



Innovative Science Room Design for the Next Generation

In April 2013, a new set of voluntary, rigorous and internationally-benchmarked standards for K-12 science education were released. The standards, known formally as the Next Generation Science Standards, were developed, written and revised by a team of teachers and education leaders from 26 different states across the country.



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The Next Generation Science Standards aim to pull together inquiry and practice and recognize the role of engineering. “Pulling together the crosscutting concepts is going to be a challenge, but it’s really effective pedagogy,” said Ellen Ebert, Washington State’s Director of Science for Teaching and Learning at the Office of the Superintendent of Public Instruction. “We’re looking at Next Generation Science Standards to propel students into the 21st century – we’re looking at college and career readiness. This is a real opportunity to help students see the potential of science in their lives.”

Facilities Must Support This New Approach

This set of science standards will work best only when facilities support this new approach to learning. Administration at both the Waterloo and Beaver Dam Unified School Districts in Wisconsin are renovating their science departments to accommodate this new approach.

Steve Vessey, Superintendent of the Beaver Dam Unified School District, commented that “many school district’s science facilities are being challenged by advancing science curricula that features a conceptual shift toward technology and engineering concepts being cross-cut into traditional science standards. This change is being led by the advancement of the Next Generation Science Standards. The amalgamation of rigorous content and application imitates how science and engineering are practiced in the real world. The Beaver

Dam Unified School District is experiencing this shift, which brings a different and increased demand on very traditional science facilities. PRA brought our science renovation project architectural concepts and designs that were a break from the past and rooted in Next Generation Science Standards demands.”

An Interdisciplinary Approach

The Next Generation Science Standards use performance

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expectation to blend the core ideas in physical sciences with scientific and engineering practices and crosscutting concepts to support students in developing useable knowledge to explain ideas. This interdisciplinary approach requires science rooms to conform to a

variety of different functions to plan, investigate, analyze, construct an explanation and allow for computational and critical thinking. The facilities must encourage both group and individual research in understanding core ideas.

The science room for this 21st century learning approach promotes student interaction and investigation. The lecture and memorization approach is replaced with inquiry, investigation and problem solving to deepen students’ understanding and teach them to be better decision makers.

This translates to a space that allows students to work together to explore scientific principles. Large, open surfaces unencumbered with fixtures or equipment. A technology-rich environment to assist in their exploration of forces and interaction. The 21st century science room needs to accommodate without excess space. Students need to present, demonstrate, engage, evaluate and communicate information in a single location.



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A Multi-Purpose Space

For these reasons, the science room has transformed into a multi-purpose space. With analytical and strategic thinking, three stages are identified: defining the problem, developing the solution(s) and improving the design. With the new science room, everything needs to be accomplished in one area. A bench-type area where hands-on project experiments, computational analysis and formation presentation can all take place. No longer can separate areas for these activities exist in one room. Space and equipment are too valuable resources. The room must morph with the need of the student. By providing one presentation/evaluation space in each science room, the area square footage is minimized, and functions are consolidated to provide efficiency and safety within the learning environment.

Furthermore, sustainable resources are part of the 21st century curriculum. Facilities must reflect this approach and provide accommodations to learn and explore. Teachers can give an overview in a structured format and then allow students to collaborate in a less structured environment, all within the same science space.

The new science rooms at Waterloo and Beaver Dam Unified School Districts are designed to take the Next Generation Science Standards to a new level. These school districts are preparing their students to achieve well beyond the 21st century.



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