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# SEEING THE FOREST FOR THE TREES

IT'S THE DOG DAYS OF SUMMER, and there's not a lot going on in the world of education—on the surface. Students, teachers and staff are enjoying a well-deserved summer break. Inflation costs and work shortages are putting a damper on the usual bustle of summer construction and renovation projects. The shooting at Robb Elementary School in Uvalde, Texas, in late May—just two days before the last day of school—closed the 2021–22 academic year on a somber note nationwide.

I'm well over a decade removed from my last summer vacation. I'm at the age where I'm not even sure what I'd do with three full months off. I remember May as the last push through finals into the gleeful indulgence of sleeping until noon every day. I remember spending June hanging out with friends, catching up on books and movies and TV, maybe travelling a bit. In July, filling 16 waking hours every single day started to feel like something of a chore. And by August, it was really time to have something to do again.

However, even if school isn't in session, there's still plenty of work going on behind the scenes. Teachers are attending professional development sessions and staff training, or maybe teaching summer school. Admin is using the short respite to reset and revamp their facilities as necessary for the coming year. Students coming back to new furniture, new technology, sparkling-clean hallways and revised course curricula should know that all these changes didn't come from nowhere. Schoolwork continues whether the students are there or not.

What follows are some highlights from the previous school year and some works-in-progress for the coming one. During that little bit of breathing room from the day-to-day madness, school administrators have time to consider broader-level ideas like electric school buses, or virtual reality technology, or the importance of the performing arts. We can review some highlights of the best ideas and projects from the past year for consideration for our own districts. Summer gives time to focus on the big picture before it's back to the day-to-day grind.

Matt Jones Senior Editor

VOLUME 3 Issue 2

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# **MAKING THE SWITCH**

How School Districts Can Use Unprecedented Federal Funding to Transition to Electric Buses

#### By Gilbert Rosas

AMID ECONOMIC CONCERNS LIKE RISING GAS prices and inflation impacting American communities and resources, the Environmental Protection Agency (EPA) is bringing a bright spot to school districts across the country. The agency recently announced a new \$5 billion fund, available immediately, to

purchase clean school bus fleets and lessen reliance on diesel fuel. The fund is part of the EPA's 2022 Clean School Bus Program, funded by the Bipartisan Infrastructure Law, to replace existing school buses with zero-emission and lowemission models. By tapping into this funding, districts can replace old buses, reduce maintenance costs, improve air quality and commit to sustainability goals.

Yet, developing a fleet of EV school buses comes with unique challenges that require a larger, more strategic plan around energy

management and sustainable upgrades. Modesto City Schools worked with energy and sustainability partner Schneider Electric to design a comprehensive approach to undertake the necessary improvements to implement a cleaner bus fleet.

Before the first students hop aboard their new electric ride

NOW IS THE TIME FOR ALL OF AMERICA'S SCHOOLS TO CONSIDER MOVING TOWARD ELECTRIC VEHICLES AND MAKING COMMITMENTS THAT WILL IMPROVE OUR ENVIRONMENT FOR STUDENTS AND THE COMMUNITY.

to school, districts must prepare their electrical infrastructure for the increased load, choose and position a mix of charging stations, and plan routes that optimize the buses' driving ranges. Districts must also consider how to power the clean vehicles. For example, by incorporating onsite renewable energy, such as solar, and combining it with battery storage, schools can minimize utility costs and keep the fleet's footprint low carbon from start to finish.

To capitalize on the unprecedented federal funding to go electric, Modesto City Schools has made the nation's single largest Blue Bird electric school bus order to date. And in tandem with this historic fleet transition, the district has embarked on a much larger energy and sustainability plan.

## Consider Bus Fleets as Part of a Larger Energy Management and Sustainability Plan

Modesto City Schools is the 25th-largest district in California, serving approximately 30,000 students across 34 schools. With an overarching strategic plan to reduce environmental pollutants for the community, shift from a reliance on diesel fuel and conserve energy, the district chose a switch to clean school buses as an impactful first project to address its sustainability objectives.

As part of a comprehensive infrastructure project, the district purchased 30 new electric buses. But the buses alone were only a single step in the process. The supporting infrastructure including the components and software to generate, store and balance electricity in the charging infrastructure—and other energy-saving, sustainable campus features were scoped into the modernization project. Overall, the project will install about 800 kWp of solar canopies, the charging infrastructure, and 30 EV charging stations, as well as help bring enhanced STEAM learning programs to the district, including six state-of-the-

art Sustainable Outdoor Learning Environments (SOLEs).

This won't all happen in one fell swoop. Instead, it takes a multiphased approach that factors in securing leadership buy-in and ensures continuity within the school district while updates are being made. For Modesto City Schools, this means that the first install will be the charging infrastructure and solar canopies at the bus yard by the end of summer. Following that, construction of the six SOLEs will occur on campuses during the school year, and solar carports will be added

to Davis High School next summer. The entire project will be completed at an accelerated pace to optimize long-term environmental and financial benefits.

This ambitious project is set to improve the health, environment and learning experience of students, staff and community. The overall project will save 1,898,642 kWh in energy consumption and remove 402 tons of carbon emissions from the environment. The impact is the equivalent of removing 86 cars from the road or planting 16,080 trees. The bus fleet alone will save \$250,000+ in fuel costs and overall maintenance, creating room in the budget for more enriching student activities. Each bus can run up to 120 miles on a single charge.

Modesto's students will be among the first in the nation to be transported to school using clean energy vehicles, and these sustainable upgrades will serve the students of this community for years to come.

## Innovative Funding Will Expand the Possibilities for Energy Infrastructure Modernization

School sustainability projects should utilize all available innovative funding resources, such as the new fund announced by the EPA. Modesto City Schools utilized California's Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) to finance a portion of the overall cost of the bus purchase. In addition to HVIP, the district is financing its larger sustainability program by leveraging energy and operational savings from the project via an Energy Savings Performance Contracting (ESPC), as well as federal stimulus funds and local grants.

This comprehensive approach to facility improvements and fleet electrification will allow Modesto City Schools to double down on stimulus-funded upgrades. Other school districts can also follow this model to make improvements beyond the Clean School Bus stimulus scope, reducing energy and operational costs district-wide by 20–30% and reinvesting those savings to improve the entire student experience in school facilities.

This is just the first step for Modesto City Schools on their sustainability journey. Now is the time for all of America's schools to consider moving toward electric vehicles and making commitments that will improve our environment for students and the community.

Gilbert Rosas is Director II, Sustainability & Adaptation, at Modesto City Schools. He serves on the World Resource Institute's Electric School Bus Advisory Council. His passions are seeking environmental justice for disadvantaged communities through electric school bus transition and by empowering students through Sustainability Initiatives and demonstrating Green Career choices. Rosas has gained national attention with two of the fastest Electric School Bus deployments in California's history, at Stockton Unified School District and Modesto City Schools.



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# TRANSFORMING CLASSROOMS INTO ACTIVE LEARNING ENVIRONMENTS

Q&A with a School Principal

By Matt Jones

MARK HESS IS CURRENTLY THE principal at Mary Helen Guest Elementary School in the Walled Lake Consolidated School District in Walled Lake, Mich. Hess has served in a variety of roles since he was hired by the district in 1993, including executive director of instruction, technology, and assessment, director of technology and data analysis, middle school principal, assistant principal, middle school teacher, and elementary school teacher. As principal, he recently led the school through a new remodel that included transforming classrooms into active learning environments.

## How did the idea to transform each classroom into an active learning environment come about?

This remodel actually started about six years ago when the district standardized classroom technology. The second part of the process was updating classroom learning spaces and modernizing school buildings so the learning environment harmonized with the updated technology. Before we started to look at options for new furniture and products, it was important for us to identify what we wanted to accomplish. We asked ourselves, "What should a classroom look like in order to maximize teaching and learning opportunities for all students?" Our goal was to give teachers more flexibility and address different learning styles.

Our district did extensive research when determining what direction to go in for the renovations, including attending school furniture design conferences, visiting neighboring districts, and deepening our knowledge base through literature and journals. We also provided opportunities for educators to test different options and provide feedback on what they thought would be best.

Ultimately, we decided to go with the flexible learning environments to best address the different learning styles among students. Not every student learns from a desk, and not all teachers teach best from their desks. We saw how technology transformed our approach to instruction, and it was time to have furniture that integrates and supports this transformation.

In your opinion, how have you seen these environments support teaching and learning at your school? My biggest takeaway I have noticed is the furniture is no longer stagnant. What I see in a classroom at 10 a.m. might have a completely different look and feel than when I visit at 2 p.m. Classrooms are much more mobile and can easily be adjusted throughout the day to align with the teacher's instruction. Teachers can have the class set up to do whole group instruction in the morning, and by the afternoon, students are working in cooperative groups. The physical layout of the room changes in a matter of minutes.

This has really allowed us to be able to break down physical barriers in the classroom. With a much more open concept and comfortable learning environment, teachers are spending less time at the front of the room and more time around the learning space.

Can you tell us about the technology in each classroom, and give a couple examples of how teachers & students might use it on a day-to-day basis? We provide Chromebooks for all of our students, but we also have a BYOD program. Each classroom is set up with Epson Bright-Link interactive displays, Epson document cameras, and FrontRow Speakers. Some of



the key programs that ground our curriculum include i-Ready assessment and personalized instruction, Google Classroom, and SAFARI Montage. Teachers can easily share content to students' devices, and students can be on their device anywhere accessing the lesson or activity.

When teachers want to display content at the front of class, but also walk around and help students, they can use the Microsoft display adapter dongle and wirelessly project from their laptop to the Epson BrightLink display. This has been helpful for teachers, since they are no longer feeling tied to their desk or computer to monitor the content students are working on. Instead, they are able to walk around and interact with students and provide feedback in real time as students are working. Having this interactive whiteboard space is also great to have students easily go up and annotate directly on the content.

Can you give an outline of the project's timeline?

Six years ago, a bond passed in the district that was made up of two main parts: technology and furniture. The district standardized its technology throughout the district as the first part, and the second part was focused on remodeling the schools and updating furniture.

With 19 school buildings in the district, the remodel was divided into four phases so not every building was updated all at the same time. My school building's turn to complete its remodel was set for the summer of 2021. The time leading up to it we spent doing the research, planning and scheduling so that when it was time for implementing the renovation in the summer, everything could run as smoothly as possible.



Do you have any advice on how to prepare teachers for this type of space?

For district leaders looking to update classrooms, start with the why and then build it out from there. When determining this, be sure to involve teachers and students and focus on what you're trying to accomplish. It's common for people to want to get the products first and then start the conversations about plans for using the new products. The purchasing process will be a lot easier if you already have in mind what it is that teachers want, and it will make it a smoother process of preparing teachers to teach in these new environments once classrooms are updated.

For principals that just had classrooms updated, encourage teachers to get creative. We had a professional development day at the beginning of the school year and provided teachers opportunities to catch their breath, meet with colleagues, and discuss what was working and what wasn't working. This was a great opportunity to get everyone together so they could bounce ideas off of each other and answer each other's questions.

Ultimately, teachers need the time to discuss, collaborate, take risks, and adjust to new learning environments. As the principal, it is important for me to find the time for teachers to collaborate and for me to check in with teachers periodically to see if they have any questions or new ideas that I can share with all. Both are great ways to remind teachers that their colleagues are available to provide support.

What are some of the best practices that you've seen teachers use to maximize opportunities for student

#### engagement?

Teachers are really getting a hang of the idea that everything new in their classrooms was designed with instruction in mind. For example, when a lesson calls for cooperative learning, students can quickly create a learning space that is most conducive to their preferred design. Earlier this year, I observed a group of six students in a fourth-grade classroom working on a science experiment around soil erosion. Two students were using the floor-level lap desk, two students sat at the round sushi table, and two were taking part in the activity using the standing desks. Students tend to be more engaged and ready to participate when learning in an environment comfortable and suitable to their preference.

Another example is our small group annex pod where a group of eight students sit in a semi-circle around a shared 60-inch interactive display. Again, the level of engagement and participation increases in this pod format as students and teacher have a more intimate space to delve into a subject matter.

# OUR GOAL WAS TO GIVE TEACHERS MORE FLEXIBILITY AND ADDRESS DIFFERENT LEARNING STYLES.

How can the creativity sparked in an active learning environment take root outside of the classroom? With classrooms being such flexible learning environments, I think it has helped teachers really think outside the box and beyond the traditional learning environment. Teachers are feeling less restricted to just using classroom space and are finding ways that different settings can benefit specific lessons.

For example, a couple of our science teachers wanted an outdoor science education area to teach subjects like agriculture and earth science. Capturing some adjacent land on school grounds, we quickly transformed the space into an outdoor science hub where students could conduct experiments and observations. Learning can happen anywhere, and teachers are really grasping on to that idea as they are creating new lessons.

# Were there any difficulties during the installation process?

As many can imagine and also relate to in 2021, timing and supply issues were our biggest concerns. There were shipping delays for some of the furniture and some of the technology, such as display monitors and AV equipment, and items were still arriving at the beginning of the school year. Issues with shortages of workers and contractors was another issue we dealt with, but we were able to adapt.

All of our difficulties were things out of our control, so no one could get too frustrated about things arriving later than anticipated. We were 80 percent complete at the start of the school year when we initially planned to be finished, but a few things were still being installed and completed as the school year started.

# What kind of feedback have you gotten from students & teachers?

Of course, there were the initial "oohs" and "ahs" and initial excitement among everyone seeing the brand-new classrooms and furniture. Early feedback from teachers was mostly about the appreciation for having more flexibility. They liked how it was easier for small groups to get together, to utilize floor space, or to not need a "front" of the classroom. Now, with this more flexible setting, teachers are seeing an increase in student engagement and easily finding ways to encourage students to participate.

Students are feeling more comfortable in the classroom versus when they were sitting on a chair at a desk. They can be sitting, kneeling, laying down, leaning on the wall, basically being positioned any way they are comfortable. That's how they're learning at home, and we've been able to create that extension to help students feel more at ease when learning at school too.

Having the new furniture has been great, but it's not just about the physical furniture. Teachers and staff have really come together to create such a safe, motivating, and positive learning environment for students.



# **ALL THE WORLD'S A STAGE**

The Mapleton Arts Center (The MAC) in Denver, Colo.

By Abby Collins and Seth Clark

#### HISTORICALLY, THE PERFORMING ARTS HAVE NOT

commanded the strong foothold in secondary education that they deserve. From choir to dance and orchestra, the enrichment that the performing arts adds to the middle- and high-school experience is undeniable. Mapleton Public Schools in Colorado is working to change this. The school district believes in the power of the performing arts and has always upheld it as a critical element of its educational programming. Even during the budget challenges of the Great Recession and beyond, Mapleton has never once trimmed its performing arts programs.

Boasting a robust performing arts program, including drama, orchestra, band, choir, color guard, mariachi and jazz, Mapleton has long reaped the benefits of prioritizing the arts in its schools. What's materialized through this sustained investment is increased academic engagement among students, fostering students' strong sense of purpose and confidence, and a strengthened community. Mapleton's current performing arts students are the model of dedication. Beyond school-based programs, many middle-school and high-school students choose to ride the bus at 5:30 in the morning to participate in zero-hour performing arts programs. Such commitment and relentlessness call for recognition, celebration and fortification.

Given the history of performing arts excellence in Mapleton, the district has committed to investing even more heavily in these



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programs by planting a legacy performing arts center to serve as a district-wide icon. Named The Mapleton Arts Center (The MAC), the building supports nearly 1,000 students across the district involved in Mapleton's performing arts programs. In addition, The MAC will become home to an entirely new offering for Mapleton students—The Performing Arts School on Broadway for 7th to 12th graders—opening this fall.

The goal was lofty: Deliver a state-ofthe-art performing arts center tailored to the unique needs of secondary students. Together with design-build partner The Neenan Company, Mapleton sought to



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give local students an introduction to the Broadway experience. A performing arts center of this caliber is rarely seen in secondary public education and offers students a world-class trailblazing in the arts. The school pairs rigorous academics with performing arts to provide an educational approach rooted in innovation, imagination and intention, where students master geometry through stage and set design and study science through sound. All Mapleton students with a passion for the arts in any of its forms now have a home at The MAC: from singers and songwriters, to builders, engineers, creators, composers, directors, designers, makers, musicians, dancers, choreographers, scholars and innovators.

The features incorporated into the 45,000-square-foot performing arts building rival that of a professional theater:

- Separate classrooms for each of its various programs, including band, dance, orchestra and choir. Each individual room provides a distinct feel, while maintaining a common thread to tie together the building and its purpose.
- 900-seat auditorium for performances/ large district-wide events.
- Outdoor stage opening into the campus plaza for summer performances/events.
- A plethora of practice space for students to hone their craft before graduating to the main stage, including a Blackbox theater, individual practice rooms and recording studio.
- A catwalk, loading dock, dressing rooms, control room, storage and ticketing booth expose students to the back-of-house support services experience.
- Professional-grade acoustics.
- Separate student and public entries.
- Large two-story lobby/auditorium entrance.
- Administrative space onsite is critical to ensuring the academic and operational elements needed for a successful educational experience are incorporated into the performing arts programming.

As is the case of any project of this magnitude and scope, The MAC required a deep understanding of Mapleton's existing performing arts program and the vision for the future, including its delivery model as well as student, faculty, staff and community needs.

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Functionally, the building needed to serve dual purposes. Not only was a theater and event space necessary, but also a fully operational secondary school. Each space was designed to foster a safe and approachable environment for students to harness real-world skills to grow in the arts.

Essentially every space within the building is used for performance, so the quality of the sound was critical in the design and build process. To ensure this, Neenan consulted closely with an acoustician throughout the project. Acoustical considerations dictated the building's overall shape and height, to deliver spacious rooms for maximum impact. The site constraints added to the project's complexity, and the design team opted to stack classrooms in order to maximize the space available. Acoustics also determined the building's layout, with painstaking care to strategically separate spaces and prevent sound from passing between classrooms, or into the auditorium.

Neenan integrated acoustical features thoughtfully, transforming them into design elements that enhanced the visual appeal of the building, in conjunction with its utility. For example, the design team selected acoustic wall treatments in distinct colors and shapes, arranged artfully along classroom walls to enhance the building's aesthetic. Other acoustical features were downplayed in the building design. The sound-dampening elements along the auditorium walls were made black to better fade into the background.

Perhaps the most remarkable features of The MAC are its careful marriage of design and function. Neenan and Mapleton Public Schools delivered a design that ensures young performers' voices would project throughout the entirety of the 900-seat theater, while keeping the space from feeling intimidating to a student. Focusing on the shape of the auditorium brought the final row of the theater

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situated as closely to the stage as possible, not only creating a more intimate setting, but also allowing every audience member to clearly see each performer on the stage. The large, two-story lobby and auditorium entrance leans into the Broadway aspect of the building and allows for flexible use of the space as a community hub beyond student performances. The carefully designed multi-use lobby is equipped to host a wide array of happenings, from art galleries to before- and after-performance gatherings, and breakout space for students during the school day.

With budget adherence and project timelines paramount for a public school project, Neenan's integrated design-build model made a performing arts center of this magnitude not only feasible, but also remarkable. With central management of the full design-build process, Mapleton's vision was carried out through each detail of the building, every step of the way. Project leads across the architecture and construction teams collaborated seamlessly upfront, allowing the team to shift plans and budgets nimbly throughout the quick phases of the project.

What resulted from the fruitful collaboration of Mapleton Public Schools and The Neenan Company will be a catalyst to transform young performers' lives for years to come. The MAC stands as an icon for what is possible when design and construction can be leveraged to strengthen communities, elevate the learning environment, and transform projects into spaces that



give students a foundation to thrive.

Abby Collins is an interior designer and Seth Clark is an architect with The Neenan Company. The Colorado-based firm is a pioneer of the design-build model specializing in creating commercial, education, healthcare and community facilities that generate economic vitality and inspire people to be well, to learn and to lead.

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# **Determine Needs and Expectations**

000 Any project will go much smoother when there is an early agreement from campus decision makers. Talk with top administrators and the IT group to determine needs, existing capabilities, and expectations. Don't forget the faculty, campus staff, security personnel, students, and parents too. They will live with the plan every day and likely offer valuable insight. Consider reaching out to your local first responders too. They are another great source of security information.

The support of these groups is critical, so keep them regularly updated as the plan is implemented. You want to get things done right the first time. Since most campuses are working with limited financial resources, effort in the early stages could help save time and money during the run of the project.

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# A PICTURE IS WORTH MORE THAN A THOUSAND WORDS

By Matt Jones

IMAGINE BEING TRANSPORTED TO THE DEEPEST regions of space, or the nucleus of a cell, or the interior of a human heart. Imagine visiting the Great Wall of China, or Victorian-era London, or the Wright Brothers' first flight at Kitty Hawk in 1903. Reading about them is one thing; seeing them all around you is something else entirely. One educational virtual reality solution from Avantis Systems aims to provide students with experiences that they—or anyone—would never be able to see in real life.

ClassVR launched in January 2017 and provides thousands of educational VR resources and structured lesson plans that align with elementary-, middle- and high-school curricula nationwide. Resources are available in subjects from art to biology to chemistry to language arts to history—and more. Teachers and students can also upload their own 360-degree images and videos to create their own VR experiences. These immersive, engaging experiences help students visualize the concept at hand, adding a layer of personal experience to their understanding of the subject matter.

West Baton Rouge (WBR) Parish Schools in Port Allen, La., began the process of adopting ClassVR in spring 2021. WBR serves as a Head Start through twelfth-grade district with about 4,200 students and ten schools: five elementary, three middle and two high. The district's ClassVR program is run by Dr. Tammy Seneca, Supervisor of Information Systems and Educational Technology, and Stephanie Thompson, District Technology Facilitator and Professional Developer.

"The kids really get...it kinda breaks down the walls of the classroom, so kids who don't necessarily have a lot of travel experience or, for example, if they're reading a book about the Great Wall of China, you know, nine times out of ten, they



haven't seen the Great Wall of China. But they get to experience it through the ClassVR," said Seneca. "And so, it really kind of gives them that almost one-to-one kind of feel of what it would be like if they were actually there. I think that's been the most positive feedback."

"The teachers are just really excited because the students are so excited," added Thompson. "They're just oohing and aahing and 'Woah, oh my goodness,' and it just really provides a little bit more concrete examples of what they're learning about that



they don't have access to."

One fundamental feature of ClassVR is the way that its content integrates with teachers' existing lesson plans and curricula. "Our department...for example, when Stephanie's working with teachers, the first question is, 'What are you teaching?' We're always trying to connect back to the curriculum," Seneca said.



"The way it works is the teacher on the front end, when they're doing their lessons, they decide what kind of scenes, what they're looking for, and they create sort of this playlist," Thompson said. "And they have a playlist ready to go to show...they flip the kids through different scenes. The students don't really get to see ahead of time what they're going to see because the teacher's controlling it. And so, there's not a lot of classroom disruption because of that, and it flows pretty easily, with the teacher sort of in control of what students are going to experience in their curriculum."

In addition to the existing VR scenes and environments, teachers can also use 360-degree cameras to create their own. One high-school environmental science teacher from West Baton Rouge created a rendering of nearby Bluebonnet Swamp. Another group used them to capture images of a variety of plants, insects and birds for identification in class. Finally, one middle school in the district recreated the school itself as an introduction to elementary students coming into the middle school.

"They kind of do a walkthrough tour of, 'This is what the school's going to look like. This is how you go up the staircase, this is where you go down this hall for eighth grade, this hallway for seventh grade, this is where the cafeteria is," said Thompson. "They're approaching it more

PHOTOS COURTESY OF WEST BATON ROUGE PARISH SCHOOLS

from a hands-on...creating the video, editing the video, they're adding additional images and text, things like that. So, they're spending a good amount of time video editing, and then they're going to load it into ClassVR so they can share it with the elementary kids."

At West Baton Rouge, all the ClassVR kits are housed in the Technology Department, and individual teachers check them out on a lesson-by-lesson basis. Teachers receive training as the district tech staff visits individual schools' Professional Learning Communities (PLCs) as well as during summer professional development opportunities and technology challenges.

The district has 128 ClassVR headsets, 16 kits of 8 devices each. Each device has its own label (e.g., "Faithful Alpaca") for tracking purposes. Teachers checking out a kit for the first time receive an invitation to join the district's license in the ClassVR portal. They also receive video instructions on how to search for and create playlists. The district uses its in-house mail system for delivery and pickup to individual schools. Seneca and Thompson both noted that, once teachers reach a certain comfort level with the devices, they've been training each other and recommending different uses or experiences.

"What we're also seeing is that the teacher that comes to training, that likes

ClassVR, the teacher next to her sees (or he sees) this happening, and they've been able to train each other," said Seneca. "So, they'll just transfer the devices the next day over to the other classroom, and they're so easy to use that it's just that quick."

"I find a lot of times, I'll just show one teacher in the group, like a group of third-grade teachers, and they're all doing the same thing. So once one teacher uses it, she shows the other ones: 'Hey, y'all gotta do this.' And then they all are now on board. And so now I've got, instead of one teacher who knows, I've got five teachers who know how to use it in that little pocket," Thompson said. "So really, it just kind of grows and spreads like wildfire."

ClassVR also extends beyond traditional classroom subjects into CTE and wellness. Local companies have approached the district to sponsor advanced VR opportunities in high schools after seeing how they're used. "We're working on that as well, to try to get some more, for example, Career Tech Ed, where they do pipe fitting. And they actually learn how to be a pipe fitter with the ClassVR and that kind of stuff," Seneca said. "And some of that came from me having conversations with this local partner about what we're doing with ClassVR, and showing them how we're starting with the younger kids and giving them experiences."

Experiences are available related to STEM and CTE topics and careers like helicopter pilots, miners, motion capture specialists, surgical training, car factory tours, Tesla factories, gas turbine factories, aircraft carriers, submarines, oil rigs, space stations, refrigerators, washing machines, dishwashers and more.

Even elementary-school guidance counselors have adopted the technology to help with social and emotional learning (SEL). The experience can help students with autism or behavior disorders with regard to calming and cooling off, life skills, social situations, sensory experiences and a wide variety of others.

However, in the district at large, the most popular environments are the ones that give students

a glimpse of the world beyond their own experiences. "Space is popular. Habitats have been popular," said Seneca.

"I feel like they're really using it with their English Language Arts, seems to be the subject area most used," said Thompson. "Because every time they go to a new book that they're going to study, they check them out in order to give them some background knowledge or more information about what they're going to be reading. So that seems to be

the hottest area, is in the ELA classroom. Where, you would think, the history teachers or the science teachers, but they really check it out so much for the ELA. I mean, they check them out in all areas, but I'll say our hottest spot is through our reading curriculum."

Seneca added, "We've even had art teachers check them out for their art students to go visit the Sistine Chapel and places like that. We have a great picture of the high school kids lying





on the floor with them, looking up like the artist did."

Sometimes, though, teachers use the ClassVR technology to give students a bit of old-fashioned fun.

"One of the ones that probably got the most publicity, and in our school district it made it take off, was we did one around Christmastime about Santa Claus," said Thompson. "The PreK teachers wanted something about the North Pole, and about

> Santa Claus, and reindeer. And so, we were able to find some great videos. One of them was where it's taken from the point of view where the student is sitting next to Santa Claus. So, like, if they turned their heads to the left, Santa Claus is sitting there, and in front of them are the reindeer. And then the sleigh takes off, and as they're taking off, they see London beneath them, the lights and the city beneath them. And those students—"

> "Those are some great pictures," chuckled Seneca.

"And it was just great to be in the room with the students because they were just screaming like they're on a ride with Santa Claus, and it was just so real for them," said Thompson. "That's the one that, I think, pushed ClassVR into so many classrooms. Because once one teacher did it, everybody wanted to do it."

Matt Jones is senior editor of *Spaces4Learning* and *Campus Security & Life Safety*. He can be reached at mjones@1105media.com.

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# OPENING THE DOORS TO EVIDENCE-BASED DESIGN IN OJAI, CALIFORNIA

#### By Tysen Gannon

IN 2021, THE THACHER SCHOOL, located in Ojai, Calif., opened the doors to its project-based learning hub. The space was designed to support a multidisciplinary learning environment with collaborative common areas and classrooms that provide greater flexibility in their use. One of the project's goals was to aid student learning through evidence-based design, which roots decisions about the built environment in research to optimize occupant experience. While the hub incorporates several elements to achieve this goal, the building's eight full-lite, oversized interior sliding glass doors proved to be key.

These doors range in from 97.5 inches to 120 inches in height and from 62.125 inches to 79.25 inches in width. All eight doors and their assemblies hold expansive glass lites with sturdy, impact-resistant aluminum framing. They promote a fluid classroom layout, balance visual connectivity with acoustic privacy and contribute ample daylight and visual connectivity—all of which are researched tenets of evidence-based design. As such, they help create an optimal learning environment for Thacher's students.

Although the specifics of the project-based learning hub are particular to Thacher, they bely general benefits. Each architectural element of a classroom or school holds the potential to contribute to a student's ability to learn within the space. This is why careful consideration of building design can positively impact student success. By examining how interior sliding doors helped support evidence-based design at Thacher, architects and institutions can extract the concept's basic premises and incorporate them into their spaces to help students reach their full potential.



## Flexible Layout Can Contribute to Student Success

While research on the benefits of flexible spaces in educational settings is scarce, the studies available seem to indicate that flexibility in classroom design can boost academic performance. A 2016 study of U.K. primary schools conducted by Barrett, Davies, Zhang and Barrett implies that environmental parameters affect learning in different ways. Lighting and individualization most impact math studies. Connection to others and links to nature most benefit reading and writing, respectively. Accordingly, it would seem to follow that when classrooms can adapt their space to accentuate these parameters based on subject, they could potentially increase student success rates across the board.

Further building the case, Mark Fehlandt's 2017 study suggests that flexible classroom design helps educators implement modern teaching practices to facilitate active student learning. In the research, flexible classroom layout did not directly contribute to student achievement. Instead, it helped teachers shift their pedagogy to engage students more effectively. In either study, flexible layout seems to have an effect, direct or indirect, on student learning and so should be a consideration when creating classrooms.

In the case of the Thacher School, Alayna Fraser, from Blackbird Architects (the firm behind the hub's design), addressed the vital role flexibility played in designing an optimal learning environment. Fraser noted the oversized sliding doors "allow adjacent rooms to function nearly as one space rather than two-adding to the flexible use of the building" and "can easily be opened when activities benefit from connectivity to adjacent spaces or remain closed, providing excellent acoustic privacy when needed." For these reasons, sliding doors allow educators to change the layout of their classrooms to provide environments that support student success no matter the subject.

Further, these doors enhance the flexibility of the entire hub. Students walking through the learning hub can peek into any classroom, whether the doors are closed or opened, and glimpse the lesson being



# THE DOORS EXEMPLIFY HOW WELL-CHOSEN ARCHITECTURAL

FEATURES CAN POTENTIALLY ENHANCE STUDENT LEARNING OUTCOMES.

taught. Those inside the classroom can also look out and see students collaborating on large whiteboards and laptops. The ability for students to see multiple modes of learning happening simultaneously helps establish connections between subjects and projects to support student success. The door design ensures both faculty and students can approach a lesson in a way that is most conducive to the material itself and the learning style of the student.

## Sliding Doors Balance Visual Connectivity and Acoustic Privacy

It is also important that educational settings provide students with quiet environments for concentrated learning. Building on past research, Dockrell and Shield studied the impact of noise on academic performance in 2006. Students were randomly assigned to varying levels of noise conditions (from quiet to babble plus environmental noise). The analyses were controlled for ability. The results suggest that in general noise has a significant and negative effect on both performance and speed of processing a task. Further, students with special educational needs were negatively affected in a different manner than their peers. These results were in line with previous studies, which, when taken together, suggest that acoustic privacy can have a substantial impact on student success rates.

Supporting the need for acoustically isolated spaces, the oversized sliding door systems in Thacher's building were specified with perimeter acoustic jamb gaskets and drop-down bottom seals to provide a Noise Isolation Class (NIC) rating of up to 39. This meant the door assemblies reduced surrounding classroom noise by 39 decibels—effectively rendering sounds equal to average freeway traffic to the level of a soft whisper. As a result, they minimize noise from adjacent areas to provide students with a distraction-free learning environment. Additionally, these doors have a soft-close dampening system that reduces closing noise.

While all students benefit from acoustically isolated spaces, it is important to note the increased effect noise can have on students with hearing loss and/or students with attention deficits or autism. For students with hearing loss, background noise can reduce their ability to comprehend class lessons and assignments, limiting their academic achievement. Likewise, background noise can heighten sensory processing challenges (which are common for those with attention deficits and/or autism). This limits the ability for neurodivergent students to achieve their academic potential. For these reasons, doors that provide premium acoustic performance can not only help educational environments support student learning in general but can also support a more accessible learning space.

# Large Glass Lites Support Daylighting Goals

In 1999, the Herschong Mahone Group conducted one of the first evidence-based design studies by examining the effects of daylight on more than 2,000 classrooms in California, Washington and Colorado. The data indicate students with the most classroom daylighting progressed 20 percent faster on math tests and 26 percent on reading tests in one year than those with the least. These findings are reported to be consistent regardless of curricula or teaching styles. They were duplicated in a 2002 study by Edwards & Torcelli and a 2008 study by Tanner. Furthermore, according to a study by The National Center for Education Statistics, 16 - 28 percent of schools fail to provide a satisfactory amount of natural lighting to their students. Finding efficient ways to improve access to daylight is vital to evidence-based design.

With such evidence behind the benefits of access to daylight in schools, it follows that the Thacher School would desire to increase natural light within its project-based learning hub. The building's exterior features an extensive amount of glazing that floods the common areas with natural light. Drawing this light into the hub's interior, the oversized, full-lite sliding doors help maximize the classrooms' access to daylight. In fact, some of the doors within the hub are so massive they take up the vast majority of a wall. Because they were specified with transparent sidelites and transoms, as well as full-lites, they leave few barriers to natural light. When used in conjunction with other architectural elements, sliding doors can help educational settings meet and exceed daylighting goals.

## Improving Student Success with Well-Designed Doors

The doors used in Thacher's project-based learning hub were customized for the school, so they present specific benefits that are particular to the building. However, they also generally support researched tenets of evidence-based design in classrooms. As such, they exemplify how well-chosen architectural features can potentially enhance student learning outcomes. While door specifications can vary greatly by school, architects and administrators can support academic success by considering how door design contributes to evidence-based design by providing access to daylight, flexible layout and a balance of visual connection and acoustic privacy.

**Tysen Gannon, LEED AP,** AD Systems has more than 15 years of experience in the architectural products industry, including roles in sales, product management, research and marketing, with a focus on glass and glazing, fenestration and façade systems.

# **CONSIDERING SPILL LIGHT**

#### By Steve Dietiker and Keith Cooper

AS THE LADUE SCHOOL DISTRICT neared completion of the \$75,000,000 expansion and renovation of the Ladue Horton Watkins High School, the design and construction team determined the budget lent itself to pursue replacement of its athletics facilities. The project had many elements involved in the full renovation. Specifically, there were updates made to the school's football stadium (with a new grandstand, synthetic turf and a new scoreboard). The renovations made to the stadium building included updates to the press boxes, coach's boxes, viewing/filming decks, elevator, storage, and future locker room spaces below the new seating for 1,998 spectators.

The project also called for renovating the Nielson Gymnasium entrance and converting the locker rooms to public restroom facilities.

Although each piece of the project had its own unique set of challenges and considerations, the design and implementation of the outdoor lighting for the athletic field was particularly complex. The track and field renovations called for sports lighting for the first time in the facility's history, requiring 50 foot-candles from four 80-foot poles. The biggest hurdle,

however, was the physical location of the sports facility itself. With its close proximity to a residential neighborhood, the lighting needed to be designed in a very specific way. The new lighting would need to be bright enough to allow activities and competitions to take place at night but regulated to the point

where there would not be an excess of spill lighting that negatively affected those that lived in the nearby neighborhood.

Sports lighting for the facility was a sensitive issue with the neighboring property owners. To mitigate any concerns, the lighting design was addressed

with the city and its citizens very early in the design process. The McClure Engineering team met with the neighborhood association prior to submitting construction documents so they could voice any potential concerns, and so that the lighting design team could address any issues ahead of time. The team supported these discussions with technical information and pros/cons of different design features that were considered. Considerations were taken about how the lighting would affect the neighboring properties during the seasons of the year when the tree foliage is at its minimum coverage. Furthermore, the School District was completely transparent with information and offered extensive restrictions on the number of dates and hours that the lights would be used. Once all considerations were discussed, the McClure lighting design team designed a LED lighting system that provided an exceptional light level cut off at property lines. Though all code requirements were exceeded, the system was designed with individually dimmable fixtures so potential future complaints could be addressed easily and with minimal cost impact.

One of the first considerations that

# THE DIMMING CAN ALSO BE USED TO PROVIDE LOWER LIGHT LEVELS FOR OTHER ACTIVITIES (SUCH AS PRACTICE) WITHOUT OPERATING AT 100 PERCENT—SAVING ENERGY, TOO!

needed to be addressed was the height of the poles. Naturally, the initial thought from the neighborhood and school district was that lower poles would be the ideal choice. In fact, the community was initially pushing for the poles to be as short as possible. However, after further



analysis and modeling, the team showed that if the poles were too short, it would be impossible to control the spill light. And controlling the spill light was the number-one priority in keeping the neighborhood and school district satisfied with the ultimate results. After negotiating down from 100 feet to 80 feet, the team could focus on the type of lighting

that would best meet the needs of all parties in-volved.

The first thought was to use metal halide lighting due to its cost-effectiveness. Unfortunately, the design team could not meet the spill light requirements for the community with this approach. Next, the team

considered LEDs with optics to see how those would fare given the situation. Still, there was an excessive amount of spill light present. Then, McClure's lighting designers tried optics with visors. By pairing specific optics with visors, the playing surface received the required





light levels and uniformity for televised sports while avoiding unnecessary spill into the neighboring dwellings.

The next challenge was an aerial one. In football, there are times when the ball is kicked so high that it may travel above the area that the lighting reaches given the use of visors. The team believed they needed uplights when using visors. The uplights would be installed roughly 15 feet above finished grade. Although this would fall into meeting specifications for dark sky requirements in the area, it was not a good situation for the community to have uplighting. The nature of the topography of the land precluded it. The grade change from the facility to the adjacent neighborhood would have resulted in the uplighting being in direct view by residents. At that point, the strategy of using optics and visors was nixed.

In the end, the team specified fixtures for each pole that had a dozen LEDs each, with each diode containing a TIR (Total Internal Reflective) optic. The goal was to establish the best optical control possible while still providing for aerial sports. This control allowed the dark sky requirements to be met, and the energy/ light intensity to be completely regulated. Metal halide lighting is not dimmable, but with the LED lights, every fixture can be tuned. If one is too bright, that particular fixture can be dimmed. In years past, the facility would have had to wait for all the spectators to leave before shutting off the lights. Now with the control, the lights can simply be dimmed. The dimming can also be used to provide lower light levels for other activities (such as practice) without operating at 100 percent-saving energy, too!

The heads were also laid out in a specific, unbalanced way to control spill lighting. The design team determined that by putting a different number of heads on each pole (more lights on the visitors' side to shoot light across the field away from the neighborhood, using the grandstand as a blocker), all of the lighting goals were met.

In addition to the challenges of the lighting, the existing facility was originally designed to be just above the flood plain, but could not be raised enough to completely avoid future flooding. In order to combat this issue, electrical components outside the building and in the flood plain were installed at a higher elevation on the poles and exterior walls.

When the project was complete, both the school district and neighborhood were thrilled with what was ultimately delivered. It really does go to show that with the proper expertise—and, just as importantly, good communication from the start—these types of successful outcomes are regularly achievable.

Steve Dietiker and Keith Cooper are principals at McClure Engineering, a mechanical and electrical consulting engineering firm dedicated to the development of innovative solutions to unique engineering problems.



# OHIO DISTRICT BUILDS \$52 MILLION CAMPUS THROUGH PARTNERSHIPS WITH LOCAL COMMUNITY, UNIVERSITY

#### By John Stoddard

BEING PART OF A NEW CAMPUS BUILD CAN BE BOTH exhilarating and exhausting, especially in a pandemic. But being able to bring our vision to reality and, in the process, create a legacy in our community may be a once-in-a-lifetime opportunity.

After 17 years in education at Oak Hills Schools, a larger suburban school district in suburban Cincinnati, I was looking for my next opportunity. I found it five years ago at Berkshire Local Schools in Burton, Ohio.

Before being selected as the new superintendent, I was intrigued by their PRIME initiative, which stands for Partnership for Rural Innovative Models of Education. The more I learned, the more I wanted to be part of it. PRIME is the name that was given to an innovative PK–16 approach to education to consolidate our smaller rural schools into a larger PreK–12 school on





the Kent State University - Geauga campus.

The idea was to create more opportunities for our students while creating a more robust feeder system into the Kent State University system, the Auburn Career Center for technical skills, and University Hospitals for a new healthcare track for high-school students.

It is a natural extension of the education process, allowing students to explore different career and trade paths. It can also reduce the overall higher education and training costs for families since their children can take college credits, learn a trade in diesel mechanics, and even explore healthcare opportunities through our programming. It also fits in perfectly with our project-based learning approach, as we teach our students how to embrace the concepts they learn in real-world situations.

When we were in the design phase of the school build, these were all cornerstones of our educational principles.

The idea was to combine the different schools under one main, new campus building. The school has three wings for Pre-K/elementary, middle school, and high school, a large central cafeteria common area, and a new auditorium and multiple gyms. This approach creates economies of scale for our food service team, allowing for different lunch schedules, with one larger kitchen for efficiency.

As part of our project-based learning approach, we also have an ample maker space used by multiple grades, a diesel mechanics area and new classrooms and labs. Backed by research, project-based learning deepens students' understanding of key concepts by giving them real-world projects to apply what they're learning academically. This helps build the soft skills employers are seeking, including collaboration, communication, and critical-thinking skills.

The other unique aspect of our campus is our immersive



themed areas. One of our key design partners, Inventionland Education, designed and constructed several of our age-appropriate areas.

We first learned about Inventionland

Education during a tour of their facilities with faculty and staff. On our way back, we discussed how it would be groundbreaking to have their style of immersive spaces as part of our new campus. They're one of the most significant invention factories in America.

The areas that Inventionland developed include a kindergarten cabin area, 1st and 2nd-grade castle, a treehouse

space for our 3rd and 4th graders, a pirate ship for 5th and 6th-grade students, a robot space for middle schoolers, as well as unique maker spaces for our highschool students. In my opinion, these unique spaces help foster creativity while working perfectly with our project-based learning approach.

Our new auditorium can seat up to 620 people and will be the centerpiece for large gatherings, concerts, and student performances.

What we're most proud of is the way our community came together to build this new

state-of-the-art campus. Because being in a smaller rural community that covers 118 square miles certainly has its challenges.

As we know, there is not a single solution for students and their families as they go through the educational system. We are committed to providing students with opportunities for the future. This includes earning a living wage, having opportunities for advancement, and having access to healthcare as our students begin their next stage of life.

We believe that the future is different for everyone. We want to provide the foundation for success, however it's defined. Every student should have options, whether it's going to college, learning a trade, joining the military, or exploring business and entrepreneurial opportunities.

Another aspect of the new build is the advantage our students will have by taking some of the advanced learning options. This includes students enrolled in our College Credit Plus classes (taught by KSU instructors on their campus or ours), allowing high school students to graduate with an Associate Degree. Students can also explore the healthcare

# EVERY STUDENT SHOULD HAVE OPTIONS, WHETHER IT'S GOING TO COLLEGE, LEARNING A TRADE, JOINING THE MILITARY, OR EXPLORING BUSINESS AND ENTREPRENEURIAL OPPORTUNITIES.

field with our nursing program through University Hospitals or begin to learn a trade, such as diesel mechanics on our campus, or through the many programs offered at the Auburn Career Center.

This comprehensive partnership was made possible by the entire community working together. This includes the 99year ground lease from Kent State University, as well as our local community, which voted overwhelmingly for the new school bond. Other partners include University Hospitals, Auburn Career Center, the Geauga Growth Partnership, the KeyBank Foundation, Envision Education, Inventionland Education, the Buck Institute for Education, and the Ohio Facilities and Construction Commission. Regarding costs, a little over half was paid for by the Ohio Facilities and Construction Commission, with the rest of the funding coming from the school bond proceeds, community partners, and Berkshire Local Schools.

We were also fortunate to receive a \$2-million donation from Great Lakes Cheese, a premier manufacturer and packager of cheese, for our new athletic facilities.

This partnership should pay big dividends for the entire community moving forward. Students will benefit from the modern campus, with the ability to get a jumpstart on college, learn a trade or enter the healthcare arena.

The community will benefit from graduates who are well prepared to excel in today's job market, and more robust real estate values from improved school rankings. In addition, Kent State University gains a local and consistent source for higher education students. I said this from the onset: This is a vast "win-win"

> for everyone involved. With access to additional trade job opportunities, students have another option to make the American Dream a reality.

> Although delayed from construction supply chain issues throughout the pandemic, the school will open in August 2022. School and community leaders will celebrate with a ribbon-cutting ceremony on August 9th at 6 p.m., and the

public is welcome to attend. There will also be a livestream of the event.

John Stoddard has been the superintendent of Berkshire Local Schools since 2017. Before Berkshire, Stoddard spent 17 years at Oak Hills Schools, a suburban Cincinnati school district where he held the role of Principal for J.F. Dulles Elementary School, Rapid Run Middle School, and Oak Hills High School. He brings a strong team-first approach, and his project-based learning philosophy has helped transformed learning at Berkshire.

# UNIVERSITY OF SAINT JOSEPH EXPANDS O'CONNELL ATHLETIC CENTER

By James LaPosta



As JCJ Architecture's fourth new building for the campus, the project is a continuation of a longstanding collaborative relationship between the firm and the university. The university selected JCJ Architecture to spearhead the project as the need to expand its existing single-gender athletic facilities became apparent following the integration of men into the student body. Furthermore, the school's leadership wanted a facility that would benefit the full campus community and provide social opportunities outside of athletics. The design is accessible for pedestrians and creates a stronger connection to the central part of the campus, eliminating the parking lot that had previously set the building apart. Additionally, the facility is situated directly across the street from the Student Center, creating a central hub for student activity.

JCJ Architecture spearheaded the architecture and interiors of the new facility. The firm sought to reconcile the traditional red brick colonial aesthetic of the existing campus buildings with the modern and dynamic new facility that would signal the institution's commitment to reinvention. The resulting design marries the red brick materiality and yellow doorways that are a hallmark of all buildings on campus with sleek and modern glass forms,





















clean lines, cantilevers and projections. Expansive windows animate the façade and highlight the activity taking place within. The university's colors, blue and yellow, are integrated into the exterior glass to add another layer of connection and visual excitement. The facility as a whole establishes an energetic visual focus at the end of the campus.

The entrance to the building is awash with natural light that streams in through the south-facing windows, which are outfitted with sun screens and shading overhangs. The emphasis on natural light and warm wood paneling extends a warm welcome to visitors, while the large windows enhance a visual connection to the campus. Interior finishes such as sports branding and a wooden trophy wall tie in a sense of athletic excitement to differentiate the guest experience from that of other buildings on campus. The main lobby is a light, airy and flexible concourse that serves as both a ticketing and concessions area for game nights and a comfortable space with high-top tables and casual furniture for students to study or socialize. The multifunctionality of the lobby underscores the central theme of flexibility.

From the outset of the project, the program hinged on the creation of a full, NCAA-regulation basketball court. The wooden ceiling elements in the lobby continue into the central gymnasium and wrap around the interiors, providing seamless connectivity between the spaces. Four state-of-the-art gender-neutral locker rooms are usable by different teams as the seasons change. Further highlighting the central tenets of connectivity and flexibility are athletic staff offices with visual access to the court and a skybox seating area overlooking the arena, which can function as both a VIP space and an additional classroom. To widen the appeal and usership of the facility, multiple training rooms provide opportunities for competitive athletes to train as well as the larger student body to exercise. Additionally, the student health services suite, formerly housed in a smaller outlying building, now resides on the ground floor of the new facility, emphasizing a focus on wellness.

James LaPosta has dedicated his career to design that advances the future of teaching and learning. LaPosta is a past national Chair of the AIA's Committee on Architecture for Education and has contributed to peer and industry organizations that seek to evolve the profession's approach to education design. In 2013, he was elevated to Fellow of the American Institute of Architects for his work elevating the practice of architecture, and in particular, education design.



# SITTING DUCKS ARE FOR CARNIVALS—NOT SCHOOLS

#### By Dennis Truxler

THE MOST VIOLENT YEAR TO DATE FOR SCHOOL shootings was 2021, with 193 people killed or wounded. Thus far this year, there have already been 145 victims. This is unacceptable and unconscionable.

The security measures currently employed in schools have not worked.

What can be done to keep kids safe and make them feel safe while at school? As an administrator, this is the most important question you will ever need to answer. That's because if the next Uvalde or Parkland or Sandy Hook happens on your watch, you will have to face many more uncomfortable questions, and you may be haunted by excruciating regrets. It all hinges on what you do now.

Happily, a key safety measure has emerged that answers the above question, and you will want to know about it.



#### of his students right in front of him.

**Students Are Sitting Ducks** 

School districts have had 23 years since Columbine to figure out a solution. Yet, kids keep getting shot at and killed in schools. Why? Simple—they are sitting ducks, helpless targets.

"We trained our kids to sit under the table, and that's what I thought of at the time. But we set them up to be like [sitting] ducks." That's the lament of Arnulfo Reyes, a teacher at Robb Elementary in Uvalde, Texas, who was shot and seriously wounded in the attack. He witnessed the horrific murder of all

That's wrong. Sitting ducks are for carnivals, not schools. Regardless of what security measures are in place on the front end, once a shooter gets in the building, schools need something else to prevent casualties.

Although the challenge of preventing casualties seems elusive, there now exists a key formula to meet it successfully. Admittedly, school safety requires a multi-layer approach, such as, "see something, say something" campaigns, campus security personnel, security cameras, metal detectors, panic alarm systems, door locks, etc. However, should any of those front-end measures fail or prove inadequate (and they sometimes do), what then? At the end of the day, kids in classrooms must be protected, somehow.

#### Searching for the "Somehow"

When I woke up on Valentine's Day 2018, my foremost thought was, "Where should I take my fiancée for dinner tonight?" Little did I (or anyone) know that within just a few hours, a horrific tragedy was about to occur. In a period of less than four minutes, a shooter killed 17 victims and wounded another 17 at Marjory Stoneman Douglas High School in Parkland, Florida.

Very soon after this, our school board and I urgently embarked on a mission to find the best way to protect our precious students and staff should a similar threat ever befall our campus.

The big question was this: What can protect potential victims—in reality, sitting ducks—from a killer with a gun?

Lori Alhadeff, whose daughter Alyssa was shot and killed at the Parkland massacre, wisely said, "Seconds matter." Once a shooter arrives on campus, there is precious little time before the carnage begins—and ends. At Sandy Hook, for example, before the arrival of the first police officer, the shooter had already fired 154 rounds within five minutes, ultimately killing 20 children and 6 adults.

So, here is what is needed to save lives: immediate access to a safe place right in the classroom, where most casualties occur. That is the key, the "somehow" that was needed.

Once we realized this, we began an earnest search for such a solution.

#### The "Somehow" Found

After much investigation, we found an American manufacturer that produced custom modular bullet-proof safety pods that could fit right into our classrooms and were capable of stopping high-caliber rounds from assault weapons, like the AR-15 or AK-47. These safety pods are made using a military-grade ballistic steel used

ALENDAN MALIVUK/SHUTTE

for military vehicles. As an added bonus, they could even protect occupants from the most powerful EF-5 tornado, since the pods had originally been designed as tornado shelters.

Without delay, we installed these safety pods in every classroom so that, should a shooter gain access to one of the school buildings (or if a tornado approached the campus), all students and staff could be safely shielded within seconds. We also installed larger pods in our cafeteria (to protect 175 occupants), gym, band room and library to further fortify the safety of our students and staff.

Interestingly, the Final Report of the Federal Commission on School Safety, released on December 18, 2018, in response to the Parkland tragedy, recommended the creation of "secure places within classrooms where students and teachers can shelter in the case of an active shooter."

How proud we were to have already put this wise recommendation in place!

#### "Run-Shelter-Wait"

After the Sandy Hook shooting, the FBI came up with the "runhide-fight" protocol as a response measure for anyone confronted by an active shooter.

Although this measure does provide a basic response framework and is certainly better than doing nothing, it can now be vastly improved upon with the presence of the safety pods we found. The "run-hide-fight" response potentially puts individuals in danger, as it recommends that they should first run

(which is essential) and hide somewhere (the "somewhere" may not be immediately accessible nor provide adequate protection) and, if discovered, be prepared to fight an armed assailant. Hardly an ideal solution, especially for young children.

The utilization of immediately accessible safety pods, however, now allows the creation of a superior active shooter response protocol: "run-shelterwait." Those in harm's way first run to

a nearby safety pod, shelter from the danger, and wait in safety for help to arrive.

The key improvement is the "hide" versus "shelter" step. Hiding places (like in a closet, under a desk, or huddled in a corner) can turn people into sitting ducks. However, a safety pod is designed to provide immediate, near-absolute protection—clearly, a superior option expressly designed to save precious lives.

#### Save Lives—Add Peace of Mind

The above claim notwithstanding, let me frankly acknowledge that no one, and no measure, can absolutely guarantee that there will be no victims from an active shooter event in a school. Variable and unpredictable circumstances (such as faulty or non-existent alert systems) may contribute to less-than-perfect outcomes. Nevertheless, the use of classroom safety pods in schools adds a superior level of protection that will at least mitigate the number of victims—and could potentially eliminate them altogether. In addition, students, parents and teachers can now be imbued with a newfound peace of mind that, prior to now, was virtually unattainable.

Gracie, one of our former high-school students, revealed when interviewed that she felt "safer at school than I did at home" since the addition of safety pods on our campus. One parent said, "I'm so glad my children are here so they and I can have the peace of mind knowing that whether it's a tornado or a nut with a gun, my kids are protected!"

Unexpectedly, our student enrollment has increased by more than 20 percent since the installation of the safety pods. Many parents have told me personally the reason they chose our district was due largely to the presence of our safety pods. Parents desperately want to send their kids to a school they feel is safe.

# Thinking "It Won't Happen Here" is Dangerous

On June 9, 2022, a potential intruder at an elementary school in Gadsden, Ala., was shot and killed by a police officer. The superintendent said, "You don't think that something like this is going to happen at your school." There is no place for such a potentially deadly fallacy, which is all too common among school administrators. It must change. Lives are at stake.

Since the Sandy Hook massacre in 2012, there have been 944

incidents of gunfire on school grounds, killing 321 victims! School administrators cannot ever think that a school shooting will not happen on their campus. Who of us would buy a new car without seatbelts or air bags? We don't anticipate having an accident each time we drive, but we do acknowledge and prepare for the possibility. It's the sensible thing to do, and the precaution does save lives.

When you are charged with the safe-

ty of someone else's kids, you must similarly prepare for the worst. School shootings will continue to happen. No one knows when or where the next one will be. But this much we do know: It will happen again on someone's campus. School districts must accept this reality and prepare for it.

Combining this acceptance with the creation of immediate access to safe places in the classroom is the formula that will keep students and staff from becoming sitting ducks during an active shooter event. Administrators and school boards, if you employ this formula, you will sleep well at night knowing your students and staff have the best chance of surviving a school shooting.

**Dennis Truxler** has spent the past 25 years as a school administrator and currently serves as the superintendent of the Quitman, Ark., school district. He also drives a school bus and coaches the girls' volleyball team.

CHARGED WITH THE SAFETY OF SOMEONE ELSE'S KIDS, YOU MUST SIMILARLY PREPARE FOR THE WORST.

WHEN YOU ARE

# GETTING SCHOOLED ON CLASSROOM

# LOW-IAQ CLASSROOMS



Deficient Indoor Air Quality (IAQ) due to dampness and mold can **INCREASE ASTHMA RISK BY 50**%



**TEST SCORES CAN DROP BY 21<sup>%</sup>** with increased CO2 and other indoor air contaminants



Schools with deficient IAQ have a LOWER AVERAGE STUDENT ATTENDANCE RATE

Pathogen Concentration with Minimum Ventilation





60 MINUTES

Sources: U.S. Environmental Protection Agency (EPA), Harvard School of Public Health and National Institute of Environmental Health Sciences



Read more about ventilation in the fight against COVID-19: **bit.ly/COVID19WP\_22** 





# VENTILATION

# HIGH-IAQ CLASSROOMS

Cleaner indoor air **PROMOTES BETTER HEALTH** and **REDUCED VIRAL SPREAD** 

Implementing IAQ management can BOOST TEST SCORES BY OVER 15%

Increased ventilation can **REDUCE ABSENTEEISM** by 10 absences/1,000 students

**Pathogen Concentration with Increased Ventilation** 



2 MINUTES

60 MINUTES

**Install RenewAire ERVs at Your School** 

# PARTNERSHIPS TO PIPELINE: A NEW MODEL FOR HIGH SCHOOLS

Fountain Inn High School, Greenville, South Carolina

## By Aimee Eckmann, FAIA, LEED AP BD+C, ALEP and Steve Turckes, FAIA, LEED AP, ALEP

DISRUPTIONS TO THE GLOBAL SUPPLY CHAIN AND

the prospect of worker shortages well into the future have underscored the importance of increasing job-readiness and hands-on learning opportunities for students. A 2021 Deloitte study warns that 2.1 million U.S. manufacturing jobs could go unfilled by 2030. At Greenville County Schools, district leaders enlisted the support of local industry partners such as Michelin, BMW, Stueken and others—all in need of highly skilled employees—to plan a new model of high school that begins to address this labor pipeline challenge.

Many comprehensive high schools around the country integrate career and technical education programs into their curriculum. Advanced manufacturing differs from traditional career and technical education programs in that it focuses specifically on technology and innovation to improve products and processes. Traditionally in school planning, career and technical spaces have been located far away from core academic classes.

At Fountain Inn High School, located in Greenville, S.C., partnerships with area manufacturers directly informed the layout of the school and its "Institute of Automation & Engineering," which is at the core of the curriculum and the planning. Fountain Inn's advanced manufacturing spaces are visible at the front door and physically embedded in the heart of the academic area to provide high visibility to students, parents and business partners, and to underscore that the curriculum is central to the school's mission.

The design process and outcome from Fountain Inn High School can inform the future design of advanced manufacturing programs across the country:

- The business workforce partners were heavily involved in early meetings for the project, helping the design team meaningfully understand their needs. This engagement, along with that of the district and designers, led to the prominence of advanced manufacturing spaces in the building design.
- Locating the advanced manufacturing labs with visibility at the front of the building underscores the importance of the curriculum. Placing a project display area prominently near the entrance sends the clear message that Fountain Inn High School values the hands-on work of students.
- The spaces within the school are designed with flexibility in mind: They can change over time based on new equipment or programming needs. This is essential to the success of the curriculum, ensuring that spaces won't become outdated as technology changes. Teachers don't "own" a classroom; they can check out rooms and create spaces from studios to labs for specific student projects, while having a dedicated teacher touch down space for focused work and professional collaboration.
- Advanced manufacturing classrooms connect to open collaboration areas and the core academic classrooms, making it easy for students to work across subjects. Since today's careers are not compartmentalized into siloed subject areas, it is important for students to grow accustomed to working across disciplines and seek inspiration from diverse groups of colleagues.

Fountain Inn's curriculum focuses on project-based, personalized learning centered around integrated and advanced manufacturing pathways such as integrated production technology and mechatronics. Students can earn certifications, degrees and other credentials that set them up for future



space to maximize flexibility, anticipating programmatic changes over time.



Dedicated teacher touch down areas offer i educators while incorporating passive super-



"The goal of Fountain Inn was to create pathways to the

success, regardless of post-secondary aspirations.

future for every student," said Fountain Inn High School Principal Maureen Tiller. "We picked pathways that would complement different experiences: machine tool, computer science and informatics, IT, arts and media. It's all integrated as electives, so every student is taking technical courses."

Intentional visual connectivity between spaces puts learning on display and sparks curiosity. The focus on collaboration for both learners and educators was fundamental in the building's planning. Students have informal collaboration areas directly adjacent to the labs and classrooms, making it easy to be hands-on and collaborative.

"We would not be able to do this without collaborative spaces," Tiller said. "The whole look of the building is more like a college. It's very different from a traditional high school, yet it is still a fully functioning high school with activities such as sports and performing arts."

To support students and their school community

PHOTOS FIREWATER PHOTOGRAPHY © 2021

holistically, districts, business partners and architects can build strong relationships to create spaces in which educational programs can be tailored to match job demand. As many schools like the new Fountain Inn High School seek to inspire the next generation of professionals, designing flexible spaces that can be adapted for changing industry needs can help ensure that students who wish to pursue advanced manufacturing careers in their home communities can access applicable training and opportunities.

Steven Turckes is the Global Practice Leader of the PreK-12 Educational Facilities Group of Perkins&Will, an international award-winning architectural firm specializing in the research-based planning and design of innovative and sustainable educational facilities. Aimee Eckmann is the PreK-12 Practice Leader in the Chicago office of Perkins&Will. As a global innovator in pre-K-12 programming and planning, Aimee advocates for forward-thinking solutions that engage and influence students, teachers, and communities.



vision of the collaborative project areas.



Upon entering the building, the view into the two-story advanced manufacturing lab space is designed to spark curiosity and put learning on display.



# HANDS-ON LEARNING SPACES: 5 LESSONS FROM CAREER TECH

#### By Bobby Williams

THE EXPANDING IMPORTANCE OF STEM EDUCATION and project-based learning requires a rethinking of the traditional school planning and design process. A practical way to start is to adopt a broader, non-traditional mindset, especially during a school project's conceptual phases.

Fortunately, planners and designers can draw inspiration and benchmarks from recent middle- and high-school projects, especially innovations in career tech education (CTE) that depart from conventional design and offer replicable lessons for improvement. These early adopters' experiential and career-based learning focuses on integrating science and math-based opportunities and coupling that mission with a hands-on, engaging and highly relevant problem-solving curriculum.

The success of this model is found in the demand for career technical education by a broad range of students interested in today's knowledge-based technology, science and health opportunities.

Two recent examples of applying the experiential lessons of career tech in school design are the redevelopment of Bristol County Agricultural High School (BCAHS) campus in Dighton, Mass., and the new Dover High School and Career Technical Center in Dover, N.H.

Bristol County Agricultural High School offers a rich curriculum rooted in STEM and environmental education and supports a working farm within its 220-acre campus. The school offers its 640 students real-world experiences through seven CTE programs: environmental engineering, animal science, natural resource management, agriculture, floriculture, arboriculture and landscape design.

Dover High School integrates academic with CTE educa-



tion, allowing students the opportunity to choose from a range of hands-on learning and skills-based education experiences. Throughout the entire building, classrooms, social hubs and career tech learning spaces are intermingled, bringing all students together as a single learning community.

Five lessons drawn from the visioning, planning and design of these two schools offer practical and replicable ideas for other communities seeking new ways to think about the future of project-based, hands-on learning.

1. Think bigger from the start – To fulfill the aspirations of all partners when planning a new school, it is critical to develop a bold and imaginative—but also clear—vision that includes input from educators, administrators, parents and commu-

nity-based representatives and leaders. Their insights, as well as their engagement and buy-in, will be important to the future of the project—and ultimately to the future of the school. The sharing of specialists' knowledge, from inside the school and out, is critical for earning buy-in and forging a school-specific pathway to experiential learning success.

2. Engage subject matter experts and students – Engaging a wider circle of advisors and subject matter experts throughout the design process leads to a school experience matched closely with the needs of today's teachers and students. During the initial stages of the BCAHS planning, HMFH met with teachers from each career tech program, as well as outside advisors and school partners to understand both high-level program goals as well as critical infrastructure, technology and equipment needs.

Equally important were visioning sessions with students from each program. For example, Animal Science students provided key insights on the needs and possibilities of distinct types of new labs, input that helped shape the lab layouts. Natural Resource Management students joined the planning by suggesting how their new natural history museum spaces might function.

From these discussions, the museum exhibits became an integral part of a new circulation path through one of the buildings. Landscape Design students participated in the design of the exterior plaza outside the new Student Commons. This visioning process not only engaged students in real-life problem solving, it also helped the students take "ownership" of the new school facilities.

3. Design maximum flexibility – While seeming "technical" by its nature, a school's supporting mechanical, electrical, data and other building systems carry an underappreciated yet vital importance in career tech, STEM and other hands-on learning spaces. Designing a robust, flexible and adaptable infrastructure is essential to the future success of any school.

At Dover Career Technical Center, HMFH focused on providing all the necessary infrastructure such as electrical, gas, air, exhaust and more from overhead, while providing floor drains for cleanup and access to water around the perimeter of the shops. The careful coordination of this infrastructure allows existing or new equipment to be located nearly anywhere in the shops, providing maximum flexibility for the ever-changing

CTE spaces.

DESIGNING A

**ROBUST, FLEXIBLE** 

AND ADAPTABLE

**INFRASTRUCTURE IS** 

**ESSENTIAL TO THE** 

**FUTURE SUCCESS OF** 

ANY SCHOOL.

4. Build for maximum sustainability – The communities we work with are engaged in a critical pursuit of environmental, energy and climate change mitigation. There are two universal benefits in this. A sustainable and energy-efficient building reduces operational costs, improves learning outcomes and tangibly slows climate change. While achieving these objectives, a thoughtful and visible sustainability program offers the potential for a highly relevant and engaging learning lab experience for students.

At Bristol Aggie, the entire school and campus is designed as a learning tool. An outdoor green roof provides planting beds with varying depths of soil to provide Floriculture students with the opportunity to grow and maintain a rooftop garden. One of the building's mechanical rooms is located adjacent to the Environmental Engineering labs and is accessible to the students who will actively audit a projected LEED Gold building as part of their curriculum.

5. Provide connections to nature – Multiple studies reveal the benefits of creating teaching and learning spaces that connect with the outside environment. Interest and excitement levels rise dramatically when projects can expand to include both indoor and outside experiences. Hands-on learning can also be designed to incorporate the outdoors, even in urban areas. Interior CTE spaces, especially those devoted to large project-based work or "maker" activities, can extend to the outside.

The BCAHS campus includes outdoor classrooms, outdoor dining and a multi-use amphitheater. Indoor spaces, such as labs and other project-based learning spaces, can integrate nature in creative and effective ways that support the curriculum while also contributing to student health and wellness.

When rethinking future science and hands-on learning spaces, dare to think big about what is possible. By harnessing the input and ideas from the entire community, integrating flexibility throughout, and working to exceed conventional practices for sustainability, the outcomes will advance teaching and learning forward for future generations of students.

Bobby Williams, AIA, LEED AP of HMFH Architects is an Associate Principal and Project Manager, and a consistent advocate for community-oriented, inclusive design. He has extensive expertise leading the design of science and Career Technical Education spaces, where he combines an in-depth knowledge of technical requirements with a natural ability to engage with educators to deliver unique design solutions to address each client's needs and facilitate a high level of hands-on learning.

# AN ESCAPE ROOM FOR BUILDING DIGITAL SKILLS

At Pennsylvania's Northampton Community College, students are engaging with cutting-edge technologies in a basement "apartment" designed to boost digital literacy and job skills.

## By Rhea Kelly

#### NORTHAMPTON COMMUNITY COLLEGE RECENTLY

won an Instructional Technology Council award for its Smart Apartment Learning Lab: a combination escape room and technology sandbox in which students can learn about the tech we take for granted in our everyday lives. Picture a homey space in which the walls literally have eyes — or, rather, cameras and other sensors, integrated into seemingly innocuous objects like picture frames, the refrigerator or even a smart bed. We spoke with Beth Ritter-Guth, associate dean of online learning and educational technology at the college, to find out how the Learning Lab is engaging students, building digital literacy and providing valuable training in the job skills of the future. The following conversation has been edited for length and clarity.

**Campus Technology:** Could you describe what the Smart Apartment Learning Lab is and what it's all about? **Beth Ritter-Guth:** When I started at Northampton in 2019, I had come from a community college in New Jersey where I had an innovation space. And I had always wanted to take innovative pieces and make an apartment, a living space, where students and the community could think about technology in the spaces where they live. So, it started with finding a space: We found a great space at the Fowler Family Center at Northampton Community College in Bethlehem, Pennsylvania, in the basement of an old Bethlehem Steel building. And so we built the Smart Apartment. The most expensive thing we have in the room is a smart refrigerator. And it goes down to the least expensive thing,

we have a nanny cam in our picture frame. We built an escape room in this Smart Apartment, and the first question we ask, which I won't tell you the answer to, is, "How many cameras and how many mics are in this room?" And I will give you a hint: It's more than 10, less than 100. But in this small room, how many things are watching you, how many things are listening to you? And that unlocks the first clue. People are surprised by all the different things that have cameras, and how you really can put a camera in anything now.

**CT:** I was going to ask how many smart technologies are in there, but I think that might spoil the escape room. **Ritter-Guth:** Well, I'll give you a list of some of the things we have. The whole room is powered by Alexa. So, we have a microwave that partners with Alexa; we have a clock that partners with Alexa; the TVs partner with Alexa. The deadliest thing in the room is a diffuser that I bought for \$19.99 on Amazon. You're thinking, how's that deadliest thing in that room? Well, here's how. All of the devices have some kind of app that runs them. And so you use your phone app, and you







have it start up the diffuser and it makes the apartment smell like roses. But you could also create a chemical, put it in the diffuser, leave, launch it and kill everything in the room. And if you're somebody looking at a crime scene, if you want to be a crime scene investigator, or you're going into the police academy, how would you even know to look for that?

If you think about healthcare, and you think about preparing nurses — which community colleges often do — if you're a nurse in a drug treatment facility, now we have smart toilets that can analyze everything. As a nurse, how would you know if that were hacked? We have smart beds to make sure people are rolling around and things like that. How would you know if that were hacked? And what would you do if it were hacked? If our



PHOTOS COURTESY OF NORTHAMPTON COMMUNITY COLLEGE



computer gets hacked, our tendency is to turn it off or unplug it or shut it down. That's not what you should do if your computer gets hacked. You keep it open, you leave it as it is and you call your IT department. For the forensic team to do their job, you have to leave it in the state you found it when it was hacked. As a nurse, how would you know that?

**CT:** It's like all these traditional vocations, they now also need IT training.

**Ritter-Guth:** Yep. As community college educators, we teach people how to build these things. We teach them how to sell these things. We teach them how to install them. We're preparing the workforce. So they need to know how to think critically, because the technology will change.

**CT:** Did you have learning outcomes in mind when designing the room?

**Ritter-Guth:** We wanted to build the room and then work with faculty to meet their course learning outcomes. The course learning outcomes for Criminal Justice will be different from Nursing 101. So the instructional designers and I work with faculty to meet their instructional goals.

The room itself, we open up to the public so they can come in for free. We have a lot of Girl Scout and Boy Scout troops coming in, and we've done outreach to the schools. The problem was, as soon as we were ready to cut the ribbon and launch the room — March of 2020. So then the room sat for two years, and because of where it is and the age of the building, we couldn't have more than six people in the room. We're just now getting back to full capacity. And even then, we're being cautious, because you have to touch things for the escape room. Like the smart fridge. You're thinking, why would anybody hack a smart fridge? A smart fridge has cameras on the inside, which are great if you want to see what your elderly mother might need from the store. But it also has cameras on the outside. So if you want to stalk your neighbor, you can hack those cameras and spy into people's very intimate lives in their kitchen.

**CT:** You have so many hackable devices in the room. Did you need to work with IT to make sure that those technologies are isolated or can't be used to hack into the campus network? **Ritter-Guth:** When I envisioned the room, I built into the plan that it would have its own network. Because the goal, going into the pandemic, was to work with schools internationally — so that they can hack our room, and then we have to solve it. The only way to teach hacking is to teach people how to hack, and then how to know that something has been hacked, and then how to fix it. So IT helped us create that room; they were very helpful. At the time, they were very concerned that they would not be held accountable if the college got hacked because of that room. But you can hack everything in that room and it will not touch the college.



I always say our purpose is to teach "build, break, defend." You can't learn to defend something if it hasn't been broken. It's just like learning about fire: You don't learn how to put out a grease fire by just talking about it. So it's very much the same principle. We want to give students a space to learn that.

**CT:** How often do you think you'll need to update the technology in the room?

Ritter-Guth: That's a good question, and actually one that

we struggle with, because the room sat for two years, and refrigerators have gotten better. The one we have is a great fridge — it was \$4,000 when we bought it. That fridge is now \$2,000 and better fridges have come out. How often do you refresh a room like that? So, I don't know the best answer to

that question, other than to say that we'll look at the technology again at the end of this coming year. We constantly have to be on top of it, to make sure that the technology is still relevant. And you have to upgrade the apps all the time too.

**CT:** Could you talk about how you create an escape room puzzle?

**Ritter-Guth:** I actually got certified to make escape rooms, so I went to training. But the easiest way — I do both

in-person and virtual escape rooms — the best way is to start at the end. Where are you putting the key at the end? In our particular escape room, you have to get into a safe, which is a biometric safe that's tied only to my fingerprint. It has a backup key, and that's what you have to find. Where are you going to put the key that unlocks the safe? Then how are you going to find where that key is? So you start backwards, and then you build your puzzles to the front side.

The first thing we do is show you a welcome video that talks

about the room and says there's nothing on the ceiling, nothing behind the paintings, nothing underneath the furniture, underneath the couches. You have 30 minutes to work on the puzzles. We kind of lock you in there and then we're actually watching you on one of the many cameras — usually on the phone camera.

And we do give hints. Professional escape rooms, they want more money from you — it's to their advantage for you not to solve it, so you have to pay the 20 bucks again and keep going back until you solve it. It's not in our advantage to not have successful students. So we give them hints, we give them time.

**CT:** Do you ever have students design their own escape experiences?

Ritter-Guth: That is always my goal — to have the students

I ALWAYS SAY OUR PURPOSE IS TO TEACH "BUILD, BREAK, DEFEND." making them. The more that we can put in the hands of students, the better the experience is, because they are going to come up with infinitely better connections to the world in which they live. So that is one of my goals, hopefully for next year, to get a group of students to come in and build their own escape room. A good way to do that at the college level is to work through clubs. I want to partner with our Student Government Association, to have them maybe build a Halloween escape room, and then use it as a fundraiser. We'll be there with them to help with the technology, but they get to make it and staff it and do what students do best, which is hang out and have fun. And they all get to see the technology in a non-threatening way.

**CT:** Do you have any advice for anyone who would want to recreate this concept on their own campus?

**Ritter-Guth:** Think big and bold and brave, always. I always have at the front of my mind, what are students going to need to know 20 years from now? We don't know what's coming 20 years from now, but we do know that the skills that students need are adaptability, thinking creatively and really being resilient to change because things change so rapidly in their world.

We're giving students opportunities to put hands on technology that they may not be able to afford. Our students can't afford a \$4,000 fridge, so we have the opportunity to give all of these students access to that kind of technology, which is low-risk to them, but high-yield in skills. Elon Musk is going to need employees who know how to do this stuff. Virgin Galactic, they're going to need employees who know how to build, break and defend the things that go on these ships that take people out to outer space. And so, I'm so thankful that Northampton has allowed me to be a visionary. Not a lot of schools can afford to do that. I've been very thankful that Northampton has supported me.

Be bold and brave. People are going to think that you're nuts, and they're not always going to value your vision. But if



you're ethical, and you follow your heart, and you keep your student learning outcomes in mind all of the time, don't worry about that other stuff. Don't be afraid to be different.

Rhea Kelly is editor in chief of Campus Technology.

# Listen

**Hear the full interview** with Beth Ritter-Guth in season 3, episode 7 of the Campus Technology Insider podcast: "How an Escape Room Is Building Students' Digital Skills at Northampton Community College." Find it at campustechnology.com/podcast or on all the major podcast platforms.

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