

**STANDARD IV:**

Students will understand features of static and current electricity.

**Science Benchmark:**

Electricity is a form of energy. Current electricity can be generated and transmitted through pathways. Some materials are capable of carrying electricity more effectively than other materials. Static electricity is a result of objects being electrically charged. Without touching them, materials that are electrically charged may either push or pull other charged materials.

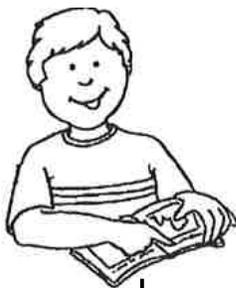
**STANDARD IV: Students will understand features of static and current electricity.**

*Objective 1:* Describe the behavior of static electricity as observed in nature and everyday occurrences.

- a. List several occurrences of static electricity that happen in everyday life.
- b. Describe the relationship between static electricity and lightning.
- c. Describe the behavior of objects charged with static electricity in attracting or repelling without touching.
- d. Compare the amount of static charge produced by rubbing various materials together (e.g., rubbing fur on a glass rod produces a greater charge than rubbing the fur with a metal rod, the static charge produced when a balloon is rubbed on hair is greater than when a plastic bag is rubbed on hair).
- e. Investigate how various materials react differently to statically charged objects.

*Objective 2:* Analyze the behavior of current electricity.

- a. Draw and label the components of a complete electrical circuit that includes switches and loads (e.g., light bulb, bell, speaker, motor).
- b. Predict the effect of changing one or more of the components (e.g., battery, load, wires) in an electrical circuit.
  - c. Generalize the properties of materials that carry the flow of electricity using data by testing different materials.
  - d. Investigate materials that prevent the flow of electricity.
  - e. Make a working model of a complete circuit using a power source, switch, bell or light, and a conductor for a pathway.



**Science language students should use:**

Infer, environments, climate, dinosaur, preserved, extinct, extinction, impression, fossil, prehistoric, mineral, organism, replacement, trilobite, sedimentary, tropical

# Intended Learning Outcomes for Fifth Grade Science

The Intended Learning Outcomes (ILOs) describe the skills and attitudes students should learn as a result of science instruction. They are an essential part of the Science Core Curriculum and provide teachers with a standard for evaluation of student learning in science. Instruction should include significant science experiences that lead to student understanding using ILOs.

**The main intent of science instruction in Utah is that students will value and use science as a process of obtaining knowledge based upon observable evidence.**

By the end of fifth grade students will be able to:

## 1. Use Science Process and Thinking Skills

- a. Observe simple objects, patterns, and events and report their observations.
- b. Sort and sequence data according to criteria given
- c. Given the appropriate instrument, measure length, temperature, volume, and mass in metric units as specified.
- d. Compare things, processes, and events.
- e. Use classification systems.
- f. Plan and conduct simple experiments.
- g. Formulate simple research questions.
- h. Predict results of investigations based on prior data.
- i. Use data to construct a reasonable conclusion.

## 2. Manifest Science Attitudes and Interests

- a. Demonstrate a sense of curiosity about nature.
- b. Voluntarily read or look at books and other materials about science.
- c. Pose questions about objects, events, and processes.
- d. maintain an open and questioning mind toward new ideas and alternative points of view.
- e. Seek and weigh evidence before drawing conclusions.
- f. Accept and use scientific evidence to help resolve ecological problems.

## 3. Understand Science Concepts and Principles

- a. Know and explain science information specified for the grade level.
- b. Distinguish between examples and non-examples of concepts that have been taught.
- c. Solve problems appropriate to grade level by applying science principles and procedures.

- **Instruction should include significant science experiences that lead to student understanding using ILOs.**



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4. **Communicate Effectively Using Science Language and Reasoning**
    - a. Record data accurately when given the appropriate form (e.g, table, graph, chart).
    - b. Describe or explain observations carefully and report with pictures, sentences, and models.
    - c. Use scientific language in oral and written communication.
    - d. Use reference sources to obtain information and cite the source.
    - e. Use mathematical reasoning to communicate information.
  5. **Demonstrate Awareness of Social and Historical Aspects of Science**
    - a. Cite examples of how science affects life.
    - b. Understand the cumulative nature of science knowledge.
  6. **Understand the Nature of Science**
    - a. Science is a way of knowing that is used by many people not just scientists.
    - b. Understand that science investigations use a variety of methods and do not always use the same set of procedures; understand that there is not just one “scientific method.”
    - c. Science findings are based upon evidence.

- **Instruction should include significant science experiences that lead to student understanding using ILOs.**