



Cornell University
Cooperative Extension

Why 4-H SET?



4-H Science Engineering and Technology programs inspire young scientists

For more than a century, 4-H has engaged youth in projects on animal science, electricity, nutrition, mechanics, entrepreneurship and natural sciences.

Today, opportunities also exist in subjects like rocketry, gps, robotics, bio-fuels, renewable energy and computer science.

One million new scientists; One million new ideas.

The 4-H Youth Development program is helping to grow and strengthen the next generation of inventors, entrepreneurs and problem-solvers.

Recognizing that youth in the U.S. are falling behind in these areas, the national 4-H program has made its Science, Engineering and Technology (SET) program a top priority for 2007-2012, along with its Healthy Lifestyles initiatives and Youth Community Action programs.

Recent studies have shown that:

- Only 18 percent of high school seniors are considered proficient in science;
- A mere 5 percent of college undergraduates earn degrees in science and engineering, compared to 66 percent in Japan and 59 percent in China.

With 4-H and the Cooperative Extension system's **direct connection to cutting-edge research and resources** of the nation's land-grant universities, as well as its established outreach programs and services, 4-H is strategically positioned to bolster science, engineering and technology skills in youth throughout the country.

Already 4-H SET programs reach 5.9 million youth with hands-on learning experiences that foster exploration, discovery and passion



for the sciences. **The national goal is to prepare 1 million new youth to excel in these areas.**

In New York State, 4-H will focus on two major program initiatives to meet this goal:

- Expanding and improving curriculum options, including a brand new "Science Toolkit" curriculum—full of interesting and easy to teach activities.
- Continuing to focus on how "4-H Connects Kids to Cornell" by strengthening partnerships with Cornell departments in order to enrich SET opportunities across the states.

Through 4-H programs in science, engineering and technology, youth are learning the joys of discovery and invention.

"Toolkit" curriculum inspires kids to jump into SET

The "Science Toolkit" curriculum offers fun, engaging one-hour activities that can be combined in a six-hour unit and spark a student's interest in the fascinating world of science, engineering and technology.

Through these experiential learning programs, youth become more engaged in SET-related learning experiences, share their experiences with their families at home, show greater interest in these areas at school and, hopefully, enroll in longer-term SET projects through 4-H.

Science Toolkit topics include astronomy, entomology, animal science, GPS and GIS technology and nutritional science.

Activities include a diverse set of hands-on

experiences, such as:

- Creating race courses for a "field day" event using GPS units
- Building a paper glider to illustrate the way wind currents work
- Dissecting a wasp's nest to learn how these insects live in a colony
- Visiting local water bodies to measure types and levels of pollution

The curriculum is set up so that leaders can "grab and go" with no need for complicated preparation or knowledge of the topic.

The Toolkit will be available on the NYS 4-H Resource Directory.



Youth at 2008 Career Explorations practice using GPS Technology.

Connect now to great 4-H resources



NYS 4-H Resource Directory
Head, heart, hands, health

HOME SEARCH BROWSE ABOUT CONTACT HELP

A way for staff, leaders, volunteers, teachers and youth to find and order great 4-H Resources

<http://www.cerp.cornell.edu/4h/>

<http://nys4h.cce.cornell.edu/>

Oswego youth learn to think like a robot

"In 4-H, we add to what youth are learning in school and extend it to real-life experience. When youth start to see science all around them they are filled with a sense of wonder and want to learn more."

*-Linda Brosch, CCE
Oswego County*

Tim Miller's story about what he did during his summer vacation might be a bit different than his friends'. The seventh grader spent part of his summer building a Lego "Mindstorms" robot and programming it to complete various tasks, as part of Oswego County 4-H's "Summer Scientist" program. The "summer scientist" program was developed by Linda Brosch, youth development team coordinator for CCE Oswego County. Brosch developed the "Summer Scientist" and "Aerospace Adventures" camp to engage youth in science exploration.

"In 4-H, we add to what youth are learning in school and extend it to real-life experiences," Brosch said. "Children naturally want to learn, especially if the topic fascinates them. During programs like these we often go outdoors to experience science. When youth start to see

science all around them they are filled with a sense of wonder and want to learn more."

Miller's mother, Eleanor, said the "Robots and You" camp was a "fantastic opportunity" for her son, who has always been fascinated with Legos and robots.

"It was a great lesson in logical thinking and learning to solve problems," she said. "For such a rural community, the camp offered a great chance for kids to do something technical."

The robot and aerospace camps attracted 4-H and non 4-H members alike. "Some youth signed up because it was something to do, but by the middle of camp, they were hooked," Brosch said.

Brosch also spreads her love of science in other ways. She designed an insect program and takes her show on the road. In 2008, she visited



Rachael Thormann, Zach Thormann and Spencer Glenister work with a "Mindstorms" robot.

local libraries, who participated in the state summer reading program, "Catch the Reading Bug."

CCE Oswego County, like other Extension programs, offers a wide variety of science programs during the year on subjects such as veterinary science and environmental education.

Connecting kids through science outreach

Many Cornell University departments are actively engaged in youth outreach projects focused on science, engineering and technology. Projects such as ladybug citizen science, climate change backyard measurements, "smart" textile design

and invasive plant control are a few of the choices.

As youth get older, they can participate in the annual Career Explorations conference at Cornell, where more than 500 youth meet face-to-face with Cornell researchers and interact with them during hands-on experiences.

The new SET initiative will grow and expand these programs, strengthening connections to programs already reaching youth and working with other departments to develop new youth outreach ideas.

Find out more:

To learn more about 4-H SET, visit:

<http://www.fourhcouncil.edu/scienceengineeringtechnology.aspx>

Or : New York State 4-H Youth Development
Cornell Cooperative Extension
340 Roberts Hall
Cornell University
Ithaca, NY 14853



Youth during the 2008 Career Explorations "Birds, Technology, and the Arts" use state of the art technology to record bird calls.



4-H'er studying animals science connect to the Department of Animal Science at Cornell University.

Opportunities for youth and youth programs to connect to Cornell University can be found at: <http://www.cornell.edu/outreach/programs/>.