

EXTENSION SNAPSHOT

Fulton-Mason-Peoria-Tazewell

I ILLINOIS Extension

COLLEGE OF AGRICULTURAL, CONSUMER
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Hands-on engineering activities allow young people to try new ideas, test solutions to problems, work as a team, and share their designs with others. 4-H youth development educator Emily Schoenfelder wrote and piloted new 4-H curriculum titled Engineering Adventures.

4-H Engineering Adventures Program Increases Students' Enjoyment of Science

According to the US Department of Education, "...not enough of our youth have access to quality STEM learning opportunities," and "The United States is falling behind internationally, ranking ... 22nd in science among industrialized nations." 4-H is helping to address this gap. This spring, several fourth and fifth-grade classes piloted a new University of Illinois Extension 4-H program: Engineering Adventures! This venture provided classroom teachers with a new 4-H curriculum that was developed in the Fulton-Mason-Peoria-Tazewell Unit and aligns with the Next Generation Science Standards (NGSS).

Furthermore, teachers were given supply kits worth over \$150 granted by the Illinois 4-H Foundation to help them implement the program. Teachers, in conjunction with 4-H youth development educator Emily Schoenfelder, used these materials to facilitate a series of six, hands-on STEM activities.

Students designed roller coasters, constructed windmills, and built solar ovens – just to name a few. These problem-based lessons built science content knowledge around Newton's Laws of Motion, thermodynamics, sustainable energy, and more! Perhaps more importantly, however, the curriculum also encouraged students to work in groups, try new things, communicate ideas, explore the engineering design cycle as a problem-solving tool, and have fun!

Upon completion of this program, participating students were asked about their attitudes and interests around STEM, as were students who did not participate in the program. Results showed that there was a statistically significant ($p < .05$) difference in the enjoyment of science between the participating and non-participating students, with 99% of participants indicating that they liked science. Furthermore, 88% of participants said they learned new things about engineering, with 72% indicating that they knew how to define an engineering design problem.

When asked about the program, one student said, "I think the most important thing I learned is that trying new things can be really fun." When asked how they might be different if they had never been involved in 4-H, another student indicated "I would have never got to build things and make more friends." Additionally, several participating teachers expressed their appreciation at having these ready-to-go lessons to offer their students.



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