

THE NINTENDO GENERATION AT VACAVILLE'S NEWEST ELEMENTARY SCHOOL GIVES IT A GREEN THUMBS UP – FOR SAVING ENERGY

Fairmont Elementary School's Opening provides a window into environmental sustainability, energy efficiency, and high performance achievement on a flat screen television

They may know how to text a message, but not many children between the ages of six and 12 can talk to their parents about wind turbines, bio-swales, solar photovoltaic panels, cool roofs, displacement ventilation, voice amplification, or carbon footprints.

On **August 13**, over 500 students at Fairmont Elementary School in Vacaville witnessed first-hand how much energy their elementary school was saving -- all from a visually accessible, touch-sensitive interactive flat panel in the school's lobby.

"We've incorporated so many green building and development practices, we wanted to leverage technology to engage the kids and show them how their school is saving energy," says Al Frangione, Principal in Charge of Technology at Capital Program Management, the program management company managing the capital outlay construction program for Vacaville Unified School District (VUSD). "The children can be proud of their school." By installing an interactive flat panel in the school's lobby, the technology is making the experience and information more tangible where the children can see the energy savings. For example, an index finger on the Green Feature icon shows details of the 12 environmentally-friendly components.

The first-ever energy-efficient elementary school in Vacaville USD beats government energy standards by almost 30 percent, and has received a Leadership in Energy and Environmental Design (LEED) Silver designation. This Green Building Rating System, developed by the U.S. Green Building Council (USGBC), provides a suite of standards for environmentally-sustainable construction, which ensures that the buildings use resources more efficiently when compared to conventional buildings. In addition, LEED-designated buildings provide for a superior learning environment and healthier work environment. Simply put, LEED-designated buildings save energy and improve learning environments.

The school's design includes natural lighting in the classrooms with nine lighting level "scenes" to make use of natural light when available. In addition, a building-wide Energy Management System controls temperature automatically adapting to conditions throughout the day and independently for each classroom. Displacement ventilation provides conditioned air into a room near the floor rather than near the ceiling, which allows for relatively warmer and slower air than if mixing from the ceiling were used. This strategy provides superior comfort control using less energy and generating significantly less noise in the classrooms.

Energy efficiency isn't the only "green" savings for the district and, while it saves energy, it also promotes a better learning environment. "These energy-efficient features will lower utility bills for our cash-strapped school district and provide ongoing savings to the District's operational costs," says Leigh Coop, Vacaville Unified School District Director of Facilities.

Other energy-efficient features include solar panels on shade structures to generate electricity, sunshades on windows, efficient double-paned windows, a wind turbine that also generates electricity, staff showers to encourage bicycle commuting and fitness activities during the day, bio-swales to treat storm water runoff from hard surfaces before it is released off site, drought-resistant landscaping, and a cool roof, which is a light-colored roof to increase reflected heat, reduce the heat island typically created by buildings, and lower cooling loads on the interior of the building.

And the list goes on. One of the most noticeable features is the actual building itself; the entire elementary school is in one building – two stories. This increases thermal mass and lowers energy bills, which enables the building to stay cooler in the summer and warmer in the winter.

Planning for the school began in the summer of 2007 and construction began in July 2008. VUSD chose the “Lease-Leaseback” project delivery method, which gives public school districts the greatest flexibility in its construction procurement by mitigating strict low-bid requirements, which often result in poor quality construction and potential disputes. In addition, the team incorporated Lean Project Management principles, which guide project delivery by building the entire delivery team into the project as early as possible, reducing redundant work and streamlining schedules. CPM helped the team reduce the schedule significantly as well as bring the project in under budget. A “reverse” phase or “pull” schedule took months out of a traditional design and construction schedule, providing a significant savings to the district.

“Lean Project Management principles are adapted from the Lean Production Systems pioneered by Toyota,” according to Jay Davison, CPM President and project manager for the Fairmont project. “By forming an Integrated Project Delivery (IPD) Team comprising the architect and all of the design engineers as well as the general and specialty contractors who will actually construct the building and involving all of them from the inception of design, a tremendous efficiency is gained by eliminating unnecessary work and rework in the course of the project. CPM’s goal is to eventually use this project delivery method to benefit all of its clients.”

And one year later, the school is ready to open its doors. The new building, which consists of 22 classrooms approximately 900 square feet each, also includes one specialized room for resource programs, two kindergarten classrooms, three special education rooms, one half-classroom for specialty programs such as speech therapy or literacy programs, a multi-purpose room with full basketball court, stage and accessory spaces for storage, a library, a computer lab, a kitchen and serving space, administration offices, collaboration spaces, custodial rooms, and teacher work rooms. The building totals approximately 53,500 square feet.

Funding for the school came from a mix of local bond funding (Measure V), state funding, and developer fee funding.

Capital Program Management, Inc. specializes in planning and executing large capital outlay programs for public and institutional clients in the educational and healthcare industries. Based in Sacramento, California, with an office in Southern California, CPM hosts three integrated practices: Program/Project Management, Budget and Accounting, and Technology Planning and Implementation, with specialties in Lean Project Management and Education Technology.

Project Team:

District:	Vacaville Unified School District
Facilities Director:	Leigh A. Coop
Superintendent:	John T. Aycok
Program Manager:	Capital Program Management, Inc.
General Contractor:	Roebbelen Construction
Architect:	ANOVA Architects
Structural Engineer:	Barrish, Pelham and Associates
Electrical Engineer:	The Engineering Enterprise
Mechanical Engineer:	Capital Engineering Consultants, Inc.
Civil Engineer:	Warren Consulting Engineers
Landscape Architect:	MTW Group, Inc.
Fire Protection Engineer:	Transbay Fire Protection, Inc.
Geotechnical Engineer:	Wallace Kuhl