Citizen Science Learning Goals, 2017

- Students learn to identify scientific evidence and its appropriate use
  - *Distinguish the scientific issue at the core of a claim*
  - *Evaluate if whatever data being presented in support of this claim is sufficient*

- Students can readily articulate what additional data or information they need to answer a question, and have learned strategies to find it
  - *Learn about different sources and their credibility (primary papers, reviews, popular press, internet sources)*
  - *Be capable of finding and accessing these resources*
  - *Learn to closely read primary research papers*

- Students understand the strengths and limitations of correlations, experiments and models
  - *Read and discuss primary research that utilizes a variety of methodologies*

- Students are able to identify patterns in data and understand the visual representation of data
  - *Understand that different methods produce different outputs and how to ask questions about them*
  - *Be able to evaluate and reconcile conflicting data and develop a scientific argument for an action*

- Students are more informed and aware of the human and societal context of science and scientific inquiry
  - *Positive and negative aspects of the human side of science*
  - *Science is performed and reacted to with a variety of contexts (political, cultural, ethical, economic)*

Learning Outcomes (draft, 2017)

1. Have confidence asking appropriate questions about the basis for claims related to scientific topics.
2. Be able to describe reliable sources for scientific information, and be able to access them.
3. Recognize pseudoscience and differentiate it from science.
4. Be able to read primary research papers at the following level:
   a. know which sections to look in for different pieces of information
   b. identify the question being asked by the researchers
   c. breakdown the results (text and figures together) and paraphrase the main findings
   d. summarize how the data presented addresses the researcher's question
   e. feel comfortable raising questions about possible flaws in the paper
5. Be able to make an argument that is based on scientific or empirical evidence, for or against some action or decision.