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AUGUST 2025
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I MPROVING SCIENCE THROUGH COMFORT

SMALL THEATER, BIG TRANSFORMATION
REINVENTING SEATING AT VANDERBILT'S ROTHSCHILD THEATER

INTELLIGENT WATER SOLUTIONS FOR CAMPUSES
MANAGING RISK, SUSTAINABILITY & STAFFING

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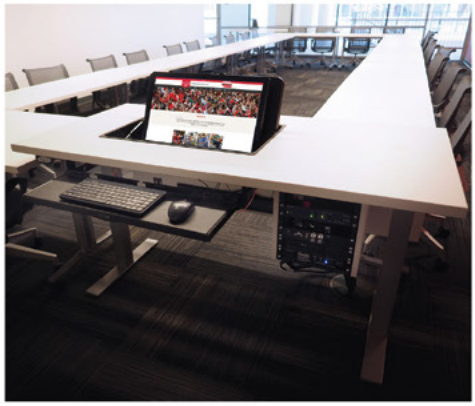

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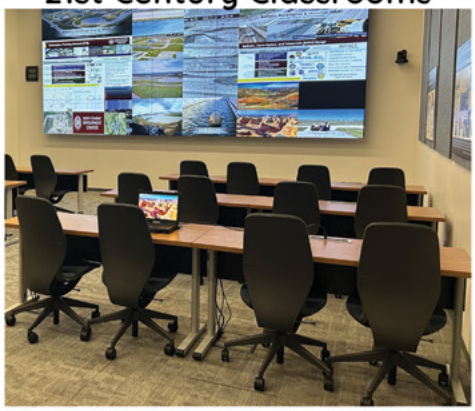

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Can student research drive real change? Dr. Paula Mazzer thinks so. From investigating soot's impact on health to restoring a local lake, her students tackle real-world problems with scientific rigor. Their work informs policy, supports the community, and redefines what learning can look like—turning classrooms into engines of public health and environmental impact.

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Editor's Letter

AUGUST 2025

Dear Readers,
It's that magical time of year again—the calm before the academic storm. The quiet sidewalks are about to be filled with students toting backpacks, iced coffees, and big dreams. It's Back to Campus season, and while the students are just arriving, we all know that your work started long before move-in day.

Let's be honest: for facility directors and campus operations teams, "summer break" is just a polite way to say, "it's time to rebuild half the campus." You've spent the last three months navigating furniture deliveries, floor resurfacing, HVAC upgrades, repaving parking lots, and—of course—the always-surprising summer construction detours. If something didn't require a hard hat or a clipboard, was it even summer on campus?

You've made sure every dorm is spotless (for at least the first hour), every lab is safe and ready, every bathroom is functioning (and we do appreciate good bathroom planning!), and every lightbulb is doing its job. You've battled supply chain delays, last-minute changes, budget surprises, and a few mystery leaks—yet here we are, with students arriving to beautifully manicured lawns, functioning water fountains, and perfectly chilled lecture halls.

This issue is a tribute to the behind-the-scenes magic that makes campus life possible. Inside, we cover topics that facility teams care about—from campus landscaping upgrades and energy-efficient lighting to auditorium renovations and vehicle fleet planning. Whether you're responsible for one building or the entire campus square footage, this is your season to shine.

We also recognize that your work doesn't stop here. As the academic year kicks off, so does a new wave of maintenance requests, room reconfigurations, and events that seem to appear out of thin air. But let's take a moment to appreciate everything that's been done to get to this point. You've helped create a welcoming, safe, and inspiring environment for students to learn, live, and grow. That's no small feat.

Thank you for letting *Private University Products and News* be part of your journey. We're proud to serve the people who keep private college and university campuses running strong, year after year.

Now go enjoy your last quiet cup of coffee—before someone calls about a broken keycard reader.

Sincerely,

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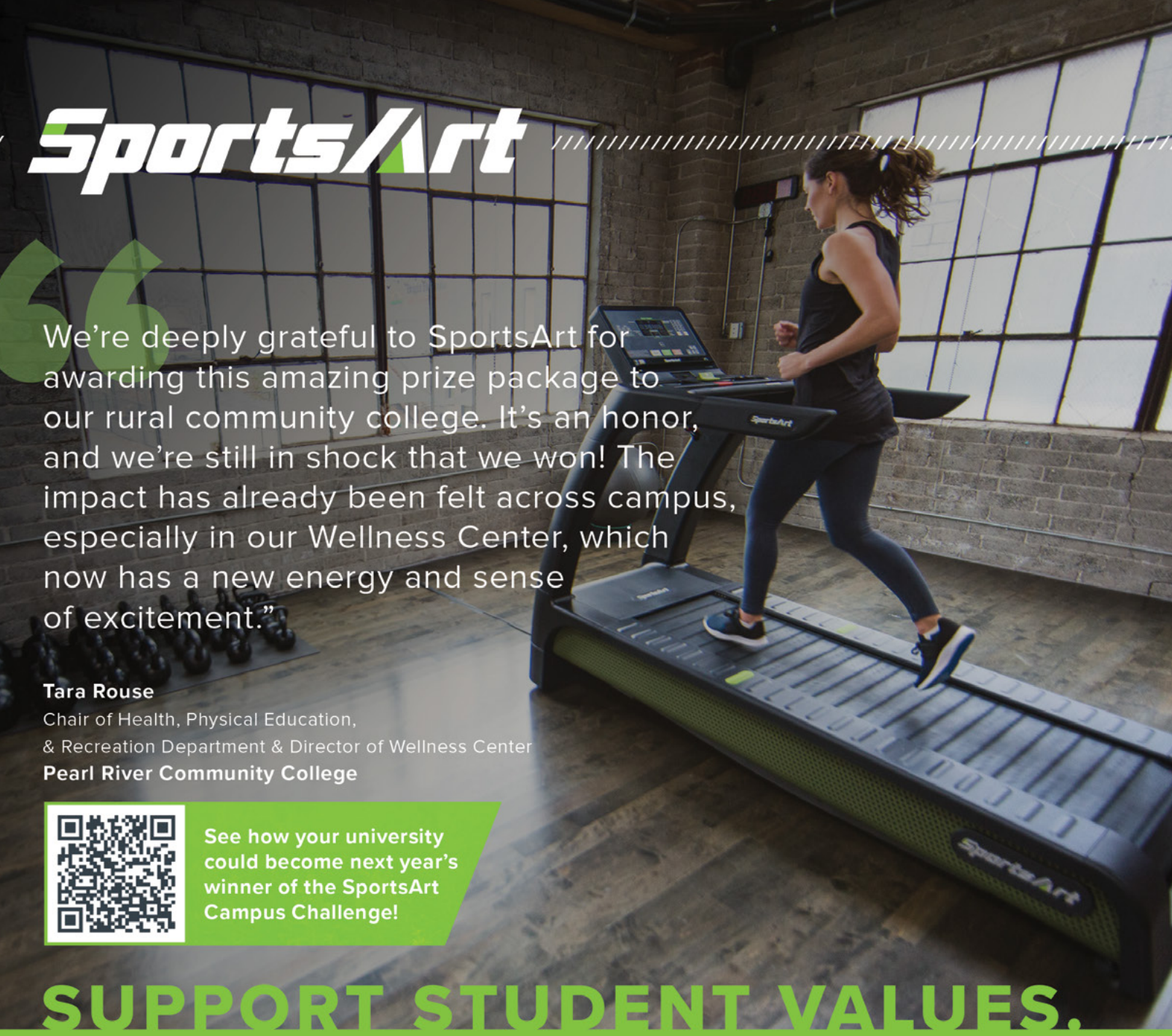

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Benefitting the Community through Course-Based Research

BY CYNTHIA MWENJA, PhD

Paula Mazzer, professor of Biochemistry at Dakota Wesleyan University, sheds light on issues of public health through the discipline of chemistry. A deft educator, she draws her students into learning by means of hands-on research experiences. In one ongoing project, Mazzer and her students engage in meaningful local field research by working with a variety of collaborators to address the issue of algae overgrowth in a public lake near the school.

Through her work, Mazzer offers a practical example for academic researchers to have significant real-world impacts in their local communities while simultaneously guiding students to generate their own research findings to share with local stakeholders.

Chemistry for Public Health

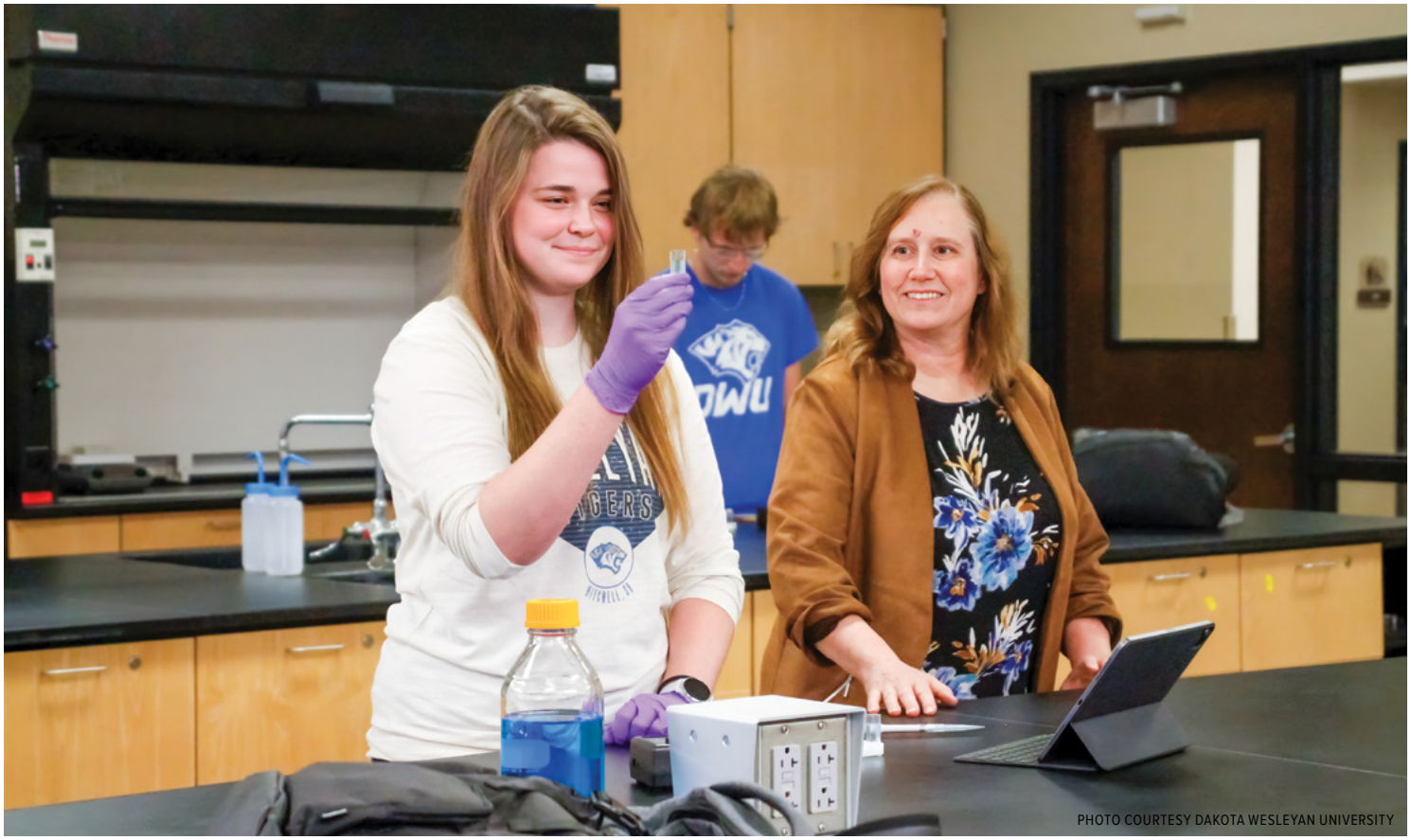
Trained as an analytical chemist, Mazzer investigates adverse effects that chemicals in the environment may have on human health. The primary focus of her personal research is how soot particulates interact with health outcomes. She says previous studies have already shown that people have a greater risk of neurodegenerative disease if they live in or near polluted urban environments. What has not been investigated, however, is which particulates relate to which illnesses. The U.S. federal government posts particulate data at AirNow.gov, but only particulate size is reported, not types of particulates. Mazzer is interested in finding out what chemicals in these particulates affect brain cells.

Mazzer often collaborates on research in this area with Patrick Hatcher, Professor in the Department of Chemistry and Biochemistry at Old Dominion University. Together, they examine how fire-derived carbon cycles through the environment. Mazzer currently works with one of Hatcher's graduate students to study the chemistry of the runoff from different types of burns. For this research, they use Daphnia, or water fleas; this sentinel organism is sensitive to environmental pollutants at much lower concentrations than fish are. Their research is showing that burn runoff does have adverse effects in the aquatic environment, but the particulates causing those adverse effects are probably removed with the first wash through a waterway. This type of research can guide local communities and policy makers as they manage cleanup efforts after wildfires.

Pedagogical Innovations

In addition to conducting research which can lead to improvements in public health, Mazzer is well known for embracing exciting approaches to learning. Several years ago, the provost organized in-house professional development workshops to fill the gap when conference travel was curtailed during the height of Covid restrictions. Mazzer was asked to spearhead the problem-based learning workshop because she had employed this and other non-traditional approaches to teaching in her classrooms throughout her time on campus.

Many of Mazzer's pedagogical innovations stem from her use of course-based undergraduate research experiences (CUREs). CUREs "offer students hands on experience doing original research and offer faculty the opportunity to generate new information within their discipline," according to the University of Colorado Boulder. Bethany Melroe Lehrman, Professor and Chair of Chemistry at Dakota Wesleyan University, notes that Mazzer is endlessly creative, pushing them both to "think and dream bigger." The two came to DWU at the same time, replacing the two previous chemistry professors. They felt an immediate bond which allowed them to take charge of the program



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and "make it their own." Melroe Lehrman states that she loves having a colleague who offers wonderful ideas for developing class projects further, and they both appreciate the freedom to innovate that DWU gives its professors.

One example of a CURE comes from Mazzer's inorganic chemistry class, where students work in groups to build solar cells throughout semester. They have a part to figure out each week, and they feel quite accomplished by the end of the term. Melroe Lehrman points out that high-achieving students can feel uncomfortable learning in these ways, but they usually realize by the end of the course that they have absorbed a great deal of theoretical and applied knowledge. Such experiences can change students' ideas of what school can be. Of course, students may appreciate this type of class even more after graduation; Melroe Lehrman knows they are likely value the "independence to discover on their own" they developed under Mazzer's tutelage when they are on the job or in the lab later on.

Taking Research Outside the Classroom

Over the past seven years, another exciting CURE in Mazzer's genetics class has developed into a project that will ultimately provide real-time water-quality data for local residents; this project will also compile data over time to guide water quality remediation efforts in the future.

Here's the background: DWU is sited in Mitchell, South Dakota, where the local Firesteel Creek was dammed in 1928 to develop "a drinking water supply and recreation center for the City of Mitchell and surrounding area," according to the city's website. The water quality has declined in recent years, mostly due to the nutrient-rich runoff from the farm and ranch land in the lake's watershed. In fact, Mazzer reports, the sediment in the lake now contains phosphorus in the same concentration as is commonly applied to crops. This buildup of phosphorus in the lake feeds harmful blue green algae blooms. Area resident Joe Kippes says that the bloom looks like turquoise paint

continued...

Over the past seven years, another exciting CURE in Mazzer's genetics class has developed into a project that will ultimately provide real-time water-quality data for local residents.

spilled on the water, and its smell is "terrible." The health problems arise when the algae die off; the microcystin produced in the die-off is harmful to other aquatic life as well as to mammals. Mazzer notes that warnings are issued when the microcystin level reaches more than eight parts per billion; people then can't use the lake for any reason, and they must keep their pets away from it, as well. The die-off in Lake Mitchell was so concentrated at one point that the microcystin level in Lake Mitchell reached thirty-five parts per billion.

Kippes remembers the lake being the "center of summer activity" for generations of area residents until the algae took over. Because these water quality issues were severely affecting enjoyment of the lake, he says, some residents formed the non-profit Friends of the Firesteel (FotF) to find solutions for cleaning the water. Kippes, who is a FotF board member as well as past President, states that all members of the original board were interested citizens who were "willing to do the work." None of the board members, however, had expertise in reading and interpreting technical documents. The group asked DWU for help, and Mazzer agreed to lend a hand with interpreting the technical information the group had gathered. Kippes says Mazzer's participation in the project made them realize that they needed her expertise; she graciously accepted their invitation to the FotF board in 2020.

Mazzer also got her genetics class involved, along with individual student researchers. The students take samples at several locations around Lake Mitchell, then filter out the algae. They extract the DNA from the filter and use data analytics tools to amplify it in order to find a "bar code" of all species in the sample. Mazzer points out that this process teaches the students how to do advanced computer processing while conducting real research and investigating a subject of vital local interest.

The FotF board developed a two-pronged plan to improve Lake Mitchell's water quality: beefing up the upstream wetlands so that less phosphorus gets to the lake from the watershed, and dredging the lake to remove the phosphorus that has accumulated over the past century. They wanted scientific feedback on the plan; Mazzer had her students conduct the evaluation. Kippes appreciates the care that the students took in their assessment; they used objective data and also showed academic integrity by pointing to the limitations of their study. In their final assessment, the students said that the FotF plan would improve lake conditions, thereby giving credibility to the approach that the board had developed. After presenting their findings to the FotF board, the students also gave a presentation to the Mitchell City Council. These experiences not only train students in conducting rigorous research; the process also offers practice in communicating their findings to people outside of their field.

Mazzer and her students are further developing research at Lake Mitchell, working with a variety of collaborators. A bioinformatics professor at the University of South Dakota provides the needed computer expertise, while a professor in the Black Hills State Genomics Sequencing Facility provides the genomics information. The ultimate goal is to regularly take samples and record data at various parts of the lake, then extract the DNA and get the genomic information. This data will be automatically sent for data processing; the resulting information will be publicly displayed in a cloud-based dashboard on the Mitchell city website, with a red dot wherever hot spots of harmful algae overgrowth are occurring. This data collection and communication benefits area residents, and the project will also start building a database showing what combination of physical parameters predates blooms of harmful algae—information which may help prevent algae blooms in the future.

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Kippes notes that this project benefits all involved—the students get to apply their academic knowledge in real-world settings, and the FotF and the city of Mitchell both benefit from the data the students collect, compile, and communicate. Cities and counties across the U.S. are facing the same scenario, and Kippes would recommend that other academic researchers get involved with similar mitigation efforts—he says that working together in these ways is good on "all sides."

Academic researchers often struggle to make their coursework relevant to their students and to find ways of using their expertise meaningfully in their local communities. By contrast, Paula Mazzer demonstrates that quality course-based research can grow into projects with significant local impact, contributing to measurable improvements in local human and environmental health. The research that Mazzer organizes at Lake Mitchell provides a template to guide others who would like to involve their students in exciting collaborative projects which provide an array of unique learning opportunities. In Mazzer's research-based classes, the outcomes go far beyond standard learning objectives; they emerge from the classroom to positively impact the world.

ABOUT THE AUTHOR: Dr. Cynthia Mwenja teaches Composition and Rhetoric at the University of Montevallo.


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FACILITIES & MAINTENANCE

Small Theater, Big Transformation: Reinventing Seating at Vanderbilt's Rothschild Theater

BY ANNIE THELAN

In the heart of Nashville, Tennessee, the private Vanderbilt University has boasted a strong reputation for academics, athletics, and performances since its founding in 1873. With more than 70 undergraduate majors, there's a great diversity in students, faculty, and visitors who come to Vanderbilt each year.

Vanderbilt is also home to the Rothschild College, the school's second residential college in Nashville's West End neighborhood. It's where you can find the Rothschild Blackbox Theater on the bottom floor, an intimate theater with a 76-person capacity and the ability to host a wide variety of performances. From lectures and presentations to movie night, this theater effortlessly adapts to any event. So when the time came for new seating to be installed, Vanderbilt needed something versatile and ergonomic to suit this one-of-a-kind spot on campus.

Vanderbilt chose Audience Systems, the UK's leading manufacturer of retractable seating for auditoriums, schools, and more. Audience Systems works with facilities to design precisely the right seating solution to fit their unique needs. For the Rothschild Blackbox Theater there was no shortage of possibilities, and with guidance from both Vanderbilt and Audience Systems, the team was able to find the right fit.

Vanderbilt settled on a highly customized version of the Eclipse model seat. This space-saving chair is based on the gravity tip-up mechanism, which allows the seat to fold into a small envelope quietly, which is perfect for performances and speakers. This elegant seat is sleek and compact yet remains comfortable for any body shape. The modified version of the Eclipse Seat for the Rothschild Blackbox

Theater is beautifully suited for the space—quiet, versatile, and comfortable.

Not only was the right seating important to keep spectators comfortable, but so was the look for the seating. The updated seating was designed to match the theater's existing aesthetic. The Blackbox Theater is the smaller, more intimate performance center on campus, and the updated seating needed to complement the feel of the space.

A specific palette of finishes was chosen for the chairs and telescopic system, blending seamlessly with the color palette already present in the space. The rich, dark tones are present in all the components, from the Louisiana Wenge finish on the platform's edge to the stained seat and back timbers that match. Not only do the seats match the performance space, but so does the telescopic system itself. This creates a cohesive, stunning look from the moment you step into the theater.

Along with matching the color scheme and vibe of the Blackbox Theater, the telescopic system and seating needed to function perfectly for the theatre's needs. Remaining static was not an option, given the theater's wide range of uses. The seating was designed to accommodate this, with the ability to retract and extend by simply folding the side rails and pressing a button.

Not only can the seating be entirely retracted, but the seating rake can be partially opened to reduce the number of seats available. This allows for a much more intimate setting, bringing the audience closer to the speaker, movie, or performance. With this functionality, the Rothschild Blackbox

continued...

Not only can the seating be entirely retracted, but the seating rake can be partially opened to reduce the number of seats available.

Theater is equally suited for both larger crowds and smaller audiences—no matter how many people show up to a performance, presentation, lecture, or movie, the theater will be cozy and intimate.

Rothschild Blackbox Theater is a hot spot for everything on campus, and the outstanding seating provided by Audience Systems is designed for everyone to feel welcome. With the perfect system installed, guests will be comfortable and focused on what matters, the event. Not only has Vanderbilt achieved its vision for the theater today, it will continue to thrive for years to come. Audience Systems provides lifetime support for the installation, including the chairs and telescopic system, to ensure that it's kept in top shape for decades.

The seating transformation at Vanderbilt's Rothschild Blackbox Theater demonstrates what's possible when seating is designed with both function and audience experience in mind. Audience Systems specializes in creating seating solutions tailored to each venue's unique requirements—whether that means designing custom configurations for intimate spaces, engineering retractable systems for multipurpose facilities, or reimagining traditional auditorium layouts. From initial consultation through installation, their team works closely with clients to ensure every detail serves the venue's vision. The result is seating that enhances both the performance and the audience's connection to it.

ABOUT THE AUTHOR: Annie Thelen is the current Marketing Specialist for Kotobuki Seating International and Interkal, where she helps build brand identity and narrative for all companies under the Kotobuki umbrella. See Interkal.com or Kotobuki-seating.co.jp/en/.

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BSC Ergonomics

IMPROVING SCIENCE THROUGH COMFORT

BY JEREMY SANDLER

Life science research often requires long hours in the laboratory. Because of the sensitive and biohazardous nature of life science work, a significant portion of time is spent using biological safety cabinets (BSCs). BSCs play a pivotal role in life science research laboratories as they are designed to support cell culturing, microbiology sample preparation, and other laboratory applications that require personnel and product protection.

continued...

To stay comfortable every day while preventing long-term injury, cabinet users need a biosafety cabinet that is designed around the human body. Ergonomic factors that keep a user safe include physical designs that reduce repetitive injury and allow a user to sit comfortably, component selections that ease strain on users, and consideration for key accessories that promote good posture.

Conscious of the need to protect students, scientists, and professors conducting critical research in campus labs, private colleges and universities are re-evaluating the ergonomic design of the BSCs they use.

Understanding the Risks Behind the Glass

There are also intrinsic risks associated with BSC use. Common risks accompanying these jobs include:

- Poor working posture – head bent forward for extended periods, raised and/or outstretched arms, fixed postures held for prolonged periods.
- Upper limb disorder risks – repetitive actions, awkward wrist/arm posture, forceful actions (including pinching grips).
- Environment – space constraints, lighting temperature, vibration, etc.
- Load – working with sharp, hot, cold or toxic/hazardous objects.
- PPE challenges – personnel protective equipment that might make work more taxing.
- Fatigue – an accumulation of multiple risk factors listed above.
- Repetitive strain injuries

Designing a BSC to minimize these risks to the user is a critical component of overall laboratory safety.

BSC Design Standards

High-quality BSCs are designed, tested and listed to an approved performance standard such as the National Sanitation Foundation's NSF/ANSI Standard 49 or the European Union's standard EN 12469. These standards ensure BSCs provide a basic, safe environment for working with biohazards, provided the cabinet is operating properly. BSC design can positively impact productivity and reinforce safety standards when the end user's comfort while operating the equipment is included in design calculations. As the UK's Health and Safety Executive explains, "Designing tasks, equipment, and work stations to suit the user can reduce human error, accidents and ill-health. Failure to observe ergonomic principles can have serious consequences for individuals and for the whole organization. Effective use of ergonomics will make work safer, healthier and more productive"[1].

BSC regulatory standards, while focused on containment of biohazards and safe operation, have limited requirements for human factors and user comfort specifications. Driven by competition, manufacturers have made great advances by engineering products to increase safety through improved comfort. These design features must be evaluated by researchers, technicians and

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safety officers. It is important for users to completely evaluate a product for all safety, ergonomic and comfort features, as there are vast differences between how each manufacturer approaches BSC design and ergonomic engineering.

The development of BSCs includes elements influenced by historical requirements and others designed through engineering innovation. Labconco, a leading leader in designing laboratory equipment, and studied existing BSCs on the market saw a need for updated ergonomic features. This led to the development of the new Logic® BSC, which integrates effective and comprehensive ergonomic features, like Inclination™ Technology and the Logic™ Operating System.

Labconco's approach to ergonomic design has evolved significantly over time. Early Class II Biosafety Cabinets resembled fume hoods, featuring console units with 90° vertical safety glass sashes that did not fully close when not in use. These units had ergonomic limitations, as microbiological tasks often involve long, repetitive procedures. Standing at these cabinets created physical strain on operators' backs, legs, arms, and necks.

The First Purifier

Prior to the 1980s, most biosafety cabinets resembled fume hoods and required operators to stand while working. For tasks requiring precision and long periods of focus, this setup posed significant ergonomic challenges. Prolonged standing can increase lower back strain and reduce overall operator endurance.

In 1983, Labconco introduced its first bench-mounted Purifier Series Class II BSC, designed for seated use. Seated operation not only improves posture and comfort but also enhances accuracy in repetitive or delicate procedures such as aseptic techniques or cell culturing. The reconfiguration of internal systems allowed the cabinet to be bench-mounted, and the sash was angled 10° inward from vertical, enabling users to sit closer to the work zone comfortably with improved posture, reduced fatigue, and decreased glare from reflections. This ergonomic redesign addressed users' immediate comfort needs and was quickly adopted across the industry.

Delta's Enhancements

In the late 1990s, ergonomic awareness in laboratory design began to shift from convenience to necessity. The diverse physical needs of each laboratory personnel (especially in shared-use environments) meant that a one-size-fits-all approach would no longer suffice.

To further enhance design, collaborating with ergonomics specialists and microbiologists, Labconco released of the Purifier Delta® in 2000. This cabinet improved ergonomic standards significantly, accommodating users from the 2.5 to 97.5 percentile for height with the first adjustable-height telescoping base stand and hydraulic base stands for adjustments while the BSC is already mounted.

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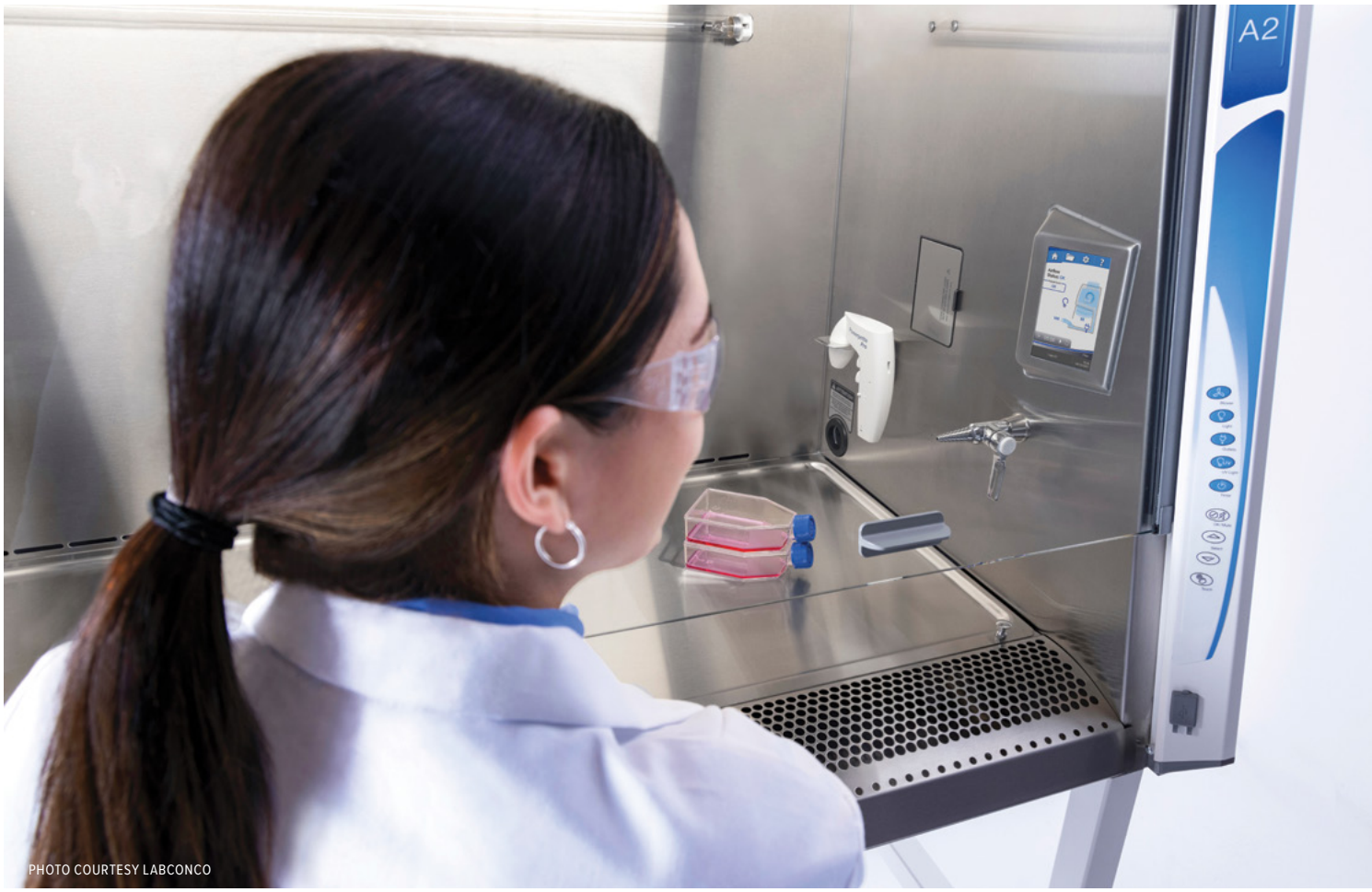

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This new cabinet introduced two sash height options (8" and 10") to better match a user's eye level, arm reach and posture. Prior to 2000, the use of ultraviolet (UV) lights to disinfect BSCs was limited by cabinets' inability to fully close the sash. The redesigned sash was fully closable, counterbalanced for smooth movement and operable with just one finger along its entire width. This minimized effort and strain, along with improving visibility. The air inlet grille was elevated and curved, creating a built-in elbow and forearm rest. An added row of airflow slots ensured safety even when arms were resting. The BSC cabinet depth was optimized for comfortable reach to the back wall without causing a cramped feeling, even during extended work sessions. The removable, single piece stamped stainless steel work surface was seamless, easy to clean, and uniquely designed.

Controls were moved from overhead panels to the cabinet's lower right-hand corner, allowing users (seated or standing) to access them without reaching. The analog pressure gauge, previously above eye level, was moved inside for easy viewing while seated. Utility valves and electrical outlets shifted forward and upward on side walls for accessibility without interfering with work.

These thoughtful adjustments made controls ADA-compliant and wheelchair-accessible—an important milestone in inclusive design for laboratory environments.

Logical Comfort

As ergonomic expectations evolved, so did the need for intuitive, technology-driven user interfaces. To further enhance safety and comfort, Labconco incorporated an Electronically Commutated Motor (ECM) blower into the Logic® Biosafety Cabinet, offering superior efficiency and monitoring capabilities compared to traditional motors. Traditional motors generate excess heat and noise due to magnetic field induction, causing discomfort. ECM technology eliminates heat buildup, stabilizing ambient temperature and significantly reducing operational noise by about 50%, creating a quieter working environment that supports long, focused sessions.

Labconco replaced analog gauges with a digital LCD display, mounted for seated visibility. Clear icons and descriptive text provide essential working parameters such as filter load and airflow status, allowing users to quickly assess cabinet status instead of reading an analog gauge. Integrated with the ECM, the LCD display provided real time monitoring of blower performance and status icons. Clear text messages replaced ambiguous indicators like red lights and buzzers, providing specific system condition feedback.

Microbiologists Labconco consulted with also emphasized the need for clearer communication around HEPA filter status. The HEPA Filter Life Remaining Gauge (expressed as a percentage) delivered an accurate, real-time evaluation of filter life – only made possible by

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the incorporation of the ECM. This precision feedback was only possible with the integration of the advanced feedback features of the ECM integrated into the Logic OS operating system.

Biosafety Redefined: Designing for the User of Today – and Tomorrow

Between 2024 and 2025, Labconco redesigned the Logic BSC with the most comprehensive overhaul since the introduction of the Purifier Delta. Every element of the new design was reexamined to focus on improving user experience and ergonomics.

The newly enlarged airflow slots in the curved armrest and redesigned plenum enable more efficient airflow distribution through HEPA filters, achieving an average 35% reduction in sound pressure. The more efficient airflow also allowed the cabinet to run with 30% less energy than before, further reducing heat output. For the user, this translates to a quieter workspace, helping to reduce fatigue and distraction during long periods of seated work. The standard prop-rod underneath the work surface makes interior cleaning a one-person job. No lifting, no awkward holds but instead easy access that reduces strain on the back and shoulders. This also demonstrates that ergonomics and efficiency can work hand-in-hand to save money at the same time as improving operator experience.

User interaction was also reimagined. The 5" touchscreen LCD display is now larger, brighter, and positioned for easy visibility while seated. The new intuitive graphical and text display of BSC functions and alerts improves the user interface and further streamlines operations to increase safety. Users can control BSC settings and functions from the touchscreen, reducing strain from repetitive button presses

Ergonomics is Essential, Not Optional

In biosafety cabinet design, user comfort and operational safety are inseparable. It's up to manufacturers to respond with solutions that do more than just meet regulatory requirements—they must meet human needs, whether the setting is a university campus or a private lab.

The ergonomic evolution of biosafety cabinets isn't just about comfort; it's about redefining what safety looks like in modern laboratories. Labconco remains at the forefront of that evolution by solving the problems that matter most to those behind the glass.

[1]HSE, n.d. Health and Safety Executive: Human Factors Design. [Online] Available at: www.hse.gov.uk/humanfactors

ABOUT THE AUTHOR: Jeremy Sandler, PhD, brings over 20 years of research experience in the life sciences to Labconco as the Product Manager for Biosafety and Laminar Flow. His research spans microbial ecology, plant ecology, genetics, genomics, stem cells, and tissue regeneration. Jeremy is passionate about developing the most advanced and comfortable Biosafety equipment for tomorrow's scientists.

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Intelligent Water Solutions for Campuses

Managing Risk, Sustainability & Staffing

BY DAVID BENAIGES

Private college and university campuses face mounting operational pressure. Aging infrastructure, rising energy costs, increasing sustainability expectations, and ongoing staffing challenges converge to create a perfect storm—particularly in facilities management.

Among the most vulnerable and often overlooked systems are those involving water: mechanical rooms, domestic hot water loops, hydronic heating systems, and plumbing infrastructure. These systems are critical to day-to-day operations yet often operate without modern oversight.

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Now, with the emergence of intelligent water management solutions, institutions can monitor, optimize, and safeguard their water systems in real time. These platforms use sensors, data analytics, and remote access tools to help teams identify inefficiencies, prevent failures, and support sustainability goals—without requiring a full overhaul of infrastructure.

Through delivering proactive, data-driven insights, intelligent water management platforms help operations and facility managers take complete control of their water systems and gain actionable insights. For facilities leaders in higher education, these water management solutions offer a new and increasingly necessary path forward, one that improves responsiveness, enhances operational resiliency, and supports long-term strategic goals.

The Hidden Risks in Campus Water Systems

Water-related failures in campus buildings are rarely small problems. A loss of hot water in a dormitory, a frozen pipe in an academic wing, or a boiler shutdown in winter can quickly spiral into emergencies that disrupt learning and may even impact student and staff well-being. Unfortunately, water systems—particularly heating and recirculation loops—are notoriously difficult to monitor with traditional tools.

Older campuses with dated equipment can face additional risks. Mechanical rooms are often spread across large sites, pipes are buried or hidden behind walls, and documentation may be outdated or nonexistent. Maintenance teams often rely on daily walk-throughs, handwritten logs, or occupant complaints to detect issues, but this strategy leaves much to chance. Without real-time visibility into temperature, pressure, and flow patterns, problems can go unnoticed for hours or days, particularly during weekends or winter breaks. That delay can lead to service interruptions, property damage, or even reputational harm if families or prospective students learn of facility shortcomings.

Simply put, intelligent water management systems allow building teams to transition from reactive firefighting to proactive system monitoring and optimization. To remain competitive and adequately prepared for the future—including achieving water system efficiencies and avoiding possible failures—facility leaders must adopt a strategy that addresses three emerging industry challenges:

Challenge 1: The Need for Speed and Precision in Maintenance Response

In an era of high service expectations, colleges can no longer afford reactive maintenance when it comes to water systems. Whether it's hot water for residence halls, consistent heating in classrooms, or maintaining safe operating conditions in science labs, quick response is essential.

Intelligent water management platforms allow facilities teams to detect anomalies in real time. Sensors monitor temperature, pressure, and flow around the clock, sending alerts the moment performance deviates from expected norms. Teams can then respond—often before students or staff even notice an issue.

Case in point: one boarding school on a 1,100-acre campus learned the value of intelligent water management systems firsthand. After experiencing a pump failure that left multiple buildings without hot water for two days, the school deployed a digital water monitoring system to help prevent similar incidents. Within weeks, the system flagged two critical temperature drops: one in the chapel's boiler room, where a transformer had blown; and another in the gymnasium, where a thermostat had been accidentally misadjusted. In both cases, maintenance was able to respond during off-hours and correct the issue before school resumed. The result? No disruption, damage, or emergency repair costs.

For higher education institutions, that kind of responsiveness isn't just a technical win—it is increasingly a service expectation and a strategic differentiator.

Challenge 2: The Push for Campus Sustainability

Sustainability has become central to the mission of many private colleges and universities. From LEED buildings to campus-wide climate pledges, schools are increasingly expected to reduce their environmental footprint, including water and energy

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consumption. But without detailed, data-driven insights for each building, progress can stall.

Intelligent water management systems offer the data transparency institutions need to move forward. They identify inefficiencies in heating loops, detect overuse in specific buildings, and highlight system behaviors, such as unnecessary recirculation heat loss, that waste energy. Some solutions even allow users to adjust system setpoints based on analytics, helping facilities fine-tune performance.

In another commercial example, a 400,000-square-foot office building used one such system to uncover excessive recirculation heat loss and optimize heating parameters, helping achieve internal carbon reduction goals and cutting costs. For campuses managing dozens of buildings, similar insights could yield substantial savings.

Beyond the numbers, intelligent monitoring supports sustainability reporting. With dashboards and historical trends, facilities staff can document improvements, comply with reporting requirements, and showcase progress to boards, donors, and other stakeholders.

In short, intelligent water management supports smarter stewardship and strengthens a school's brand as a forward-thinking institution.

Challenge 3: Bridging the Skilled Labor Gap

The skilled trades shortage continues to affect institutions nationwide. Facilities departments, once staffed by experienced technicians with decades of institutional knowledge, now face high turnover, increasing retirements, and fewer young professionals entering the field.

For campus maintenance teams, this creates two problems: 1) knowledge loss, and 2) limited capacity. Teams are being asked to do more with fewer people and incomplete memory of historical building issues.

Intelligent systems help bridge that gap. Real-time dashboards, system alerts, and automated data logging reduce reliance on manual checks and

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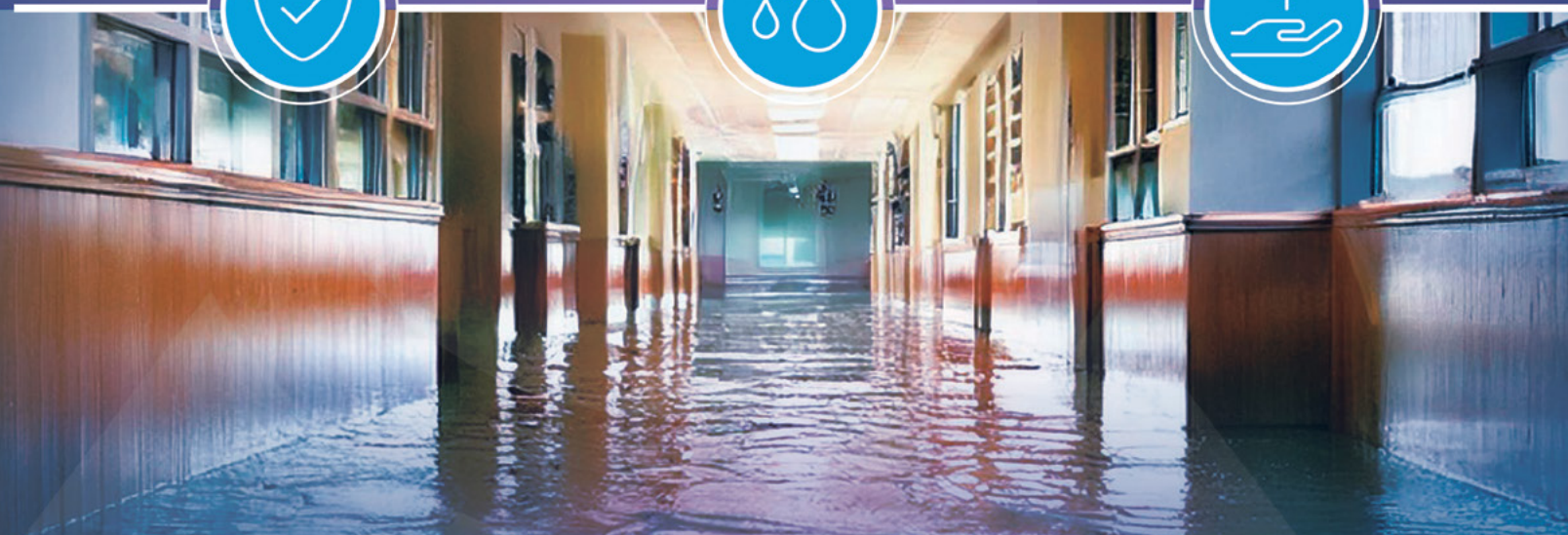

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paper records. Teams can quickly see when and where something malfunctions—without relying on a technician's intuition or memory.

On sprawling campuses with distributed building infrastructure and dynamic priorities, these water management platforms optimize the usage of labor across the entire site. Intelligent systems can help to completely reimagine campus priorities, helping to elevate building issues that were forgotten—or even unknown—and freeing staff to focus on other ,non-water priorities.

At one large educational campus, implementing an intelligent water management platform reduced manual temperature checks by over 80 percent, freeing up significant staff time for preventive work. For smaller institutions with limited personnel, these efficiencies can mean the difference between a proactive maintenance program and chronic firefighting.

Perhaps most importantly, these systems help train new employees. Visualizations of system behavior, step-by-step alert tracking, and historical performance data provide a built-in learning environment, which supports faster onboarding and more confident decision-making. On demand expert customer guidance also ensures successful implementation.

Why Intelligent Water Management Matters in Higher Education

Campus infrastructure is vast, interconnected, and aging. At many institutions, plumbing and mechanical systems were installed decades ago and have been modified over time with little documentation. That makes monitoring and optimization difficult without the help of technology.

Intelligent water management offers a scalable, cost-effective solution. It provides visibility where there was once guesswork. It helps identify root causes of issues rather than treating symptoms. And it empowers facilities leaders to make informed decisions about repairs, upgrades, and performance improvement.

Consider Legionella, the waterborne pathogen responsible for Legionnaires' disease. According to the CDC, most building-related outbreaks are caused by preventable failures in water system design or management. With remote temperature and flow monitoring, maintenance teams can ensure water conditions remain within safe range, reducing risk and liability.

What's more, intelligent systems support compliance with ASHRAE standards, health codes, and internal safety protocols. With automated logs and downloadable reports, schools can maintain more accurate records consistently.

Selecting a Smarter Path Forward

Not all digital water tools are created equal. Some focus narrowly on leak detection. Others emphasize submetering or energy modeling. Truly intelligent water management platforms go further to integrate data from across the mechanical room to provide comprehensive oversight.

Campus decision-makers should look for water management systems that:

- **Install easily** and work with existing equipment (no system shutdowns required)
- **Monitor multiple performance indicators**, including temperature, pressure, and flow
- **Deliver real-time insights** to effectively identify the most critical actions, including the capability to remotely shut off water during emergencies
- **Offer secure, cloud-based dashboards** accessible from any location
- **Include 24/7 expert support** to help interpret data, troubleshoot and guide optimization
- **Deliver ROI within a defined timeframe**, perhaps within the first year

Intelligent Water Management is a Strategic Imperative

Water management has long been treated as a back-of-house responsibility. But today's challenges—aging systems, climate-driven expectations, labor constraints, and student service standards—require a more strategic approach.

Intelligent water management platforms represent a shift toward proactive infrastructure stewardship. They offer campus leaders a way to reduce risk, increase system efficiency, and extend the capacity of their staff, all without overhauling existing infrastructure.

For private colleges and universities, these solutions are not a luxury. They are a modern necessity, one that supports operational excellence, sustainability leadership, and long-term institutional resilience.

Now is the time for campus decision-makers to ask: What don't we know about our water systems—and what would it mean to finally have those answers?

ABOUT THE AUTHOR: David Benaiges is Vice President of Intelligent Water Solutions at Watts Digital, where he spearheads the effort to transform how commercial buildings manage water. Under his leadership, Watts Digital is advancing Nexa, an intelligent water management platform that empowers users with real-time data, actionable insights, and remote capabilities, enabling smarter decisions that optimize performance, reduce risk, and drive sustainability. Watts, a trusted name in water solutions since 1874, continues to evolve through digital innovation to meet the needs of modern water infrastructure. Learn more at www.watts.com.

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Landscaping Environments

TRENDS AND ADVANTAGES THAT MAKE PRIVATE COLLEGE GROUNDS VITAL TO THE CAMPUS APPEAL

BY ED BAUER

Across the nation's private colleges and universities, landscaping has evolved into both an art and a strategic investment—one that shapes student experience, recruitment, and retention. From immersive arboretums to biophilic learning landscapes, campuses are increasingly designed to blend architecture, sustainability, and wellness, creating environments that feel less like schools, and more like sanctuaries for the mind and body.

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Shaping First Impressions: Recruitment Starts at the Gate

Prospective students and their families are deeply influenced by campus aesthetics. Touring walkers often pause at the sight of vibrant quad lawns, sculptural pergolas, or wooded paths that evoke calm. Institutions have long recognized that landscaping is now part of their "face"—one that appears in brochures, on websites, and across social media.

- **Biophilic design on display.** In line with 2025 landscaping trends, colleges are integrating natural materials (like reclaimed stone and terracotta), multi-layer plantings, and pollinator gardens that double as outdoor classrooms—breathing new life into traditional grounds (homebuilding.co.uk+1best-collegereviews.org+1.)
- **Sensory corridors.** Walkways lined with native perennials, grasses, and flowering shrubs offer a palette of textures, scents, and colors, appealing to modern students who seek a connection to nature amid academic pressures.

From Aesthetic to Welcome: Enhancing Campus Life

Landscaping isn't just for show—it fosters community, mental wellness, and belonging. Institutions are creating "outdoor third places" that draw students beyond lecture halls and dorms.

- **Pergolas and outdoor study nooks.** Equipped with weatherproof seating, Wi Fi, and lighting, these structures extend classroom space to the quad, encouraging creativity and social interaction.
- **Campus arboretums as living labs.** Many private colleges promote biodiversity and conservation through campus forests or arboreta. Vanderbilt University's arboretum with 190 species across 300+ acres is one example travelandleisure.com.
- **Campus lakes and water features.** Reflective ponds or streams, like Furman University's lakeside Bell Tower setting, provide both aesthetic charm and calm retreats thoughtco.com+15travelandleisure.com+15educationdirectory.net+15.
- **Meditation gardens and labyrinths.** Designed for mindfulness and reflection, these pockets of serenity enhance student well-being, offering respite during high-stress periods.

Sustainability in the Soil

Environmental responsibility is translating into environmentally intelligent landscaping—carefully tailored to each region's climate and ecosystem.

- **Native plantings for climate resilience.** Colleges ditch exotic ornamentals in favor of drought-tolerant flower beds, wildflower borders, and butterfly gardens—a direct reflection of widespread garden trends .
- **Water stewardship.** Low-impact irrigation, rain gardens, and bioswales

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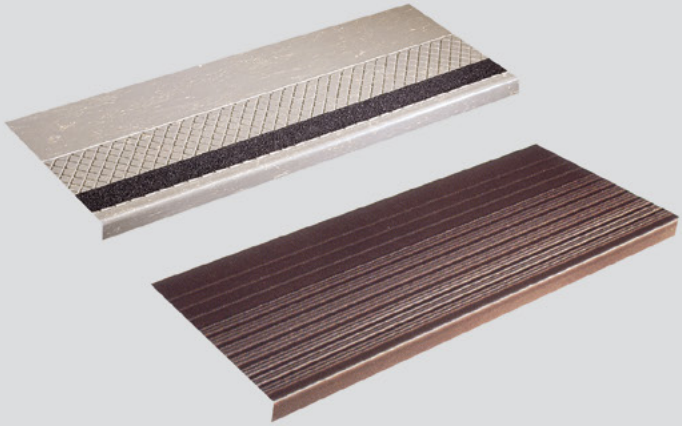

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Campus Carrying Prestige: Examples of the Most Beautiful

Many of America's most scenic private campuses set the standard:

- **Rhodes College (Memphis, TN).** Designated the #1 Most Beautiful College Campus by the Princeton Review in 2017, its stone Collegiate Gothic architecture sits within a certified Class IV arboretum with over 120 tree species (en.wikipedia.org+11axios.com+11travelandleisure.com+11travelandleisure.com+3en.wikipedia.org+3southernliving.com+3.)

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- **Berry College (Mount Berry, GA).** This English Gothic inspired university sprawls across 27,000 acres, the world's largest contiguous campus, featuring fountains, walking trails, and wildlife habitats (southernliving.com.)
- **Mount Holyoke College (South Hadley, MA).** Landscaped by Olmsted & Sons around two lakes, waterfalls, woodland trails, and an organic garden, it reflects a longstanding ecological commitment (en.wikipedia.org+1businessinsider.in+1.)
- **Swarthmore College (PA).** Behind its Collegiate Gothic buildings lies a 425-acre arboretum—including Crum Woods and the Dean Bond Rose Garden—offering students both beauty and hands-on learning spaces (thoughtco.com+2bestcollegereviews.org+2aol.com+2.)
- **Florida Southern College (Lakeland, FL).** Home to the world's largest collection of Frank Lloyd Wright-designed structures, its mile-long covered Esplanade ties together tranquil ponds and open green spaces with architectural coherence (architecturaldigest.com+1southernliving.com+1.)

Numbers Tell the Story

Private colleges dominate catalogs of America's most beautiful campuses:

- *Travel + Leisure, Conde Nast Traveler, Architectural Digest, Southern Living, and Business Insider* consistently highlight dozens of private institutions among top-50 lists.
- Tennessee alone saw two universities in the sate earn high ranking: Belmont University at #11 and Rhodes at #30 on *Architectural Digest*'s 53 prettiest campus list (axios.com+1travelandleisure.com+1cntinsider.com+1travelandleisure.com+1.)
- *Southern Living*'s storied "Most Beautiful Campuses in the South" roster credits Berry, Vanderbilt, Duke, Rollins, and Florida Southern College southernliving.com+1southernliving.com+1.
- Nationally, dozens of private colleges—from Rice and Bucknell to Wellesley and Scripps—find themselves repeatedly lauded online for their verdant quads, woodland trails, and historic appeal (businessinsider.com+1businessinsider.in+1.)

In short, private institutions appear to dominate these aesthetically driven rankings, cementing the message that investment in landscaping correlates with institutional reputation.

Beyond Curb Appeal: Grounds That Retain

Lore shows that beautiful campuses aren't

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dental floss for recruitment—their power lies in sustained student satisfaction:

- **Mental health support.** Access to calm restorative spaces—lakeside benches, meditation gardens—can alleviate stress and strengthen mental well-being, which research ties to higher student retention .
- **Pride and community.** Students frequently cite campus beauty as a source of pride—the backdrop for graduation selfies, morning jogs, and late-night strolls.
- **Outdoor classrooms.** Flora-rich learning zones act as living laboratories for science, art installations, and community programming—boosting student engagement and satisfaction.

Innovations on the Horizon

Looking ahead, private campuses are introducing cutting-edge landscaping features:

- **Smart gardens.** Automated sensors monitor soil moisture and instruct

sustainable irrigation.

- **Multi functional green corridors.** Pathways with bike lanes, Wi Fi-equipped study zones, and autopilot lighting offer versatility for students, faculty, and campus wellness initiatives.
- **Climate-resilient planting.** UK trends like cottage-style, blousy blooms and soft native grasses are crossing over, helping campuses adapt to "edge-of-change" plant varieties and wildlife friendly patches (businessinsider.comhomebuilding.co.uk+1bhg.com+1.)
- **Art–nature integration.** Installations—sculptures emerging from forestry, hidden alcoves beneath pergolas—turn grounds into interactive exhibits themselves.

Strategic Investment: Why Grounds Matter

In today's competitive higher ed environment, campuses pull out all stops to stand apart.

- **Differentiation.** While academic offerings can be replicated, a sense of place is unique—and beautiful grounds are hard to mimic.
- **Return on investment.** Landscaping improvements not only uplift brand perception but drive enrollment and retention—yielding dividends over decades.
- **Institutional legacy.** Many campuses tie their emblematic trees or gardens to donor legacies, campus history, or environmental missions, locking beauty into their identity.

Today's private colleges are demonstrating that beauty is more than surface—it's a transformative instrument of recruitment, retention, brand building, well being, and sustainability. With native plantings, arboreta, meditation gardens, and integrated art landscapes, campuses are thoughtfully sculpted to offer sanctuary amid structure, inviting students to linger, learn, and call these spaces home.

As landscaping trends evolve, expectations will rise. The institutions that lead in aesthetics, green strategy, and wellness-first designs are not just building campuses—they're crafting thriving, vibrant communities attuned to the aspirations of the modern student.

ABOUT THE AUTHOR: Ed Bauer has been in publishing for over twenty years. He worked on the staff at Mount Union College.

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According to Sean Farrell, senior project manager at Layton Construction, establishing collaborative relationships is key to successful construction projects. One of the best examples of this maxim is a multi-phase university project for which Layton Construction is serving as construction manager. Layton, part of the STO Building Group, is a nationally-ranked commercial contractor with ten offices around the United States. The firm specializes in healthcare, industrial, warehousing, and higher education projects. As construction manager, Layton hires the sub-contractors and manages and oversees the project as part of a team.

> "Since we were building windows and doors to make a brand new college, we needed a company with the methodology to produce the product like it was done 100 years ago."
>
> *— Sean Farrell, Sr Project Manager*
> *Layton Construction*

Hope's Brian Whalen, Vice President of Sales, acknowledges that the project was a real test of Hope's capabilities. He is especially proud that they Hope's was able to expedite the schedule even in the face of design changes and in the midst of the Covid-19 pandemic. The shop drawing approval process – including preparation of blueprints of windows and doors with all setting conditions, sizes, customized designs, and required testing – took longer than normal. Changes were made along the way that might have pushed back the delivery schedules for some, but Hope's made adjustments during the production process to deliver all materials on time. Whalen gave a nod to Joey Riggan and the team at Alexander Metals, the frame and glass installer team, saying the overall project went extremely smoothly once the frames were on site.

Says Whalen, "It was a fantastic collaboration among all the parties. Hope's worked closely as the manufacturer to fulfill the architect's design vision, and then the installer worked closely with us to make sure everything was installed executed properly."

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