Rethinking the Big Box: Adaptive Reuse for Schools

Adaptive reuse of existing buildings creates a win-win-win opportunity for communities, schools, and the students who use them. Repurposing vacant "big-box" retail spaces for educational use can spur neighborhood revitalization, provide viable alternatives to new construction, and create innovative spaces for teaching and learning.

Fact: Schools matter. The physical school environment has a measurable impact on student health, safety, sense of self, and psychological state. Put simply, research shows that the learning environment affects…learning. There are approximately 4,745 school days between kindergarten and senior year. 3,500 of those days, a full 74%, will be spent at school. For many children, school is the nicest place they go; it is well worth the time and effort to create learning environments which are healthy, safe, and delightful as well as functional.

We need more excellent schools, and we need them quickly. The Institute of Education Sciences states that 50.1 million students attended public K-12 schools in 2013. Enrollment, particularly in the elementary grades, is projected to increase steadily through 2019. At the same time, today's schools are increasingly faced with strained budgets. By 2012, national spending on school construction had diminished to approximately $10 billion, about half of pre-recession level spending. Construction funding continues to decline, even as enrollment grows.

This decline in investment shows. The *2013 Report Card for America's Infrastructure* compiled by the American Society of Civil Engineers gave U.S. schools a "D" rating. The report estimates that 76% of America's public K-12 schools were in substandard condition in at least 1 of 6 critical areas including daylighting, noise control, temperature and ventilation, indoor air quality, quality of maintenance, and safety and security. Experts estimate that the cost of modernizing our nation's school facilities is at least $197 billion, in an era of constrained finances and rapid growth. Where do we go from here?

Fact: Vacant Buildings Are a Drain on Communities.
Most communities have surplus buildings, and too often they take the form of abandoned big-box stores. These visible examples of blight occupy prominent community spaces as poorly-maintained eyesores, frequently triggering decline in neighboring businesses and becoming targets for undesirable activity. The International Council of Shopping Centers documented that 6,900 retail stores of all types closed in 2012. Retail closures are the result of a number of factors: an overabundance of retail space, shifting economic markets, the recent recession, and an increase in online shopping. When big-box retailers such as WalMart change store formats, older stores are often vacated for newer, larger spaces. WalMart is projected to open 250 new stores in the US in 2014. At least half of these will be supercenters, many supplanting existing Walmart stores, which will then be empty. Abandoned retail spaces, often referred to as "ghost boxes," continue to proliferate.

Fact: In This Case, "Problem" Plus "Problem" Equals "Opportunity."
These two problems- growing school districts with tight budgets in need of facilities, and vacant spaces creating physical and economic drains on their communities- create a significant opportunity. These abandoned big boxes offer school districts a practical alternative to new construction, and offer communities a means to re-energize underused community space.

Advantages to "adaptive reuse," the term for the practice of renovating existing buildings for new uses, are many. Abandoned retail spaces are often located in central locations which can serve school districts well in covering attendance zones. They are typically accessible from main arteries and are, in some cases, connected to existing public transit. In terms of land use, recycling these buildings promotes smart growth, minimizes urban sprawl, and preserves greenfield sites.

Adaptive reuse offers many urban design advantages as well. In addition to the potential for neighborhood revitalization, creative community use of these structures increases density in a healthy way, which can support new economic development. Adaptive reuse may save on costs for construction, zoning, and financing over new construction, and provides the added benefit of creating a public example of fiscal and environmental stewardship. Adaptive reuse, in most cases, realizes its most substantial savings in terms of reduced construction times, allowing students to occupy facilities much faster than with typical new construction projects.

The environmental impact of adaptive reuse is substantial. The National Trust for Historic Preservation notes that over 1 billion SF of construction is demolished every year, with most of the debris ending up in landfills. Recycling buildings can minimize landfill impacts and take advantage of the embodied energy which has already been invested in the building and infrastructure. As a significant additional incentive, adaptive reuse provides excellent opportunities for innovative designs and imaginative spaces, or "thinking outside the box."

Candidates for Adaptive Reuse:
Selecting a building for adaptive reuse as a school requires careful preparation. Some buildings are better candidates for reuse than others, and school districts should be aware of the key factors which will impact the viability of a project. Ideal reuse candidates are centrally located, with pedestrian access if possible, to promote a sense of the school as an integral part of a healthy community. The building itself must be structurally sound, safe, potentially properly zoned, and potentially compliant with code and accessibility requirements. The building must be adaptable enough to support the proposed educational curriculum and accommodate future needs in a flexible, high-quality, modern learning environment. The site should provide adequate space for circulation as well as room for any required ball field and playgrounds.

As with any renovation project, thorough due diligence at the outset is critical to success. Consultants should evaluate a wide range factors including structural layout; energy efficiency of walls, windows, and roof; condition and capacity of mechanical, plumbing, and electrical systems; and any potential real estate and property management issues. Safety and security are paramount; however, security issues are usually relatively easily resolved, as big box sites tend to be very open and provide good sightlines. As big-box buildings are typically quite large, school districts should complete a programming study to confirm that the proposed building is suitable in terms of size. Surplus space may provide room for future expansion, but may also prove challenging. Some districts may choose to lease surplus space until it is needed.

Points to Consider:
Adaptive reuse may pose unique challenges, and a number of issues must be addressed before school districts make a decision to invest in this type of project. The first obstacle for districts is often psychological. Stakeholders may prefer to start with a clean slate, avoiding the unknowns associated with a major renovation project. Navigating bureaucratic processes may require additional time up front, as districts must often comply with pre-established regulations such as minimum school acreage requirements, health and safety regulations, acoustical criteria, traffic routing, and parking concerns.

Each site will provide a different set of challenges and opportunities. Physical and aesthetic challenges can be solved with creative design solutions, but these challenges do require particular attention. Renovations require particular attention to potential environmental hazards such as radon, asbestos, or lead paint; environmental testing and sampling will determine whether these or other hazards need to be remediated. The thermal performance of the walls, windows, and roof may be substandard, and it is not uncommon to have to add insulation and provide insulated glazing to meet energy codes. The condition of the slab should be examined, as moisture in the slab is a common problem which may require a costly remediation. The structural grid, connections, and wall construction for bracing to withstand seismic and wind loads must be inspected to confirm that all systems are code-compliant for a new occupancy type. As early as possible in the process, the team should use information from the due diligence and conceptual design stages to assemble a cost estimate to verify that reuse is a financially viable option.

The biggest challenge, and one of the most important factors in an adaptive reuse project, is bringing daylight into the vast, dark interior spaces. Clerestory light boxes, skylights, punched window openings, and storefront glazing are all effective tools to bring light into the interior of a building, and make the space much more welcoming, functional, and suitable for educational use. However, these problems, in addition to the challenge of overcoming the big-box aesthetic, may be mitigated or eliminated by innovative design.

In short:
While adaptive reuse projects require careful site selection and attention to due diligence, the potential benefits to both communities and school systems are substantial. A revitalized ghost box can spur community development, reduce landfill impacts, reduce sprawl, preserve greenfield sites, and promote recycling on a large scale. For schools, adaptive reuse of

these buildings may offer significant time savings in providing much-needed school facilities, and generate opportunities for innovative design, state-of-the-art educational facilities, and inspiring spaces in which to teach and learn.

Case Study: Vernon Malone College and Career Academy, Raleigh, NC

The Vernon Malone College and Career Academy in Raleigh, NC required a special space for an innovative new curriculum. Created by a 3-way partnership between Wake County, Wake Technical Community College, and Wake County Public Schools, the program offers traditional core academic subjects taught by Wake County teachers, presented alongside career and technical programs taught by staff from Wake Technical Community College. The program is designed to boost graduation rates, encourage students to engage in learning, and provide valuable career skills in a nontraditional setting.

To create this setting, the team selected an existing vacant Coca-Cola bottling and distribution plant and targeted it for a new life as a school. The 100,000 SF building offered a number of significant advantages. It was located near the heart of downtown Raleigh, easily accessible from several prime traffic arteries. The 16-acre lot offered ample space for parking and site circulation, and the site was zoned for educational use. The size of the existing structure was an ideal fit for the 700 student program, and the high-bay, widely spaced steel column grid provided flexibility for the new layout. An existing administrative office area which previously served the Coke plant was easily adapted for the school's offices.

In a bold design move, the team re-energized and defined the stagnant space with a dynamic orange wall which slices through the building. The wall adds a sense of vitality and movement beneath new clerestory light boxes, which fill the interior space with daylight. The interior design incorporates elements that align with the industrial aesthetic of the existing building and the technical side of the program. A new clearly defined entry provides a welcoming face to the program, and new punched windows allow additional natural light into the interior. A central "learning commons" area fosters collaboration and a spirit of community in an "adult-like" hangout space. The exterior of the building reflects the spirit of the adaptive reuse transformation, integrating new design elements to capture the energy of the new program while economically utilizing the building skin.

Though the site was a good match for the school's needs, it provided a number of challenges as well. Existing fuel tanks, lead paint, and asbestos had to be removed, and fire code required the insertion of fire walls to compartmentalize the building. Several of the fire walls required structural adjustments for code compliance. The existing concrete floor was sloped, and the team invested in a new slab poured on top of the existing floor to avoid ongoing construction issues with leveling. The exterior walls were brick and block with no air space or insulation; these required spray foam insulation and a gyp board interior finish. To seal and protect the exterior, "Thorocoat" waterproofing was applied to minimize water intrusion while giving the brick a fresh appearance. The existing roof was also poorly insulated and in need of repair. The team replaced the entire roof with new R-30 insulation and a new PVC roof membrane to reduce energy costs and ongoing maintenance needs. The amount of paving exceeded the needs of the program, so the team was able to reduce the amount of impervious surface and create additional green space on the site to complement the existing mature landscape features.

The resulting project is a "win" for the school system, the community, and above all, the students. It opened in the fall of 2014 to enthusiastic praise from students and faculty, and is already offering new energy to the underutilized area. In addition to neighborhood revitalization and significant sustainability benefits from building reuse, the project, like most adaptive reuse projects, provided moderate savings over the cost of new construction. The biggest advantage to the school system was, in this case, a substantial savings in time: the project, even remediation, took about 12 months to complete, as compared to 18-24 months for a school for this program built from the ground up. The extra 6-12 months is a significant advantage in accommodating growing enrollment needs, and the real need for innovative learning space, as quickly as possible.

Exterior before:

Exterior after:

Students in common area: