

2013 Exhibition of School Planning and Architecture

Colonel Smith Middle School

Fort Huachuca, Arizona

Emc2 Group Architects Planners, in association
with Fanning Howey

Colonel Smith Middle School



Colonel Smith Middle School

- Middle School
- Future STEM High School



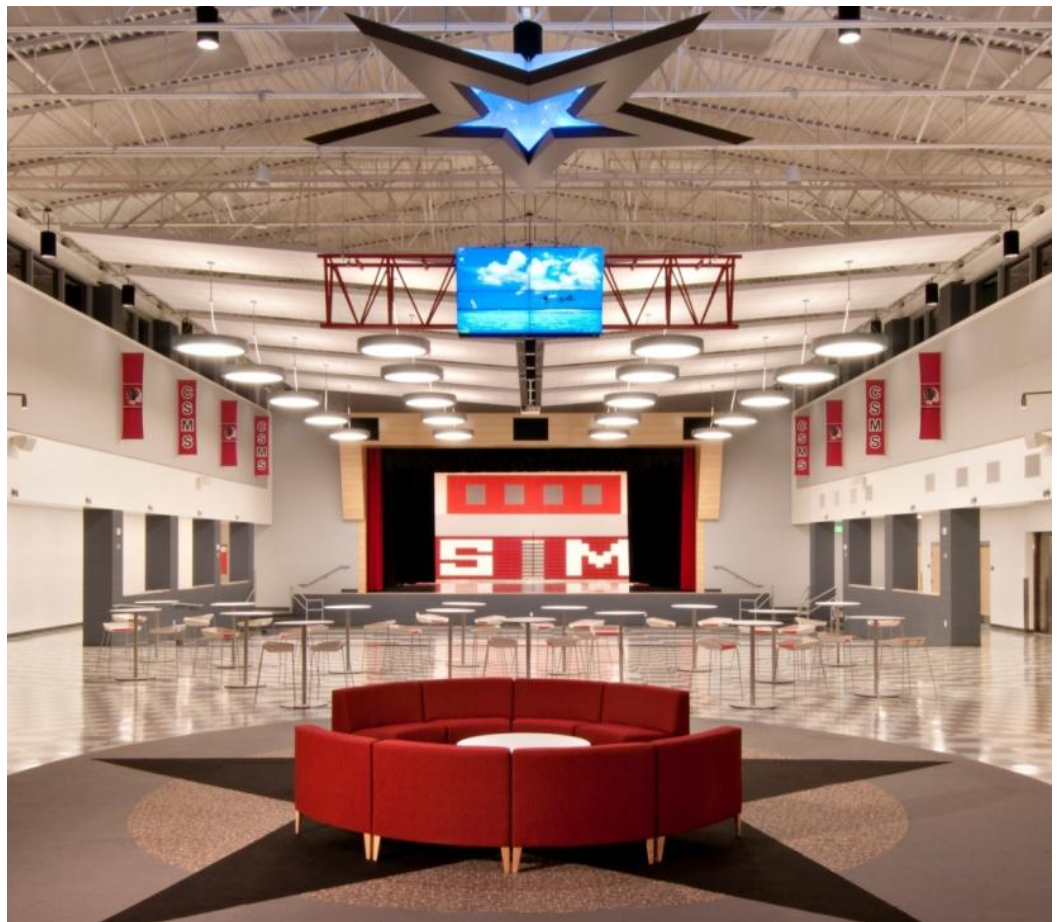
A Global Community

Community Environment: The new middle is located on an Army Installation in southern Arizona. As a school that serves primarily military families, the student population tends to come from a broader range of geographic areas. The building is designed to provide environments where students are able to quickly assimilate to their new surroundings and form strong bonds based on collaboration and shared inquiry.



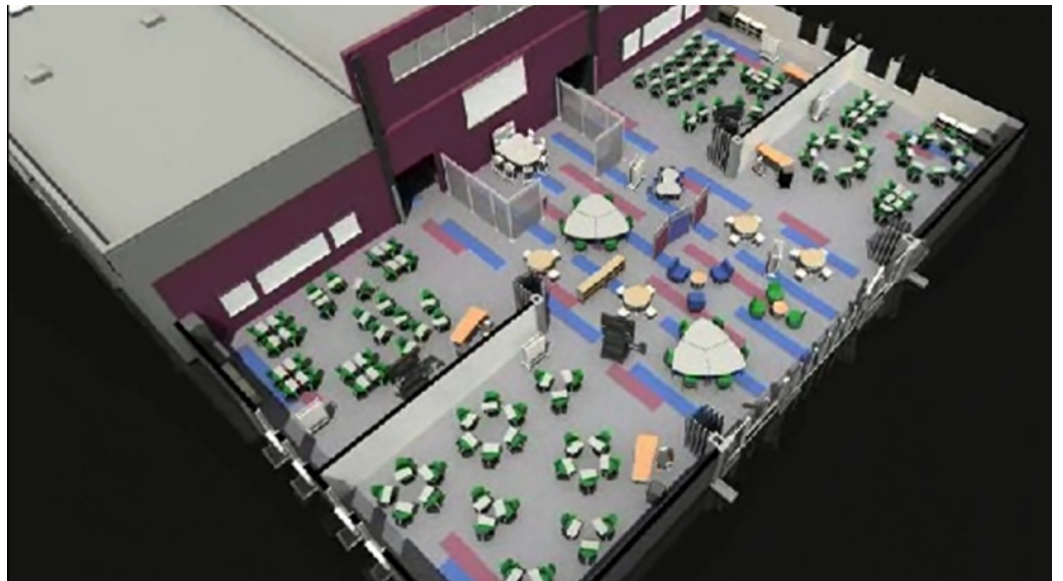
Community Resource

Community Environment: Located in the heart of the Army Installation, the school acts as a vital community resource. The new track and synthetic turf field are used by multiple community groups. The school's Student Union is a popular place to host community events. A dual-sided stage provides flexibility for more intimate gatherings or for large presentations—the school band always draws a big crowd. The design of the building uses transparency and an open site plan to create a welcoming atmosphere that invites residents to take part in the many exciting community programs.



Learning Anytime, Anywhere

Learning Environment: The middle school offers a STEM curriculum which incorporates the building's Net-Zero strategies. Colonel Smith is anticipated to be the first Net-Zero K-12 school in the state of Arizona. The design uses open learning environments, mobile furniture, and hand-held devices to support project-based learning and encourage use of the entire facility. Technology is in the hands of all students using hand-held electronic devices with access through a wireless system accessible throughout the entire site. Instructional delivery methods put heavy emphasis on project-based, interdisciplinary instruction that stresses real world problem-solving and experimentation in a collaborative environment.



Lessons From the Outside World

Learning Environment: All indoor and outdoor spaces are available for learning - every square foot counts! Entry to the school site and Informational Kiosks welcome students and visitors to the site. The Kiosks, designed by students, include information about the building, site and local geography, as well as inspiring quotes that reflect the school's philosophy. Operations of the school are designed to reflect environmental awareness and learning. Exterior learning spaces are located on the east and west and include areas for the study of Environmental & Biological Science, Gardening Insights, Optical Astronomy, Pollinators and Astronomy & Spring/ Autumn Equinox.



Building as a Teaching Tool

Physical Environment: The built environment supports a STEM curriculum, which includes a strong emphasis on sustainability. In the Student Union, students monitor the building's real time energy usage from an energy dashboard. Students are also able to view dashboard information from apps on their mobile devices. The information found on the dashboard is a major source of student projects.

Visual elements also contribute to the project-based curriculum. Custom wall coverings showcase Nature in all its forms. On-site wind turbines act as demonstration elements, while exterior learning spaces provide areas for the study of everything from Environmental & Biological Science to Astronomy.



Net-Zero Strategies

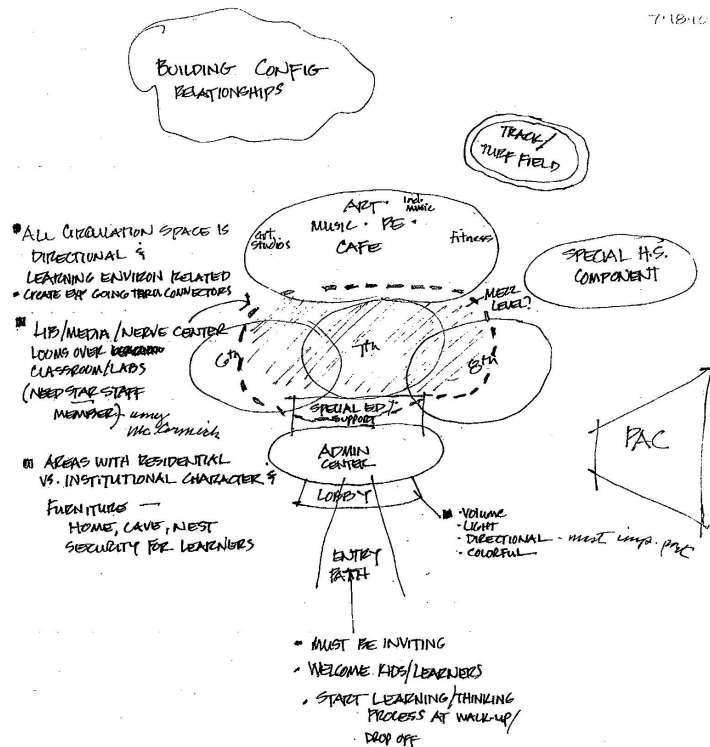
Physical Environment – Designed to be Arizona's first Net-Zero K-12 School, the building features a host of strategies that impact learning and reduce resource consumption.

- A layered daylighting solution employs windows, skylights, and clerestory windows in all regularly-occupied spaces
- High-efficiency LED and electric lighting systems are designed to reduce lighting energy use by 80 percent
- Solar panels heat domestic water for the Locker Rooms and Kitchen
- Two 25,000-gallon water harvesting tanks allow 100% of on-site irrigation to be supplied by harvested rainwater



Quick Start Process

Planning Process: The vision for the middle school came from the District's extensive research into 21st century learning concepts. Data from the National Science Foundation, the Science Foundation of Arizona, the 21st Century Partnership, and other organizations was used to shape the educational vision. The planning process was robust and comprehensive. District officials, local stakeholders, planners, architects, engineers, contractors, and specialty consultants were brought to the table from day one. The involvement of the district's technology integration specialist—a district-appointed individual who helps to build actions plans to integrate new technology—was especially helpful in the development of the high-tech learning environment. A three-day charrette involving all key stakeholders set a strong direction and allowed the design team to complete Schematic Design in less than 100 days.



Changing the Language

Planning Process: From the beginning, the team sought to change even the language of educational planning and design. Instead of classrooms and science labs, team members discussed Flexible Learning Stations and STEM labs. The planning process focused on the integrated delivery of instructional material and project-based, interdisciplinary instruction that stresses real world problem-solving and experimentation in a collaborative environment. Another key consideration during planning was the integration sustainable strategies into the curriculum and learning environment. Not only did the community set the goal of creating the first Net-Zero K-12 school in Arizona, but District leaders also wished for the building's many sustainable features to act as a seamless extension of the STEM curriculum.

word

•a unit of language, consisting of one or more spoken sounds or their representation, that functions as a principal carrier of meaning.

<u>20th Century</u>	<u>21st Century</u>
Classroom	Flexible Learning Station
Extended Learning	Student Collaboration
Media Center	Research Commons
Music Room	Music Integration Lab
Art Room	Art Integration Lab
Science Room	STEM Lab
Computer Lab	TOI Lab

Floor plan

- Design uses open spaces and mobile furniture to provide maximum flexibility



FLOOR PLAN

1. Flexible Learning
2. Collaboration Areas
3. Administration
4. Research Commons
5. Student Union
6. Resource
7. Art
8. Music
9. Health
10. Gymnasium

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Project Data

Submitting Firm :	Emc2 Group Architects Planners
Project Role	Architect of Record
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Joint Partner Firm:	Fanning Howey
Project Role	Design Architect
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Other Firm:	3W Management
Project Role	Owner's Representative
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Construction Firm:	Turner Construction Company
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Project Details

Project Name	Colonel Smith Middle School
City	Ft. Huachuca
State	Arizona
District Name	Ft. Huachuca Accommodation School District
Supt/President	Bonnie Austin
Occupancy Date	June 2012
Grades Housed	6-8
Capacity(Students)	600
Site Size (acres)	24 acres
Gross Area (sq. ft.)	88,693
Per Occupant(pupil)	148
gross/net please indicate	
Design and Build?	No
If yes, Total Cost:	
Includes:	
If no,	
Site Development:	2,888,969
Building Construction:	14,815,458
Fixed Equipment:	822,739
Other:	2,604,129
Total:	\$21,126,296

Supporting Images



Hand-held devices and mobile furniture help the learning environment take on whatever form is needed.

Supporting Images



In place of science labs, the school has STEM labs capable of supporting Chemistry, Physics, Biology, and Earth Science instruction.

Supporting Images



Technology takes center stage throughout the building, including in the school's Data Center, which is visually connected to the rest of the facility by large windows.

Supporting Images



The open Student Union uses transparency to provide visual control of the heart of the building.

Supporting Images



In addition to meeting the community's educational and cultural vision, the school adheres to force protection guidelines applied to all buildings on the Installation. A riparian wash encircles the school and provides the necessary vehicular barrier.