and capacity — enabling your institution to respond to needs instantly and non-disruptively scaling up or down.
- **Security:** EMC Isilon enables higher education institutions to deploy new technologies and digital curriculum while ensuring secure storage of data.

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Acknowledgements:

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THE CENTER FOR DIGITAL EDUCATION is a national research and advisory institute specializing in K-12 and higher education technology trends, policy, and funding. CDE advises the industry, conducts relevant research, issues white papers, and produces premier annual surveys and awards programs. CDE also hosts events for the education community. CDE’s media platform includes the Center for Digital Education Special Reports, an online resource site, email newsletters, and custom publications. www.centerdigitaled.com