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Winnetka, Ill. — Project leaders from Wight & Company joined New Trier High School students, parents, teachers, administrators and local elected officials on June 1 to celebrate the groundbreaking of the Winnetka Campus Facilities Project. The groundbreaking ceremony signified the official launch of the two-year project, which will replace three worn and inefficient buildings with a new 275,000-square-foot building. The new building will house more than 25 classrooms and science laboratories, as well as a new library, a new cafeteria, and spaces for art, music and theater programs. The Winnetka Campus Facilities Project will replace the 1912 cafeteria, 1931 Tech Arts Building and 1950 Music Building. Construction will take place in two phases.

Ceremony marks beginning of New Tier High School

HOW ARE CAMPUSES HANDLING DEFERRED MAINTENANCE?

RESEARCHERS HAVE FOUND that students in deteriorating school buildings score between five to 11 percentile points lower on standardized achievement tests than students in modern buildings.

This example, along with other countless studies that show that a child’s ability to learn is greatly affected by the environment in which they are learning. When classroom maintenance suffers, students suffer and often it is due to minor issues that have built up over time.

Deferred maintenance occurs when small repairs and maintenance get put off due to a shortage of funds or staff availability. When these projects don’t get immediate attention they can continue to worsen over time and eventually cost many times the expense the original repair would have cost.

With budget cuts continuing to restrict public schools construction spending, larger projects tend to take priority over the bulk of maintenance and minor repairs. Although these projects may be small on an individual basis, they can add up to a major task list that can amount to hundreds of thousands of dollars.

Job Order Contracting is an alternative construction procurement tool that helps alleviate tight budgets and overburdened facility management staffs.

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Maureen Knight is the marketing manager of National Joint Powers Alliance. She can be reached at maureen.knight@njpacoop.org.

Ohio District Expanding Career Academy and Athletic Facilities

The Deer Park (Ohio) Community City School District is using $4 million in funds to build upon and expand its Career Academy and athletics facilities. The partial renovation to the high school lower level will provide team breakout rooms, mock interview spaces and innovative spaces to provide the students with a real world feel of business practices conveniently in their own high school. Each career academy

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Maureen Knight is the marketing manager of National Joint Powers Alliance. She can be reached at maureen.knight@njpacoop.org.
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Research Review

MORE CHALLENGES ON THE HORIZON.

According to the U.S. Census Bureau, 78 million students (children and adults) were enrolled in school in October of 2012. This is over a quarter of the entire population ages 3 and older. A quick look at the numbers tells us there are nearly 50 million K-12 students attending 98,000-plus public schools in the U.S., plus another 6.2 million on staff. If you think your classrooms are overcrowded now, there are more challenges on the horizon. In simplest terms, the population of the U.S. is growing — one birth every 8 seconds; one international migrant every 32 seconds — for a net gain of one person every 15 seconds. A growing population means a strain on the current facilities, as well as a need for more and better facilities.

Unfortunately, it seems that the focus is rarely on facilities — The decisions being made about educational facilities are usually based on solid research. Here are just a few examples.

Acoustics — According to the Acoustical Society of America, in many classrooms, the speech intelligibility rating is 75 percent or less. That means that listeners with normal hearing can understand only 75 percent of the words read from a list. Considering that a primary mode of teaching involves speaking and listening, speech intelligibility is a prime concern in classroom design.

Daylighting — There are a number of studies available on daylighting, from those done by Warren Hathaway with Alberta Education to more recent ones done by the Heschong Mahone Group and Hatfield. Their findings show that daylit classrooms and views to the outdoors affect concentration, test scores and learning. The 2011 Hatfield review found that students exposed to the most daylight have a 21 percent increase in performance.

Quality, Performance, Retention — The 2010 School Energy and Environment Survey of 800 district administrators or school board members reveals that almost 90 percent see a direct link between the quality and performance of school facilities and student achievement.

Community — A 2011 IZA (Institute for the Study of Labor) report describes the effects of school construction in a poor urban district on students and community. Student reading scores increased on the order of those typically observed in students who win lotteries to attend high-performing charter schools. Home prices were raised in affected neighborhoods, and led to increases in the population of families with children attending public schools.

Deborah P. Moore
Executive Editor/Publisher
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PROTECTING FLOORS FROM MOISTURE DAMAGE

AS THE SCHOOL YEAR APPROACHES, it is crucial to properly prepare for and install flooring. Skipping critical subfloor preparation will significantly shorten the life of a floor.

Prepare - To prevent warped floors, curled edges and mold and mildew, assess all potential sources of subfloor moisture, measure moisture levels using calibrated probes and select a compatible floor tile and adhesive for the unique conditions of a school. Subfloor moisture can be caused by: rainwater seepage, rising water tables, residual water from concrete curing, leaking water lines, or floods — all which slowly attack water-based adhesives. Polyethylene and PVC materials may require specific adhesives due to their surface chemistry, so check compatibility before buying.

Measure - In-situ Relative Humidity (RH) probe tests, such as ASTM F2170, measure subfloor moisture quickly and accurately. Most flooring adhesives withstand 80 percent RH. However, reaffirm the adhesive RH rating and pH balance with the manufacturer. A pH greater than 10 will break down the adhesive over time.

Install - Carpets with felt backing are designed to wick moisture away from the subfloor while antimicrobial treatments built into the primary backing can prevent mold, mildew and bacteria growth. Adhesives should be CRI Green Label Plus-certified, or proven to have low Volatile Organic Compounds (VOCs), and engineered to resist 80 percent RH. For high moisture conditions, consider 95 percent RH. However, reaffirm the adhesive RH rating and pH balance with the manufacturer. A pH greater than 10 will break down the adhesive over time.

Seam-welding compounds or floor sealers, which typically contain harmful VOCs, are unnecessary unless the flooring and adhesive are not rated to the RH moisture level. High VOC products impact IAQ and often delay move-in because adequate curing and ventilation is required to flush out VOCs and odor before students and staff enter buildings.

ős Prem Patel is the global education market segment leader for the Milliken floor covering division. He can be reached at Prem.Patel@milliken.com.

NEWS & VIEWS

( CONT. FROM PAGE 3 )

will align with a specific, high-demand career pathway led by industry leaders and specially trained teachers. Flexibility of the spaces is key, with the newest technology and modular furnishings allowing for the innovative use of teaching and training methods now and in the future. SHP Leading Design helped design the classrooms to best prepare the students for the chosen careers.

46 Educators selected for 2015 Emerging Leader Class

The Association For Supervision And Curriculum Development (ASCD), a global community dedicated to excellence in learning, teaching and leading, has announced the selection of 46 educators for its 2015 class of Emerging Leaders. The Emerging Leaders program recognizes and prepares young, promising educators to influence education programs, policy and practice on both the local and national levels. The 2015 Emerging Leader class is the largest since the program’s inception in 2005 and is diverse both professionally and regionally. For more information on ASCD’s Emerging Leaders program, visit www.ascd.org/emergingleaders.

Universities get $1.6 million IES grant to study Virtual Schools

Researchers from University of Michigan, Stanford and University of California, Davis, have received a $1.6 million grant from the United States Department of Education’s Institute of Education Sciences to conduct a three-year study of virtual schooling in Florida. Researchers will examine data for both the Florida Virtual School — an online public school serving K-12 students in Florida — and Miami-Dade County Public Schools from the 2003-04 through the 2013-14 school years, as well as data from surveys of teachers and students. According to information from the University of Michigan, the researchers will use the data to identify “how virtual schooling options affect students’ course progression, academic achievement and teacher effectiveness.”

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WITH THE COLD WEATHER behind us, many school building managers are looking for ways to save money and make buildings more comfortable. As the sun heats up during the day, so do temperatures inside school buildings. A/C systems often must work overtime during the costliest period of the day — when peak electric rates are charged.

A very cost-effective solution to this problem is professionally installed window film. With window film, buildings can have a sleek look, save money, reduce glare and hotspots. The International Window Film Association estimates installing Window Film may be up to 91.5 percent less than installing new windows.

Whether placed on the outside or inside of glass, today’s modern window films may cut cooling costs by 30 percent, repel about 80 percent of solar heat gain and some even have the same energy saving capabilities as low-e glass. Return on investment (ROI) is often less than three years and some utilities even offer rebates for window film installation!

For example, to help encourage the reduction of peak energy demand, Dominion Virginia Power offers an average $2,100 towards the installation of window film in Virginia commercial buildings. Dominion Virginia Power’s non-residential window film helps reduce the cost of installation making it more affordable for businesses to reduce solar heat entering buildings through windows by prescribed amounts. In California, many local municipalities offer rebates and tax credits. For example, California’s Proposition 39 helps eligible school projects improve energy efficiency, expand clean energy generation and energy retrofits.

Retrofitting does appear to be the solution most environmentalists are pushing for. The Preservation Green Lab at the National Building Trust for Historic Preservation published its own report recently, which concluded that in almost all cases retrofitting and renovation are better options for energy efficiency. That report was based on a 75-year life cycle analysis of six different varieties of buildings in four American cities. It cited energy savings of four to 46 percent and revealed immediate ROI rather than years down the line.

Window films give the exterior of buildings a uniform, modern look, without the unappealing look of shades and curtains haphazardly open or closed. Unlike window attachments, they also require no human or mechanical intervention because window film is a passive product that performs round the clock. Professionally installed window film can reduce glare by more than 50 percent, allow 30 to 80 percent of visible light in, and block up to 99 percent the sun’s ultra violet (UV) rays.

Protection against UV rays is something property managers should consider when looking at building upgrades. Window film can shield building occupants against the damaging effects of sun exposure. Regular windows used in mid-century buildings often provide no protection from sunlight and expose people who sit near these windows to UV rays, which can cause premature aging of the skin as well as various skin cancers. In the winter months, the sun hangs lower in the sky and can shine directly into school windows; this can potentially cause eyesight damage.

By employing window film, building managers are able to block out harmful UV rays and cut down on glare, while still allowing windows to be fully used and allow in abundant light.

Window film can also make glass more resistant to breaks and shattering from impacts with foreign objects. Professionally installed film may help to hold the window together after an impact break, thus preventing any additional damage to the window frame or people inside the building.

In summary, professionally installed window films can achieve many of the same energy efficient benefits at a fraction of the cost of window replacement while also providing important health benefits.

In summary, professionally installed window films can achieve many of the same energy efficient benefits at a fraction of the cost of window replacement while also providing important health benefits. Facilities managers overseeing school properties and grappling with energy efficiency issues need to take a serious look at window film. It could be an ideal solution to both help maintain structural integrity of the original building and deliver the energy savings.

Darrell Smith has over 35 years of experience in the window film industry and is the Executive Director of the International Window Film Association, a non-profit organization of window film dealers, distributors and manufacturers that facilitates the growth of the industry. For more information, visit www.iwfa.com.
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Safe Rooms

AN EFFICIENT DETERRENT TO SCHOOL VIOLENCE IF USED APPROPRIATELY.

There is a relatively simple yet important concept to improve not only the safety of school staff but survivability for all building occupants in certain types of school violence incidents. Though the concept has been around for decades, it is still not in use in many American K-12 schools. Fortunately, architects, school facilities, information technology and safety personnel can help to incorporate the concept in most current facilities and in future school construction projects. This concept is known as the safe or “safer” room. Since the term safer room is often used for tornado sheltering, many people use the traditional term of safe room for spaces utilized during security situations.

A safe room is a location where staff can rapidly seek refuge from a potentially violent person and order building-wide protective actions, such as an emergency lockdown and summon emergency assistance. While embassies and other high-risk settings are often equipped with safe rooms that are capable of withstanding rifle fire, moderate-sized explosions and other types of weapons, I do not suggest this level of protection for most American K-12 schools. The very real threat of school terrorism and other types of well-planned and deadly attacks are possible for any K-12 school. However, school officials should balance the costs of high levels of target hardening with needs relating to other far more common threats to human life. Over the past 50 years, terrorist attacks and active-shooter incidents have not been leading causes of death on K-12 school campuses. Focusing limited time, energy and fiscal resources too heavily on these rare, but catastrophic types of incidents can, and sometimes does, result in preventable deaths from more common hazards because they do not receive appropriate attention.

Schools should consider reasonable modification of key workspaces, such as main office areas, media centers, food service preparation areas and other locations where school employees sometimes face risk from aggressive people. By designing or modifying these types of workspaces in a manner that allows employees to rapidly move to a space with a lockable door, close and secure themselves, make appropriate emergency announcements and call 911, school employees can dramatically reduce the risk of serious injury and death — not only for themselves but for students and staff throughout the campus.

While more sophisticated attack methodologies can certainly be employed to defeat this level of protection, many aggressors in K-12 schools have been successfully stopped by ordinary locked doors. In fact, aside from the deadly attack at the Red Lake Reservation High School in Minnesota, no one has ever been able to provide any example where an armed aggressor has killed anyone by breaching a locked interior door of a K-12 school in the United States. While some vendors, using fear-based sales approaches, have claimed that many victims have died after locking themselves in various types of rooms, the facts do not support these assertions. School lockdowns have been successfully stopping attackers since at least 1900. In this case, a teacher in Danbury, Ct., locked the door of her one-room schoolhouse and stopped a man with a gun from entering her school to carry out an attack.

Rather than focusing primarily on what staff should do if someone breaches a locked interior door, my experience has been that we should focus on how we can implement school lockdowns more rapidly and reliably. Providing front office staff with the means to protect themselves, rapidly announce a lockdown, and to call 911 from a reasonably secure space is one important step. Simple design modifications can often dramatically improve the ability of staff to accomplish this without major fiscal cost.

In some instances, additional modifications are appropriate. For example, if an administrator’s office with large glass windows is the best available space for the school office, limited use of ballistic film or security film may be required. More typically, providing an additional microphone for emergency intercom announcements may be needed in older school buildings. A thoughtful evaluation of the situation by school facilities, administrative, local fire service and law enforcement personnel can often result in reasonable and cost-effective strategies.

As with any other safety approach, appropriate training and drills are needed for school staff to be able to effectively utilize this concept. I have found that most office staff can effectively secure themselves, order a lockdown and initiate a 911 call in less than 10 seconds once a safe room has been established for them and they have been properly trained and drilled in this concept.

Michael S. Dorn has helped conduct security assessments for more than 6,000 K-12 schools, keynotes conferences internationally and has published 27 books including Staying Alive – How to Act Fast and Survive Deadly Encounters. He can be reached at www.safehavensinternational.org.
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The STEAM Express - Future Ready

THE CITY OF KLEIN, TEXAS, is located just northwest of Houston. It is a warm, rural community that draws many families with its ideal balance of friendly charm and proximity to the Houston marketplace. The KEF (Klein ISD Education Foundation) is a non-profit organization "designed to provide direction and support for innovative academic and enrichment projects and staff development activities for the Klein ISD."

From the outset, the foundation had a dream to mobilize unique learning opportunities for a wide range of Science, Technology, Engineering, Arts and Mathematics ("STEAM") subjects. The STEAM Express is a 48-foot Featherlite trailer custom built to showcase interactive exhibits and technology to students and the community within these content areas.

21st-century learning

Today’s students are continually saturated with media and are nearly unlimited with their access to information. Many educators struggle with how to adapt the way they learned or the methods with which they teach to a very different generation of students. To assist in this process, a number of curriculum "frameworks" have been developed to help shape and focus learning around core content and skills. One such framework is STEAM, which seeks to include the arts in the already popular approach called STEM. STEM which stands for Science, Technology, Engineering, and Mathematics, is often focused on developing career specific knowledge and skills while still implementing state-mandated learning requirements.

Mobile technology has exploded in the past five to eight years, and many schools are quickly accepting the technology’s rampant popularity and using its influence in a positive way. This explosion in mobile technology can often be expensive to implement district-wide. The STEAM Express is maximizing the district’s resources by using a mobile platform to bring technology and equipment to students that would otherwise be cost prohibitive to implement across campuses.

Design process and content creation

A project development team of schoolteachers, administrators, technology staff, maintenance staff, as well as KEF directors, was assembled to give this project a pragmatic form. PBK facilitated group meetings and discussions to assist in defining the goals and arrived at five major objectives:

1. **Prepare** elementary and junior high students for the STEAM curriculum being adopted in high schools.
2. **Educate** the community on Klein ISD curriculum initiatives and STEAM principles.
3. **Outreach** into the community and schools where opportunity and technology are not as prevalent.
4. **Accessibility** — provide access to technology and activities too cost prohibitive to be implemented district-wide.
5. **Showcase** career options, curriculum ingenuity, and applications of classroom technology.

The following design process involved case studies of mobile training centers, diagrammatic studies, and curriculum development specific to this mobile and flexible environment. PBK initially created three schematic layouts increasing in complexity. They ranged from a simple design with minimal structural and exterior changes to a "break-the-box" scheme with a fold down stage and digital displays that pivoted out for presentations. The project development team decided to move forward with the "break-the-box" scheme.

PBK Architects continued to work with the manufacturer’s engineers to ensure that the district’s safety and accessibility standards were not compromised throughout the design process. It took five months to complete construction and take delivery.

The incredible team of Klein ISD staff, and KEF, PBK and Featherlite employees brought together their individual expertise to bring to life the dream that was the STEAM Express. On Nov. 17, 2014, the Klein ISD Education Foundation officially donated the mobile classroom to the Klein ISD in a ceremony and media day to mark the official launch of the STEAM Express. Since the initial investment for the construction and design of the trailer was paid for by the Klein ISD Education Foundation through donations, the district is charged with physical maintenance and the continued updating of curriculum to hold true to its new slogan, “Klein ISD, Future Ready.”

Cindy Doyle currently directs the Community Relations & Education Foundation, Klein ISD. Joshua Burkhart, LEED Green Associate served as an architectural designer at PBK Architects, Ian Powell, AIA, LEED AP BD+C is a partner with PBK Architects.
YOU WOULDN’T KNOW IT, but several classrooms at the 9th Grade Center of Garner Magnet High School in Garner, N.C., used to be cinema screening rooms with sloped floors. A portion of another classroom was once a concessions stand. HVAC machinery is in what was once a projection room, and a long central corridor was the pathway to each theatre.

The main impetus for the $5.6-million adaptive reuse project by the Wake County Public School System: to alleviate crowding in the fast-growing district’s nearby high school, while plans for a new high school develop. It’s a complex process, as pointed out by Brian Conklin, the district’s senior director of Facilities Design & Construction; project designer Mete Gurel of Gurel Architecture; Donna Francis, principal of architecture firm Clark Nexsen, which has worked with the district on adaptive reuse elsewhere; and Garner Magnet High School Principal Drew Cook.

Wake County’s other adaptive reuse projects include turning a medical product manufacturing facility in Apex, N.C., into Laurel Park Elementary School, a 2008 project designed by a firm that’s now part of Clark Nexsen; converting a Winn Dixie supermarket building into Wakefield Ninth Grade Center; and now adapting a former Coca-Cola facility into a career and technical education school that opened last fall.
Elsewhere, structures are adapted quite differently: Take Leonardo da Vinci School for Gifted Learners in Green Bay, Wisc. The public district’s program grew and needed new quarters, Principal Tammy Van Dyke explains. So, officials acquired a vacant, 30,000-square-foot building — it had been a private religious school for K-8, then a daycare center before becoming vacant for five years — added another 5,000 square feet of space and a secure entrance, says the district’s Michael Stangel, director of Facilities Planning & Maintenance.

That was just the start, as Stangel, project architect Melanie Parma of Somerville Architects and Engineers, and Stu Sirjord of Nexus Solutions pointed out during a 2014 visit to the school. Other changes included carving out parking and playground facilities on the tight urban site, installing energy-efficient building systems — as per an effort implemented across the district — modifying some plumbing and replacing windows, and equipping the school with interactive, mobile and other teaching and learning technologies that include distance learning equipment.

“We are clustered by academic need rather than grade level, so it’s necessary for use to be flexible with our space,” says Van Dyke, “Everybody floats to where they need to go.”

The response: flexible and moveable technology and furniture — different ages need furnishings with adjustable heights and whiteboard paint areas high and low enough for all — and plenty of space for collaboration. One of the highlights: a Thinking Studio, which Van Dyke described as a “reinvented library” and a space for collaborative learning.

In other adaptive reuse initiatives around the nation:

• A former IBM building was converted into the 1,400-student North Atlanta High School, which opened in 2013. The $147-million project involved comprehensive security and safety systems.

• Denver Public Schools, in a $31.4-million project, converted a downtown office building into a facility that houses a K-5 school, high school, administrative offices and a technical college. The new facility opened in April 2014.

• A $51.9-million renovation turned a vintage 10-floor warehouse into the 200,000-square-foot Avenues: The World School, a private educational facility serving 1,600 youngsters in the coveted Chelsea area near New York City’s High Line Park.

Impetuses and procedures vary. Back at Wake County, Conklin explains that his district keeps close tabs on student capacity,
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and when more is needed, officials work with “our real estate services professionals to seek sites best suited for a school. If there is an existing building in the target area that can be adapted to fit our specific needs, it is considered along with greenfield sites.”

If officials go the way of adaptive reuse it’s understood that such projects can — but do not necessarily — save construction time and money, and there are some trade-offs. Conklin explains that while converting the moribund theatre building solved problems for the district and the community — which was concerned about urban blight — the building’s “footprint was unable to accommodate the full program, requiring the addition of supplemental modular building space.” Students start their day in modular units, and walk a few yards to the center’s four science classrooms, an art classroom, two computer rooms, band and chorus room, gymnasium, cafeteria and kitchen and other facilities.

District officials seem sanguine about the approach, particularly as population growth continues and prime locations for new construction dwindle. There’s a feel-good factor, too, in turning moribund structures into bustling educational facilities. As Cook adds, “This has given us a clean, new perspective; and for most of our kids, this is the nicest, newest school building they’ve ever been in.”

Some adaptive reuse tips:

- Build and convert for learning, not the other way around. In other words, it’s pedagogy first and building/design second. “We already have the curriculum and the pedagogy, so we can have these spaces support that,” architect Parma says.
- Don’t inherit problems. Due diligence is the key. As Wake County’s Brian Conklin explains, carefully evaluate “building system components, such as roofing, HVAC and the structure.” It’s critical.
- Bear in mind that “there is no perfect fit in a re-use,” Conklin points out. There may be some less-than-ideal features of a building that nonetheless makes sound educational and budgetary sense to adapt.
- Allow plenty of school-level input about potential buildings, Garner High School’s Drew Cook says, and “keep an open mind.”
- Remember that it’s “more about the people in the building than the building itself,” Cook points out.
- “Establish realistic expectations,” says Conklin. Keep the community informed about your project.
- You don’t have to reinvent the wheel to fit advanced learning facilities into traditional buildings, Stangel adds.

Scott Berman is a freelance writer with experience in educational topics.
Choosing Your Floor

Decisions need to be made that are based on more than looks.

By Scott Berman

In a sense, flooring grounds school building designs — pun intended. Put another way, “flooring is used as a design element. And it’s an important design element.” That’s the view of Mt. Lebanon (Pa.) School District’s Gissy Bowman, the district’s communications director. Bowman and Rick Marciniak, the district project manager, recently led School Planning & Management on a tour of the renovated and expanded Mt. Lebanon High School complex. A $109-million project, slated for completion in December 2015, is unifying and rejuvenating this building, which has had various sections added since it opened in 1928. The LEED equivalent result will provide an efficient, technologically advanced learning environment, district officials point out.

Of course, flooring is just one aspect of a much larger, complex and multi-pronged project and, as the district officials pointed out, design is just part of the equation for flooring. Among the other parts of the equation: choosing the right floors, with an eye toward their cleaning and maintenance now and for many years ahead.

Changes in cleaning approaches have come with the other changes at the Mt. Lebanon school. Take original terrazzo, for example: Marciniak says wet mop, some polish and buffing twice a year during school breaks more than suffice. The maintenance staff is pleased, he reports, with the ease of cleaning, which has also held down costs, he says, pointing out that the district considers products and approaches based in part on recommendations by Kimberly Clark and Aramark.

A glimpse at the flooring solutions across the school is telling of the diversity of school spaces and some of the products

PHOTOS BY SCOTT BERMAN
American school buildings are aging — 42 years old on average — presenting environments that “can contribute to poor IAQ”.

for their floors today. The flooring includes:

• VCT tiles in light colors in classrooms,
Patcraft carpet tiles in administrative offices, non-slip poured epoxy flooring in the school kitchen’s prep area — it lends itself to efficient cleaning — and broadloom carpet in the long aisles of a remodeled 1,700-seat auditorium. Intermittent pops of bright colors along hallways, where ceramic tiles offer visual interest and delineate areas overlooking study rooms on the floor below.

• Preservation of the aforementioned hallway terrazzo in sections of the school complex dating from the 1930s and the 1950s. The step matters to the community, Bowman pointed out, because the original flooring is a key part of the character of the building, and “the terrazzo is remembered.” It was one of many points raised by members of the community during public hearings during planning.

• Repurposed maple gym floor from the 1950s — it was sanded, refinished and coated with three layers of polyurethane, Marciniak explains — in a bustling space now used as the school’s multipurpose/center court and cafeteria area.

• A new maple sprung floor system in a new gymnasium.

• Rubber tile in the school’s weight room. Marciniak described it as a heavy, robust product that withstands any likely forces — such as the dropping of weights — in the busy facility.

• Large expanses of polished, unstained concrete in hallways, including a section overlooking the multipurpose/center court area and another in a new glass bridge joining that area to a newly constructed athletic field house.

Elsewhere, according to L&M Construction Chemicals, the Boulder, Colo. district also used polished concrete for a recent project at Manhattan Middle School. There, the district worked with Concrete Floor Systems to install FGS PermaShine, a polished concrete floor product. The process included abating asbestos-backed tile, followed by repeated grindings to deal with deep staining of sections of existing concrete and to prep that and other areas of concrete for the new finish. The result is a vivid, multi-colored floor surface across 23,000 square feet.

In another example, various factors came into play for a recent flooring project by the Lawrence Public Schools district in Kansas, but the running thread is efficiency. In other words, district decision makers there sought flooring that is easy to choose, clean — often on short notice — repair and replace. The district went with a J+J Flooring product called Kinetex in six district buildings consisting of four schools and two district support buildings.

“We need a product that is user friendly,” says Trisha Brooke-Fruendt, the district’s supervisor of maintenance, “In the educational world, things may have to be cleaned at a moment’s notice, or replaced. Cleanliness is a top priority.” The flooring product, which is a square, enables “easy accessibility,” she adds, as well as “stain resistant and water repellent.”

Looking more broadly at trends, J+J Flooring’s David Daughtrey, group director of Business Development Education, says decision makers have a range of considerations as they work through the process of selecting new flooring. Among other things, districts are concerned, of course, with price, given “limited funds due to strained state and local budgets”; acoustics, recycled content and the ability to be recycled; the need for slip resistance and versatile use; as well as indoor air quality (IAQ).

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Low-down on Floors. Flooring is just one aspect of the much larger, complex and multi-pronged educational facility planning and construction project, and design is just part of the equation. Decision makers have a range of considerations as they work through the process of selecting new flooring, such as price, acoustics, recycled content (and the ability to be recycled), the need for slip resistance and versatile use, and indoor air quality (IAQ).

42 years old on average — presenting environments that “can contribute to poor IAQ” Daughtrey notes. In his view, soft surface floor covering can help, “by capturing dust, dirt, pollen and other allergens, preventing them from circulating in the air and entering the breathing zone.”

Then there is the factor of acoustics. As Daughtrey puts it, “many U.S. classrooms do not meet preferred acoustics standards.” He explains that a key measure is reverberation time (RT), or how long sound persists after the source of the noise ceases, and that “classrooms should have an RT of 0.4 to 0.6 seconds. To reduce RT, either volume must be decreased or sound absorption must be increased,” according to Daughtrey, “Carpet and textile composite flooring modify RT, and sound absorption is increased with the use of these materials.”

Durability, efficient cleaning and maintenance across flooring types, indoor air quality, acoustics — there are important factors to consider with flooring. And as mentioned, there is also design. Floors are a highly conspicuous and telling part of an interior. After all, “It reflects how well thought out your building is,” adds Mt. Lebanon’s Bowman.

Some ideas about selecting flooring systems across district buildings:
- Maintain relationships. Districts and suppliers should keep in touch — an effort that can help simplify the process when the time comes to choose a flooring system.
- Think through how a flooring system will work given maintenance staffing and budgeting. Gathering input about that from staff members is an important step: not only in terms of the value of their first-hand experience in a district working through the process of finding the right flooring system, but also in terms of its ongoing care.

Scott Berman is a freelance writer with experience in educational topics.
Smart Flooring For Learning Environments
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Many of us have never experienced firsthand a learning environment that looks and feels like this. I certainly remember a time when classrooms contained a dusty chalkboard, a sea of small desks and the position of the minimal windows determined the temperature in the room.

The demand for a better learning environment is here. The way we communicate, learn, and explore has changed. How we educate our students today is rooted in unprecedented knowledge of how to adapt to a variety of learning styles and is supported by innovative technology.

It’s time to transform our learning environments to engage and inspire our students. It’s time to reinvest in our commitment to the success of our communities.

Architectural design for schools comes with its own set of responsibilities, including adequate capacity, affordable maintenance and extensive safety features. How do we begin to transform our schools in a way that will make the biggest impact? Here are five important keys to a successful school environment.

1. Indoor Air Quality — Poor indoor air quality can trigger absences and affect concentration. As densely populated places, schools need excellent indoor air quality.

2. Acoustics — Students shouldn’t miss important classroom content due to background noise, such as from heating and cooling systems. Young children require a high level of acoustic quality for comprehension.

3. Visual Comfort — Research shows appropriate lighting improves test scores and reduces behavioral issues. Superbly illuminated spaces simply create a positive environment.

4. Sustainable Design — A high-performance school is synonymous with a sustainable school. Sustainable design maximizes tax dollars, conserves resources and cuts operating costs – while teaching environmental responsibility.

5. Flexibility — Students learn in different ways. Today’s classrooms need more flexibility and a creative learning environment so that several activities can go on simultaneously.

Architecture has powerful impact on student success.

By Janet Selser

WHEN WE THINK of the tools we use to help our children learn and grow at school, we think of textbooks, SMART boards and multiplication tables. But what if the school itself were a powerful learning tool, capable of creating the kind of positive, secure and engaging atmosphere children need to succeed?

The physical environment of our schools plays an important role in how our students feel and educators function. Seemingly small details such as controlled daylight, a connection with the outdoors, and interactive gathering spaces all contribute to a bright, positive atmosphere.
Creating an atmosphere that lets students know they are cared for and capable of great things, that is something our educators strive for each and every day, why not insist the school building itself do the same thing? In schools that have addressed these key issues, their students not only exhibit improved academic performance, but have better attendance and behavior as well.

“I was greeting students on the first day of school as they entered our new Highland Park Elementary. There is so much light in the beautiful atrium — very different from the old building. As I stood there, a first-grade boy walked in with nine family members. He stepped into the lobby, looked up and said, ‘Wow, you really like me!’ Then he continued to look around in awe, as did his family,” says former Stillwater Public Schools Superintendent Ann Caine, Ed.D. “I was so choked up. This is why we do what we do. Facilities DO make a difference. Highland Park has told me behavior is calmer because the students are taking pride in their new building. Achievement is up. Teachers are excited to come to work every day because they are teaching in aesthetically pleasing rooms with plenty of storage!”

Across the country, communities are voting on school bond campaigns. Many of these campaigns focus on building and improving facilities and classrooms. It is within our power as taxpayers to maximize all of our powerful learning tools to strengthen both our schools and our communities.

Janet Selser is an architect and the co-founder and president of Selser Schaefer Architects in Tulsa. Selser Schaefer Architects (www.selserschaefer.com) draws upon years of experience and evidence-based best practices to design environments that support education — making sure nothing gets in the way of the connections that spark learning.
IN RECENT YEARS, schools around the country have taken a beating from escalating energy bills. But, that doesn’t have to be your reality. Educational leaders can make a difference in their facilities’ performance by using some of the same approaches they utilize to enhance students’ performance.

For example, your team is sure to track and compare the standardized test scores of your students. It provides a benchmark to measure your students against others and evaluate how they are progressing from year to year. Testing establishes a standard by which to evaluate. But, do you measure and compare the energy use of your buildings? The often-quoted leadership phrase, “If you can’t measure it, you can’t manage it”, certainly applies in this context. It is an incredibly important first step to gather internal and external data. This will provide a framework by which you can forecast and measure improvement.

**Data exposes opportunities**

Initially, you should develop two primary resources. The first is the historical data of energy use for your properties, preferably over several years and with as much detail on each building as possible. And secondly, you’ll be looking for benchmarks to compare performance against expectation. Your historical data should be readily available through your accounting office or your energy provider.

Sources for benchmarking are likely to include your state education agency, www.energystar.gov/benchmark (available by

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**A Battle worth Fighting**

Proven ways to combat rising energy costs.

By Mike Borski
When was the last time someone admired the design of your HVAC system? Never. Which is why we’ve been hard at work for over 30 years creating the most elegant, flexible, space saving, and design-inspiring VRF Zoning solutions in the world. With the industry’s only two-pipe simultaneous cooling and heating VRF system, Mitsubishi Electric VRF is easier to design and install than traditional HVAC and other VRF systems. Discover why we’ve led the way to better use of space, better comfort control, and better energy efficiency in the U.S. for more than a decade. Learn how Mitsubishi Electric VRF can be the right choice for any building project at MitsubishiPro.com.
building type), or other regional energy focused groups. In many parts of the country, there is wide access to free expertise through energy advisors. They are great sources of information and can provide wise counsel. In addition, these advisors can guide you towards resources that provide financial assistance to help fund the transition to a more energy efficient school. It is worth the time and energy to research what is available in your area.

As you compare your data to benchmarks, evaluating your heating, ventilating and air conditioning (HVAC) systems is the next place to turn as you become a super sleuth for energy efficiency.

Once you’ve assembled the data, you can begin to look for monthly performance patterns and compare those with your benchmarks. Benchmarks are most useful when they account for school type (elementary, middle and high school), the extent of air conditioning and summer use, the presence of swimming pools, and other uses in the building.

By comparing your electric and gas consumption on a per-square-foot basis adjusted for heating and cooling degree days with other similar school buildings, you can discover where you are doing well and where you aren’t matching up, identifying opportunities for savings. For example, if your electricity use is higher than comparable schools where air conditioning is not available, then lighting would be a serious suspect of waste.

Look at lighting

Sometimes, lighting energy over-use is a problem with a reasonably simple solution. You may find that lights are being left on inappropriately, spaces are over-lit, or that less-efficient lamps are being used. Many energy providers offer an electric lighting audit as part of a strategy to reduce overall energy usage. Some even offer financial incentives for converting to energy-efficient lighting. Assessment of the lighting levels relative to the visual task being performed is a vital consideration in this discovery phase.

Over-lit areas waste energy, while insufficient or poor quality light may reduce teacher and student productivity. An average of 40 to 50 foot candles is a good level for most classroom spaces and we often see much higher light levels in existing schools. (Foot-candles are a common unit of measurement in the lighting industry. Think of it as the amount of light that actually falls on a specific surface. The foot-candle measurement is equal to one lumen per square foot.)

For classrooms or offices focused on computer use, lower light levels are preferred by users. Lighting retrofits should focus on getting to the appropriate light level with efficient lamps. Lighting in vacant or sparsely used spaces can be reduced by installing time clocks or occupancy sensors.

Tame technology waste

When looking for “low-hanging fruit” in your pursuit to reduce your energy bill, take a look at your technology. Old computers and monitors can send the meter spinning day and night. Shutting them off at the end of the day and being sure sleep modes are in use are simple measures that quickly make an impact over time. Just ask the Hudson School District in Wisconsin. Their newest school, River Crest Elementary, was designed to be a highly energy-efficient facility. After construction and occupancy, the building was fully monitored, revealing that the school actually used less energy than the model predicted. The district then applied the techniques and strategies for energy conservation used at River Crest to the district’s remaining schools. The net annual energy cost reduction in the existing buildings across the district nearly equaled the annual energy costs to operate River Crest. Strategies that were implemented included lowering room temperatures, keeping lights off in low-use areas, and turning computers off at night.

In addition, some schools are moving to zero client monitors, which are server-based monitors for cloud computing systems. Zero-client monitors eliminate the need for local CPU (central processing unit), memory and storage at each individual workstation by connecting the monitor to a central server. These monitors execute responsibilities that are typically handled by a desktop PC. They not only reduce energy used by each of the individual stations, but also eliminate the heat that is transferred into the classroom or lab.
Snoop into your HVAC

As you compare your data to benchmarks, evaluating your heating, ventilating and air conditioning (HVAC) systems is the next place to turn as you become a super sleuth for energy efficiency. HVAC system operation plays a vital role in reducing energy costs and consumption over the lifespan of your educational facilities. Common remedies for excessively high energy usage related to your AC and heating include setting the temperature at a higher (summer) or lower (winter) level, timing the hours of operations such as shut off time more effectively, checking air filters, and utilizing shades more strategically. If those practices are already in place, then more complex steps — like examining verifying operation of heat wheels in energy recovery units, appropriate use of economizer mode, and checking the efficiency of the chillers — should be considered to remedy energy-eating system issues.

For more frigid regions of the country, looking at heating issues might provide the greatest prospect for savings. In addition to the above measures, examine if outside air is coming in unnecessarily during morning warm up when the facility is unoccupied. The age of existing boilers can often provide strong clues to energy efficiency. As a general rule, if you have condensing boilers up to 10 and 15 years old, you are likely to still be operating at a relatively efficient level. Good conventional boilers that are staged can still be operating relatively well if purchased in the last 20 years. Older boilers, especially those that were originally designed for coal or fuel oil, are likely to be very inefficient even if converted to gas. The payback on replacing such equipment should be evaluated carefully. Many schools are finding that adding a packaged boiler, if mechanical room space is available, is a cost-effective way to improve efficiency. Engaging knowledgeable energy professionals can be valuable to achieving long-term success once you move beyond simple solutions.

Examining systems yields results

One recent project in Neenah, Wisc., illustrates the effectiveness of looking closely at one’s systems. Nekoosa High School (NHS), a 114,000-square-foot facility, was completed in 1970. Recently, the school district was ready for a 33,000-square-foot addition, and desired to add air conditioning to sections of the school that were without. They also aimed for holding energy use per square foot near the same level, even with the additional floor area and air conditioning. As we examined their systems, we discovered an antiquated and leaky pneumatic control system, old and ill-adjusted temperature sensors, and virtually inoperable control valves. In effect, we found a wealth of opportunity to improve the energy efficiency of NHS for years to come. Ultimately, they were able to add significantly more space and provide greater comfort for their students and faculty, while holding the line on energy consumption.

Windows wield results

Investigating the impact of your windows on the performance of your building is also important. Inefficient windows can not only negatively affect the performance of your building, but also the comfort and performance of your students. In too many instances, students that are close to windows are exposed to cold outdoor temperatures because of old, single-pane windows. Many technological advances have come to market in recent years that enhance the energy performance of windows while controlling glare. Examples include better edge sealing techniques, low-emissivity and solar control coatings, improved framing materials, low-conductance gas fills and edge spacers. These developments can be used to optimize each schoolroom’s performance based on climate and window orientation.

Stand up to rising energy costs

There’s no reason to be bullied by rising energy costs. Look at the available data and take the proper action to eliminate wasteful practices, update antiquated systems and become more efficient. Then, monitor the results to see that you get what you paid for, and identify even further opportunities to cut energy costs. Stand up to your facility and you’ll find the benefactors to be your students, faculty, staff and taxpayers!

Mike Borski is a senior project architect and the education team leader for Hoffman LLC, (www.Hoffman.net) a Wisconsin-based planning, design and construction firm. He was the architect for a recently completed LEED Gold elementary school. Mike can be reached at mborski@hoffman.net.
Involve, Engage, Motivate: Teaching Students With Ed Tech

As schools transition toward e-learning environments, educational technology offers new opportunities and resources to increase student participation and classroom interactivity.

By Ellen Kollie
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I was one of the last teachers to try them. I finally decided to have a student-led classroom: I asked the students to solve their own technology problems and help their neighbors solve theirs, because I don’t know everything. It worked. They made signs with the passwords to websites and hung them on the bulletin board. They created videos to explain how to do things. And they help one another.”

Solarz gained momentum with educational technology (ed tech, as it is commonly called). In fact, he gained so much momentum that Illinois Computing Educators (ICE), whose mission is to lead the educational community in enhancing learning through technology, named him 2014 Educator of the Year in the K-12 classroom.

“Ed tech serves my classroom in a number of ways,” says Solarz. “For my students, it provides feedback in real time without teacher interaction, and that helps direct forward movement. For me, it’s a way to report out — to show process and product. Also, because I can read and make comments on students’ work in progress in the evening, such as papers saved on Google Docs, as opposed to while I’m sitting next to them, I can be more specific about and review what I’m addressing in class.”

And there are plenty of ways Solarz is using ed tech to involve, engage and motivate his students. Each of his students maintains an e-portfolio on the classroom website, which is Weebly. “They can embed text, audio and video, others can offer feedback, and students can revise or edit at any time,” he explains. “It’s our main hub, used for major instruction and big lessons.”

Here are additional ways Solarz is using technology in the classroom.
1. Both Photo Booth software and the YouTube video sharing Website allow students to create videos, which are embedded in their e-portfolios.
2. ThingLink, an interactive media platform, allows students to create engaging content by adding rich media links to their photos and videos. “For example,” Solarz says, “as we read Phantom Tollbooth, the students marked each spot in the story on ThingLink and explained what happened at that spot. They were responsible for doing it themselves while we were reading.”
3. The Voki Website allows students to create customized speaking characters. In social studies lessons, students create avatars with features and accents representing different regions or countries, which are embedded in their e-portfolios.
4. Creately online diagram software is used for creating such items as Venn diagrams timelines, tables, graphs, charts and more. Solarz notes that all the students can access this ed tech tool at the same time.
5. With Trello, a flexible and visual organizational tool, students to create steps in a process to complete a project. It allows both Solarz and students to post comments for instant feedback, add due dates and more.
6. Google Drive is a cloud service that allows for storage of documents, photos, videos and more. From Drive you can also use Google Docs, Google Sheets and other applications to create and edit various types of files. “When we studied Mars,” says Solarz, “we colonized the planet, and the students had to write a government constitution. With Google Docs, they could revise in real time and see what others were creating without interrupting them.”
7. The class has met students from all across the world with Skype, which allows you to see and speak with other people in real time. “We have met students from Brazil, Germany, Canada and other parts of the United States,” says Solarz. “I don’t tell my students who we’re meeting. They use yes/no questions to guess where the students are from. And then we talk about what we’re learning in class. The students can and do share email addresses and become pen pals.”
8. In addition to computers, Solarz uses a Kindle for shared reading time. “My paper copies of books are older and falling apart,” he explains, “so I project the book we’re reading on the projector for the students to follow along as we’re reading. It’s more helpful than buying 20 copies of each book we read. “Technology is allowing us to do things we never could have done before,” Solarz continues. “It’s a new way of learning. It’s so much better than sitting, being lectured to and taking notes. We use it every day. It’s not novel. If I stopped using technology, my students would wonder what was going on.”
Mark Smith, executive director of Michigan Association for Computer Users in Learning (MACUL) and an FETC advisory board member, sums Solarz’s experiences in noting three common ways teachers are using technology in the classroom. The first is assessment: “It’s the way students deliver work,” he says. “It’s the 21st century inbox, if you will.” The second is modeling. “It has come to the forefront, with students using tools like SketchBook Express app and Bamboo tablets to create 3D images, graphing and more,” he indicates. “The third is for common engagement activities such as Knex and flashcards online.” MACUL is a non-profit organization “dedicated to assisting the education community through support, promotion and leadership in the effective use of educational technology,” according to its Website. FETC brings “education leaders and technology experts together to exchange techniques and strategies for teaching and learning success,” according to its website.

**Staying abreast of what’s new**

Solarz learns about new technology and new ways to use technology tools through two avenues. One is Twitter. “I receive tweets about new ways to use technology tools,” he says. “And I get one tweet about the best 100 ed tech tools for the year. I look at these tools one weekend every year and find two or three to implement in my teaching for the coming year.”

EdCamps are uniquely designed professional development days. “Attendees decide together what they’re going to learn,” Solarz explains. “Let’s say some teachers want to learn about ThingLink. We’ll schedule a session, and those who use it share how to use it with those who want to learn about it.” He notes that EdCamps are held on a fairly regular basis, popular with teachers and a great way to learn.

When it comes to what’s new, Smith sees five innovative ways teachers are using technology in the classroom.

1. **Coding:** “There are robots running around classrooms coded by students through a series of commands,” Smith says. “It brings technology right into anyone’s hands.” He quickly rattles off three: Scratch, which is a free programming language and online community allowing students create their own interactive stories, games and animations; Lightbox, which is a JavaScript library that displays images and videos by filling the screen, dimming out the rest of the web page; and Sphero, which is an app-controlled wireless robotic ball.

2. **Digital portfolios:** This is similar to Solarz’s use of Weebly.

3. **3D printing:** Smith notes that 3D printing isn’t yet cost effective and it takes hours to print projects, but it’s definitely up and coming. “Having a connection in the learning environment where students are creating something that solves a problem is huge,” he indicates, “and MakerSpace is one place where it’s being done.” MakerSpace is an online community for creating and sharing projects in 3D printing, robotics, drones and more.

4. **Design work:** “This creative work used to be meant for such classes as shop,” says Smith. “Now it’s cool, innovative, high-technology, high-speed.”

5. **Intellectual property:** While this doesn’t qualify as an official way teachers are innovatively using ed tech in the classroom, it is an important consideration. “We are probably going to start seeing a security and device management world where students’ and teachers’ intellectual work is protected,” Smith observes.

**What administrators need to know**

Outside of the classroom are the administrators directing the teachers. What do they need to know about ed tech? Plenty, say our experts. “I think administrators have to know that, if a teacher is going to integrate technology in the classroom, he or she is taking a huge risk because a lot of things can go wrong,” says Solarz. “Beyond that, administrators have to trust that teachers are going to make mistakes but will learn from them — if administrators want teachers to use technology and learn and grow.

“It’s difficult for teachers to try new things if they’re in an environment that doesn’t appreciate risk taking and learning new things,” Solarz continues. “Administrators have to understand that and say, ‘I support you; now go out there, take chances, and learn and share what you learn with others.’”

Smith affirms Solarz’s point, noting: “We have to grow administrative leaders who understand that teachers need to be both good teachers and good with technology, and teachers need support from administrators to accomplish that.”
Libraries and Media Centers

DESIGNING SCHOOL SPACES IN THE INFORMATION AGE

by DAVID KRUTZ

SCHOOL LIBRARIES and media centers are one of the most symbolic, protected and expensive spaces on any school campus. With the fast-paced revolution of technology impacting facilities around the world, fundamental and provocative changes are beginning to challenge the traditional role of the school library’s space and purpose.

To remain relevant, libraries will need to adapt and redefine their “value-added” purpose. Many people seeking information no longer need to visit a physical space in order to fulfill their information needs. Yet there is a growing body of research demonstrating the positive effect school libraries and librarians have on student reading abilities and academic achievement. The physical presence of libraries and media centers in schools will continue to be important, but library staff will need to expand programs beyond physical walls to create virtual libraries capable of serving the needs of the students, wherever they are.

Evolving functionality

The right balance must be struck during the planning stage between tradition and innovation when it comes to protecting the core principles of a library or media center. Traditional library environments are text-based and primarily constructed for individual use; their purpose is to teach people how to efficiently find and use the information they need. Today’s library is a dynamic learning space, not a book warehouse. The space must be a fluid...
environment, adapting to the ever changing ways of exchanging ideas and information, and able to continually reinvent itself to remain vibrant and relevant.

Students have become accustomed to multitasking, working in groups and being surrounded by multimedia environments, and libraries must reflect these trends, mirroring the multiple activities that can take place simultaneously in modern learning environments. Since there are many different styles of learning, the library should also reflect this variety with as many different learning spaces as possible — quiet study areas, group activity areas, spaces for individual and small group work, instructional areas and even areas where food and drink are allowed. Visit your local coffee shop to quickly understand that kids today want a social learning space where information can be shared, not just absorbed.

**Design is key**

When designing a library space, it’s important to have the library program and staff in place before facility planning begins to understand the media center’s philosophy, mission and how many people will use the space. Experienced and reputable school library facility consultants should be engaged to review the developing program of requirements and guide the design team and stakeholders through the process. Modern school libraries are complex spaces required to perform multiple roles simultaneously, and as such, need to be carefully designed to avoid being too conservative and uninviting. The design should be bold and exciting, especially in providing flexible spaces and comfortable furnishings to entice students and teachers to make daily use of the space’s offerings.

**Blending levels of technology**

Physical considerations need to be carefully addressed: the number and location of data and electrical outlets, wireless access points, the quality and level of lighting in different areas, the acoustical considerations both inside the space and from outside sources, and the type of media that will be accessed. Older technologies don’t necessarily go away; the book, the radio, the telephone, the movie, the television, the CD-ROM and the internet all currently provide people with information and will probably continue to do so for the foreseeable future. These technologies need to be factored into the overall design and layout of the library space, with consideration given to how they will be accessed.

Traffic flow patterns need to be analyzed to ensure that spaces such as the reading/study areas are away from the high-traffic and noise-generating spaces such as meeting rooms and video conferencing areas. The library needs to be accessible from the rest of the building, but not a passageway between areas of the building. Will the resources be made available to the public after school hours? Should the rest of the building be accessible as well, or does the library need to stand alone in terms of restrooms, drinking fountains and climate control? Will a separate outside entry be required with parking nearby? How the library will be used and by whom will help shape its layout.

A good school library or media center is more than a book repository — it should be the school’s information hub and an environment to support multiple learning activities, styles and media formats. The amount of information available to students and teachers is overwhelming and continues to grow at a staggering pace. Libraries, and the librarians that staff them, can help guide and teach students and staff to cope with information overload and focus on what is meaningful and relevant to today’s curriculum. A well-executed library program is a place where students can develop the skills and proficiencies necessary to succeed and embody the “ongoing, voluntary and self-motivated” concepts of the lifelong learner.

David Krutz is a project manager with The Ruhlin Company, a full-service construction firm located in Northeast Ohio. With more than 31 years of construction management experience, David’s building expertise is focused on K-12 facilities. He can be reached at dkrutz@ruhin.com.
Blended School Security

Security planning and spending that protects students, faculty, staff and property — in that order.

By Michael Fickes

School districts often spend security budgets in ways that don’t really enhance security or protect students. “I see many K-12 schools and districts spending money on security — without achieving security or protecting students,” says Charlie Howell, a principal with Division 28 Consulting, LLC, a San Antonio-based school security consulting firm.

“One school planned to install 200 cameras and send the video feed to the police department dispatch center,” Howell says. “But at the dispatch center, one police officer will have to watch those 200 cameras and a couple hundred more cameras from other security installations. How would this plan protect students?”

In almost all security programs, cameras are forensic tools, continues Howell. In other words, cameras are used to investigate events after they have occurred.

Well-defined specific tasks are exceptions to this rule. For instance, a principal might place a camera at each entrance and assign one person to secure those entrances. The responsibilities might include monitoring the cameras, screening visitors visually and over an intercom, dispatching a receptionist from the office to let the person and escorting him or her to the office for a visitor’s pass.

Howell advises building a security program by first carrying out a security assessment that identifies the risks and vulnerabilities a school is subject to.

A security program addresses those risks and vulnerabilities, eliminating them when possible and mitigating those that can’t be eliminated.

Finally, and perhaps most importantly, Howell recommends blending the security program into the day-to-day operation of the school.

“If you install a security program that is perpendicular to a school’s operation — to coin a phrase — the teachers, staff and...
students will break the program because it will be too inconvenient," Howell says. "One of my roles is to blend security into operations. When that is done right, no one will notice the security elements when following a normal operating day.

"When someone moves out of the normal operational path, he or she should feel the security program."

Security 101

Howell defines security with four words: deter, detect, delay and respond — in that order.

Deterring means security that makes a would-be attacker decide not to try. Deterrence doesn't always work. Suppose someone breaks through the access-controlled door. When that happens, and alarm sensor detects it and sets off an alarm, which alerts security.

Detection sets off a call to people capable of mounting a response — adults working in the school or security officers in some cases and police officers in more serious cases.

As the response gets organized, the security program must delay the intruder, perhaps with hall gates and internal locked and access controlled doors.

Ultimately, the responders arrive and put an end to the crisis.

People manage these basics, sometimes with the support of physical security technology.

Access control in elementary schools

"I've seen many elementary schools with a card reader on the door to the playground," Howell says. "But then there are no readers on the side doors to the school, and those doors are unlocked."

Before installing card readers, Howell advises analyzing the role of an access control system in protecting students. He notes that elementary schools need a comprehensive access control system, one that controls every door. "An active shooter in an elementary school will lead to the worst possible disaster," he says. "The young children won't be able to get away and they will be slaughtered."

"So conceptually, elementary schools need more access control — both to keep unauthorized people out and to delay unauthorized people who eventually get in."

Howell starts thinking about the design of an elementary school's access control system by analyzing the day-to-day operational flow of students, faculty, staff and visitors into and through the school.

Where are the entry points in the morning when everyone is entering the school? Where are the exit points at the close of the school day?

Where is the entry point for visitors and parents during the instructional day?

What is the flow of students and teachers to the playground at recess?

If there are portables, what is the pathway and doors out of the school and into the portable area?

Howell goes over his operational flow analysis with administrators and asks if he has missed anything.

"Using the flow analysis, I can identify appropriate doors for readers," he says. "Typically, that would include exterior doors used regularly. Rarely used exterior doors can be locked but don't need readers."

"In the morning, we would unlock the exterior doors used by students, faculty and staff. When everyone has arrived, we lock down for the day."

Howell also consults with teachers about locking down their classrooms. The discussion starts at the classroom door on the subject of locking the door in an emergency. "If they have to reach outside to lock the door, they won't want to," Howell says. "Key locks don't work well for everyone. Those that are scared will be shaking and unable to get the key into the keyhole."

"There are two answers: a pushbutton on the knob or a removable magnetic strip on the door frame over the strike hole. They simply push the button or remove the strip."

Security professionals carry out additional analyses to program other physical security technologies and measures including radios for communications, video cameras, alarms, the composition and layout of a security station as well as barriers, lighting and landscaping.

Learn to analyze your security needs, and you will begin to spend your security dollars in ways that enhance security and protect students.  

PHOTO BY JOE WOLF

Exit Points. Elementary schools need more access control — both to keep unauthorized people out and to delay unauthorized people who are trying to get in. An important thing to consider when designing a school's access control system is the day-to-day operational flow of students, faculty, staff and visitors into and through the school.  

PHOTO BY JOE WOLF
The Bullies Inside Locked Schools

Physical and cyber-bullying represent another major safety and security problem for schools.

According to the National Center for Education statistics, 61 percent of schools report occasional bullying and 37 percent report bullying incidents at least once a month. Add those percentages, and 98 percent of schools need anti-bullying programs.

Last year, the "American Journal of Public Health" published a 2014 study analyzing bullying. Called "Trends in Bullying, Physical Fighting, and Weapon Carrying Among 6th-Through 10th-Grade Student from 1998 to 2010," the study found that bullying has declined since 1998.

Specifically, students who reported being bullied at least twice per month declined from 13.7 percent in 1998 to 10.2 percent in 2010. Other studies have shown a similar downward trend.

Bullying experts attribute the decline to the number of anti-bullying programs adopted by schools. While these programs appear effective, it is not time to let up. The reason? Twenty-two percent of students still report being bullied in school.

Of the 22 percent of students that report being bullied, 7 percent say that they are being bullied electronically by way of texting, email, instant messaging and gaming.

So there is still a lot of bullying. Perhaps worse, bullying victims bring weapons to school. Another study presented at the 2014 meeting of the Pediatric Academic Societies found that bullying victims were more likely than other students to bring weapons to school. The same study estimated that 200,000 bullying victims bring weapons to high school every month. A lot of those weapons probably go undetected.

More and more schools are incorporating anti-bullying efforts into their overall safety and security programs. The website www.stopbullying.gov offers a step-by-step approach to building an anti-bullying program. You can compare your program to the one offered on the website or use the information to build your own program. Either way, it’s worth a look.

The first step is to conduct an assessment by surveying the community. According to the site, adults are often surprised by the extent of bullying uncovered by such anonymous surveys. That’s because kids don’t report being bullied, and bullies typically do their work when adults aren’t present.

Second, the stopbullying.gov program recommends engaging students, parents, teachers and administrators in developing an anti-bullying message. Set up a task force of students and adults to review and evaluate the effectiveness of the program.

Next develop a code of conduct, rules for behavior and a system that enables students to report bullying safely and comfortably. Include information about what bullying is. Some kids might not even realize they are being bullied.

The website also recommends using staff meetings, assemblies, class meetings, meetings with parents, newsletters for families, the school website and student handbook to establish an environment of acceptance, tolerance and respect.

Finally, develop a continuing education program for students, faculty and staff. Most importantly, train adults to recognize bullying and to intervene in an appropriate way.
Less Maintenance, Better Security, Insulation

As with most schools, maintenance and operating budgets at Union Grove School District, in Union Grove, WI. were spread pretty thin. Fortunately, Kurt Jorgensen, director of Operations & Facilities at Union Grove High School, found a way to save time and money, while at the same time improving security, by specifying Special-Lite FRP Doors.

The Union Grove district’s experience with SL-17 FRP Doors started with just one door, years ago. The hollow metal frame in that opening rusted away over time, but the door was still fine. Based on the performance of that door, Kurt convinced the school board to use Special-Lite FRP Doors instead of hollow metal doors, when all exterior doors were replaced in a renovation.

When Kurt learned that Special-Lite can locate proximity card readers inside an FRP door, protecting it from weather and tampering, he specified that option on nine of the new doors. As Kurt puts it, “that’s one less thing for kids to mess with.” Kurt also built in door position sensors so it is known whenever a door is opened, or has been propped open by a student.

After all exterior doors were replaced, Kurt says he could tell that the boilers were running less. On a cold December morning he noticed only one boiler was running, where before there would have been four running. According to Jorgenson, “I can tell by the temperature in the hallways, and teachers are saying that they are warmer. I’m turning down the temperature in their rooms. It is amazing.” Kurt attributes these changes to the replacement of the exterior doors with Special-Lite SL-17 FRP Doors.

When summing up his decision to insist on Special-Lite Doors, Kurt says, “I’m glad we did it. It’s one less headache. I know the doors are going to close every time.”

New Washfountain Makes A Splasch

Madison Elementary, part of the West Allis-West Milwaukee School District, has more than 230 students enrolled in classes ranging from kindergarten to sixth grade. As with many older schools, Madison could use a few facility upgrades, particularly with regard to classroom hand washing areas.

After decades of use, a washfountain in Madison Elementary’s kindergarten classroom was wearing out and desperately needed to be replaced. “Most of the spray holes were permanently clogged, so the water would shoot out of the others and over the edge of the washfountain making a big mess,” says school custodian, Bill Ziolecki.

“Maintenance had become a big challenge on the old washfountain,” adds Ziolecki. “It was also a bear to clean, and frankly, the bowl material looked better if we left it alone.”

As part of an 80th Anniversary celebration, Bradley Corp. held a search for the “Ultimate Washfountain” to find the most unique, antique, or otherwise unusual washfountains. After judging the entries, visitors to Bradley’s website chose Madison Elementary as one of the ultimate winners. Most likely, Madison was selected because their washfountain was extremely old, and a new washfountain would benefit kindergarten and first grade students.

In early 2003, Madison Elementary received their grand prize, a new Bradley Terreon Classic Juvenile Height Washfountain. Juvenile-height washfountains accommodate at least three users — a feature that conserves water and energy and takes up less space than restrooms or classes equipped with conventional sinks.

“While it may not be the most visually appealing, it’s certainly fun,” Ziolecki says. “I’d like to get washfountains throughout the entire school. The children really have fun using them.”

www.special-lite.com

www.bradleycorp.com
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**Seating that Stands Out**

*Arcadia* — The often elusive pairing of style and substance meet harmoniously with Infinium, a sophisticated collection of modern lounge seating, benches and occasional tables from Arcadia. This versatile series is characterized by a unique geometric shape that makes a dramatic statement.

![Arcadia](www.arcadiacontract.com)

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![Genetec](www.genetec.com)

**Heavy-Duty Faucets**

*Moen Commercial* — The M•Dura line is thoroughly tested to stand up to the extreme wear and tear found in commercial applications and provides a stylish aesthetic. The M•Dura features a heavy-duty, cast-brass body and ceramic disc cartridge encased in a durable brass.

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Executive Level

30 ☐ Superintendent

20 ☐ President/Chair (Board of Education)

Purchasing Level

Assistant Superintendents, Vice-Presidents, Directors, Managers, Supervisors of:

50 ☐ Business

49 ☐ Purchasing

Specifier Level

Assistant Superintendents, Vice-Presidents, Architects, Engineers, Interior Designers or Consultants:

51 ☐ Facilities Planning

44 ☐ Maintenance, Buildings & Grounds, Physical Plant

40 ☐ Energy/Sustainability

54 ☐ Safety & Security

59 ☐ Technology

47 ☐ Federal and State Departments of Education

60 ☐ Architect, Engineer, Interior Designer or Consultant

65 ☐ Construction Manager, Design Builder or General Contractor

64 ☐ Integrators

00 ☐ Other (Please specify)

2. Please select the category which best describes your area of involvement in Education.

10 ☐ Public School District

30 ☐ Government Agency (Federal or State Office)

40 ☐ Private Firm (Architect, Engineer, Construction, Consultant, etc.)

00 ☐ Other (Please specify)

3. What is the enrollment level of your district? (optional)

1. Over 25,000

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3. 5,000 – 9,999

4. 2,500 – 4,999

5. 1,000 – 2,499

6. Under 1,000

4. Which associations or organizations do you belong to:

1. NSBA – National School Boards Association

2. AASA – The School Superintendents Association

3. ASBO – Association of School Business Officials International

4. APPA – Leadership in Educational Facilities

5. NSPMA – National School Plant Management Association

6. CEFPI – Council of Educational Facility Planners International

7. NSBA TLN – National School Boards Association Technology Leadership Network

8. AIA – American Institute of Architects

9. AIA/CAE – Committee on Architecture for Education

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Rules, Laws, Policies
AREN’T THEY SUPPOSED TO BE FOR THE BENEFIT OF THE STUDENTS?

TWO OF MY PET PEEVES — politicians who make decisions about how schools should operate, and school districts that make and enforce rules without thinking about the larger consequences — have conspired to keep my eyes and ears on the news lately, rather than looking at the latest happenings designed to help improve education.

This may be simplistic thinking, but in my travels to schools in the U.S. and in other parts of the world, I’ve found one common thread. The people working in the schools like children. Teachers obviously choose to work with students, whether very young or more mature. But by and large, the secretaries, custodians, bus drivers, crossing guards and others who work in schools care about children. If they did not, they would seek employment elsewhere.

Politicians basically like voters. Since children do not vote, politicians have little or no desire or need to be with children, to care about them or think about their welfare. They’ll kiss babies, of course, but that’s to please the parents, and they hand them back as quickly as possible.

Some politicians talk a good game about the importance of education, but listen to them closely and you’ll find that their concern quickly moves from what you are trying to talk about (“what is good for children,”) to “how much will it cost?” If it involves raising taxes, forget about it.

Fortunately, the United States has been built on a foundation of public education paid for and by everybody and available to all children. The unfortunate part is that it does cost a lot of money paid considerably less than qualified teachers.

I do not know why having qualified or unqualified teachers in the classroom should become a partisan issue, but apparently it is. All Republicans voted in favor of the proposal; all Democrats opposed it. Republicans control both houses of the state legislature so there is a good chance that this budget item will be approved.

“Yes, yes, of course we want what’s best for children but how much will it cost? Will it keep the tax rate down?” That’s what is important.

School people can be foolish, too

Of course, school people hardly need the help of politicians to make schools look silly. Take the situation in Cherry Creek, Colo., where an elementary school cafeteria worker was fired because she gave food to hungry children, even if they were not entitled to free or reduced meals.

Della Curry, the worker involved, admitted that she violated school policy by giving the free meals, but raised a very good question about when school rules, perhaps proposed for good reason, have unintended consequences.

“I had a first grader in front of me, crying because she didn’t have enough money for lunch. Yes, I gave her lunch. I broke the law. The law needs to be changed.” (Possibly it will be. A spokesperson for the school district responded, “No child is ever allowed to go without lunch.” Now, let’s hope that policy is enforced, even when it conflicts with the other.)

In Senatobia, Miss., the families of a few high school students stood up and cheered when their children were called up to get their diplomas. Apparently, there was a rule that all applause when it conflicts with the other.)

They paid an immediate price for this enthusiasm, being escorted from the auditorium by security guards and having to wait outside to continue their unauthorized celebration. But the case hardly ended there. Two weeks later, the school superintendent filed charges against the parents in the local court for disturbing the peace, saying he’s “determined to have order at graduation ceremonies.”

What he has gotten instead is a wave of unwanted publicity and national attention, exasperated by the fact that the celebrating family is African-American. Rules, rules, rules. Be careful. Making and blindly enforcing rules can have many unintended consequences.

>>Paul Abramson is education industry analyst for SP&M and president of Stanton Leggett & Associates, an educational facilities consulting firm based in Mamaroneck, N.Y. He was named CEPFI’s 2008 “Planner of the Year.” He can be reached at intelled@aol.com.
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