

Idaho's 4-H program develops positive attitudes towards science

AT A GLANCE

4-H provides numerous STEM-infused programs engaging a diversity of youth with different interests, improving attitudes towards and interest in science.

The Situation

The State Board of Education has a mission to “[...] increase[ing] all students’ interest, engagement and success in STEM education; prepare[ing] students for STEM and related careers; and firmly establish[ing] partnerships between industry, education and government to make these goals a reality.” University of Idaho Extension’s 4-H Youth Development program offers a variety of opportunities for youth to engage in topics that pique their interests. While 4-H projects are not discipline specific, they do integrate and blend many academic topics. Many 4-H projects have elements and emphases on STEM content and skills. In the interest of supporting the State Board of Education mission to support all youth, we sought to examine if different 4-H programs which engage many different youth had a similar or different developmental effect on youth attitude and interest in STEM. In 4-H, youth self-select into projects they find interesting. Our question was: can we move youth toward improving attitude towards and interest in STEM regardless of the project taken to get there?

Our Response

To investigate how different projects might engage youth in science, we selected projects based on three



4-H member participating in steer project.

criteria: 1) the project had an emphasis in STEM content and skill development; 2) the project engaged different youth in terms of gender and age range; and 3) the project participants were involved only in one 4-H project area at the time. The first selection criterion allowed us to examine different project approaches to engaging youth in STEM. The second allowed us to examine gender and age differences, and the third allowed us to attribute responses to one specific 4-H project. The four project areas selected were:

- **Livestock:** these clubs focus on raising an animal for a set number of days and then selling it at a 4-H livestock sale. Livestock projects are considered animal sciences, where youth learn about nutrition, reproduction, meat science and other

topics related to animal welfare and production agriculture.

- **Family and Consumer Sciences (FCS):** these clubs focus on projects such as sewing, baking, canning and other homemaking projects, which all include the multiple science areas such as mathematics and food sciences.
- **Small Animal:** these clubs focus on the science and welfare of pets. Youth learn about the animals that they keep around their houses such as a dog, cat, rabbit or guinea pig.
- **FIRST LEGO League (FLL):** these clubs focus on coding and engineering a robot that can accomplish a set of tasks from the theme for that year’s challenge as well as a science research project.

A survey was developed using the National 4-H Common Measures (“Common Measures.” 4-H, 4-h.org/professionals/common-measures/) to assess participant interest and engagement in science and attitudes and aspirations toward science. The surveys were administered by a 4-H professional either during meetings or during an event at the end of the project year. We collected responses from 152 youth.

Program Outcomes

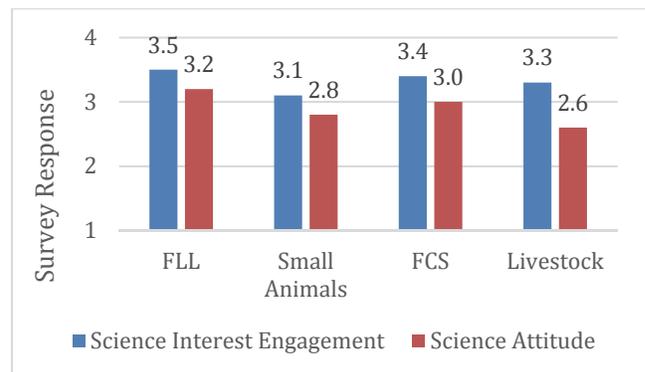
Previous surveys have targeted specific projects such as FLL, but none have made a comparison across projects as to the engagement and interest in science in 4-H. The survey also asked questions about the demographics of the youth. Table 1 describes the number of participants from each club, percentage of girls participating and the age range for each project area.

Table 1. Demographics of study participants

Project	N	% Girls	Average Age	Age Range
FLL	103	23.3%	11.6	8-14
Small Animals	13	76.9%	10.6	8-14
FCS	10	90.0%	10.9	9-13
Livestock	26	54.2%	13.3	9-19

Despite the differences in gender and age range, participants across projects had a high interest and engagement in science as well as a positive attitude towards science (Figure 1). Results from this survey indicate that 4-H is engaging youth in science in all project areas which will help prepare them for careers in a diverse and changing future.

Figure 1. Science interest and attitudes among participants



Survey scale: 1=Strongly Disagree to 4=Strongly Agree

FOR MORE INFORMATION

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