

**Task Background**

**Domain & Area:** Science - Nature of Science and Engineering

**Target CCR Standard(s)** (including level of standard, if needed) and/or adult diploma competency for Science or Social Studies:

**MN Standard Adult High School Diploma Science Competency**

**Area 1: Nature of Science and Engineering**

- Show an understanding of the scientific method, using empirical criteria, logical argument and skeptical review.

**Task Description:** The purpose of this task is to provide a student an opportunity to demonstrate competency in a fundamental concept in science: scientific process/inquiry. In this task, a student will

- select an experiment to analyze
- evaluate the conclusion of the experiment
- cite the original experiment when appropriate
- construct a new hypothesis based on the results of the original experiment
- design a follow-up study using the scientific method

**Information for the Teacher**

- All materials described below are found in a Google folder here:  
[https://drive.google.com/drive/folders/171tn0naHGQBn897slu\\_R-h6ftTDMXqzK?usp=sharing](https://drive.google.com/drive/folders/171tn0naHGQBn897slu_R-h6ftTDMXqzK?usp=sharing)
- Students should already have studied the steps in the scientific process/scientific inquiry and be able to apply the scientific method to a problem or a question. Students should also know how to cite and/or quote another person's work in an appropriate format (APA or MLA).
- Students can choose an article from the [Experiments Collection | Science News for Students](#) that interests them. Explain that an essential part of scientific inquiry is building on other scientists' work. For this task, students will read about another scientist's experiment and analyze their data. As often happens in scientific studies, it may lead to further questions and new hypothesis. Students will use the *Scientific Process Summary* sheet provided to outline the experiment they are designing based on a new hypothesis.

- Besides copies of the materials linked above (materials could be provided to students in print or electronic form), the student will need access to the internet to choose an experiment to analyze.
- This task was designed to be completed mostly independently by a learner. For students needing more support, they are encouraged to ask for feedback on their work from a teacher and make revisions as needed. Students are also encouraged to follow all activity instructions carefully and to study the rubric to understand how their experiment design will be evaluated. A good website for help with MLA and APA citations is *Research and Citation Resources // Purdue Writing Lab* - [https://owl.purdue.edu/owl/research\\_and\\_citation/resources.html](https://owl.purdue.edu/owl/research_and_citation/resources.html)
- It is up to the teacher to determine if appropriate CCRS standards will be added to this task and if a claimed CCRS anchor is demonstrated at a level to show diploma competency. It is up to the teacher and student to determine when task evidence is ready to be submitted to the portfolio reviewers.
- There is a rubric provided for evaluating the experiment design.

**Activities**

**Title:** Analyze an Experiment and Formulate a New Hypothesis

**Materials:** This activity includes the *following link* for students to explore and choose an experiment to analyze. They will record their observations about the data in the “Analyze Data,” “Make Observations,” and “Formulate New Hypothesis” sections of the “*Scientific Inquiry Process Summary*” document.

- Science News for Students Website:  
<https://www.sciencenewsforstudents.org/collections/experiments>

**Title:** Design an Experiment

**Materials:** This activity requires the student to design an experiment to test their new hypothesis using the “*Scientific Inquiry Process Summary*” document and “*Nature of Science and Engineering Task Rubric*” handout.