Extension Empowers Leaders

COOPERATIVE EXTENSION

University of Kentucky
College of Agriculture, Food and Environment

Kentucky State University

Powell County 4-Hers create apps using drag-and-drop web development tools.

4-H Incorporates Computer Coding into Science, Engineering and Technology Programs

Extension introduces youth to new technologies where they apply skills to solve real world problems.

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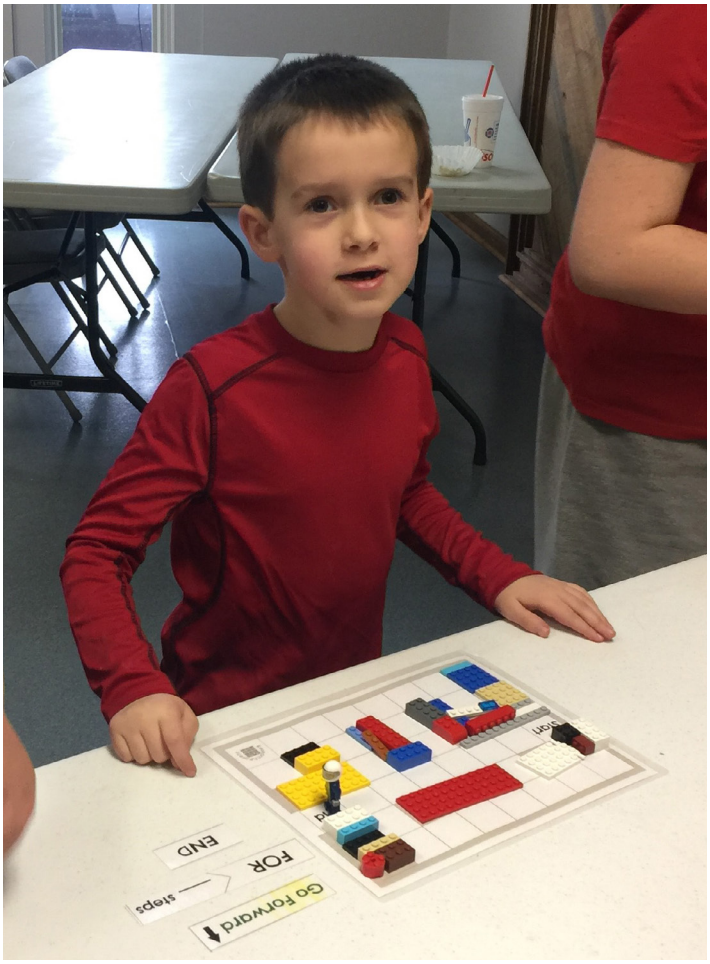
It starts with us



Monroe County 4-Hers apply basic skills before learning higher-level computer science skills using Hour of Code™ materials.

In 2015, the Kentucky 4-H Program began using the online computer science program Hour of Code as a teaching tool to introduce youth to coding. The Hour of Code is part of the code.org initiative and uses games to teach basic, intermediate, and advanced coding skills. Forty Kentucky county 4-H programs have used the resource, in addition to the new 4-H Computer Science curriculum.

Over 1,200 4-H members have participated in the Hour of Code since its introduction in 2015. 4-H agents and volunteers have provided more than 200 hours of direct instruction. Of the counties completing a follow-up evaluation, 100% of the 4-H members were able to complete a coding session. Sixty-six percent of those completing the program were able to share what they learned with someone else. Seventy-one percent of agents who implemented the program for the first time plan to offer it again.

The Powell County Cooperative Extension Service, in collaboration with the Kentucky 4-H Office, received a grant from the National 4-H Council (through the Office of Juvenile Justice) to help continue to expand the Science, Engineering and Technology (SET) county programming through a Mentoring Through Science grant. Youth develop relationships with adults as well as expand their knowledge and skill sets in robotics, rocketry, and construction. The Cooperative Extension Service provided afterschool robotics and/or SET clubs at Clay City Elementary, Powell County Middle School and the Powell County High School, collaborated with the Powell County Schools Migrant Program to provide summer day camp SET activities, and facilitated a Powell County robotics team. The elementary group learned basic robotics programming and other S.E.T. concepts. The middle school youth expanded that knowledge to robotics "challenge" programming and expanded their technology skills by introducing Hour of Code technology and programming skills. The robotics team learned enhanced sensor programming to improve robot functions at competitions.

The high school group purchased a 3-D printer, which allowed them to solve a real world problem for a local resident. The resident was unable to locate a washer needed to repair a faucet. The high school students spent many hours measuring and programming each dimension of this washer correctly into the printer. After much trial and error, they were successful in producing an improved, functioning washer.

Hour of Code and other 4 H science programs are available through local county 4-H clubs, schools and grant-funded programs in Kentucky. Focus areas for 4-H science programs include robotics, rocketry, environmental science, agri-science, biotechnology and veterinary science.

The U.S. Bureau of Labor Statistics projects that in just three years there will be 1.4 million computer science-related jobs, and only 400,000 qualified job candidates. Extension programming helps ignite interest among youth to pursue these fields.