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14

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CONTENTS

VOLUME 95 • ISSUE 2 • OCTOBER 2022

COVER STORY

FEATURES

DEPARTMENTS

VIEWPOINTS

ALSO IN EVERY ISSUE ...

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Test scores and death counts

By Mike Kennedy

Newly released results from the National Assessment of Education Progress (NAEP) show that the reading and mathematics scores of 9-year-old students fell significantly between 2020 and 2022..

The average mathematics score declined seven points, and the average reading score for 9-year-olds declined five points.

"These are some of the largest declines we have observed in a single assessment cycle in 50 years of the NAEP program," said Daniel McGrath, acting associate commissioner of the National Center for Education Statistics. "Students in 2022 are performing at a level last seen two decades ago."

Did anything happen between 2020 and 2022 that could have caused such an alarming drop in student performance?

Well, there was that global pandemic. You remember—the one that abruptly shut down tens of thousands of school campuses across the nation.

With little warning, it transformed millions of students into reluctant home schoolers—if they were lucky enough to have the right computer equipment and sufficient online access to connect remotely with their teachers.

The NAEP says the test results represent the first report with a nationally representative sample of students comparing achievement from before the Covid-19 pandemic to now.

The testing numbers are cause for concern, but is anyone who has lived through the last 2 ½ years surprised by them?

Only an unwavering optimist would think that students could endure such a disruption to their established learning routine without any effect on their academic performance, not to mention their mental and emotional well-being.

It remains to be seen how quickly test scores will rebound as most students return to classrooms full time and again become accustomed to in-person instruction.

But expressing concern about the decline in test scores does not mean that schools made a mistake when they decided to cancel classes and send students home in March 2020 as Covid cases climbed rapidly.

Keeping kids in school obviously would have been better for their academic progress, but the fear and uncertainly that swept across the nation when a deadly and little understood virus began claiming lives made it too risky to keep students confined indoors in crowded spaces like a typical classroom or cafeteria.

If school buildings had not closed or were allowed to reopen classrooms more quickly, maybe student reading and math test scores would have held steady or improved.

But it's also not hard to imagine that if schools reopened too quickly, before effective vaccines were available, some of those students and their teachers would be gathering every day in one of the 36,000 or so U.S. school buildings with inadequate ventilation. Inevitably, many of them would have joined the millions of people who contracted Covid-19.

Instead of lamenting declining test scores, we could have been adding their names to the more than 1 million Americans and 6.5 million people worldwide who have lost their lives to the virus. ▪

Mike Kennedy, senior editor, has written for *AS&U* on a wide range of educational issues since 1999.

Massachusetts officials approve construction of elementary in Amherst

The Massachusetts School Building Authority has approved construction of a three-story elementary school on the site of the existing Fort River School in Amherst.

The new facility, which will house about 575 students, will replace the aging Fort River campus. The *Daily Hampshire Gazette* reports that the construction project is expected to cost more than $100 million.

Before the project can proceed, Amherst voters must approve a debt-exclusion, likely to be scheduled for next spring.

Design plans call for the facility to be a net-zero building that will use ground source heat and photovoltaics, as well as make extensive use of natural light and outdoor learning spaces.

The state agency also has approved the relocation in 2023 of all sixth-grade students in Amherst's three elementary schools to Amherst Regional Middle School.

Construction is expected to be complete in fall 2026.

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Charter school in North Carolina asks Supreme Court to overturn lower court's dress code ruling

A North Carolina charter school has asked the U.S. Supreme Court to overturn an appeals court ruling that the school violated female students' constitutional rights by requiring them to wear skirts.

The *Associated Press* reports that Charter Day School in Leland argues in its petition that it is privately run and not a government-run entity.

The full U.S. 4th Circuit Court of Appeals ruled in June that the school's dress code, which required female students to wear skirts, violated female students' equal protection rights. The court's majority said that because charter schools receive public funds, they are considered "state actors" who are subject to the Constitution's equal protection clause.

In its petition, the school asks the Supreme Court to "review and reverse" the appeals court decision.

North Carolina state law says that charter schools are independent institutions exempt from rules and regulations applicable to public schools, the school contends.

School founder Baker Mitchell has said the dress code was intended to create a "code of conduct where women are treated, they're regarded as a fragile vessel that men are supposed to take care of and honor."

Since the appeals court decision, Charter Day has changed its dress code to allow girls to wear pants.

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Recreation complex planned at Samford University in Birmingham, Ala.

Samford University in Birmingham, Ala., is renovating and expanding campus buildings to create an enhanced recreation and athletic complex.

The university says the $65 million venture is the largest capital project in its history.

Construction, set to begin in early 2023, involves four buildings that total 154,000 square feet:

- Seibert Hall will be redesigned to have two basketball courts, a multiuse court, studios for fitness classes, an eSports studio, dance studios, weight and cardio machines, a multipurpose workout area, lounge areas, a coffee house and a 24-hour convenience store.
- Bashinsky Field House will be refurbished for Samford student-athletes and provide training spaces for teams and dedicated practice spaces for the men's and women's basketball and volleyball programs.
- A third building be constructed. It will have 20,000 square feet of recreation and event space, including a suspended indoor track, additional basketball courts and cardio spaces, sound and staging for campus events, a catering kitchen, covered outdoor athletic space, a pedestrian path and a covered balcony.

- The first floor of the Dwight and Lucille Beeson Center, across the street from the complex, will be renovated and become the new home for the university's health center and counseling services.

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3 high school students in Oklahoma killed in lunchtime car crash

Three students from Charles Page High School in Sand Springs, Okla., died in a car crash shortly after leaving the school campus during lunchtime.

The Sand Springs Leader reports that the three fatalities were identified as Ethan Gibson, 17; Cyra Saner, 16; and Kylee Weaver, 16. Two other passengers in the car, both 16, have been hospitalized with injuries. Their identities have not been disclosed.

Police say the crash occurred around 12:15 p.m. Sept. 15 just south of Sand Springs Lake.

Deputy Police Chief Todd Enzbrenner says the car was speeding east when it failed to negotiate a curve and went off the northeast side of the road.

Enzbrenner says his "best educated guess" was that the students were on their way to lunch. The lunch period reportedly began about 10 minutes before the crash.

Juniors and seniors at Charles Page are allowed to leave campus for lunch, and a number of students enrolled in classes at Tulsa Tech and Tulsa Community College come to and from campus. ■

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A key strategy in making sure that classrooms and other school spaces have good air quality is choosing flooring materials with low emissions of volatile organic compounds.
Image credit: © Tyler Olson | Dreamstime.com

Air it out before you step on it

By Mike Kennedy

Coping with the disruptive effects of Covid-19 has underlined for educational facility managers the importance of indoor air quality to the health and safety of students and staff.

A key strategy in making sure that classrooms and other school spaces have good air quality is choosing flooring materials with low emissions of volatile organic compounds (VOCs).

"Interior building materials — including carpets, carpet padding, paints, sealants and caulking, adhesives, floor and ceiling tiles, cabinets, molding, composite wood products, and other wood work — can contain contaminants that are gradually emitted (off-gassed) throughout the life of the material," the U.S. Environmental Protection Agency says.

The EPA says failure to address indoor air quality deficiencies in schools may increase long- and short-term health effects for students and staff, such as coughing, eye irritation, headaches, allergic reactions, asthma and other respiratory illnesses.

Minimizing VOCs

Carpeting and resilient flooring are popular choices for school facilities. Each has advantages and disadvantages, but both types of flooring will off-gas VOCs after being installed.

"These emissions can be significantly reduced, although not completely eliminated, in the first 72 hours through the use of proper ventilation techniques," the EPA says.

Two recommended techniques are an *air out* and a *flush out*.

An *air out* removes materials that produce objectionable emissions from packaging and unrolls or spaces them apart in a well-ventilated warehouse so that fresh air can easily flow in and around the materials.

"Because the products are being aired out in a well-ventilated warehouse, the pollutants are not emitted within the school building, thus reducing the chances that the pollutants will be adsorbed onto other building materials or finishes, or that occupants will be affected," the EPA says.

A *flush out* is when large amounts of outdoor air are forced through a recently completed building for a period of three to 90 days to remove the majority of pollutant emissions from building materials, finishes, and furnishings. The recommended minimum volume of outdoor air needed for flush out is the amount needed to ventilate the full school at least once each hour (1 ACH, or air change per hour), 24 hours a day, 7 days a week.

The EPA recommends these strategies for deciding which flooring materials to install in school spaces:

- Prioritize sensitive program areas. Identify and prioritize spaces where material selection is of particular concern based on the function of the space, such as a nurses' office, and special education classrooms.
- Use product consensus standards when possible. Select products based on available consensus standards (developed by government agencies, environmental certification services, or trade organizations) that address health and toxicity issues relating to specific material types.
- Develop specification criteria. Facility planners should provide specification criteria for appropriate materials and installation methods. Incorporate specifications into design and construction documents.
- Obtain Material Safety Data Sheets (MSDS) or manufacturer certifications. For materials that are deemed critical to a project and for which standards or other references do not exist, obtain and review safety data sheets and manufacturers' certifications or test data. Contact manufacturers for clarification as needed. A review by experienced indoor air quality professionals may be justified for particularly critical materials or sensitive spaces.
- Require field approval for product substitutions. Review and approve contractor requests for product substitutions to ensure that the indoor air quality criteria defined in the specifications have not been compromised. Require justification from contractors for substitutions that do not meet environmental performance criteria.

But schools should not prohibit substitutions, the EPA says.

"Specialized subcontractors can be an excellent source of information about new and improved product alternatives," the agency says. "The approval process for substitutions should be clearly spelled out and should require specific product ingredient information, as well as information about any adhesives, solvents or other materials that might be used during installation or maintenance."

Another key to prevent flooring from creating air quality problems is keeping the floors clean and well maintained.

"Regular and effective cleaning and maintenance is essential to keep the floor covering dry and clean," the EPA says. "Designers should explicitly consider cleaning and maintenance issues when specifying floor finishes for various uses in schools." ■

The Future is Fiberon

State bonds enable University of Nebraska system to address deferred maintenance

The University of Nebraska system has spent more than $57 million in the past year to address a huge backlog of deferred maintenance projects on its campuses.

The Lincoln Journal-Star reports that the university has been able to make a dent in its maintenance backlog after state legislation last year secured $400 million in bond financing to address deferred maintenance projects over the next 40 years.

Neihardt Hall, previously served as student housing at the University of Nebraska, will be turned into space for student support services. *Image credit: Google*

The university system has spent $57.9 million so far on roughly 80 projects at its campuses in Lincoln, Omaha and Kearney, according to data provided by the university.

Among the projects completed: replacing windows, repairing leaks, upgrading heating and cooling systems, removing asbestos, and improving lighting.

More than one-third of the 900 or so buildings in the University of Nebraska system are 50 years or older and need significant upgrades to make them suitable for modern-day education, the university says.

Dozens of the maintenance projects that the university is tackling are not the kinds of work that attract a lot of support from donors, who "are not always excited about "replacing sewer pipes or broken air conditioners," said Chris Kabourek, the university's vice president of business and finance.

"That was the intent: to go in and use this money for a lot of those projects that are important but not noticeable, at least until something breaks," Kabourek says.

NU worked with a consultant to identify and prioritize a list of deferred maintenance projects.

In 2030-31, Nebraska plans to pursue a second round of bond financing that would address the remainder of the university's maintenance backlog.

Beaverton (Ore.) bond package includes $120 million for deferred maintenance

A bond proposal approved by voters in the Beaverton (Ore.) school district earlier this year will pay for $120 million in deferred maintenance projects.

Moss build-up on the roof of Montclair Elementary School is an example of the deferred maintenance needs in the Beaverton district.
Image credit: Beaverton School District

The maintenance projects covered by bond funds are larger jobs, such as roofs, HVAC upgrades and site improvements. The district's general fund budget covers regular maintenance costs and inspections, but it is not sufficient to cover larger repairs or equipment replacement.

A consultant's study in 2019 found that the district's 10-year deferred maintenance needs totaled $610 million.

In addition to the deferred maintenance, Beaverton's $723 million bond package will enable the district to replace Beaverton High School and the Raleigh Hills K-8 School. Rebuilding Beaverton High would eliminate about $53 million of deferred maintenance at the school, the district says.

Idaho report says school maintenance backlog runs into the billions

A survey of 77 of the 115 school districts in Idaho found that it would cost an estimated $847 million to bring all the schools in those districts up to "good" condition.

The 2022 report by the Idaho Legislature's Office of Performance Evaluations says that those districts would need to spend $1.3 billion to get their building to "perfect" condition.

The report draws attention to the uphill struggle Idaho schools have to improve the condition of their facilities. It notes that centralized information about the condition of Idaho school buildings is scarce or nonexistent and that Idaho ranks near the bottom nationally for funding school building maintenance, both on a per-student and per-building gross square footage basis.

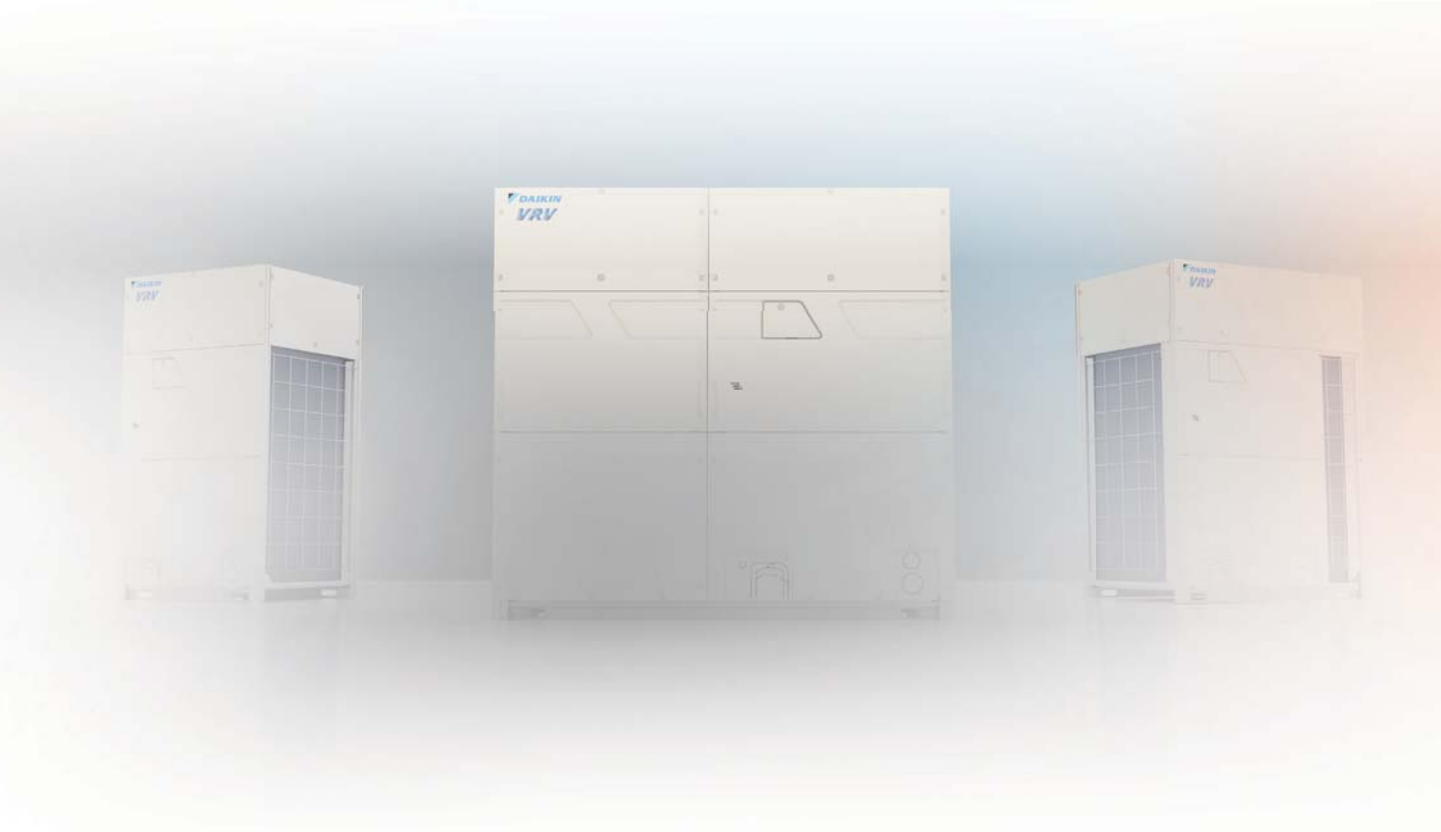
School districts are required to submit 10-year maintenance plans to the state detailing conditions of their buildings and upcoming maintenance projects, but few do so. "Only 33 of the 115 districts submitted maintenance plans to the state from 2016 to 2020," the report says.

The districts that responded to the survey accounted for 35.6 million gross square feet of school buildings; they rated over 22 million square feet of that space as "fair" or "poor."

Image credit: Idaho Legislature Office of Performance Evaluations

Noting that the legislature has not commissioned a statewide facility condition assessment since 1993, the report recommends that the legislature do so.

"A statewide facility condition assessment of schools would inform the Legislature of the true conditions of school buildings statewide and the costs of needed upgrades and repairs," the report says. ■



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STEM building is new campus gateway for Los Alamitos, Calif., high school

The Los Alamitos (Calif.) Unified School District has opened a $52 million STEM Building at Los Alamitos High School.

The newly opened $52 million STEM Building at Los Alamitos High School serves as the new campus gateway.
Image credit: Erickson-Hall

The three-story building serves as the new campus gateway. The 86,528-square-foot facility houses 30 science, math, and career technical education classrooms with staff spaces on each floor to support collaboration. The ground floor features a college and career center, a media center, a computer lab, and a specialized fabrication lab for manufacturing, engineering, and robotics. The outdoor courtyards and "stadium seating" grand staircase will accommodate flexible learning and performances.

"It's an advanced facility, on par with what you'd find on a higher education campus," says Los Alamitos Superintendent Andrew Pulver. "We're excited to bring these world-class amenities to our students' educational journey."

Funding for the new facility came from a $97 million bond measure approved by voters in November 2018.

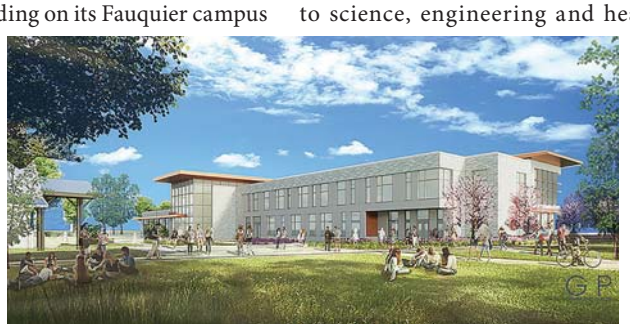
The builder is Erickson-Hall, the architect is Westgroup Designs, and the construction manager is Rachlin Partners.

Virginia community college opens STEM facility

Laurel Ridge Community College has opened Hazel Hall, a 40,000-square-foot STEM building on its Fauquier campus in Warrenton, Va.

Fauquier Now says that the facility will host a mix of health care, science and engineering courses for students and has a conference center that community organizations can reserve for meetings and events.

Officials say the facility will enable the college to take on more students and expand its education and training programs.



Hazel Hall has opened at Laurel Ridge Community College.
Image credit: Laurel Ridge Community College

"I'm sure you will agree that having a building dedicated to science, engineering and health professions has never been more important," says Kimberly Blosser, president of the college.

The building has labs for biology, microbiology, chemistry, nursing skills, and engineering, as well as a maker space and simulation training center.

The architect is Grimm + Parker Architects.

State gives OK for construction of STEM facility at University of Wisconsin-River Falls

The Wisconsin State Building Commission has authorized construction of the $116.7 million Science and Technology Innovation Center at the University of Wisconsin-River Falls.

Construction is scheduled to begin next year on the Science and Technology Innovation Center at the University of Wisconsin-River Falls.
Image credit: University of Wisconsin-River Falls

The university says the 73,865-square-foot facility, known as SciTech, will have flexible undergraduate instructional laboratory suites, active learning studios, undergraduate and faculty research spaces and shared interdisciplinary space. SciTech will have 32 undergraduate research spaces and 12 instructional labs.

The project also will enable the university to grow partnerships with businesses and industries through collaborative programming, internships and innovative product development via the University Business Collaboration Center.

"Students will benefit through engagement in active-learning spaces designed for the 21st century," says Maria Gallo, chancellor of UW-River Falls.

Construction is scheduled to begin in 2023 and be completed by late 2025. Classes are slated to start in the new building beginning January 2026.

Community College in Puyallup, Wash., breaks ground on STEM building

Pierce College Puyallup in Puyallup, Wash., has broken ground on 54,000-square foot Science, Technology, Engineering and Math Building.

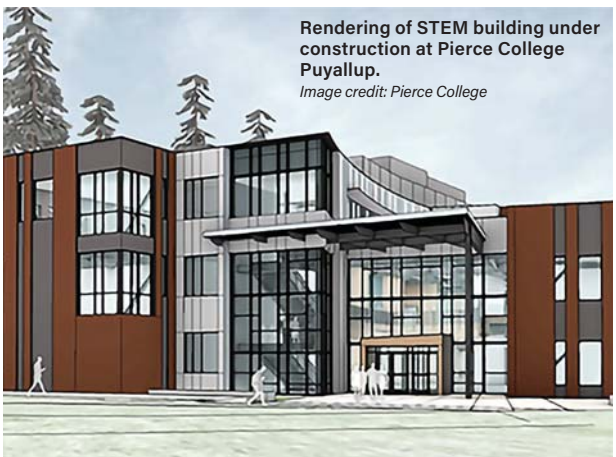
The community college says the facility will be first new academic building on the Puyallup campus since 2010.

Plans for the building call for eight teaching labs, a fabrication lab with supporting design and collaboration spaces, nine classrooms, a double classroom, 30 faculty offices, informal learning and study spaces, and numerous support spaces for students and faculty aimed at collaboration and safety.

The fabrication lab will enable students and the broader community to actively build and participate in hands-on activities.

A core principle of the building's design is to be "radically welcoming" so that students can see the scientific process, imagine themselves as scientists, and transition from observer to innovator.

"Our goal is to advance equitable access and success in STEM education so students can thrive and enrich our local and global communities," says Pierce College Puyallup Interim President Matt Campbell.



Rendering of STEM building under construction at Pierce College Puyallup.
Image credit: Pierce College

$53 million STEM complex under construction at Michigan Tech

Michigan Technological University in Houghton is building a $53 million facility that it's calling the H-STEM complex, for Health, Science, Technology, Engineering and Math.

Rendering of Science and Innovation Center under construction at Regis Jesuit High School in Aurora, Colo.
Image credit: Regis Jesuit High School

The university says the building will have newly constructed shared and flexible laboratory spaces co-located with renovated classrooms and learning spaces within the existing Chemical Sciences and Engineering Building.

The complex will enable researchers and students from Biomedical Engineering, Chemical Engineering, Mechanical Engineering, Electrical and Computer Engineering, Materials Science and Engineering, Biology, Chemistry, Cognitive and Learning Sciences, Computer Science, and Kinesiology and Integrative Physiology to work together in collaborative spaces with shared equipment.

Michigan Tech says the facility has been designed to qualify for LEED Gold certification. The building is expected to be completed in 2024.

Catholic high school in Colorado breaks ground on science facility

Regis Jesuit High School in Aurora, Colo., has broken ground on a 65,000-square-foot Science & Innovation Center.

The $35 million center will enable the school to expand project-based learning and collaboration among the school's 1,700 students.

An 8,000-square-foot Innovation Center and maker space with the latest technology and equipment will bring student projects to life in tangible, physical forms.

The Catholic high school is over capacity and is in critical need of additional space and upgraded facilities for interdisciplinary exploration, creativity, entrepreneurship and scientific experimentation, school leaders say. "The Science & Innovation Center will be a true front door to campus," says school president David Card.

Featuring spacious classrooms for expanding the biology, chemistry and physics curriculum, the facility will enable Regis to expand courses in robotics, rocket science, environmental science, media literacy, and studio arts.

Construction is expected to take about 18 months.

The H-STEM Complex at Michigan Technological University in Houghton, is expected to open in 2024.
Image credit: Michigan Technological University

The architect is Larson Incitti Architects, and the builder is Saunders Construction. ■

Redefining green schools

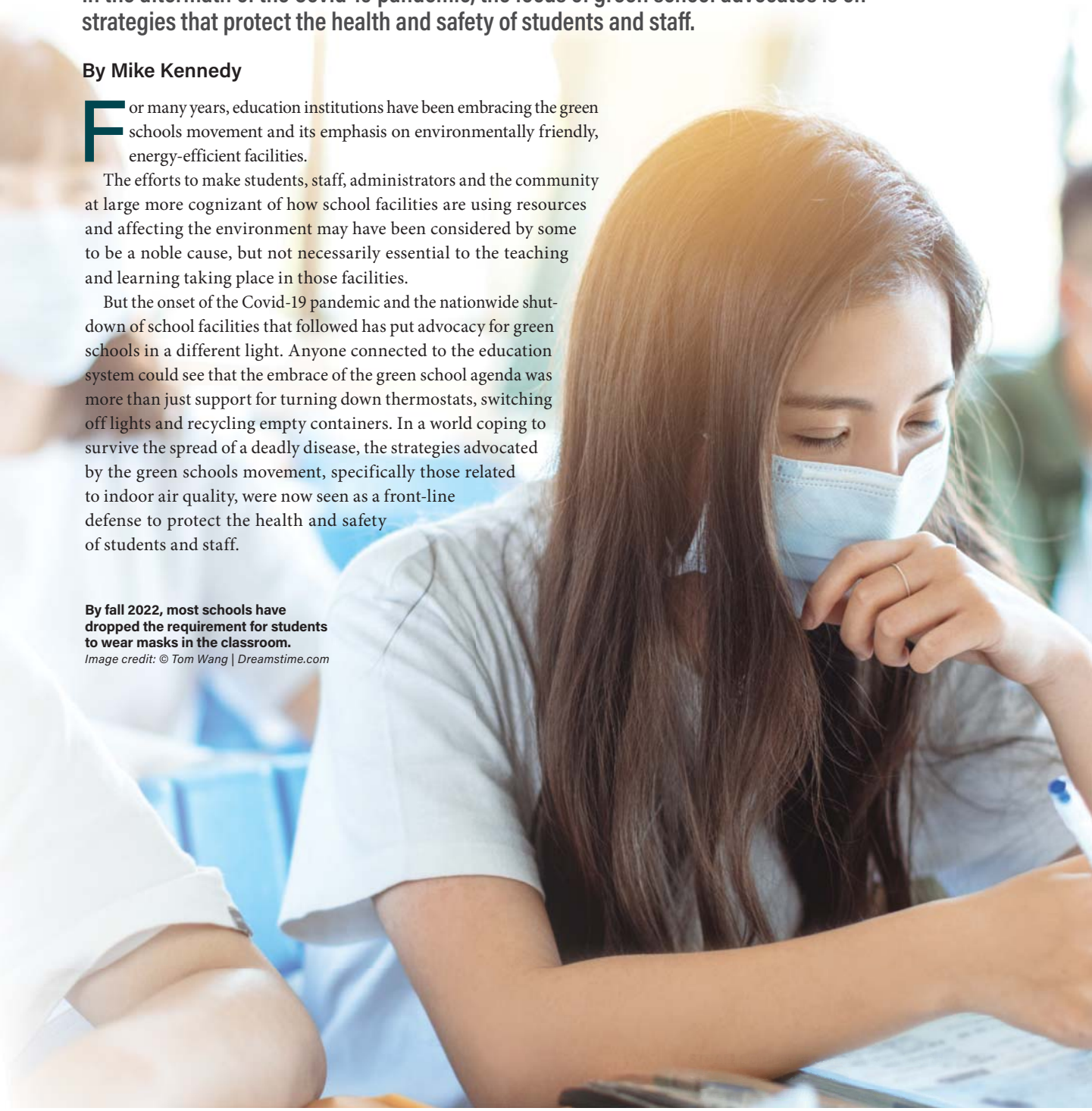
In the aftermath of the Covid-19 pandemic, the focus of green school advocates is on strategies that protect the health and safety of students and staff.

By Mike Kennedy

For many years, education institutions have been embracing the green schools movement and its emphasis on environmentally friendly, energy-efficient facilities.

The efforts to make students, staff, administrators and the community at large more cognizant of how school facilities are using resources and affecting the environment may have been considered by some to be a noble cause, but not necessarily essential to the teaching and learning taking place in those facilities.

But the onset of the Covid-19 pandemic and the nationwide shut-down of school facilities that followed has put advocacy for green schools in a different light. Anyone connected to the education system could see that the embrace of the green school agenda was more than just support for turning down thermostats, switching off lights and recycling empty containers. In a world coping to survive the spread of a deadly disease, the strategies advocated by the green schools movement, specifically those related to indoor air quality, were now seen as a front-line defense to protect the health and safety of students and staff.



By fall 2022, most schools have dropped the requirement for students to wear masks in the classroom.
Image credit: © Tom Wang | Dreamstime.com

"The focus on a clean and healthy environment, whether it be at home or at school, was a reality in Covid," says Phoebe Beierle, senior manager of programs for the Center for Green Schools at the U.S. Green Building Council. "It really helped people understand the importance of that when it comes to our schools. When schools can't keep their doors open because the ventilation in the building is not appropriate to keep kids safe, people pay attention. It becomes a reality that's hard to ignore, and it becomes a learning experience."

Crisis response

Like other catastrophes that have focused attention on underreported school-related crises, Covid-19 and the campus closings that disrupted society made it impossible for people to ignore the deficiencies of many school buildings in the United States.

"What came to light during Covid was that our school infrastructure is crumbling and that it is inadequately maintained across the country, especially in underserved communities and communities in poverty," Beierle says. "The pandemic really highlighted how interconnected our systems are and how addressing only one solution is really not going to be a resilient solution long term.

That was especially true regarding indoor air quality. A Government Accountability Office report in 2020 estimated that as many as 36,000 of the nation's 100,000 public school buildings are likely in need of HVAC system upgrades or replacement, but what made the problem more immediate for many people was when health experts determined that Covid-19 was an airborne disease that spreads more easily in enclosed spaces with poor ventilation.

"The communities that have been suffering with poor infrastructure have known about this—inadequate indoor air quality is something that they deal with every day," Beierle says. "It just hadn't risen to the level of crisis because schools have all these other crises."

"Covid elevated it to a national profile," she continued. "It wasn't just the poor communities that were suffering—everybody was suffering, either because their schools weren't designed or weren't operated in a way to meet the environmental health and safety standards to combat Covid."

Tracking progress

To see how U.S. schools have been addressing indoor air quality in the pandemic, the Center for Green Schools conducted a survey of school district facility managers and generated a report in May 2022, Managing Air Quality during the Pandemic: How K-12 Schools Addressed Air Quality in the Second Year of Covid-19.

The center gathered data on what steps schools had been taking to make the indoor environment safe for occupants. It received survey responses from more than 4,000 schools representing over 2.6 million students.

The most prevalent building engineering control measure schools carried out was increasing outdoor air intake through HVAC systems. Another strategy, improving filtration, was not feasible at many schools because the HVAC systems in those buildings were not designed to accommodate the higher-efficiency filters that were most effective at removing airborne contaminants.

Some survey participants said they were skeptical about the value of standalone filtration devices in classrooms, but teachers felt they were beneficial.

"The strategy of using standalone filtration devices in classrooms...was met with some hesitation due to doubts about the long-term sustainability related to maintenance," the Center said. "There was uncertainty about how

Connecticut creates $150 million grant program for HVAC system upgrades in schools

The state of Connecticut is allocating $150 million toward a grant program supporting upgrades for HVAC systems in the state's public schools.

The grants will supplement more than $165 million that schools have already committed for air filtration improvements since the start of the Covid-19 pandemic. The earlier funding came from the federal Elementary and Secondary School Emergency Relief Fund.

Gov. Ned Lamont says the grants will provide schools with a dedicated source of funding to support additional infrastructure upgrades.

"One thing the Covid-19 pandemic showed is that many school buildings in our state, particularly those that are of a certain age, are in serious need of air quality improvements," Lamont says. "Modernized ventilation systems provide an important public health function that filtrate the air and reduce airborne contaminants, including particles containing viruses."

Examples of eligible projects:

- Replacing, upgrading, or repairing boilers and other heating and ventilation components
- Replacing controls and technology systems related to HVAC operations
- Installing or upgrading air conditioning or ventilation systems

Distribution of the grants will be prioritized based on the age and condition of the existing HVAC system or equipment being replaced or upgraded; existing air quality issues at the school; the age and condition of the school building; the master plan of the district in question; the availability of maintenance records; and a contract or plans for the routine maintenance and cleaning of the HVAC system.

The Ann Richards School for Young Women opened in 2021 in Austin, Texas, and has received LEED Silver certification for environmentally friendly features, including improved air quality filtration and a variety of outdoor spaces.
Image credit: Sterling Stevens

to think about long-term use of portable air cleaners post-pandemic, and districts did not wish to acquire many new devices that might potentially turn into 'junk' later on."

But many teachers liked having the standalone cleaners because they provided tangible evidence that their schools were using some visible airborne infection control measure within indoor spaces.

"Focus group participants noted that contributions of the HVAC system were less trusted by teachers and staff, perhaps because they were less conspicuous given their integration into the building, and perhaps because the HVAC system actually did have low capacity to deliver outdoor air or recirculated filtered air," the report said.

Some schools began to rely on outdoor learning spaces to avoid the spread of Covid-19 inside their buildings. *Image credit: © Mariakonosky | Dreamstime.com*

The center also found that schools were more likely to carry out indoor air quality improvements by using federal Covid aid rather than funds from their operating or capital budgets.

Non-urban districts were more likely to depend on state and local guidance, and urban districts were more likely to use federal guidance or guidance from national organizations like then American Society of Heating, Refrigerating and Air-Conditioning Engineers.

More than a quarter of districts said they had no plans to carry out additional ventilation, filtration or other building changes in schools.

School personnel also reported being confused by the need to sort through a lot of rapidly changing information related to which Covid-19 controls to prioritize—and a barrage of marketing for air cleaning devices—to make decisions that would be accepted by the broader community.

Moving forward

The report concludes that school systems need greater support to deal with Covid and future outbreaks that may threaten public health.

"The results highlight the urgent need to better support school districts with implementation of airborne infection control strategies to mitigate the immediate Covid-19 threat, as well as future pandemics, seasonal epidemics and to improve the overall

indoor air quality," the survey's executive summary concludes. "Widespread education of school system administrators and staff is needed to ensure that they are aware of both the widely agreed-upon indoor air quality recommendations and the parameters around the use of federal Covid-19 relief funds on indoor air quality measures."

But dealing with Covid has helped many school leaders become more educated about what is needed to achieve good air quality in their facilities.

"I would say that school systems have become much more knowledgeable about the infrastructure they have—what works well and what doesn't, and where the areas are that need improvement," Beierle says. "We have demonstrated that there is a serious need and a big gap in the infrastructure needs in our schools. We need to continue investing in it or it will continue to present problems."

Beierle says the environmentally friendly policies advocated by Center for Green Schools and the Green Building Council address widespread needs and apply to more than just the Covid crisis.

"All the policies that we have promoted for two decades at the U.S.G.B.C. are solutions that have been helpful in the time of Covid and also can be helpful in the times of poor air quality outside, if you are in an urban environment or where there's wildfire smoke."

Addressing indoor air quality became essential for schools trying to combat the spread of Covid-19. *Image credit: © Keng Po Leung | Dreamstime.com*

The lesson that the Center for Green Schools hopes people learn from addressing IAQ and Covid is that providing good indoor air quality is more than a green schools issue—it's a public health necessity.

"Sustainable, good air quality is a positive thing," Beierle says. "It helps us perform better. Good air quality is not just something that is attributable to green schools and sustainability. It's a reality that most people can relate to. ■

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Higher education institutions can take advantage of financial incentives from local, state and federal sources to support campus transportation electrification efforts.

Image credit: © Hse0193 | Dreamstime.com

Getting plugged in

Universities can jump-start a renewable future with EV charging.

By Robbie Astrop, Greg Gustafson

Electric vehicles (EVs) and the charging stations needed for them to operate have led to increased infrastructure needs on college campuses. The demand for electromobility, or e-mobility, is growing quickly, and higher education institutions across the country are considering sizable EV infrastructure expansions. More than 10 million electric cars are on the road across the world—and the number is projected to reach 30 million by 2030.

Providing the infrastructure to power these vehicles will require massive upgrades. Universities can get ahead of the curve by putting comprehensive EV infrastructure into place to support the needs of students, faculty, and visitors. Such upgrades will enable schools to meet the demand for e-mobility solutions while reducing their carbon footprint and enhancing campus sustainability.

Students and sustainability

Sustainability is a high priority for most college students. UNESCO reports that 91% of students "agree that their place of study should actively incorporate and promote sustainable development." A 2019 Princeton Review survey of nearly 12,000 college applicants found that 64% considered a school's environmental commitment when deciding where to attend. For these eco-conscious students, requests for sustainable development go far beyond a recycling program or water conservation. A long-term sustainability plan that includes e-mobility offerings and other green initiatives will be key in enforcing the message that an institution's commitment to the environment is here to stay.

Strong sustainability commitments can be a valuable tool for universities as they recruit prospective students. Schools that develop an e-mobility plan demonstrate that commitment to eco-friendly practices and enhance their reputation for environmental consciousness. That can lead to increased student enrollment and retention. Sustainable operations also may aid in attracting top faculty talent; one study found that 90% of millennials and 77% of baby boomers report that working for a sustainable employer is a top priority.

Planning an Electrification Strategy

Taking a closer look at carbon reduction plans and identifying clear sustainability goals is the first step toward creating an effective e-mobility infrastructure. After project goals are highlighted, a thorough site survey can be conducted, and next steps can be determined.

Many universities may be operating under systems that are decades (and even centuries) old, so it can be difficult to introduce new functions and enhancements to a traditional campus structure. A knowledgeable e-mobility partner can help communicate with campus decision makers and help alleviate any internal tension.

Asking critical questions can help define the scale of a campus e-mobility plan. What chargers best fit a school's specific needs? How many chargers are optimal? What power grid connections are required? These solutions could

Depending on a school's goals, a plan may call for environmentally friendly power solutions tailored to a campus's infrastructure, like integrated energy storage, renewable energy power solutions, and microgrid solutions.

Increasing student desire for sustainable transportation may persuade schools to support EV initiatives. *Image credit: © Klodien | Dreamstime.com*

be public facing, limited to staff and students only, or focused on internal fleets and shuttles operated by the university.

Depending on a school's goals, a plan may call for environmentally friendly power solutions tailored to a campus's infrastructure, like integrated energy storage, renewable energy power solutions, and microgrid solutions. Rooftop solar panels, fuel cells, and other alternative energy solutions can all exist on a microgrid with battery technology to keep everyone moving with little to no environmental impact.

E-mobility Beyond Chargers

If projections are accurate, more and more EVs will be on the roads in the next few years. A recent study by EY found that 41% of consumers stated their next vehicle purchase would be a plug-in hybrid EV or a battery EV, supporting the belief that chargers will become not just a nice-to-have amenity, but a necessity. Some states even aim to phase out combustion vehicles completely, such as California, where Gov. Gavin Newsom has issued an executive order requiring all new vehicles to be zero-emission starting in 2035.

Universities may decide to look beyond EV charger installations and consider an even greater expansion of their e-mobility offerings. Emissions from school transportation equipment account for a significant portion of the overall carbon footprint at many university campuses. Considering a transition to electric buses alone can play a huge part in reducing overall pollution.

Defined routes and consistent mileage make electric buses an ideal option for campus transportation. The primary impediment to EV proliferation has to do with "range anxiety"—the fear that a vehicle will run out of power before it gets to its destination. Discrete, defined routes for EVs alleviate that anxiety because the range is known. At Columbia University in New York City, a switch to electric buses is expected to reduce greenhouse gas emissions from the university shuttle by over

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Projections show that millions of additional electric vehicles will be on the road in the coming years.
Image credit: ABM

270 metric tons—a 70% reduction from the diesel-powered shuttle buses that were being used. In addition to significantly reduced emissions and noise pollution, electric buses also can offer sizable savings when it comes to fuel and maintenance expenses.

Many campuses across the country caught a glimpse of the power of battery-powered transportation after the rise of electric scooters took college towns by storm in 2018. Encouraging the use of e-bikes and electric scooters through the installation of designated riding areas can help enhance the environmental impact of an e-mobility transit system.

Routes to funding

As college campuses consider an EV expansion (or first-time installation), administrators may worry that the costs will exceed established budgets. But a school can afford—and even profit from—e-mobility solutions in multiple ways. The U.S. Department of Energy's Alternative Fuels Data Center (https://afdc.energy.gov/laws) has information about incentive programs that may be available to education institutions. In addition, some states are considering legislation that will require their public universities to purchase only electric vehicles in their fleets in the coming years and will offer funding programs to meet that need.

Today, higher education decision makers can take advantage of a variety of financial incentives from local, state and federal sources to support campus transportation electrification efforts. As schools consider

Schools considering installation of EV infrastructure should determine which chargers best fit their needs, how many chargers are optimal, and what power grid connections are required. *Image credit: ABM*

campus electrification financing options, they also should look at possible revenue opportunities. Electric vehicle service equipment can be installed in campus parking spaces and garages, and campuses can offer pay-to-charge options for users. Universities also can charge students and staff an upfront EV charging fee as part of an annual parking pass purchase. RFID (Radio-frequency identification) technology can be used to enable a form of contactless payment—a card can be waved in front of a charger to process a transaction.

Increasing student desire for sustainable transportation also may play a key role in financially supporting electrification initiatives. In 2017-18, the University of California at Irvine became the first campus in the United States to convert to an all-electric bus fleet. Students voted for this initiative, and they are paying for it with a quarterly student services fee that covers the bus acquisition and operating costs.

When it comes to cost savings, factoring in charge time can ensure that the strain on an electric grid is minimized while providing low energy rates. For example, fleets that can charge their EVs overnight and midday will realize the highest cost-savings, as these are off-peak hours. Additionally, installing smart chargers or software to automate a fleet's charging schedule and measure actual energy usage will help fleets better maximize the time-of-use rate structure.

Whether a university is looking to install a dozen EV chargers at student residence halls or carry out end-to-end e-mobility solutions across campus, prioritizing sustainability and the increasing EV needs of students and faculty will pay off now and for years to come. ■

Robbie Gustafson and **Greg Astrop** are Senior Business Development Managers with ABM eMobility & Electrical Infrastructure. They develop and deliver turnkey solutions for the full spectrum of e-mobility needs, from future-proofing infrastructure design to upgrading parking and transportation programs.

Open and Safe Spaces

Careful design can successfully balance security and put learning on display.

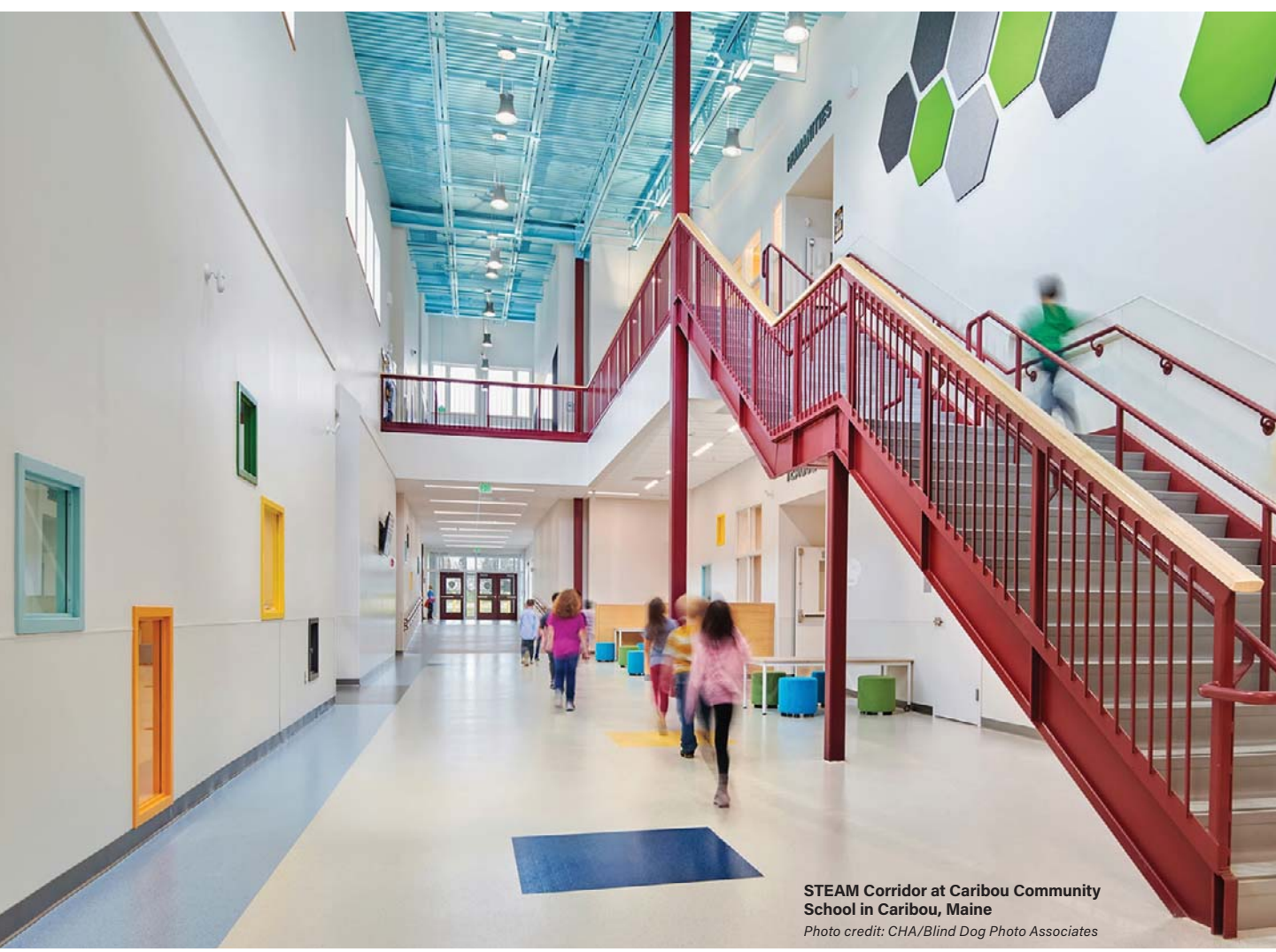
By Kathryn Cogan, Toby Heath

As students and educators return to classrooms this fall, educators and designers are reminded of the importance of creating spaces that focus on learning, feel innately safe, and celebrate their purpose in a building.

Designers and education planners know that learning environments can be inspirational and aspirational—vibrant spaces in which students and staff take ownership and feel a sense of belonging.

Showcasing the learning is achieved by increasing visibility into active classrooms. Yet, planners and designers often are faced with resistance when suggesting increased visibility into learning spaces. Sometimes it is a resistance to change; sometimes, there is a misconception that transparency and security are mutually exclusive. Current thought leadership in building safety promotes visibility, and careful design can successfully balance security and put the learning on display.

Aligning this strategy with security policy and procedures makes a more secure classroom. Visibility into a classroom with a viable hiding location reduces the chances that an attacker will enter the room. Properly designing and protecting the infrastructure associated with creating visibility needs to be carefully planned; however, in today's environment, the list of viable products is increasing exponentially. The only barrier to using these technologies is opening the designer's mindset to think outside the traditional design methods.



STEAM Corridor at Caribou Community School in Caribou, Maine
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Maker spaces at Mt. Ararat High School in Topsham, Maine.

Showcasing STEM

STEM spaces lend themselves very well to showcasing project-based, active learning. With green screens, robotics, LEGO builds, and 3D arts, something exciting is always happening in these rooms. Situating these spaces in a building so that students and staff pass them daily brings attention to the work evolving in them. Using transparency and integrating these spaces into the main circulation of a building, designers create a visual cue that reminds the students and staff that learning is more than tests and lectures, a cue that is inclusive of varied learning styles.

When students envision themselves in those spaces doing something exciting and learning something new, they feel connected to their school. That, in turn, fosters a welcoming atmosphere for more students and reminds the students why they are there. School climate plays an integral role in behavior, so spaces should be designed to connect with more students and their learning styles. For these spaces to be highly visible and still meet security protocols, access in and out of them should be controlled by security doors. They can also be placed adjacent to traditional classrooms with refuge areas and secure hardware.

Territorial reinforcement

Natural territorial reinforcement is one of the major pillars of Crime Prevention Through Environmental Design (CPTED). CPTED is a multidisciplinary approach that uses environmental design to deter criminal behavior. The strategies associated with CPTED rely on influencing an offender's decisions that precede the criminal acts. Territorial reinforcement promotes social control through increased space definition and improved visibility. Having more activities on display within the shared spaces of a school minimizes dormant areas within the building where negative activities might take place, such as contraband use, bullying, or violence. Additionally, this approach creates an environment in which strangers or intruders stand out and are more easily identifiable, thus reducing the time to detect an interior threat.

At a recently completed preK-8 school, all the students use a STEAM corridor throughout the week. It connects the innovation lab, the art rooms, and the learning commons in the central circulation of the building. Although the innovation lab programming was not available to the prekindergarten and kindergarten students, low windows enabled them to see into these spaces. The windows are scaled for a specific population, signaling to those students that the building was made for them. Enabling the younger students to see into those spaces creates a sense of aspiration for them—something to look forward to when they move up through the building.

One of the challenges in a preK-8 school is ensuring that the students of all ages feel safe. Connecting the younger students to the older students through visuals helps build a community within the school. Balanced with an open circulation that minimizes zones where bad behavior may occur, this STEAM corridor and the visibility into the active learning area within play a critical role in the culture and community of a school.

Natural territorial reinforcement is one of the major pillars of Crime Prevention Through Environmental Design (CPTED). CPTED is a multidisciplinary approach that uses environmental design to deter criminal behavior.

As seen from the corridor, these punched openings are highly coordinated on the learning space side to allow for areas of refuge. Low glass is laminated to prevent breakage and entry through them by an intruder.

From a security perspective, these open learning spaces essentially force the first point of detection to the exterior wall of the building. Although most schools have identified the exterior wall as the delineation by minimizing the points of entry into the building (single entry point in most cases), most schools don't actively monitor unauthorized access into the school via the many openings that schools typically possess. Using door contacts (low-cost technology) on every exterior wall opening and, most important, having proper policies and procedures governing an active response to a door opening is arguably the best security element to deploy. Providing the earliest detection of a security breach correlates to the quickest response possible.

Beyond classrooms

As group work and individualized learning become more prevalent in education, spaces beyond a traditional classroom are required to support these teaching modalities. Small group work rooms, collaboration rooms, and one-on-one rooms add to the flexibility of learning environments and help to accommodate more students. Some support spaces require focus and concentration, and visibility into them is inappropriate. However, some are vibrant, active group workspaces and can lend themselves well to celebrating the collaboration happening within. Situating these spaces on the corridor with windows and sliding doors can create a space that capitalizes on borrowed light and showcases the work that students are doing in them. Sliding doors create opened spaces into the corridor, forming ad hoc areas for special classroom team events or presentations. These spaces may be outfitted with different furniture, further visual cues that they are unique spaces for differentiated learning. The school in this example had adopted a learning strategy that encouraged independent group work and wanted a space that students could use for collaboration. These spaces are designated as student-centric spaces, and visibility into them further celebrates that.

It is important to balance this kind of independent workspace with natural surveillance. Each space is connected to a teacher-occupied classroom, and the door between the spaces is strategically situated at the primary teaching wall. Additionally, this connection to a traditional classroom provides an easily accessed area of refuge if an unsafe situation arises.

Natural surveillance is also another major pillar of CPTED. It occurs by designing the placement of physical features, activities, and people in such a way as to maximize visibility and foster positive social interaction among legitimate users of the space. Potential offenders feel increased scrutiny and limitations on their escape routes. Although security cameras offer the ability to see remote areas and record the activities associated with those areas, natural surveillance offers many attributes that security cameras cannot. Schools can exponentially increase the surveillance of an entire space by having activities throughout the entire school interior, not just behind closed classrooms. Not only will the phrase "see something, say something" become more standard, but bullying, violence and contraband use will decrease significantly because students will be in the presence of school staff.

Social and emotional factors

Planners cannot overlook the importance of the social-emotional learning that takes place at school. Learning how to navigate social interactions is a critical facet of educating the whole student. Designers must plan for these spaces thoughtfully.

Visual transparency plays a critical role in the learning environment, yet it is not contrary to the security of the students and staff. Transparency can enhance the connection to the physical environment and the learning taking place in a building. It can promote positive territoriality within a building, thereby reducing vandalism and bad behavior. And it can simultaneously provide natural surveillance of student-occupied spaces. Balancing visual transparency with thoughtful adjacencies, location of security doors, and spatial layout to provide areas of refuge allows for extensive use without compromising the safety and security of the students and staff.

Creating a safe, secure school is the goal. Think of the differences between a castle and a jail. They may look similar, but the feelings they prompt are not the same. The goal in an education space is to create a castle. ■

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Student-Centered Learning

By Paul Erickson

(This is part two of a three-part series)

Educators and architects are breaking new ground in best practices for teaching, learning and new types of school spaces. Let us go deeper into defining learning zones and specialty spaces for supporting student-centered learning.

Learning zone: A learning zone leaves behind traditional "classroom" teacher-directed instruction. It has varied small-group activities, activity-based student collaboration, teacher facilitation, and presentation and discussion. It will have flexible seating, portable worktables, mobile screens, operable partitions, and ubiquitous technology.

FTLA: A Flexible Team Learning Area is designed as an open space with a grouping of six to eight learning zones. It is designed for circulation and varied learning activities as an extension of the learning zone, with technology and transparency between spaces. Worktables, chairs, soft seating, smart TVs, and portable markerboards fill this space for group activities.

SMART room: A Stimulating-Maturity-Through-Accelerated-Readiness-Training room is an indoor playground to engage elementary students in physical movements to stimulate the brain. Through regular sessions and during classroom breaks, students burn energy to refocus as they move through their day. Spaces are equipped with balance beams, overhead ladders and creep/slap tracks for processing language cues.

Maker space: This space supports creating with hands-on techniques while learning concepts for real-world applications. Schools may provide a dedicated space or integrate it with a media center or STEAM lab. Equipment in the space may include worktables, chairs, stools, 3D printers, sewing machines, portable carts, sinks, and mobile storage.

STEAM/STEM lab: Through guided curriculum that integrates science, technology, engineering, arts and math, hands-on projects engage students in inquiry and problem-solving. The lab design optimizes collaborative project-based group learning. Technology includes virtual reality devices, portable datalogging equipment, coding and robotics tools, 3D printers, drones, and software programs.

CTE space: The resurgence of career and technical education, frequently supported by local industry, provides career-friendly learning in subjects like health care, design, construction, transportation, and culinary arts. Spaces may include a greenhouse and culinary arts commercial kitchen for "farm-to-table" programs, a high-bay automotive lab for automotive technology and fire-fighting programs, or a construction shop for carpentry and trades programs.

FAB labs: Students design and build projects, often sponsored by industry experts. Replicating actual work environments, the labs may include workbenches, computers, 3D printers, scanners, laser cutters, routers, milling machines, tool cabinets, portable whiteboards and wire racks. Age-appropriate tools include saws, drills, ratchets, and glass cutters.

Science research studios: Reimagined science spaces provide students opportunities to pursue authentic research driven by their interests. Programs connect students with leaders in academia and industry through guided communication, critical thinking, creativity, and collaboration. Spaces may include wet lab benches, fume hoods, and flexible space for experiments. Each student may have a lab bench to conduct long-term experiments with specialized equipment.

Learning stairs: At the heart of the school, learning stairs are an amphitheater-type setting for socializing and studying – providing a vertical visual connection between floors. Learning stairs incorporate code-required risers and treads with deeper bench-type seating with electrical outlets, seat cushions, and task lighting.

Outdoor spaces: During Covid, students and teachers pivoted to outdoor learning. This shift became more viable with portable teaching equipment. Open-air amphitheaters, along with portable indoor-outdoor furnishings including carts and whiteboards, support this learning experience. Adventure-type classes use the outdoors for learning survival skills, GPS, and camping. Areas for science and CTE provide hands-on learning experiences not found inside a building. For example, soil beds dedicated for gardening with tools storage and irrigation infrastructure provide students with real-world biophilic learning. ■

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a. Requested and Paid Electronic Copies	4,159	3,668
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17. Publication of Statement of Ownership for a Requester Publication is required and will be printed in the: issue of this publication. Oct-22
18 Date
James Marinaccio, Audience Development Manager 9/19/22

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Indiana, Purdue universities announce plans to break up IUPUI

Indiana University-Purdue University Indianapolis (IUPUI), a joint venture of Purdue and Indiana, will be split into two separate entities.

The two universities announced that the IUPUI campus will be transformed into separate academic organizations, and Indiana and Purdue will govern their own programs. Completion of the realignment is expected in time for the fall 2024 semester.

IUPUI, a joint venture of Indiana and Purdue universities, will split into two distinct entities.
Image credit: IUPUI

Indiana University owns and operates the IUPUI campus, but certain programs grant Purdue degrees.

Plans call for Indiana University to take over operation of what is now the School of Science at IUPUI, except for its Department of Computer Science, which will become part of Purdue. Indiana will expand its Luddy School of Informatics, Computing and Engineering with new computer science programs in Indianapolis.

Indiana also expects to enhance integration of its science programs with its School of Medicine and other allied health science schools. In addition, Indiana will have responsibility for providing certain administrative services for both academic organizations and for maintaining the intercollegiate athletic program. Indiana also will continue to provide an education program for the more than 27,000 students in other programs such as business, law, nursing, and social work.

Purdue will assume responsibility for engineering, computer science and technology as a fully integrated expansion of Purdue's programs in West Lafayette. The new structure will enable Purdue to grow engineering, technology and computer science enrollments in Indianapolis, and create opportunities for West Lafayette students to "study away" in Indianapolis while pursuing internship or cooperative work opportunities.

In addition to its new urban campus, Purdue intends to open a branch of its Purdue Applied Research Institute on or near the existing IUPUI. Overall, Purdue anticipates growing Indianapolis enrollment by more than 1,000 students, housing many together in a new residential building near their academic buildings.

District fires security firm fired after gun is left unattended at elementary school for a second time

The Beaufort County (S.C.) District has fired the company that provided school security after a guard left a gun unattended in an elementary school staff bathroom in September.

The Hilton Head Island Packet reports that it was the second incident this year in which a guard from GuardOne Security left a gun in a school bathroom.

Hilton Head Island School for the Creative Arts.
Image credit: Beaufort County School District

Police say a guard left a gun unattended in a staff bathroom at Hilton Head Island School for Creative Arts and Daufuskie Island School in Hilton Head Island.

The earlier incident took place Feb. 1 at Mossy Oaks Elementary School in Beaufort. In that instance, a loaded 9mm gun was left unattended for three minutes in an unlocked staff bathroom. The weapon was found by a teacher who reported it to the principal.

A spokesman for GuardOne Security, a division of S&S Management, could not be reached for comment.

The school board approved the almost $1 million contract with S&S Management in September 2021. It called for 18 guards for the district's elementary schools and early childhood centers. Middle and high schools have School Resource Officers assigned to them. The school district says it will be transitioning "swiftly" to a new security company.

Virginia Commonwealth University will pay nearly $1 million to family of hazing victim

Virginia Commonwealth University (VCU) says it will pay $995,000 to the family of Adam Oakes, a 19-year-old freshman who died last year from alcohol poisoning at a fraternity party.

In addition to the payment to the Oakes family, an agreement between the Oakes family and the university states that students must complete 12 credit hours at VCU before they are allowed to join a fraternity or sorority.

Alcohol will be prohibited at any activity of any fraternity or sorority that is attended by new members, and any alcohol served or consumed at an event sponsored, endorsed or organized by a student organization shall be provided by a licensed third-party vendor following advance notification with VCU.

"By working to honor Adam's life and legacy, we are dedicated to creating a national model for universities and colleges across the country," VCU and the Oakes family said in a joint statement.

Oakes, a pledge to the Delta Chi fraternity, died on Feb. 27, 2021. At a fraternity event, he was given a bottle of whiskey and told to drink it. He died of alcohol poisoning. ■

Adam Oakes
Image credit: Love Like Adam Foundation

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