

EVOLUTION



of Design

Low-cost design options and other tips that can help make healthy and creative classrooms

Todd Bushmaker AIA, LEED AP and Rob Koehler AIA

There are many lessons learned as the design of school facilities has changed to address the current and future needs of society.

Because of research data, improvements in products, cultural shifts, new pedagogy, government mandates, a changing job market and more, our facilities should look and operate differently.

Sir Ken Robinson, an author, speaker and international advisor on education, forecasts that we're largely preparing students for jobs that don't exist today. Fortunately,

school design has evolved to address numerous societal swings.

■ Flexibility of Space and Furniture

The more flexibility that we can provide for our teachers, the better they can prepare our students for excellence. A key aspect of the educational schema is to prepare a workforce for tomorrow that is proficient in the STEM (science, technology, engineering and mathematics) disciplines, but also proficient in arts, social sciences and collaboration.

When looking at remodeling a dated

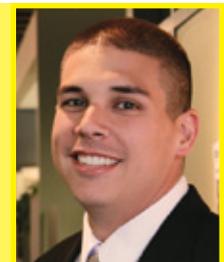
facility or creating new construction, we must constantly consider how our space can accommodate all sorts of different learning and arrangement of students (*i.e.*, project-based learning).

Rigidity is the arch nemesis of creative education. Flexibility empowers teachers to allow groups of varied sizes, create diverse activity areas, and provide a forum for shared learning among sets of students. Triangular or trapezoid-shaped desks can provide numerous options for helping groups of all sizes collaborate. There are other low-cost options that can provide



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further flexibility and creativity such as stability balls, soft café-style seating, bean bags, and standing stations to add to the adaptability of the environment.

Existing classrooms can often be made more flexible for different teaching and learning styles simply by rearranging furniture or purchasing more adaptable furnishings. Tables are increasingly utilized that can serve single students, pairs or small groups depending on how they're reconfigured. Room dividers that double as tackboards, writing surfaces, storage units or bookcases can increase a teacher's options while accommodating a limited budget.

Ergonomic seating options can help students focus by reducing muscle and joint strain and the tendency to fidget due to discomfort. Soft, casual seating (whether in classrooms, common areas, breakout spaces or the library) can foster collaboration in a less rigid environment.

New educational theories and teaching methods have put increasing emphasis on improved communication skills and teamwork, highlighting the need for space and furniture that facilitates those attributes.

Technology is the Norm

Technology impacts every facet of our lives and its integration into our children's education is vital. However, the power of technology in K-12 education can put significant demands on school facilities and infrastructure. It is essential to have a clear technology pathway that considers such items as student engagement, digital backpacks, personalized learning, 1:1 distribution, and 24:7 learning.

Except for those applications that require higher-end hardware such as video editing and building information modeling (BIM), there is a shift away from stand-alone computer labs to portable, assigned computing devices like Chromebooks and iPads. A large-format, touch-screen computer might be more conducive for the learning environment than a smart board or projector. Again, group interaction,



Non-Invasive SECURITY

Today's schools face the difficult incongruity of needing to be both welcoming and secure. Unfortunately a determined person will find a way in no matter what, but a strategy of slowing them down enough to head off a situation in time can be developed with a little extra attention. Decorative site fixtures, landscaping, drive design and even building setbacks can all be part of helping to stave off a threat before they even get to the building. A video intercom system can screen visitors before allowing them into the school, and establishing their identity before providing access.

Once guests are granted access, they should pass through or by the reception area, prior to entering into the heart of the school. Many schools provide additional security for office staff by incorporating a transaction window, perhaps with bullet resistant glazing. Panic buttons which simultaneously notify law enforcement, and communicate with the district's alarm company, administration, and even the rest of the school, are increasingly common.

Allowing views from hallways into classrooms is no longer seen as wise in light of recent intruder situations and the need for classroom lockdowns. Classroom security functions should allow the teacher to lock the room without opening the door. Electronic locks on both exterior and interior doors have become a widespread option, providing different levels of access and usage tracking; some systems are also capable of remote locking and status assessments. □

collaboration, and communication are key facets of learning that technology should support.

Increasingly, teachers are embracing the use of students' personal devices instead of demanding they be put away. Sufficient Wi-Fi to handle school-issued and personal devices, charging stations, network

and content security, and building infrastructure to handle future needs are important today.

Adjustments are often necessary to ensure devices are ready when students come calling. Charging station needs vary depending on the programs adopted by each district. Some utilize portable carts, which

require a dedicated circuit at a conveniently located receptacle. Locations may vary, such as in classrooms, a corridor alcove, the library-media center, or other locations campus-wide. For permanent installations, a surface-mount raceway (wire mold) is more appropriate, allowing easy access to connect multiple computers to a power source. As you plan for the future, don't forget about other devices, such as tablets and phones.

Lighting Strategies and Educational Effectiveness

Natural light enhances learning and social spaces and creates more interesting and dynamic environments. Glazing technology has improved as has options for daylighting in recent years. As importantly, natural daylighting and enriched views have a positive impact on student health, learning ability and sense of well-

being, but too much in the form of glare and overlighting distracts and can negate the advantages.

When building a new school, design teams are now much more aware of the need to balance the

utilization of natural and artificial light and how those two interact with each other in different parts of the building. In existing schools, much can be done to improve efficiency and provide better learning space for



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students. For instance, consider reducing light levels in typically overlit areas such as corridors, gymnasiums and cafeterias. Replace outdated fixtures with LED-based units and install multi-level switching for flexibility in the classrooms.

We've grown familiar with the benefits of timers and motion sensors to reduce lights being on unnecessarily, but daylight sensors are avail-

able that measure daylight level in the room (or areas of a room) and adjust appropriately. Lamp "temperature" can also have an impact: cool colors can be perceived as harsh and sterile, while warm colors can have a relaxing, natural effect. LED lamp technology is available that can dynamically adjust this temperature, and in fact introduce almost any color to suit a specific need.

■ Preparing for the Future

Staying up-to-date with new building technology can help your schools run more efficiently and provide a better, and healthier, learning space for your students. The good news is many of these options are relatively low-cost and can save your district money in the long run.

As we continue to work to make our schools more conducive to collaborative and creative learning, we need to emphasize the importance of flexibility in our classrooms. We do

not know exactly what kind of learning space our students will need in 10 or 20 years nor do we know what kinds of technology our students will be using. Flexibility in our schools is one of the best, and most cost-effective strategies schools can use to stay modern.

To equip your students to be a global force, be aware of the evolution of educational design and proactively prepare for tomorrow, today! ■

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