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Integrating STEM into Every 4-H Project

A mission of 4-H is to prepare young people to have a positive impact on communities related to significant environmental, economic, and social issues. Youth need to understand STEM (science, technology, engineering, and mathematics) concepts and practices and know how to use scientific and engineering thinking to address these issues.

While the 4-H program advances a long-term goal to increase the number and diversity of youth pursuing higher education and careers in STEM fields, it is not our intent to only prepare future scientists and engineers. 4-H should also help youth address issues in their lives that involve STEM and connect learning with real-world situations where youth can adopt and use science methods or engineering to solve problems.

But wait! There are not just new “4-H STEM” projects. STEM may be integrated into all existing 4-H projects, like baking, rabbits, presentations, textiles, and many others.

STEM can be incorporated in any type of 4-H project or event by following the **experiential learning cycle** (do-reflect-apply) and ensuring youth have opportunities to explore and investigate (called inquiry-based learning) where they utilize **scientific and engineering practices**. Having 4-H members do things like:

- ask questions and define problems
- develop and use models
- plan and carry out investigations
- analyze and interpret data
- use math and computers
- construct explanations and design solutions
- engage in argumentation from evidence
- obtain, evaluate, and communicate information

Example: Breadmaking and Baking Project

Invite youth to research the role of fat in baking and experiment using different types of fat or oil (e.g., margarine, olive oil, butter, vegetable oil) in a recipe. Youth might determine the different types of grains used in baked products (e.g., oats, wheat, rice flour, flaxseed) and create a presentation that follows one grain from farm to fork.

Find more examples on 4-H Projects Sheets at http://4h.ucanr.edu/Projects/Project_Sheets/