4-H Science, Engineering, and Technology (SET)

www.ca4h.org/Projects/SET/

4-H SET
Science Engineering Technology
UNIVERSITY OF CALIFORNIA

Why 4-H SET?

The U.S. is at pivotal point in its history. Despite Ameirca's rich legacy of innovation and global contributions, as a nation we are facing declining proficiency in science, engineering, and technology (SET) and a significant workforce shortage in these critical fields.

Expected Outcomes

Through participation, youth improve their science, engineering, and technology knowledge, skills and abilities. Youth apply SET learning to all areas of their life, adopting and using new methods of approaching problems. *Ultimately, the goal of the 4-H SET initiative is to increase the number of youth pursuing education and careers in science, engineering and technology.*

What is 4-H SET?

4-H SET activities and projects combine nonformal education with hands-on, inquiry-based learning in a positive youth development context to engage youth in improving their SET knowledge, skills and abilities. 4-H SET activities and projects combine the strengths of the 4-H Youth Development Program's non-formal experiential-based delivery modes and strong youth-adult partnerships to address SET content as defined by the National Science Education Standards.

Programs

4-H staff and volunteers develop, design, and deliver 4-H SET programs to youth in diverse settings and locations that have current, content and are contextually appropriate. Through this program design and implementation strategy, 4-H volunteers and staff provide opportunities for youth to increase knowledge, skills, and competencies and improve their attitudes about science, engineering, and technology. Each county has 4-H programming in club, camp, afterschool, in-school and other settings. Through each of these delivery modes, new youth are engaged in learning science, engineering and technology.

Elements of 4-H SET Programs

Activities follow the **Experiential Learning Cycle** - After the activity, the facilitator leads youth through a period of reflection where the learner shares and processes the experience and applies new learning in authentic situations.

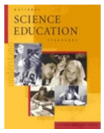
Activities promote **Inquiry Learning using Effective Questioning** - Through learning experiences, youth are encouraged to think, explore, question, and make decisions. Youth build understanding through active exploration and questioning.

Provides opportunities to improve **Science, Engineering and Technology Abilities** - Engages youth in science, engineering and technology through one or more of the thirty most important science, engineering, and technology processes.

Anchored in a **Positive Youth Development** context - Provides opportunities for youth to develop their 6 C's: Competence, Confidence, Connections, Character, Caring/Compassion, and Contribution.

Facilitated and delivered with adult mentors who partner with youth - Learning experiences led by trained, caring adults and teens who create environments in which they work together as active learners.

Programs offer **Extended Learning Opportunities** - Projects offer long-term experiences to significantly increase youth knowledge, skills and attitudes. Experiences are designed for extended frequency and duration that serve to build learning over time.



Programs based on **National Science Education Standards** - SET activities delivered through inquiry-based learning focusing on concepts of physical science, life science, earth and space science, science and technology, science in personal and social perspectives, history and nature of science.

Volunteer and Professional Development

Effective science education requires good educators that create active learning environments. Professional development opportunities help prepare 4-H adult volunteers, teens and staff to incorporate science, engineering, and technology into 4-H projects and activities in a hands-on, experiential manner. These professional development experiences assist in increasing the knowledge, skills, competencies, and confidence levels of adult volunteers, teens and staff to provide engaging 4-H SET learning experiences.

Curriculum

A wide variety of 4-H SET curricula have been identified, adapted/developed, and implemented. By working with 4-H volunteers and staff, land-grant college and university faculty, 4-H SET content experts, and other partners the 4-H program infuses new, exciting and innovative materials to reach new audiences and enhance the 4-H experience. An online curriculum database is available with identified SET-Ready electronic curricula at http://www.ca4h.org/Projects/Curriculum/