**Situation**

**Description of challenge, problem, or opportunity:**
- Unsolved social/economic problems that need to be addressed by STEM
- Need for general population to better understand STEM
- Deficit of American undergraduate students in STEM majors
- General population lacks science literacy to understand basic science methods and content utilized in daily routines or evaluate rising bioethical issues
- Under-representation of women and minorities in STEM majors and careers
- Need a diverse pool of trained scientists and scientifically literate people to frame and solve problems & educate others

**What we invest:**
- Federal, state and private funds
- 4-H Infrastructure
- Land Grant Univ. Support
- County Extension administrators and agents, program coordinators, and specialists
- Collaborations with formal and informal partners, including STEM business/industry leaders
- Recruitment of Volunteers
- Training
- Knowledge
- Collaborations with external evaluators and researchers

**What we do:**
- Provide overall statewide direction of 4-H STEM, reaching: extension administrators, LGU and Extension faculty and staff, youth grades K-12, funders/donors, partners, and the public
- Select or develop 4-H STEM appropriate curricula and resources
- Market 4-H STEM to increase interest and participation
- Conduct non-formal education, including learning and teaching, facilitated inquiry and experiential learning, and engineering design process and invention.
- Facilitate question formation and problem solving through guided activities
- Teach youth about academic and career choices, and requirements
- Embed or supplement math into 4-H programming

**What we produce**

**Science, Technology, Engineering and Math**

**Program Logic Model**

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**Outputs**

Knowledge

Actions

Conditions

- **What we produce**
  - Intentional STEM-Ready programming and instructional methods
  - 4-H STEM-Ready curricula
  - Trained staff and volunteers
  - Engaged adult participants
  - Engaged youth participants
  - MOU’s, formal and informal partnerships, including other federal agencies, state agencies, LGU colleges and departments, science museums, youth organizations, K-12 formal education entities, and home school groups.
  - Evaluation materials
  - Marketing materials

**Outcomes**

- Occurs when there is a change in knowledge or the participants learn:
  - Increased awareness of STEM among youth
  - Improved STEM skills (scientific methods and abilities) and knowledge (content) among youth
  - Increased awareness of opportunities to contribute to society using STEM skills and practicing civic engagement
  - Improved application of confidence and competence of STEM skills among youth
  - Increased application of life skills among youth
  - Increased application of career skills among youth.

**Assumptions**

- 4-H non-formal experientially based programming addresses science abilities, concepts and content under guidance of trained 4-H learning facilitator who collaborates with science experts; 4-H develops appropriate STEM abilities to emphasize in non-formal education; 4-H essential elements create optimal youth development context for learning; 4-H reaches diverse population.

**Explanations**

- Increased awareness of STEM skills, content, and career possibilities increases engagement of youth in STEM careers.

**External factors**

- Youth experience in schools including (with) STEM & mathematics.
- No Child Left Behind (course content, testing, tutoring provided in school), changing landscape of schools, community and family influence (e.g., population changes, immigration, global economy and competition in STEM education and STEM pursuits).

Adapted from National Science Logic Model (National 4-H Council, 2007)