



## Logic Model: 4-H Science and Engineering

Situation: The Program for International Student Assessments showed 2012 data of 15-year-old students on math literacy with 21 countries have higher average scores than the U.S. National Inventors Hall of Fame indicated science, technology, engineering and mathematics (STEM) education puts an emphasis on preparing future generations to be successful in their careers. Skills gained from STEM education extend beyond those needed to be successful in STEM fields, preparing children with varied interests who move into any industry to have valuable skill sets that allow them to be successful (<https://www.invent.org/blog/trends-stem/value-stem-education>).

INPUTS	OUTPUTS		OUTCOMES – IMPACT		
	Activities	Participation	Short-term	Medium-term	Longer-term
What we invest	What we do	Who is reached	What do we think participants will know, feel, or be able to do after participating in program?	How do we think participants will behave or act differently after participating in program?	What kind of impact can result if participants behave or act differently after participating in program?
4-H Youth Development Educators and Specialists  Adult Volunteers	Develop and deliver curriculum and instruction for: <ul style="list-style-type: none"> <li>• Science interest &amp; thinking</li> <li>• Science skills &amp; attitudes</li> <li>• Engineering skills &amp; attitudes</li> </ul>	Youth in grades 4-12	Interest and Engagement in Science <ul style="list-style-type: none"> <li>• Youth will express interest and be engaged in Science-related activities</li> </ul> Positive Attitudes and Aspirations toward Science <ul style="list-style-type: none"> <li>• Youth will express positive attitudes about science</li> <li>• Youth will see science in their futures and recognize the relevance of science</li> </ul> Develop Science Skills and Abilities <ul style="list-style-type: none"> <li>• Youth will demonstrate a capacity for science process skills</li> </ul> Apply Learning <ul style="list-style-type: none"> <li>• Youth will apply science skills to issues in their community</li> </ul> Contributions <ul style="list-style-type: none"> <li>• Youth will make contributions to their peers, families and communities</li> </ul> Develop Engineering Skills and Abilities <ul style="list-style-type: none"> <li>• Youth will demonstrate a capacity for engineering skills</li> </ul> Positive Attitudes and Aspirations toward Engineering <ul style="list-style-type: none"> <li>• Youth will express positive attitudes about engineering</li> </ul>	Youth will use/apply knowledge and skills learned in future science or engineering opportunities  Youth will use/apply knowledge and skills in science or engineering	Youth will seek out future opportunities, activities, courses, education, degrees, jobs/work related to science or engineering



			<ul style="list-style-type: none"> <li>Youth will see science in their futures and recognize the relevance of engineering</li> </ul>		
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Assumptions	External Factors
1. Activities framed around eight essential elements, 4-H guiding principles & mission mandates 2. Delivery modes (club, afterschool, school enrichment and camp) 3. Experiential learning 4. Place-based education (local priorities)	1. Funding support 2. Youth culture, trends, social norms, media 3. Other youth developing organizations 4. Political priorities, public will, environment