4-H Science Logic Model

Situation

Description of challenge, problem, or opportunity:

- Unsolved worldwide social problems need to be addressed by science

-In the US, shortage of scientists & people understanding science

-- Under-representation of women and minorities in science careers

-Need a diverse pool of trained scientists to frame and solve problems & educate others.

-General population in the US (& worldwide) lacks basic understanding of science methods and content ("science literacy")

Inputs

What we invest:

- Federal, state and private funds

- 4-H Infrastructure

-Land Grant Univ. Support

- County Extension administrators and agents, program coordinators, and specialists

- Training

-Knowledge

-Collaborations with external researchers

-Collaborations with science industry leaders

Activities

What we do::

-Select and develop 4-H Science curricula

-Select and train volunteers

- Market 4-H Science to increase interest, participation

- Conduct non-formal education (learning and teaching, facilitated inquiry and discovery)

- Facilitate question formation and problem solving through guided activities

-Provide or supplement math programming

-Teach youth about academic and career choices, requirement

Who we reach (Participation):
- Extension administrators, LGU and Extension faculty and staff)
- Youth (grades 3-5, 6-8, 9-12)
- Federal, state & private funders
- Partners
- Public

Outputs

What we produce:

- 4-H Science curricula

- New instructional methods

- Trained staff and volunteers

- Adult participants engaged

- Youth participants engaged

- Partners (Other Federal agencies, science museums, youth organizations, etc.) collaborating

- Marketing materials

- Evaluation materials

Outcomes

Knowledge

*Occurs when there is a change in knowledge or the participants **learn**:*

-Increased awareness of science among youth

-Improved science skills (scientific methods) and knowledge (content areas) among youth

-Increased awareness of opportunities to contribute to society using science skills.

- Increased life skills (self-efficacy) among youth

Actions

Occur when there is a change in behavior or the participants act upon what they've learned and:

-Youth apply science learning to contexts outside the 4-H courses (e.g., school classes, science fairs, invention contests, etc.)

-Youth adopt and use new methods or improved technology

-- Youth demonstrate use of life skills

- Youth express interest/demonstrate aspirations towards science careers (career fairs, job shadowing, volunteer work or internships)

--Youth raise questions and identify problems to be addressed using science

Conditions

*Occur when a **societal condition** is improved due to a participant's action taken in the previous column.*
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-Increased number and more diverse pool of youth pursuing education and careers in science related fields.

- Increased and more diverse pool of trained teachers, educators, scientists

-Increased science literacy in general population

- Increased innovation addressing social problems using science

ASSUMPTIONS – 4-H non-formal experientially based programming addresses science abilities, concepts and content under guidance of trained (scientifically able) 4-H learning facilitator; 4-H develops appropriate science abilities to emphasize in non-formal education; 4-H essential elements create optimal youth development context for learning; 4-H reaches diverse population; and increased awareness of science skills, content, and career possibilities increases engagement of youth in science careers.

EXTERNAL FACTORS – Youth experience in schools including [with] science & mathematics, No Child Left Behind (course content, testing, tutoring provided in school), changing landscape of schools, community and family influence (e.g., religious teaching on Creationism), population changes, immigration, global economy and competition in science education and science pursuits.

Note: 4-H Science encompasses science, engineering, technology and applied math.

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