



Case Study in Building Science: Stevens Point Area School District

What is Building Science?

Building Science is the branch of science dealing with construction, maintenance, safety, and energy efficiency of buildings. By incorporating building science topics or lessons into curriculum, you bring real life situations to the classroom. It is important to inform students how to recognize a comfortable, durable, and energy efficient home.

Students Build Wisconsin ENERGY STAR® Homes

In classrooms and at construction sites across the state, technology education students are gaining the skills they will need to become effective members of tomorrow's building workforce. Led by innovative educators and community partners, these students are learning what it takes to be outstanding employees by building Wisconsin ENERGY STAR Homes.

The Wisconsin ENERGY STAR Homes Program uses the Environmental Protection Agency's strict guidelines for energy efficiency as a basis of the certification process for each home. In addition, homes must comply with specific building requirements for Wisconsin's cold climate to earn certification from the Wisconsin ENERGY STAR Homes Program. Four basic areas of building science and performance are addressed through the certification process: air flow, heat flow, moisture flow, and indoor air quality. When implemented correctly, the standards and guidelines enhance a home's comfort, safety, durability, and energy efficiency.

The goal of students building Wisconsin ENERGY STAR Homes is to introduce them to energy efficient building techniques. Other benefits include promoting awareness about the environment, energy efficiency, and health, while teaching students and the community how to save energy. These students will be building tomorrow's residential inventory. By supporting their

education today, we can be sure that tomorrow's homes will be high quality and energy efficient.

There are many examples of students building Wisconsin ENERGY STAR Homes in Wisconsin. Two examples are in Stevens Point at P.J. Jacobs Junior High and Stevens Point Area Senior High Schools.

Dave Rasmussen, the former instructor at P.J. Jacobs, started taking students to work on Habitat for Humanity Homes in 1994 for a full day of hanging drywall. After two years, he began taking students every day for the whole year. His students have helped build 18 homes in the Stevens Point community. Four of those are certified as Wisconsin ENERGY STAR Homes.

Robert Baker, the instructor at the high school, has built 11 homes with students while partnering with CAP Services. Two of those homes are certified as Wisconsin ENERGY STAR Homes.

Students Gain from Constructing Wisconsin ENERGY STAR Homes

In the construction course at P.J. Jacobs Junior High, students not only learn about energy efficient building practices, but they also experiment with incorporating renewable energy technologies into homes.

In the 2007/08 school year, students learned about net-zero energy building practices, incorporating the following technologies into a home:

- double-wall construction
- in-floor radiant heat
- solar thermal panels

Rasmussen feels that "teaching students how to build energy efficient homes is a valuable life-long skill that every person needs to be aware of [since] we live in a time of limited amounts of fossil fuels."

Schools that have been involved with Wisconsin ENERGY STAR Homes projects: (as of Summer 2009)

Appleton Area School District

Hartford Union High School

La Follette High School -
Madison

Lakeland Union High School -
Minocqua

Mauston High School

Merrill High School

Northland Pines High School -
Eagle River

Oconomowoc High School

Parker/Craig High Schools -
Janesville

P.J. Jacobs Junior High School -
Stevens Point

Rhinelander High School

Shawano High School

Sheboygan North & South
High Schools

Stanley-Boyd High School

Stevens Point Area Senior High

Sun Prairie High School

Schools that have been involved with Home Performance with ENERGY STAR projects: (as of Summer 2009)

Kiel High School

In November 2007, students in the P.J. Jacobs home construction class hosted three visitors from Taiwan who were interested in learning more about students building energy efficient homes. The visit demonstrated to the students how important energy efficient construction is and how their experiences can provide models not only to other communities or states, but also to other countries.

Benefits of Working with Area Professionals

Robert Baker enjoys working with CAP Services as a partner because of the amount of time the students get to work alongside sub-contractors, learning the details of electrical, plumbing, and HVAC system installations.

Baker is excited to have numerous graduates working around the state in construction-related occupations. Because of his connections with area professionals, Baker receives phone calls every spring from contractors who are looking for qualified students interested in summer work. He states, "I enjoy working with my students on these projects because [I] really get to know [the students] in ways not possible in a classroom. By the time we finish our home projects, I really have a feel for their work ethic, responsibility, and problem-solving skills. These homes also provide a valuable link between community, parents, and school, aside from the fact that we are helping first-time homeowners get established."



How to Get Started

If you are interested in building a Wisconsin ENERGY STAR Home with your students, the first step is to contact a consultant that will guide you through the certification process. A list of consultants can be found on the Focus on Energy Web site at focusonenergy.com. The consultants can do their testing while students are at the job site to show them the tests they perform to ensure energy efficiency.

The Wisconsin K-12 Energy Education Program (KEEP) was created to help promote energy education in Wisconsin. KEEP receives its primary funding through Focus on Energy. KEEP offers professional development opportunities, student involvement projects, educational energy resources, networking opportunities and more for Wisconsin's public and private K-12 schools. For information about KEEP, call 715.346.4770 or visit uwsp.edu/keep.



Focus on Energy works with eligible Wisconsin residents and businesses to install cost effective energy efficiency and renewable energy projects. Focus information, resources and financial incentives help to implement projects that otherwise would not be completed, or to complete projects sooner than scheduled. Its efforts help Wisconsin residents and businesses manage rising energy costs, promote in-state economic development, protect our environment and control the state's growing demand for electricity and natural gas. For more information call 800.762.7077 or visit focusonenergy.com.



Wisconsin ENERGY STAR Homes is one of the Focus on Energy Residential Programs. New homes are constructed to meet program standards and are estimated to be more than 25 percent more energy efficient than homes built to Wisconsin's Uniform Dwelling Code. To date, the more than 350 builders who have partnered with the Wisconsin ENERGY STAR Homes Program have constructed more than 9,000 new homes. For information about the program, call 800.762.7077 or visit focusonenergy.com.



Case Study in Building Science | Wisconsin K-12 Energy Education Program