

Replacement vs. Renovation: The Reincarnation of Hubble Middle School

By Douglas J. Ogurek, LEED AP

On the first full day at the new Hubble Middle School in Warrenville, Illinois, science teacher Meg Tillman and her seventh-grade students saw something majestic when they looked out their lab windows: a red-tailed hawk swooping into the vegetation that fills the campus's five-acre retention pond. After some commotion within the tall grasses, the hawk clasped its prey in its talons and took flight.

At the original Hubble Middle School, neither the views (a congested Roosevelt Road and glimpses of downtown Wheaton) nor the century-old facility that offered them was very inspiring. Built at the start of the 20th century, the 250,000-square-foot building was converted from Wheaton Central High School to Hubble Middle School in the early 1980s.

The age, size, and design of the facility led to a host of obstacles. Andy Johnson, Wheaton Warrenville Com-

munity Unit School District 200 Board of Education president since 2001, recalls, "The old Hubble was grossly inefficient to operate when compared to any of our other middle schools, and even to our much larger high schools." These inefficiencies surfaced in student transportation, educational programs, and energy expenditures.

A decade of discussions about solving these issues culminated in a planning study, which revealed that building a new facility would be a much more budget- and student-centered solution than renovating the existing one. Big old Hubble Middle School was just too big and too old.

At three-quarters the size of its predecessor, the new 190,000-square-foot Hubble Middle School is rooted in the school's program and instructional delivery methods. The input of students, teachers, and community members inspired everything from the outdoor nature

Hubbard Middle School teachers use the entire school—inside and out—as a classroom.

observatory that flows beneath the glass bridge to the green roof accessible through the learning resource center.

The “new” Hubble also stands as the first middle school in Illinois to register for LEED for Schools® certification from the U.S. Green Building Council. Leadership in Energy and Environmental Design (LEED) is a rating system for achieving comfortable, healthy, energy-efficient, and environmentally friendly facilities.

Recently featured as a U.S. Green Building Council case study, the facility not only testifies to the success achieved when all stakeholders participate to create a program-driven school, but it also sets an example for other districts, for public building agencies and corporations, and for the 1,000 students it serves. Johnson says, “We’ve had nothing but positive responses from those who have been to the school . . . kids and adults.”

Reduced Commutes and Parklike Campus

The first major challenge was finding a suitable location for the new school. District 200, located 25 miles west of downtown Chicago, serves five communities in DuPage County. The original Hubble sat near the center of the district in Wheaton. However, more than half its students lived in Warrenville, at the southwestern corner of the district. “It was completely outside the attendance boundaries for many of the families it served,” Johnson explains.

According to Beth Sullivan, Hubble Middle School principal, the old school had only four eligible walkers, while many Warrenville students had 25-minute bus rides to and from school. Bad weather would sometimes double travel times.

After an intense search, the administration and board found a potential site. It was in Warrenville and was much closer to the majority of students. However, the process of securing that site was “tumultuous,”



Top: Students and teachers congregate on the green roof throughout fall and spring. Bottom: Natural lighting brightens the library/resource center.

says assistant superintendent of business operations Bill Farley.

A small but vocal group resisted the move. “They raised all sorts of unfounded objections,” adds Johnson. “But in the end, the community saw through the red herrings and voted 60–40 to support a new school in a new location.”

The new Hubble’s site raises the number of eligible walkers to 45 and significantly cuts travel time for the majority of students; they have more time to participate in middle school

programs and more time to spend with their families.

Whereas the sounds of horns and sirens often invaded the old Hubble campus, its reincarnation offers a much more tranquil setting. The 22-acre campus features drought-resistant landscaping highlighted by a 5-acre storm-water basin filled with wetland vegetation. “It’s a parklike setting,” says Sullivan. “Some have even called it ‘pastoral.’”

Farley adds that the board, administration, and architect worked hard

Hubble Middle School offers an inviting entryway to students, staff, and visitors.



to ensure that the site did not disrupt the school's corporate and residential neighbors. For instance, the placement of landscaping berms and trees keeps the school from imposing on its surroundings, while lower-wattage parking lot lighting eliminates light pollution.

A Much Better Fit

Paul Pessetti, the architectural firm's project manager for the new Hubble, described its forerunner as "a sprawling mass of rooms at odds with the program." For instance, a sixth-grade team of 100 students on the lower level might have to ascend two floors and then walk the full length of the building to arrive at their next class.

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Building on their work of the previous 10 years, the middle school planning commission and the architect analyzed the effectiveness of different middle school layouts. They toured the existing building, noted its shortcomings, and studied the Hubble curriculum. They also toured other innovative middle schools in Illinois.

The architects drew from learning styles research and best practices gained through America's Schoolhouse Council, a national collaboration of educational architects, to lead a series of programming sessions with the district's programming committee. Administrative and

district staff, as well as teachers from each department, provided input. "We started with a blank slate," says Brosnan. "Teachers talked about the activities the students took part in during each period of the day and how their spaces affected these activities."

What resulted is what Brosnan calls a "hybrid" or "integrated team" approach that organizes spaces according to specific activities. A series of team houses located close to one another offers easy access from one team area to the next. This arrangement allows for future changes or shifts in the organization of the teams.

Classroom and community spaces are clearly divided. Each floor of the three-story classroom building has 10 classrooms, 6 special education classrooms, 2 science labs, and a faculty team room. The one-story main (community) building includes a cafeteria/commons that seats up to 340, a 500-seat auditorium, faculty offices, large and small gymnasiums, a fitness center, a health classroom, and separate classrooms for band, music, orchestra, and drama.

A glass bridge with a multiuse art lab on the first floor and a learning resource center on the second connects the classroom and main buildings. The bridge offers views to the outdoor nature observatory that flows beneath it.

Another unique space inspired by the Hubble program is the "collaboration zone." Each floor of the classroom building has two of these team areas located in the corridor. "Collaboration zones help create smaller schools within the school," says Pessetti. "They promote cooperative learning and informal gathering." Large windows allow teachers to observe collaboration zone activity from the classroom. Sullivan says the zones get a great deal of use, whether by a group of students working on a project or by a teacher using a laptop with the wireless connection to provide one-on-one instruction.

Sullivan attributes much of the school's programmatic success to the many full- and part-day strategic planning

sessions held with the architects. “There was nary a stakeholder, from the board of education to the central office staff, who didn’t have an opportunity for input.”

Straddling the Educational Spectrum

Hubble’s programmatic responsiveness becomes even more apparent with an examination of the two departments that occupy opposite ends of the educational spectrum: science and art.

Science labs in the old Hubble had outdated systems that were designed for specific branches, such as chemistry, biology, and physics. However, each year, Hubble students study a variety of disciplines, including life, chemical, and physical earth sciences. This “spiraling” curriculum often forced classes to trade rooms, leading to scheduling difficulties in the old school.

The new school’s labs are fully equipped with contemporary technology and offer much more flexibility. Tillman says, “We can teach any one of our science classes, sixth, seventh, and eighth, in any one of our labs.” The labs also accommodate the high school-level courses that Hubble added to its curriculum for fast-paced students.

Brosnan adds, “Science acts as an independent department, yet integrates into all the academic houses.” On each level, two science labs join the team houses. The labs’ central location allows a common prep area for equipment storage and the stacking of plumbing and ventilation.

One challenge for art teacher Heather Adams and her department was scaling down the amount of space she had in the old Hubble. Additionally, her old room’s L-shape constrained movement, and the space had limited views and natural light.

Today, daylight and views thrive in Adams’s smaller though much more efficient space within the glass bridge. Her kiln, previously located below her teaching space, now resides in a storage closet in the classroom. Students’ three-dimensional artworks, formerly stored on the floor, are now stored in individual lockers and cubbies. The room’s location next to the entry enables more people to see student work in the display cases outside the room. Adams says, “It is well-organized and is more like a professional studio that any artist would be happy to create in.”

Flexible for Special Education

Hubble has many students with learning disabilities and emotional disorders participating in individualized education programs. Therefore, the district and architect engaged in a second track of meetings focused on integrating special education into the facility.

A multineeds room in the new Hubble includes a dedicated entrance with a ramp. Also, each house has self-contained special-education classrooms, as well as

space for “pull out” and “pushed in” services. These areas can easily be expanded to full-size classrooms if the district’s needs change. Moreover, the collaboration zones will support a shift to a fully integrated special-education process. Brosnan says, “The flexibility to offer special education in a variety of ways enhances the long-term viability of this building.”

Bringing in the Community

Another important goal was to ensure that the new school not only sustained but also enhanced the strong relationship with the community that the original Hubble had. “The community members supported the referendum,” says Sullivan. “We wanted to create a resource that they could use for many years.”

The new location made a difference immediately; Sullivan notes that many more Warrenville families are attending social events.

A series of team houses located close to one another offers easy access from one team area to the next.

Bill Farley and the administration helped develop intergovernmental agreements with the Wheaton and Warrenville Park Districts to use all parts of the facility. To start, the indoor and outdoor athletic areas have been opened to the community. The district anticipates that the auditorium will soon be available to other district schools, as well as to local theater groups and community organizations.

Green Goes Gold

The old Hubble’s size and age wreaked havoc on its operating expenses. “Our energy analysis showed that the district was spending as much on energy for the old Hubble as it was for its two high schools combined,” says Pessetti. “And the high schools had four times the area.”

As with its other recent projects, District 200 placed a high priority on energy conservation for the new Hubble. Farley, who has overseen nearly \$250 million in district construction, was adamant about full building commissioning. This process optimizes a facility’s heating, ventilation, and air-conditioning; plumbing; electrical; and fire and life safety systems from the first day of occupancy to maximize long-term payback.

When the architects introduced the possibility of LEED certification, the administration and the board embraced it enthusiastically. “We suggested pursuing LEED silver,” says Brosnan, “and the board said, ‘Let’s go for gold!’”

The new Hubble, with its LEED for Schools® Gold registration—it is the first middle school in Illinois to do so—sets a standard for energy efficiency and environmental respect. Architectural critic Edward Keegan wrote, “With thoughtful strategies that embrace the difficult site and cutting-edge green amenities, the campus demonstrates the environmental challenges and solutions that are part of today’s architectural practice and community life.”

Hubble’s commute-reducing location and 60,000 fewer square feet than its predecessor are just the prelude to its sustainable performance. Among the school’s sustainable features are drought-resistant landscaping, materials with high recycled content, superior insulation, low-flow plumbing fixtures, and a mechanical system that is 20% more efficient than standard systems. Sullivan says that the daylighting system allows her to keep lights off in many of the spaces . . . even on winter days with little sun.

The architects helped District 200 obtain a \$135,000 sustainable design grant from the Illinois Clean Energy Community Foundation. Vuk Vujovic, director of sustainable design at Legat Architects, says, “Grants like this one allow districts to explore sustainable design solutions, review cost-benefit scenarios, and consider energy-efficient building systems that they wouldn’t otherwise be likely to pursue.” At Hubble, the foundation grant helped fund building energy modeling, daylighting studies, and advanced building commissioning.

The most exciting benefits of Hubble’s green elements are that they support the curriculum and help train future generations to respect the environment and the natural resources it provides. “We wanted to lead by example,” says Farley. “What we achieved is on the forefront when it comes to teaching sustainable values.”

The second level of the glass bridge houses one of Hubble Middle School’s feature sustainable spaces. The learning resource center, with its floor-to-ceiling glass walls and white floors, ceilings, and columns, gives users the impression that the airy, light-filled space floats amid the trees that surround the school. The center also offers access to a green roof where students, whether reading alone or participating in a class lesson, can be found during nearly every class period in fall and spring.

Teachers use the learning gardens, outdoor studios, and surrounding wetlands to support their lessons. Art teacher Heather Adams calls her space, located beneath the library, the “bridge suite [from the Atlantis resort in the Bahamas] because it is that fabulous!” Because her classroom offers views of the campus landscape, Adams is creating more projects based on artists that use the environment as part of their inspiration. “We’re outside more often than before. I am enjoying bringing nature back into the classroom.”

Tillman and other science teachers have used the facility to teach students about how building materials can

be recycled. The school’s high-performance systems have also supported lessons in light reflection, absorption of light energy, radiant energy, and rainwater runoff and infiltration. Additionally, the district plans to integrate the green roof into its curriculum so its three other middle schools can benefit.

The interior also offers sustainable teaching tools, such as the recycling stations in the cafeteria/commons. District 200 and the architects are now working on educational signage that will appear throughout the school to elevate awareness of environmental issues.

In another sustainable gesture, parts of the old Hubble adorn the new school to connect to the past. For instance, decorative stone panels salvaged from the exterior of the original building are incorporated into the interior walls of the cafeteria, library, and corridor. “Reusing components of the old school is not only a good example of recycling,” says Johnson, “but it pays homage to our history, which is important to the board and the community.”

One of the biggest concerns school districts have about high-performance systems is their up-front costs. To adhere to its budget and still achieve its sustainable goals, District 200 used limited applications of some high-performance systems. For instance, the team limited the size of the green roof, while white roofs that reflect sunlight to reduce heat gain cover the remainder of the facility. Similarly, although both parking lots have vegetated bioswales to absorb and filter storm-water runoff, only the smaller lot has permeable brick pavers, which further manage runoff.

All Hands on Deck

During planning, the Hubble Middle School team hosted many community meetings, ranging from 1 citizen to 80. According to Farley and Sullivan, this “all hands on deck” approach enabled Hubble to emerge as a place where learning, collaboration, and performance prevail. “It’s very rewarding,” says Sullivan, “when community members with no significant ties to the school offer praise.”

Another factor in the project’s success was the board’s involvement. Johnson explains, “We just kept driving the staff and professionals to bring in the project on time and on budget, and they did.” Board members have received many positive comments from Hubble students. Johnson adds, “Our kids have a school designed around them.”

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All photos courtesy of Steinkamp Photography/Legat Architects