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DECEMBER 2022
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**Infectious
Enthusiasm
for Student
Research
AT CATAWBA COLLEGE**

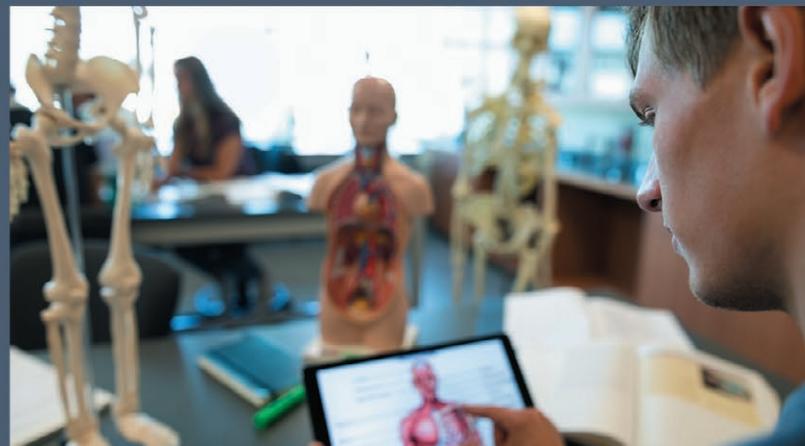
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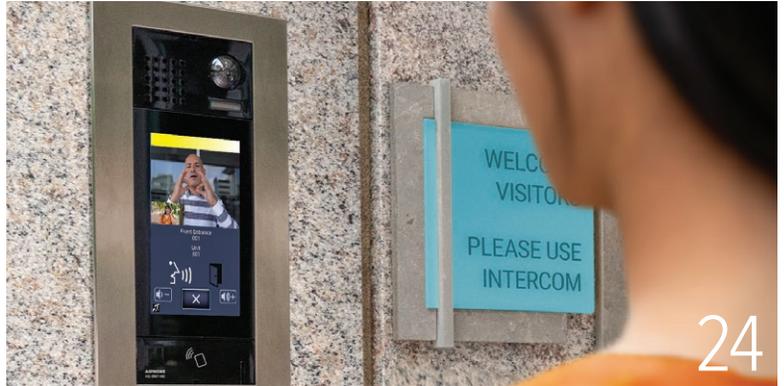
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The front of the classroom display continues to be a main focus in today's classrooms, with teachers relying on the displays to enhance their lessons and to keep students engaged. As display technology evolves, IT and facility managers have more options to choose from, depending on the size of the classroom or lecture hall.



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Fostering Dialogue and Discovery with Residential Learning Communities

When prospective students envision living on campus, they often imagine the traditional college dorm—rooms with beds bunked over desks, shared bathrooms, and an RA living down the hall. However, one option not often known to students in search of their new “home away from home” is that of the residential learning community.



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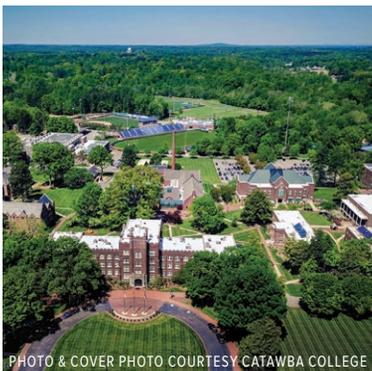


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Jay Bolin, Associate Professor of Biology and Dean of Natural Sciences at Catawba College, is a botanist who continuously seeks to expand undergraduate research opportunities for his students. He promotes Catawba by connecting with people working in various science disciplines at other schools, often developing and deepening the relationships to turn these researchers from contacts to collaborators. These connections have led to the creation of a groundbreaking undergraduate research lab at Catawba as well as the establishment of vital field research projects at North Carolina sites and beyond.

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When asked to picture a classroom or lecture hall, chances are the image most people conjure will include rows of fixed chairs or desks facing the front of the room.

EDITOR'S LETTER



Merry Christmas, Happy Holidays, and Happy New Year!

It is that holiday time of year again, and I must admit this season is my favorite. I am one of those who already has four trees up at the house, the yard is decorated, and yes, we even have office decorations up. A lot of people might say these are a lot of decorations, but I love what the holiday season stands for: perpetual hope and the reminder of new beginnings.

I have always thought that this time of year brings out the best in all of us. Childlike wonder abounds, and we can become better versions of ourselves. Yes, I know many of us strive for these attitudes all year long, but for the next few weeks, we seem to attain our goals, if only for a short season. Many smiles are returned; salutations of “Happy Holidays” and other well wishes seem to flow a little easier to all around us—and who does not get a little bit of excitement inside when they see the festive lights?

During this time of year, many of us think of all the people who are in our lives, near and far, as we think about sending greeting cards and presents to let people that we are thankful for them being in our lives. Even though mailing Christmas cards is very traditional, for the first time in forever, we made sure to send them out this year; I somehow felt that all of us could use a little nostalgia. Seeing the joyful cards on the refrigerator has always made me smile and think of loved ones, some of whom are far away. With all our busy schedules throughout the year, many of us yearn for connection to family and loved ones and wish we could take more time to be with them. During this season, we somehow and somehow make time—even if for a moment—to spend with our loved ones, and we are usually better off for doing so.

We are all aware that many do not have the luxuries we enjoy, so our hearts turn toward the ones in need at this time of year to do something extra for people outside of our immediate circles. Many holiday TV shows remind us that there really is no such thing as a selfless act; we often get so much joy from giving to others that we benefit as much—if not more—than the ones who receive. In this season of thinking about the blessings we enjoy, I am reminded that I am blessed to be surrounded here at *PUPN* with some of the sweetest people I know. Thank you for the privilege of getting to work with you every day; I am better for having you in my life.

Happy Holidays, and may the New Year bring you peace and love and joy in abundance!
Until next month—

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Infectious Enthusiasm for Student Research at Catawba College

BY CYNTHIA MWENJA, PhD

Jay Bolin, Associate Professor of Biology and Dean of Natural Sciences at Catawba College, is a botanist who continuously seeks to expand undergraduate research opportunities for his students. He promotes Catawba by connecting with people working in various science disciplines at other schools, often developing and deepening the relationships to turn these researchers from contacts to collaborators. These connections have led to the creation of a groundbreaking undergraduate research lab at Catawba as well as the establishment of vital field research projects at North Carolina sites and beyond.

Establishing the Graham Genomics Lab

Bolin has played a big part in brokering a recent partnership between Catawba and Eremid Genomic Services to establish the Bill and Shari Graham Genomics Laboratory on the North Carolina Research Campus (NCRC) near the college. Bolin had already been looking for ways to connect Catawba and the NCRC so that the college's students could gain experience with different types of research. Francisco Camacho, newly hired Director of the Graham Genetics Laboratory and Professor Affiliate at Catawba, says that Bolin has "been a champion for pushing this project forward."

Bolin underscores the idea that the new next generation genomics lab provides "a one-of-a-kind opportunity for undergrads" since they will be able to sequence genomes in just a day or two in the facility. The machines for such work are expensive to both buy and run, so most students don't get pre-professional experience working with the equipment. Camacho states that assembling the lab has been exciting; they have been able to get new, state-of-the-art equipment through

Erimed's purchasing contracts. Bolin affirms that the partnership was created in "response to demand"; labs around the country need graduates from four-year colleges to be able to do this next generation sequencing work.

Camacho, who has taught at several institutions of higher education previously, will split his time between teaching for the college and running the lab. He confirms that the Spring 2023 genomics class section is already full, with a waiting list, and he asserts that, while it's currently rare for next-generation sequencing to be taught—particularly to undergraduates—this direction "is really where biology is going; it's already commonplace for genes to be sequenced." Because of how efficient next-generation sequencing has become, he states, "understanding the genome is now an important part of understanding biology."

In the class, Camacho says, students will learn the lab skills for next generation sequencing, with the goal of training "students to be ready for careers in clinical diagnostics." These skills, he maintains, will boost students' job prospects because they will have run the machines; getting that

experience otherwise is not easy, according to Camacho. One of the class assignments will ask students to explore their own oral microbiomes to see what's living in their mouths. In doing this work and making comparisons, Camacho states, they may have information to develop for potential publication, as well. He confirms that the type of research they will do in the lab is not only different from academic research, but it also has much higher stakes. Bolin's vision and unflagging work has led to these opportunities for Catawba students.

Moving from Connection to Collaboration

Bolin has made connections at the Plants for Human Health Institute at North Carolina State University, also housed at the NCRC. Bolin is extremely proactive, always looking for new connections and collaborations, asserts Slavko Komarnytsky, Associate Professor of Pharmacogenomics at North Carolina State University and Professor Affiliate at Catawba. Komarnytsky maintains that Bolin has been "critical in extending the reach of Catawba" beyond the campus, giving "visibility to



PHOTO COURTESY CATAWBA COLLEGE

Catawba College students” and giving the students “exposure to the real world.”

Komarnytsky says that he and Bolin met by chance about seven years ago. While researching the evolutionary relationships of plants, Bolin needed a particular piece of equipment and saw that Komarnytsky had the needed equipment in his lab. As their research relationship unfolded, Komarnytsky led the development of a mobile discovery program for students—including Catawba College students—that applied a simple, inexpensive tool to allow anyone to go out in nature to look for novel antimicrobials to collect. The innovation in the mobile test kits is the use of student saliva. Komarnytsky verifies that it can be hard to take microbial cultures, but “the microbes present in the saliva respond to bioactive principles in the samples.”

With this tool in hand, the two started a class called “Antibiotic Resistance and Drug Discovery.” In the class, up to fifteen Catawba students are introduced to microbial cultures and their importance to human health. They are taught how to use the mobile test kits to screen samples from nature. The students can get quite creative with their sampling, Komarnytsky acknowledges, trying such disparate items as a grasshopper, dog hair, and various substances from “a grandmother’s fridge.”

These sample kits are not just educational tools, though; “they are screening tools for real science,” according to Komarnytsky. The student researchers can prioritize “hits” to try to understand the chemical principles behind the activity. They can then take the plant to the lab and test the compound to see if it is novel. All of this student-driven

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research begins as part of this Catawba College class, which in turn, developed from the chance meeting and subsequent partnership between the two men. Additionally, Komarnytsky emphasizes, he is able to offer internships to some of the students he works with, and they often stay in his lab to continue their research.

Working with Students, on and off Campus

In another of his endeavors, Bolin has directed undergraduate research at Catawba’s Center for the Environment. This 189-acre living laboratory includes forests, wetlands, and streams; it is recognized by the state of North Carolina Natural Heritage Program as being ecologically significant. Under Bolin’s guidance, students have been studying the impacts of the invasive emerald ash borer (EAB); the research is now in its fourth year of data collection. In six plots within the ecological preserve, they have tagged trees to track the decline of the ash tree.

In the fall of 2020, Bolin invited Arilyn Lynch to join the EAB research; she is now a 2022 Catawba graduate in Biology and Environment and Sustainability. Lynch explains some background on the research: While the

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EAB had arrived in the U.S. in 2002, it had reached North Carolina in 2013, and the research at Catawba began just as the pest had invaded Rowan County. Female EAB lay eggs in crevices in the bark of ash trees, mainly targeting the green ash. As the larvae grow, they feed on the tree's cambium layer, destroying the tree's ability to move sugars and water, thereby disrupting its nutrient flow. Students are monitoring the status of all of the trees, even the non-ash, to see how the forest is changing as the ash is eliminated. Unfortunately, Lynch states, there is nothing to do to save the affected ash trees at the forest scale. As a result, the study is not to stop the spread of the pests but to see what will change when the ashes are gone.

The research sites are within the swampy area of Catawba's ecological preserve, where now, due to the EAB, many ash trees are falling. In the first year, the student researchers did not expect to see such high infection rates, but they saw a jump from 20% infected in 2019 to 53% infected in 2020; no tree mortality was observed in 2019, but there was 11% mortality by 2020. In 2021, Lynch confirms, 56% were infected, with 37% mortality. These numbers, Lynch acknowledges, "are staggering." In 2021, Lynch states, the students needed hard hats to conduct their research; trees were "falling like crazy. You could put your hand on a tree for balance, and it just went right down." While 100% of trees with EAB larvae die, the saplings are not affected; EAB only lay eggs in trees over about a few inches in diameter. As a result, Lynch asserts, there is potential that saplings could survive after EAB move on.

Despite this small hope, Lynch says that living in a world where this sort of science is coming out can be "sobering" and "a lot to handle." The research, however, make her more passionate about applied science because "discovery science like this is important." She appreciates the opportunity to participate in this research with Bolin, saying that he is a kind and supportive mentor who "enjoys research, even falling down in a muddy swamp!" Drawing on this work with Bolin, Lynch's research presentation won recognition as the best at the annual Beta Beta Beta National Biological Society regional meeting, and it went on to win the Frank Brooks award at the national meeting, as well. Lynch provides one example of the importance of giving students the opportunity to conduct real research with genuine stakes in the world outside of the classroom.

Even within his classes, Bolin seeks out connections to extend his students' experiences beyond the campus. Bolin is teaching field botany this term; each Friday, the class takes excursions to learn about plant communities. They will also take a longer trip to camp in western North Carolina; Bolin lights up when discussing student field trips. He is also co-teaching a marine science class which culminates this term in a trip to the Caribbean island of Bonaire; this class is generally scheduled every other year. As part of the curriculum, students learn to

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scuba dive at a local dive shop so that they are ready to explore the waters off the island. They also study the vegetation ecology of the island and read *What a Fish Knows: The Inner Lives of Our Underwater Cousins* as one of the texts. Another class Bolin teaches, Natural Resource Ecology and Management, leads to travel a little closer to home. In this class, offered every other spring, students camp at the Atlantic coast near Norfolk to work with the Elizabeth River Project, on a wetland restoration project on one of the historically most polluted rivers in the U.S. Bolin states that working in places like the Elizabeth River that “really look like they need help and smell like petroleum” gives students perspective.

Infectious Enthusiasm

Above all, Bolin’s gusto for pursuing and expanding opportunities stands out to those he works with. Camacho says that Bolin’s “enthusiasm is infectious. Jay’s excitement for teaching students is the thing I love most about him.” Komarnytsky asserts that two things are critical to Bolin’s success: “working hard to extend the reach of the school, and seeking opportunities for the students.” Bolin verifies that this is an exciting time for the college. Last year, an anonymous donor gave \$200 million to its endowment; last month, another \$42 million was anonymously donated. The most recent gift comes in the middle of developing a new Quality Enhancement Plan and renewed strategic planning. Bolin emphasizes the incredible opportunity that these gifts offer in the strategic planning process; they allow faculty decision-makers to envision programs of national prominence. They can think about improving student life and creating innovative student experiences, including travel and service learning. Additionally, he says, they can give careful thought to how to continue to support their large population of first generation students while meeting the needs of a growing number of international students. These financial gifts will certainly help the school, but Bolin’s sense of possibility and boundless enthusiasm for new ventures will truly enrich the final results.

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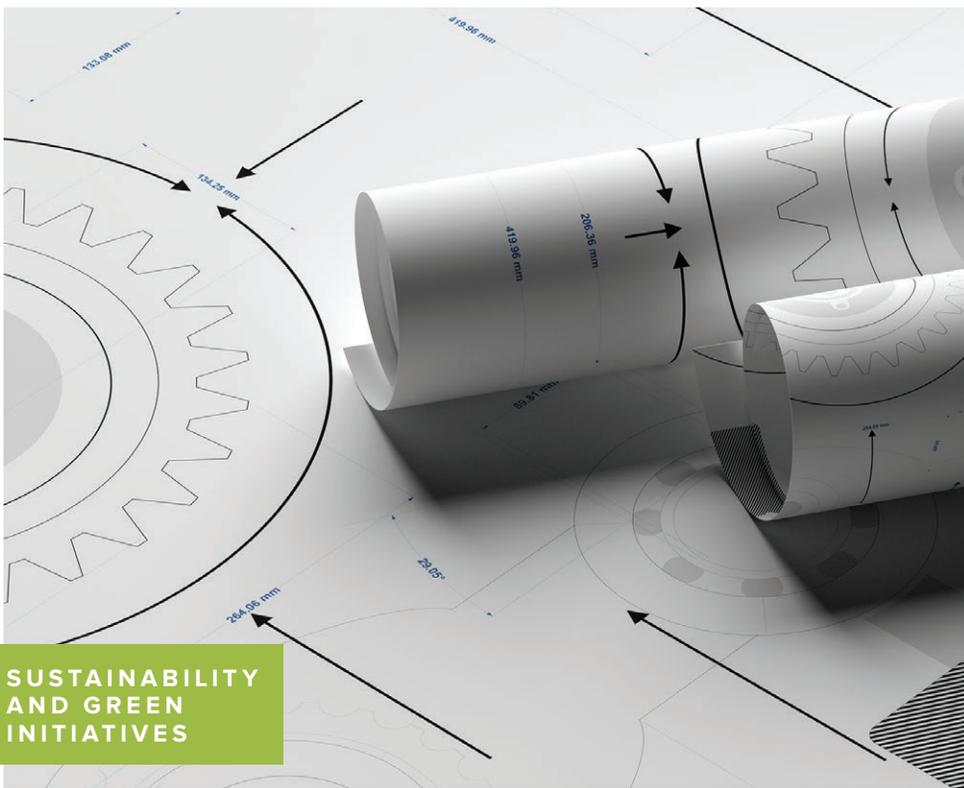
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High Sustainability. Low Cost. Better Air.

BY WILLIAM HENDRIX

Universities can have better environmental standards with higher levels of sustainability and with lower costs of operation. New strategies are available for managing and improving conditions at universities and colleges that yield better health and wellness, lower facility costs, and higher sustainability. Private colleges and universities face unique challenges to provide safe, uplifting places for students and staff to thrive. The pandemic era has placed a new emphasis on managing environmental conditions and offering safeguards that ensure health safety and reduce absenteeism. These objectives are complicated by rising costs, tight labor markets, and supply chain complications.

University decision-makers should consider several effective strategies to achieve a better university environment. Here are four metrics to consider:

Mitigation

The first solution in providing better health and wellness is the integration of active air and surface purification systems across the entire facility. Active air and surface technology operates constantly, improving indoor air quality by removing pathogens and reducing odors and sanitizing surfaces.

Optimal systems include multiple technologies, including photocatalytic oxidation, bi-polar ionization, and filtration. The best systems adapt to all parts of the university, including devices that can operate inside the HVAC system, along with freestanding and mountable devices.

Treatment areas include dorms, classrooms, administrative offices, food service, athletics facilities, and transportation. This widespread treatment provides continuity of control across the entire university landscape, thus protecting students, faculty, and staff from harmful contaminants. HVAC systems should be cleaned and sanitized prior to the installation of the air and surface purification system. This pre-installation cleaning, along with regular preventative maintenance, ensures the best possible indoor air quality and optimal system performance.

Optimization

The objective of facility optimization is seeking a comprehensive set of solutions to increase the performance of the facility by reducing operational costs, extending the life of the equipment, and providing more sustainable outcomes. The key areas in this effort are

enhancing the performance of the HVAC system, reducing overall energy consumption, and conserving water usage. Collectively, these strategies use targeted technology that can reduce operational costs by up to 50% and lead to improved sustainability.

Verification

University administrators can monitor the systems and be sure these strategies are working by utilizing several technologies. Maintenance personnel must be able to measure indoor air quality in real time; such on-demand information provides the prime indication of the general environmental conditions inside the university. The preferred IAQ monitoring system measures the important metrics that determine overall air quality in real time. These metrics include measurements for the following:

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- **Temperature**

Temperature affects the comfort level of students, faculty, and staff

Indoor air quality monitors should also integrate with any building management system. A good IAQ monitor can also alert maintenance personnel to problems or abnormalities which need to be addressed in other areas of the facility, such as HVAC. These monitors are essential tools in determining the health of the facility and whether the equipment is operating properly.

Implementation

One of the primary objectives of optimization is to offset the costs of implementing innovative solutions that result in better environmental

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conditions. These optimization efforts include air and surface purification systems and upgrades to the HVAC system. The cost savings derived from optimization should ideally be reinvested back into the facility. The amount of savings that can be found are directly related to local energy and water costs in the market. Higher utility costs equal a higher level of savings. Most of the solutions can be installed by current facility staff or contractors that currently service the facility.

There are many creative ways to pay for these improvements, including fee-based programs that offer a monthly fee paid by the university; in some cases, these fees are lower than current energy costs. Such programs eliminate a capital expense, allowing the university to deploy capital to the core mission of education. In this type of program, the benefits are immediate in both improved facility conditions and lower costs.

Universities that implement the strategies outlined above can expect some intangible benefits, including:

- **Stronger student performance:** Indoor air quality at universities and colleges has always been important, especially since it impacts alertness and cognition. Indoor air quality has a direct relationship on student performance.
- **Competitive Advantage:** Universities that adopt these measures show students, family, and alumni that they are serious about providing the safest, most productive environment possible. Such initiatives could be a deciding factor in students selecting a university.
- **Environmental Leadership:** A higher level of responsibility, shown through employing more sustainable solutions, demonstrates dedication to a lower carbon footprint.

Adopting A New Standard

Colleges and universities are places that develop the next generation of leaders; they are also repositories for great ideas and new

solutions. Institutions of higher education are often on the leading edge of change, pioneering concepts that shift paradigms. For these reasons, colleges and universities should be the first adopters of new standards that improve outcomes across the spectrum of health, economics, and sustainability.

Administrators and educational leaders have at their grasp a concept that can and will change the way university facilities are maintained and measured in the future.



ABOUT THE AUTHOR: William Hendrix is president and CEO of Inspired TEC. William is responsible developing strategies and solutions at Inspired TEC that improve health and wellness, improve facility performance, and lower operational costs. William and the team at Inspired TEC are passionate about solutions that improve sustainability and enhance corporate responsibility with a lower carbon footprint. Inspired TEC has been the leader in active air and surface purification technology for over two decades and now is a full spectrum facility solutions company.



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TEACHING AND
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Active Learning Needs Active Solutions

BY BOB HILL

When asked to picture a classroom or lecture hall, chances are the image most people conjure will include rows of fixed chairs or desks facing the front of the room. This basic classroom design hasn't changed much in the last one hundred years. Many educators have become conditioned to depend on such a standard-issue classroom, without questioning its effectiveness.

Turning to Movement to Improve Learning and Wellness

A one-size-fits-all furniture policy doesn't benefit educators or students. Even when furniture is falling short—when students are forced to use desks that aren't the right size, chairs are designed for easy stacking rather than proper spine support, or fixed stations inhibit any form of group collaboration—oftentimes school administrators seek temporary solutions rather than addressing the root of the problem.

The underlying issue is that the average classroom is designed for students to sit. Forcing students to sit limits learning and results in sedentary behavior, which has been shown to have negative long-term health consequences. Something as simple as furniture designed for movement can have a significant impact on an otherwise static learning environment.

Linking Movement and Learning

Scientists have been exploring the link between movement and learning for many years, proving that physical inactivity can

impair developmental behavior and skills. According to the Association for Supervision and Curriculum Development (ASCD), movement can be an effective cognitive strategy to strengthen learning, improve memory and retrieval, and enhance learner motivation and morale.

Movement can also be credited with better health. Since the 1960s, obesity rates in the U.S. have tripled. Younger and younger people are now subject to diseases that were once associated only with older adults, and obese youth are more likely to have risk factors for long-term cardiovascular disease, such as high cholesterol or high blood pressure. Adding low-level physical activity such as standing into the classroom can make a difference.

Based on published studies of sit-stand desks with adults in office settings, adding even moderate amounts of movement can improve mood, reduce fatigue, and promote an overall sense of well-being. For instance, Dr. John Buckley with the University of Chester says that standing can burn fifty mor

calories per hour than sitting; just four hours of standing per day can add up to twenty pounds of fat loss in a year. Standing also increases blood flow and metabolism, burns more calories, and improves focus and energy.

Staying Stuck in Static Mode for Generations

The real question is why our classrooms have been static for so many generations. When evaluating today's educational learning environments, surprisingly few provide examples of where the research encouraging movement has had any impact.

Even with the great technological strides of our times, students are still sitting in traditional classrooms with fixed chairs and furniture; such furniture has limitations that impact physical and mental development. Traditional furniture allows next to no variation in posture and leads students into a largely sedentary routine through significant portions of their day. Designing a well-integrated, collaborative, active classroom means moving away from fixed furniture.

Rethinking and Reconfiguring

Educators and students have found that the effortless and natural reconfiguration of the classroom brings a new dimension to teaching and the curriculum as students move quickly to create various formations without wasting lesson time. Maintaining student attention also becomes less of a challenge; students report being more attentive and alert if standing and moving about the room.

Furniture designed for movement gives professors flexibility and adaptability in the way they teach by enabling students to move about a classroom quickly and easily as needed. Desks with casters can be easily guided around a room to meet varying teaching approaches, from the 360° to the flipped classroom.

A traditional forward-facing room can be reconfigured in just moments to allow for greater collaboration among students, without the typical chaos that happens in classrooms that are cluttered with stationary desks and chairs. Individual desks can be maneuvered and adjusted on a whim for the person or task at hand, then just as quickly returned to a starting position.

Using Mobility to Support Varied Learning and Teaching Styles

The mobility supports the shift between lecture, discussion, and project work. Mobile furniture

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fits a variety of classrooms, learning styles, and teaching techniques. Switching positions and having the ability to channel restless energy is also a key to an active learning environment. In the classroom, such flexibility can be achieved with student standing desks that adjust to the height preference of individuals and change easily, on the fly, without help from the instructor or facility managers.

Many standing desks offer height adjustment, allowing students to stand in a way that's uniquely comfortable; they can also move or fidget during class in a natural and non-disruptive way. The height adjustability can also be used to adjust desks to a collaborative level. With the use of stools, students can sit or stand at will, as their bodies demand, without breaking lines of sight to the instructor.

Uncovering Pedagogical Opportunities

The opportunities to use this type of furniture in a classroom are broad. A professor can give students a small group assignment and, within

moments, students can be reconfigured into breakout groups, have all of their materials and belongings travel with them, and immediately collaborate on a project.

Professors can also respond to the energy in a room and recapture student attention by encouraging students to stand up or quickly reconfigure their desks, since standing has the ability to renew focus and reduce disruptions. The best solution of all lies in establishing a new behavioral norm that students may stand in the classroom and that both standing and movement is encouraged; movement will happen naturally, whether the curriculum directly encourages it or not.

Leveraging Natural Energy of Students

Creating a healthier classroom that's more conducive to learning requires leveraging the natural energy of students with curriculum that integrates movement and furniture. Adjustable-height, mobile classroom furniture has earned its place as a strong option for health

and performance. Integrating low level physical activity, like that of using a standing desk, into the classroom can have a positive impact on student health, classroom engagement, and academic performance. An active classroom also fosters frequent physical movement and the ability to easily interact with others, bringing movement—however subtly—into classrooms and learning environments during lecture periods, group projects, test taking, or studying. Furniture that facilitates movement can finally give schools a means to achieve what research has already proven.



ABOUT THE AUTHOR: Bob Hill, Ergotron's Global Education Manager, is building greater awareness for how students, classrooms, and schools benefit from adjustable standing desks. Ergotron is empowering smart learning with mobile device charging systems, height-adjustable student and teacher desks, and AV mounts. To learn more, visit education.ergotron.com.



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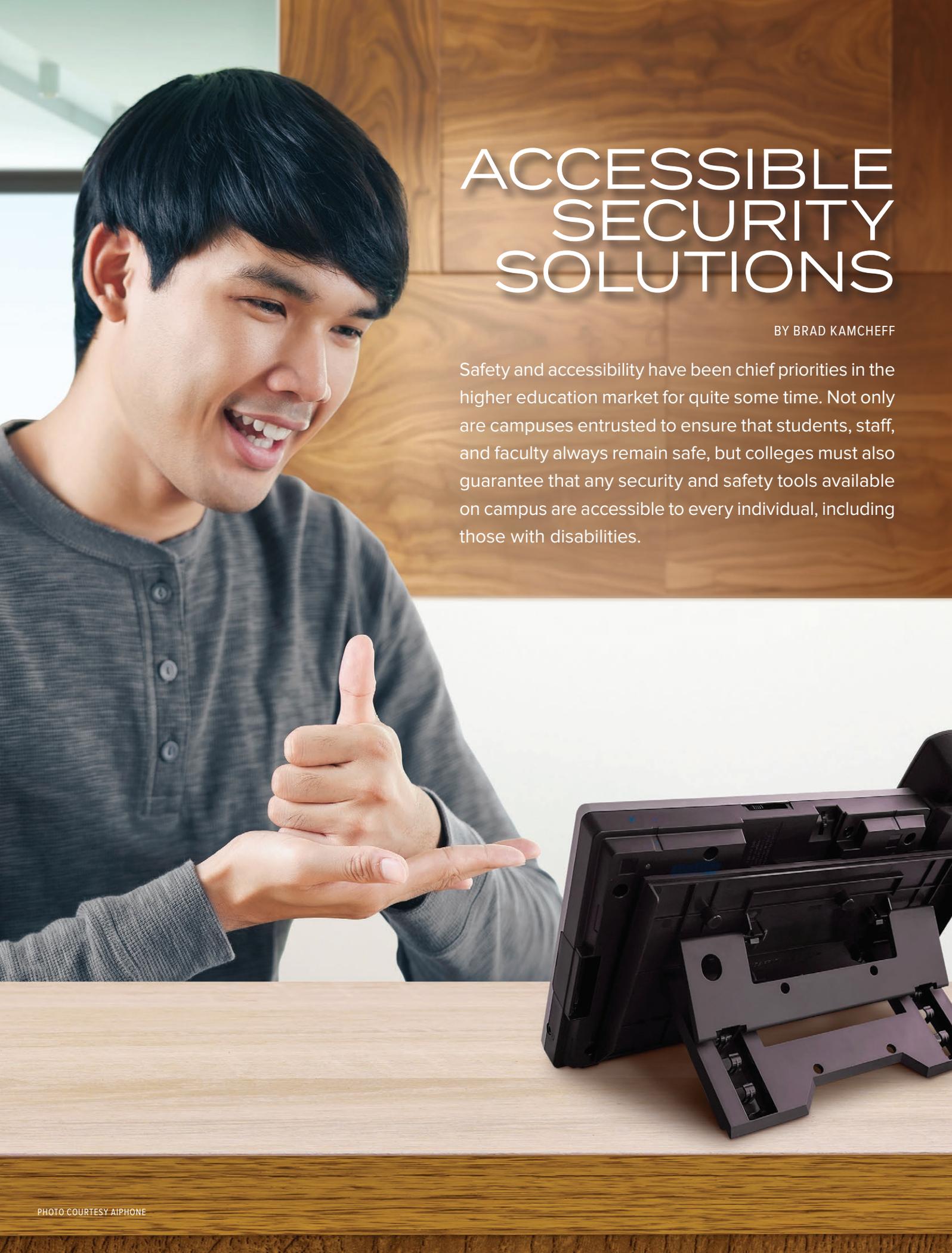


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ACCESSIBLE SECURITY SOLUTIONS

BY BRAD KAMCHEFF

Safety and accessibility have been chief priorities in the higher education market for quite some time. Not only are campuses entrusted to ensure that students, staff, and faculty always remain safe, but colleges must also guarantee that any security and safety tools available on campus are accessible to every individual, including those with disabilities.



While campuses rely on a multitude of security systems to monitor facilities and keep people safe—such as surveillance cameras, access control systems, and visitor management tools—these systems are not necessarily used by guests and students; an internal corporate security team instead manages them. However, entry control and communication systems, such as intercom systems and emergency towers, are two types of security resources available to everyone on campus, including students, staff, faculty members, and visitors. Together, these systems can help enhance security, manage building access, and provide valuable means of communication in the event of emergencies. Emergency towers help with these concerns particularly well, since they are typically not connected to buildings; they are instead located in parking lots, in outdoor spaces, and along campus sidewalks.

Much like a building needs to be accessible to comply with the Americans with Disabilities Act (ADA), intercoms and emergency towers also need to be accessible to everyone on campus. Meeting ADA requirements to ensure equal access for individuals who may have disabilities should be common practice. Not only do these devices need to be easy to use, but they must be positioned properly and easily visible. Intercoms and emergency towers now incorporate IP technology, video capabilities, and additional functionalities to make them ADA compliant. These inclusive intercoms and emergency towers can provide an additional layer of security and communication across campuses.

Intercoms

An important first step to mitigating threats lies in the ability to thwart the threat in the first place. Such prevention begins with ensuring that policies, procedures, and equipment

are all up to standard. Most on-campus shootings and other violent acts occur once the individual has entered through the front door of a building. Emphasizing controlled access points at key entries adds an extra barrier of safety between threats and members

Just like access into a building needs to be accessible to all individuals, regardless of abilities, so do emergency communication towers. Emergency towers come in multiple shapes and sizes, but the key among them is ensuring that an emergency button is easy to reach for someone walking or sitting in a wheelchair.

of the campus community. While written policies help staff understand how visitors are approved for entry, staff members should also be informed about more simple items, such as why doors cannot be left propped open, when to lock down, and how to evacuate during emergencies.

Installing two-way video intercom systems at each entrance is an important first layer of protection. Video intercoms can enable front desk personnel or security staff to not only talk to someone who wants to enter, but also clearly see the person when the system includes an integrated IP video camera. This feature can help screeners to quickly determine if the person is who they say they are, check credentials using the video camera, and see if the person is agitated or carrying a weapon. In the event of an emergency, school staff can maintain locked entrances and alert school personnel and law enforcement.

As facility managers struggle with staffing shortages, intercom systems have become a work force multiplier, enabling a single individual to safely manage multiple doors remotely or from a central location. With a two-way video and audio intercom

system, security guards can visually assess the situation and talk to a person before allowing them access to any area. Screeners can assess whether people who wish to enter are agitated or carrying a weapon. The ability to easily engage with visitors—by both

seeing and talking to people trying to come inside the building—enhances the ability for security personnel to proactively identify issues.

Visitor Management

Organizations can centralize visitor management using IP intercom systems, providing a seamless experience for staff and visitors. Better yet, this extensive and enhanced monitoring can be done from any location. In these cases, where less staff is required, centralizing a visitor management system with an IP video intercom allows monitoring to be routed to any location. This flexibility can decrease excess in-person interactions between staff and visitors, as fewer employees are required onsite to manage requests.

Additionally, educational decision-makers will find immense value in using video intercom systems to monitor and manage building occupancy across all campus buildings—classrooms, gyms, dining facilities, and other common areas. This oversight enables users to maintain occupancy policies, social distancing guidelines, and any other required health and safety requirements.

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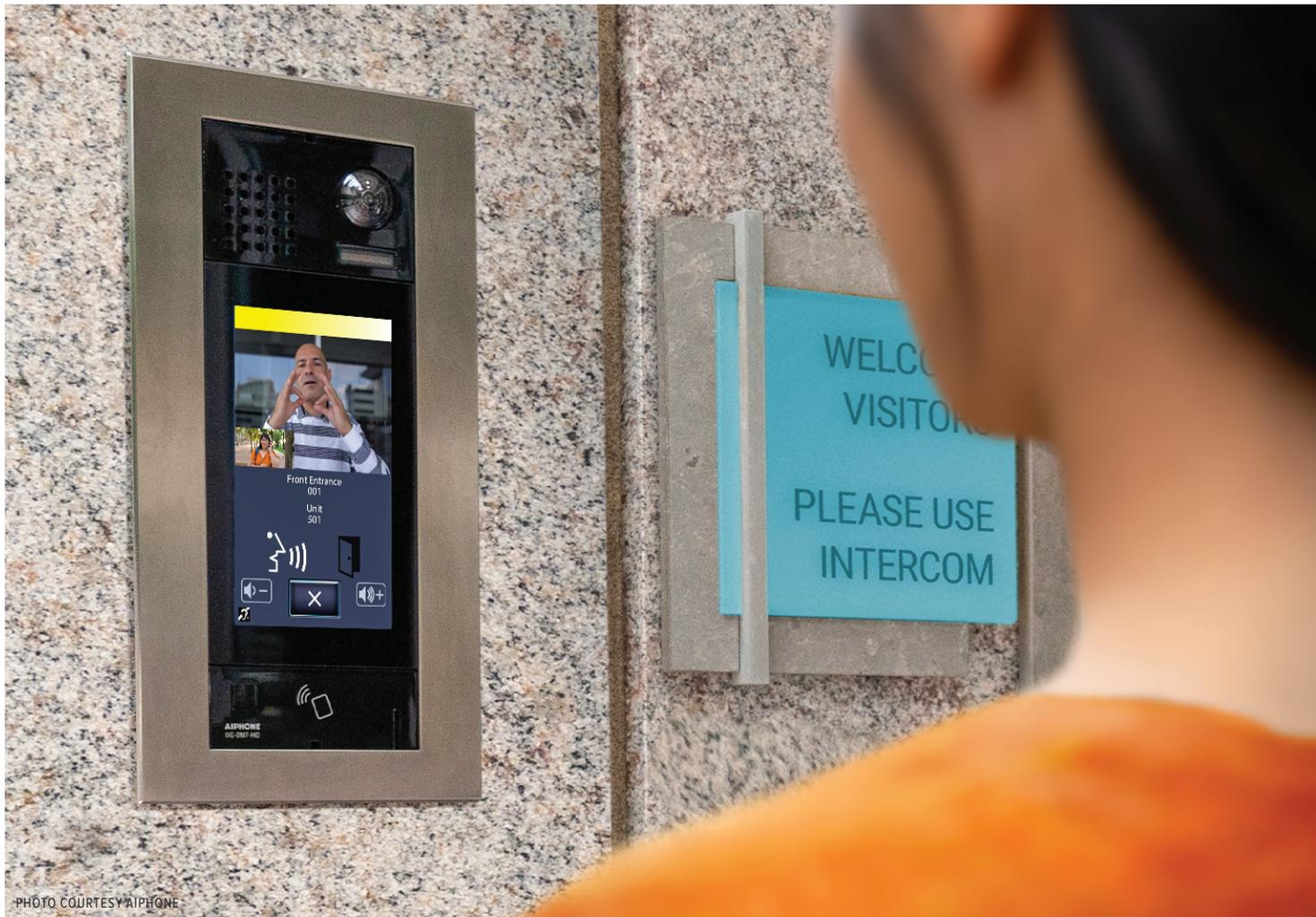


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Emergency Communication Towers

Popular in areas such as campuses, parking lots, malls, or courtyards, emergency towers can be accessed around the clock and are easy to locate with their lit beacons. This visibility means towers can be seen over long distances, day and night. When the emergency button is pushed, the tower light flashes to alert others, allowing emergency services to locate the party in need more easily.

Emergency towers provide valuable and reliable two-way communication capabilities for individuals traveling across a college campus. In certain geographic areas or in large concrete structures, cell phone coverage can be spotty, whereas a hardwired emergency intercom tower ensures consistent, reliable communication with authorities when needed.

ADA Compliance

Just like access into a building needs to be accessible to all individuals, regardless of abilities, so do emergency communication towers. Emergency towers come in multiple

shapes and sizes, but the key among them is ensuring that an emergency button is easy to reach for someone walking or sitting in a wheelchair. Intercom systems now include two-way video and integrate with telecoil (t-coil) technologies to assist in hearing aid conversions for individuals with hearing loss or impairments. The integration of this technology ensures enhanced communication for those who are hard of hearing and wear compatible hearing aids.

For those with compatible devices, an IP video intercom equipped with t-coil technology sends out an electro-magnetic signal. A person's hearing aid will pick up this signal, allowing the hearing aid and the intercom system to directly connect, producing a clearer sound and removing audio interference. This integration allows those with hearing impairments to communicate with intercom systems more easily.

As campus settings—including educational institutions—are prone to unexpected events, door entry control and communication

solutions, like intercoms and emergency towers, can help protect students and faculty during emergencies. These systems can be placed anywhere support is needed and offer the ability to remotely access systems and manage them from anywhere on the network, thereby offering valuable support and safety for students, faculty, and visitors alike. As campuses install these upgraded security systems, they also need to make sure that the placement and technology is accessible to all members of the campus community.



ABOUT THE AUTHOR: Brad Kamcheff has been with Aiphone over thirty years. He uses innovative methods

to promote and inform industry peers about Aiphone's vast intercom portfolio, award-winning quality processes, and unparalleled customer service teams. Long-time experience has helped shape his view of the security industry and become knowledgeable of its trends. www.aiphone.com

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DISPLAY TRENDS

FOR HIGHER EDUCATION

BY WAYNE BORG

The front of the classroom display continues to be a main focus in today's classrooms, with teachers relying on the displays to enhance their lessons and to keep students engaged. As display technology evolves, IT and facility managers have more options to choose from, depending on the size of the classroom or lecture hall.

Bigger

Projectors have traditionally been the display of choice for the larger university classrooms and lecture halls, because bigger screens are better. The larger the classroom, the further away the students are from the display, and the larger the display screen needs to be so that students at the back of the room can easily see and read text. Projectors can easily project images large enough to fill these larger screens, as most projectors can display an image up to 300", measured diagonally.

Brighter

Projectors are rated by the brightness (in lumens) of their light source. The more lumens the projector's light source can produce, the brighter the image will be that the projector displays on the screen. The needed brightness of a projector all depends on how much ambient light there is in the classroom. The larger the classroom, the more ambient light. Other factors—like large windows letting in sunlight or overhead lighting—need to be considered, as well. High brightness projectors, from 5,000 to 22,000 lumens of brightness, are becoming more popular, with some IT and facility managers opting for higher brightness levels than needed in the larger classrooms because they are bright enough to be seen even if the teachers leave the shades open and the lights on.

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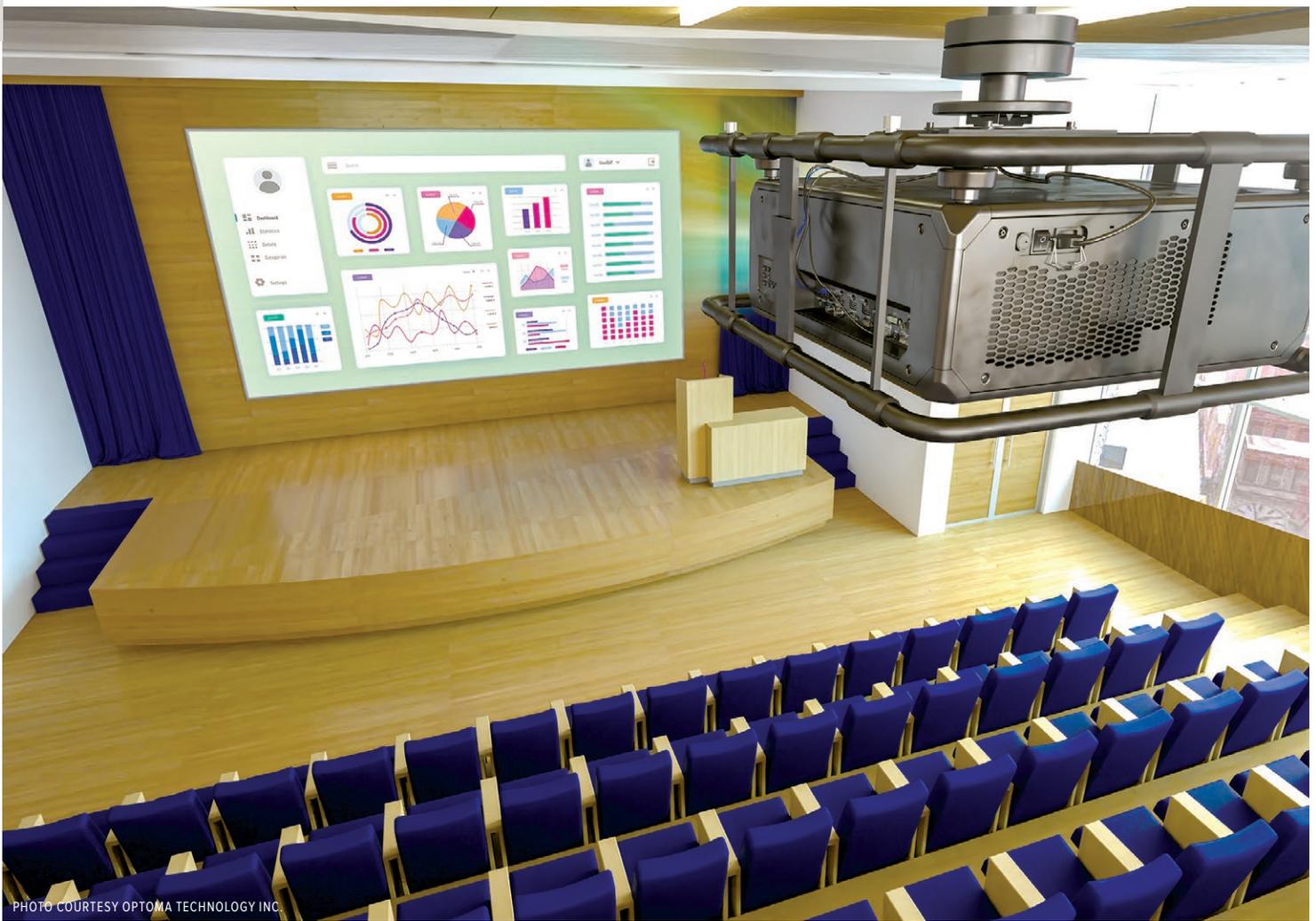


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Laser

Laser projectors have no lamps to replace, ever. Many of today's laser projector models have laser light sources that will last up to 30,000 hours, which is twice the average life of a projector lamp. The most common complaints that educators have about projectors concern the lamps. Based on an average of seven hours of use a day and 220 school days a year, a typical higher education classroom projector will be in use about 1,540 hours per school year. Projector lamps start to degrade immediately and can lose up to 50% brightness between 2,000 and 3,000 hours of use. As a result, a 6000 lumen lamp projector will project a brightness of only about 3000 lumens after just a couple of years of use, while laser projectors keep images bright and clear for well over ten years because their light sources degrade much slower. Replacing lamps is the single largest maintenance cost of traditional lamp projectors; the cost of the lamps and labor easily reaches hundreds of dollars over the life of the projector. With laser projectors, however, there is no need to ever purchase, stock, or replace a projector lamp ever again. For an added bonus, most laser projectors don't have filters, either.

Laser Is Better

The new laser projectors on the market today have improved light sources that are engineered to produce consistent vibrant colors and clear text. They have also closed the price gap compared to lamp-based projectors, with initial purchase prices that are now much more affordable than ever before. They produce less heat than lamp projectors and consume less electricity. Reduced power consumption is one of the more overlooked benefits of laser technology. A lower electricity bill could be the biggest area of savings for larger schools that use projectors in every classroom. For campuses that are focused on reducing greenhouse emissions: not only do laser projectors run cooler, but they are also much more efficient to operate, thereby reducing a school's overall carbon dioxide footprint. Additionally, these products have no mercury to worry about. All lamp projectors use mercury vapor lamps, so switching to a laser light source removes this toxic element from the campus—one that is hazardous to human health and to the environment. One of the best laser projector features is that they turn off and on immediately, with no waiting for the projector to warm up.

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Lens Shift

Lens shift actually moves the lens in different directions, vertically and horizontally. This flexibility does not change or decrease the native resolution of the lens, but it does help with installation to adjust the projector when it doesn't align perfectly with the screen. Keystone digitally alters the projected image to fit the screen before it gets to the lens, but this alteration will decrease the resolution. Both will help to line up the image properly on the screen, but maintaining the highest resolution is always better. Motorized lens shift and motorized zoom and focus are great step-up features, as they not only help with the initial install, but also make re-aligning the projector easier when needed.

4K UHD Resolution

Projectors and displays with 4K Ultra High Definition (3840 x 2160) resolution capability have become the standard in higher education. 4K UHD delivers 8.3 million active pixels to the screen, which is four times more than full HD 1080p. Campus administrators should choose projectors that have a high enough native resolution to accept 4K video signals, supports HDR (High Dynamic Range), and are able to produce sharp, life-like images and vibrant

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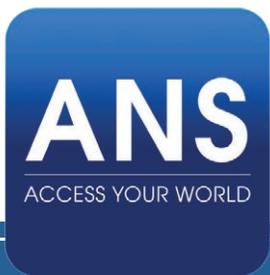
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colors. For classrooms, the greatest benefit of 4K resolution is the improved clarity for text; clearer text can be projected on larger screens. Small numbers, small letters, and images can all be displayed in finer detail. When viewing projectors using this resolution, students are able to see clear text, whether they are sitting in the front row or at the back of the classroom.

Interactive

For smaller classrooms, interactive flat panel displays (IFPDs) have become a great option, with many schools replacing their interactive whiteboards with IFPDs. These displays feature 4K UHD resolution and, more touch points (some with up to twenty points of touch, and up to forty using Windows), so users can write clearly with much better accuracy than interactive whiteboards. These displays also offer more connectivity options and anti-glare glass for use in rooms with high ambient light. Most IFPDs designed for the education market are available in screen sizes ranging from 55

to 86 inches. The latest IFPDs are easier to use, with enhanced whiteboard software designed to help teachers with their lessons and keep students interested. Some feature quick-draw pens that automatically launch the whiteboard, along with floating toolbars that can instantly select tools such as an eraser, ruler, and highlighter. Users can also change colors on the pen. These boards integrate with popular learning software like Google Classroom, Google’s free learning management system, and they include single sign-on support so users can sign into their accounts to access Google Classroom resources like lesson plans. All of these features are designed to make teaching with IFPDs easier.

Displays

Overall, displays are better today than they ever were. Both projectors with screens and IFPDs now offer better resolution, higher brightness, and enhanced feature packages. The images that can now be displayed are

clearer and brighter than ever and can only help both teachers and students with the learning process. Projectors and screens are still the most affordable technology to use to get the large screens needed in larger classrooms and lecture halls for students to be able to read small text and numbers. Old, costly lamp projectors should be replaced with new, 5000+ lumen laser projectors to provide the high-quality, large images that the larger classrooms need while reducing maintenance costs at the same time; for smaller classrooms, the latest interactive flat panel displays are a great option.



ABOUT THE AUTHOR: Wayne Borg is the Marketing Manager at Optoma Technology Inc. He has over thirty years of sales, marketing, and product development experience in the audio/video, electronics, and appliance industries.

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FOSTERING DIALOGUE AND DISCOVERY WITH RESIDENTIAL LEARNING COMMUNITIES

BY DAVID VINSON, PhD

When prospective students envision living on campus, they often imagine the traditional college dorm—rooms with beds bunked over desks, shared bathrooms, and an RA living down the hall. However, one option not often known to students in search of their new “home away from home” is that of the residential learning community (RLC).

Rather than adjusting to a room shared among two or three people, the RLC can function as an appealing alternative, one that invites occupants to join a community of either like-minded people or a predetermined group. Such spaces can cultivate close-knit communities in which fellow students develop relationships not only among themselves but with faculty who live on site. Students have likened RLCs to the Hogwarts houses of

Harry Potter. Unlike the magical hat that assigns a student on the spot to Gryffindor or, say, to Slytherin, students in RLCs know their destinations prior to arrival on campus.

RLCs can offer vital support systems during what can be a daunting time for first-year students; this population often contends with homesickness or balancing the rigors of education amidst newfound independence. A general guideline for the number of students

in an RLC is 400-500, allowing students to experience a much smaller school atmosphere even if the institution itself is much larger. In addition to living among faculty, students benefit from having these faculty members available for support in both academic and personal matters. Faculty members in these settings have the opportunity to become part of the support system for students, and these relationships can go a long way to fostering dialogue and helping to break down potential barriers that may exist between students and faculty.

While RLCs are historically associated with Ivy League schools, they also exist on over thirty campuses in the United States. Two notable examples include Santa Clara University and the University of Miami.

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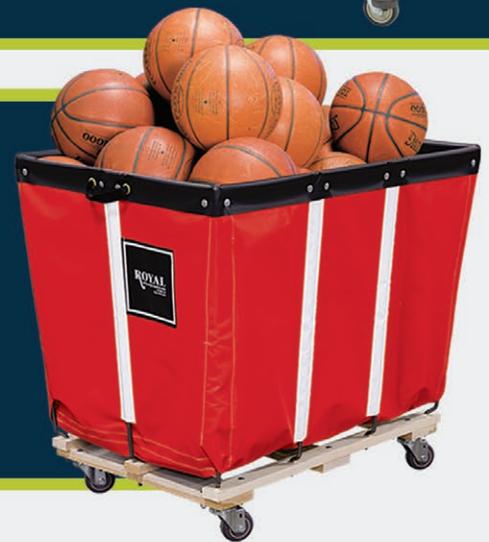
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Both institutions have embraced the benefits of RLCs, not merely by creating a culture of support and collaboration, but by making these spaces comfortable, stylish, and amenable to the technological needs of students and faculty alike.

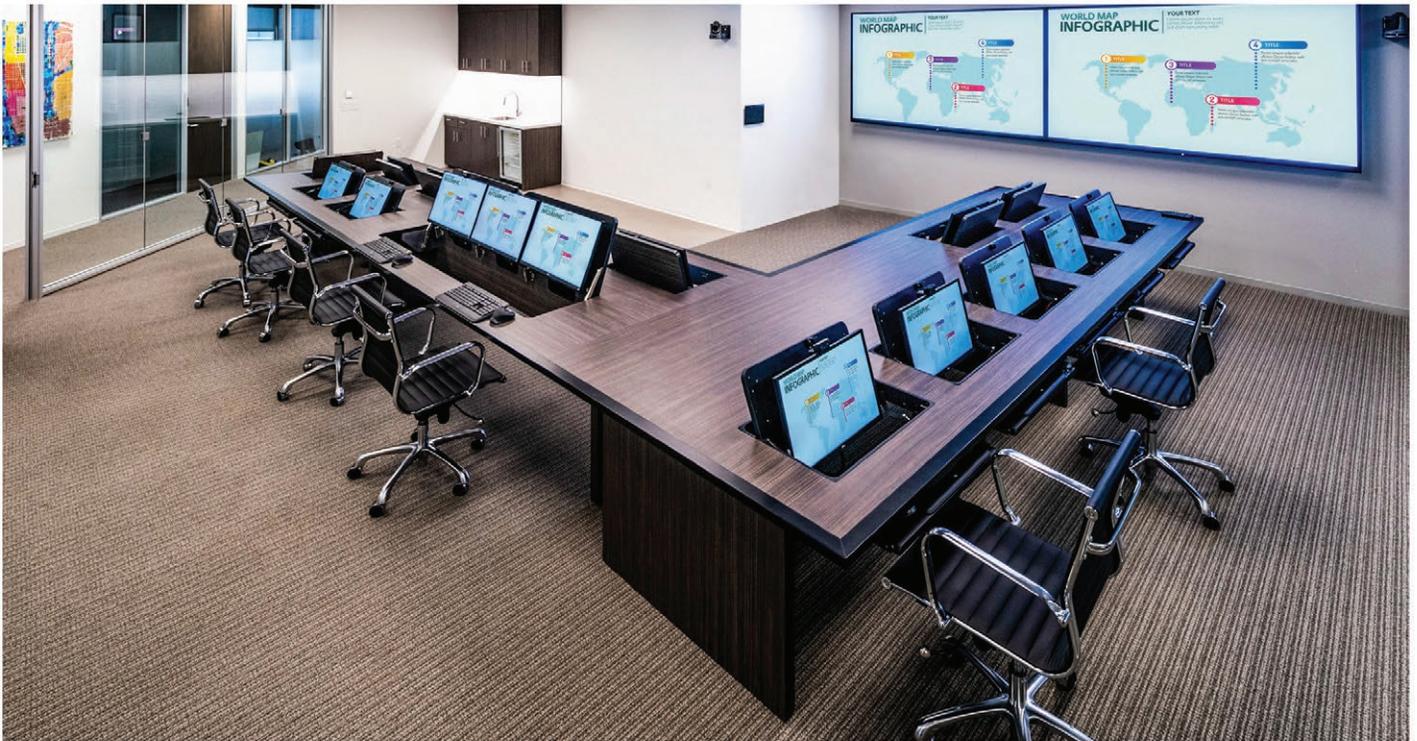
Residential Themes at Santa Clara University (SCU)

Santa Clara University (SCU) is the oldest operating higher education institution in California. The campus is located in the heart of Silicon Valley and spans 106 lush acres with pristine gardens and state-of-the-art facilities, all of which surround the historic Mission Santa Clara de Asís. Located at the southern tip of San Francisco Bay, Santa Clara is adjacent to San Jose, the 10th largest city in the country, and the region is known to offer nearly three hundred days of sunshine a year.

SCU attracts ambitious and talented students, faculty, and staff, and it has been nationally recognized for its outstanding commitment to diversity and inclusion. Moreover, the University

has received recognition for prioritizing sustainability and working to protect and preserve the environment. But another aspect of SCU's appeal, in particular for first-years students, is that it is home to nine residential learning centers. Nearly 95% of SCU's first-year students live on campus, and even those who have a residency requirement exception are invited to participate in a designated RLC. Each RLC is associated with a specific residence hall and organizes its community around one or two broad themes. The themes are not major-specific. For instance, Alpha RLC organizes its communal life and engagement priorities around the concepts of innovation, integrity, and impact. Students in Alpha RLC are encouraged to interrogate and discover ways to improve the lives, health, and wellbeing of others, and to do so in ways that align with the University's Jesuit educational values and Catholic social teachings. Alpha RLC would be especially appealing to students focusing on Social Entrepreneurship, Business and Marketing, Social Sciences, Social Justice,

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and Diversity and Multiculturalism, to name but a few. Alpha RLC is a mini-suite-style, co-ed community housed within Graham residence hall. The four-story Graham Hall is divided into twelve different “neighborhoods,” with approximately thirty-two residents and one Community Facilitator in each neighborhood. Each of the twelve neighborhoods have their own common room lounge, kitchen, and laundry facility, all of which encourage students to build relationships that culminate in a sense of community throughout the building. Larger communal spaces include a multi-purpose room, a movie room, several study rooms, and two classrooms. A large quad provides outdoor seating and barbeque space.

The da Vinci RLC is among several other RLCs at the University. This co-ed, mixed-style residence hall honors the prolific interests of Leonardo da Vinci, including engineering, science, and visual art. The culture of da Vinci RLC aims to engage students’ minds and to

connect their passions to a greater sense of purpose. The da Vinci RLC is home to Ciao da Vinci! —a community located on the fourth floor of Casa Italiana. The community, closely tied to the Italian department, hosts activities such as bocce ball tournaments, Italian movie nights, home-cooked family-style dinners, and trips to the nearby “Little Italy” neighborhood. First-years students in the RLC take a Cultures and Ideas sequence course called “Italy: Gateway of Cultures.” Via class discussions and guest lectures, the two-quarter course explores Italian culture from Ancient Rome to Italy today. Casa Italiana Residence Hall houses approximately 380 students and provides a variety of living options within its two sections, Casa Vintage and Casa Modern. The former has traditional-style, single rooms with community bathrooms; the latter has suite-style apartments, each of which has four bedrooms, two bathrooms, and a kitchen. The larger communal spaces include a common room, a fully equipped kitchen, a fourth-floor

terrace, commuter lounge, three classrooms, and several lounges with televisions, billiards, ping pong and foosball tables, and pianos. A large courtyard provides outdoor seating, charcoal barbeques, and a bocce ball court.

Prolific Residential Options at the University of Miami

Located seven miles southwest of downtown Miami, Coral Gables is home to the main campus of UM, known otherwise as the University of Miami. UM is set on a gorgeous 239-acre tract that serves as a hub for two renowned colleges and seven schools. To the broader community, the main campus also serves as a prime destination for arts and culture. For instance, it houses South Florida’s largest and most varied art collection at the Lowe Art Museum. The Jerry Herman Ring Theatre brings vitality to the South Florida cultural community, and the Gusman Concert Hall and Clarke Recital Hall are the sites of hundreds of concerts. Moreover, the

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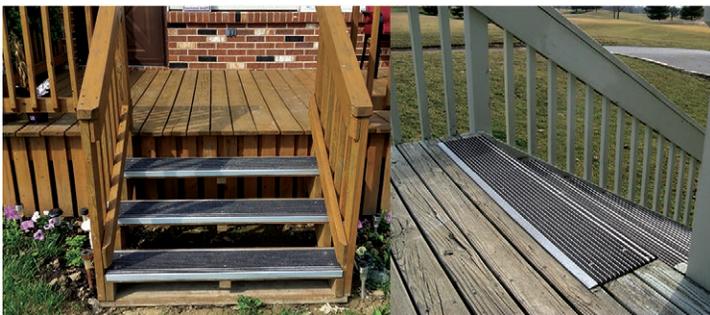


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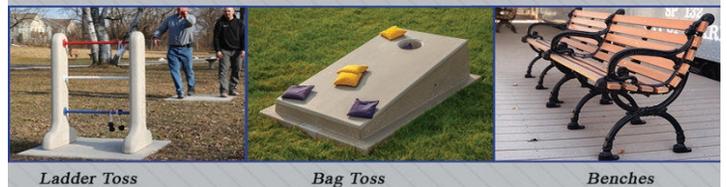
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Cosford Cinema screens a spectrum of first-run, classic, rare, and art-house films. Of course, the Coral Gables campus is also home to the University's celebrated intercollegiate athletics program.

The appeal of UM to prospective students is perhaps self-evident, but first-year students may not initially be aware of UM's adoption of Residential Learning Communities. Housing and Residential Life offers on-campus housing in five residential colleges as well as a Lakeside Village and the University Village. These serve as housing options for all first-year students, each of whom is required to live in University housing for two academic semesters. Eaton Residential College is surrounded by oak trees and is set directly on the eastern side of Lake Osceola. The rooms are designed in a suite arrangement with two double rooms connected by a bathroom. Each floor includes single and double rooms with study lounges and laundry rooms on each floor. Students are encouraged to cultivate relationships

with Residential Faculty, which in the case of Eaton is a senior lecturer at the UM Biology Department who lives on site with his family and their dog, Super, and cat, Mimi.

Opened to students in Fall 2020, Lakeside Village rests on twelve acres and is comprised of twenty-five interconnected buildings, in addition to a multitude of outdoor spaces that include a grand courtyard, study areas, recreational spaces, and outdoor terraces. The first floor and mezzanine level of the main structure serve as retail, event, and office spaces. As a way of enjoying the space surrounding Lake Osceola, amenities include a large exhibition space for dynamic programming along with other meeting spaces—an auditorium, a classroom, and a multi-use pavilion. Above the first floor and mezzanine level are five floors of student housing occupied by primarily sophomores as well as some juniors and seniors. Unit layouts vary from studios to single and double suites, and even to suites comprised of four single

bedrooms, a communal kitchen and living room, two bathrooms, and a laundry room.

Reflecting on the Benefits of RLCs

Not only can RLCs provide a sense of community and security for students who are adjusting to a new, formative stage in their adult lives, but the benefits of RLCs go beyond day-to-day conveniences. RLCs positively impact students' academic and social opportunities and GPAs. These living spaces facilitate increased commitments to learning, increased persistence to graduation, and enhanced satisfaction with the overall experiences of campus life.



ABOUT THE AUTHOR: Dr. David Vinson has a PhD in English with specializations in transatlantic literature and cultural studies. He is a committed scholar, teacher, and dad. If you ever meet David, avoid the subject of soccer. His fandom borders on the truly obnoxious.

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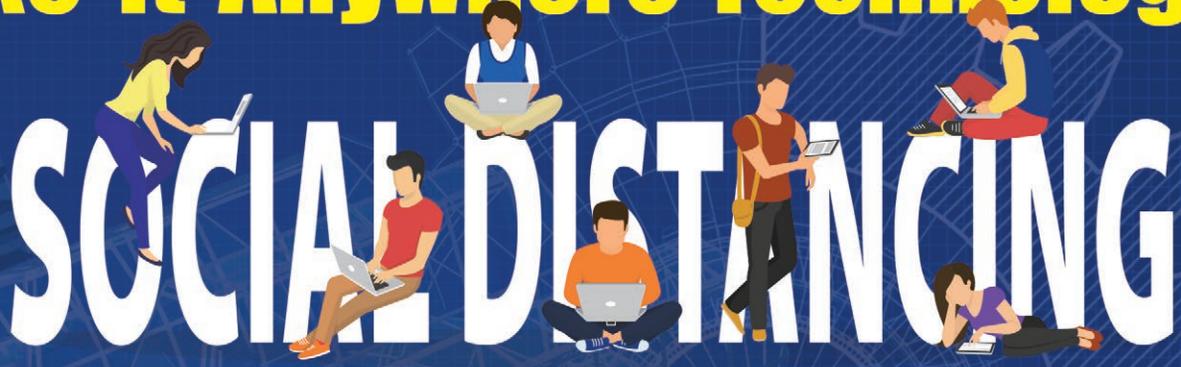
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