

The Relationship Between Family & Consumer Sciences Education and STEM



The Family and Consumer Sciences Field ...

Draws from broad and diverse disciplines to develop and provide the content and programs that help individuals become more effective critical thinkers and problem solvers.

Through discovery and delivery of research-based knowledge, family and consumer sciences professionals help individuals and families develop essential skills to successfully live and work in a complex world.

The Alliance for Science and Technology Research in America (2010) identified that science and engineering advancements are necessary for ensuring national security and economic growth. With staggering statistics regarding the knowledge and skill level of American youth in math and science, schools are being challenged to integrate and strengthen science, technology, engineering, and mathematics (STEM) education and literacy into the curriculum.

- In 2009, just 34 percent of U.S. 8th graders were rated proficient or higher in a national math assessment, and more than one in four scored below the basic level. (<http://nces.ed.gov/nationsreportcard/pdf/main2009/2010451.pdf>)
- In an international exam given to 15 year olds in 2009, U.S. high school students ranked significantly behind 12 industrialized nations in science and 17 in math. Students in only 4 industrialized nations scored lower in math. (<http://nces.ed.gov/pubs2011/2011004.pdf>)
- Only 45 percent of U.S. high school graduates in 2011 were ready for college work in math and 30 percent were ready in science. (<http://www.act.org/research/policymakers/cccr11/readiness1.html>)

The STEM Career Cluster is defined as:

"planning, managing, and providing scientific research and professional and technical services (e.g. physical science, social science, and engineering) including laboratory and testing services, and research and development services." (US Department of Labor)

Further, STEM includes integration of science, technology, engineering, and mathematics; utilization of project-based learning; application to real-world examples; promotion of careers; and inclusion of strong "soft" skills coupled with the technical skills.

Family and Consumer Sciences Education and STEM

Family and consumer sciences, founded as home economics, had its beginnings in 1899 when Ellen Swallow Richards, one of the first female graduates and female faculty members of the Massachusetts Institute of Technology (MIT), led the way to use scientific knowledge to address water quality, food safety, and safety of home environments. Learn more about Richards' contributions to engineering at www.engineergirl.org/engineers/historicalengineers/4422.aspx.

Family and consumer sciences education addresses STEM

through the living sciences including:

1. Food science and innovation
2. Nutrition science and wellness
3. Interior/textiles design, technologies, and manufacturing
4. Environmental practices and sustainability in textiles, foods, and housing
5. Early childhood education and parenting

Since its inception, the family and consumer sciences curriculum has built the baseline skill set necessary for success in STEM. These programs stimulate interest in STEM, guide students into these career fields, and expand employability for science-oriented students. **Students are engaged in relevant, hands-on instructional strategies and reinforce STEM principles, such as:**

- **Interior Design and Housing:** designing spaces for human interaction; universal design; technological advances in design for the home; environmental practices and sustainable products and processes
- **Apparel, Textiles, and Design:** textile research; technological advances in apparel and textile design and manufacturing; evaluation of apparel and textile quality; textile finishes to address function and form
- **Nutrition and Food Science:** sensory analysis; product development and packaging; quality control; food safety and sanitation; chemistry of food and nutrient composition

Youth Organizations

FCCLA, embedded within the FCS classroom, allows members to address individual, family, and community needs in authentic experiences that expand and demonstrate STEM knowledge and skills. Learn more at www.fccla.org.

FCS professionals lead 4-H youth development programs that promote STEM education and careers. Learn more at www.4-h.org/youthSTEM/.