

Science

Fourth Grade



Fourth Grade Science Curriculum Overview

The [Indiana Academic Standards](#) define what students should know, understand, and be able to do at grade level beginning in kindergarten and progressing through grade twelve. These standards serve as the foundation to our curriculum in Noblesville Schools but are not a curriculum on their own. The Indiana Academic Standards are supported through grade-level curriculum maps and a selection of curriculum materials to support these maps. These curriculum maps and materials are aligned to the Indiana Academic standards while also meeting the needs of all learners. Therefore, the Noblesville Schools' curriculum is constantly undergoing periodic and systematic analysis and revision.

The Indiana Academic Standards for Grades K-12 Science are based on *A Framework for K-12 Science Education* (NRC, 2012) and the Next Generation Science Standards (NGSS Lead States, 2013). The K-12 Science Indiana Academic Standards outline the knowledge, science, and engineering practices that all students should learn by the end of high school. The standards are three-dimensional because each student performance expectation engages students at the nexus of the following three dimensions:

- **Dimension 1** describes scientific and engineering practices.
- **Dimension 2** describes crosscutting concepts, overarching science concepts that apply across science disciplines.
- **Dimension 3** describes core ideas in the science disciplines.

The content area standards and the types of learning experiences they provide to students in fourth grade are described below. These fourth grade standards are supported in Noblesville Schools through curriculum materials for science instruction, including *Inspire Science by McGraw Hill*.



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Inspire Science

Inspire Science by McGraw Hill serves as the primary core curriculum material for all fourth grade learners and provides alignment with the Indiana Academic Standards for Fourth Grade Science.

Table 1: Fourth Grade Inspire Science

Science Unit and Module(s) Pacing Varies By Unit	Science Unit Learning Outcomes Learners will...	Science Unit Big Idea and Essential Questions
Unit 1: Forces and Energy	Design and build a roller coaster track for a steel ball. Construct an explanation to describe the cause-and-effect relationship between forces and motion. Construct an explanation about the relationship between speed and energy. Ask questions and construct an explanation to describe the transfer of energy when objects collide.	(Big Idea) What is energy? How do forces affect motion? How are speed and energy related? How does energy transfer when objects collide?

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Science Unit and Module(s) Pacing Varies By Unit	Science Unit Learning Outcomes Learners will...	Science Unit Big Idea and Essential Questions
Unit 2: Using Energy	Module 1: Investigate different types of energy and how energy is transferred. Make observations to explain how different types of energy can be transferred in various ways. Plan and carry out investigations to describe and model how energy transfers with sound and light. Use their observations from their investigations to describe how energy is transferred by electric currents. Plan and carry out investigations to explain how energy can be transferred by heat. Module 2: Use information they have obtained about natural resources to design a solar oven. Obtain and combine information about the source of nonrenewable resources, and how their uses affect humans. Obtain and combine information about the source of renewable resources, and how their uses affect humans. Obtain and combine information about the source of renewable resources on the environment. Use their observations to construct an explanation and design a device that converts energy from one form to another.	Module 1: (Big Idea) How is energy used? What are the types of energy? How are sound and light energy transferred? How is electrical energy transferred? What is heat? Module 2: (Big Idea) How does energy use impact the environment? How do we get energy from nonrenewable resources? How do we get energy from renewable resources? How does our use of energy resources affect the environment? How can we design a device that converts energy?

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Science Unit and Module(s) Pacing Varies By Unit	Science Unit Learning Outcomes Learners will...	Science Unit Big Idea and Essential Questions
Unit 3: Our Dynamic Earth	Module 1: Investigate the changing of Earth's features and design and test a model of erosion. Use maps to interpret and analyze data and describe patterns in landforms. Construct an explanation about how rock and fossil formations change a landscape over time. Plan and carry out investigations to observe the effects to Earth's surface by living and nonliving things. Module 2: Consider why one building might have collapsed during an earthquake, while others did not. Analyze and interpret data from maps to observe patterns of earthquake occurrences. Develop and use models to describe the patterns in waves and how waves cause objects to move. Construct explanations about the effects of earthquakes on structures and design solutions to reduce earthquake damage	Module 1: (Big Idea) How do Earth's features change? How can we use maps to describe patterns in landforms? What can we learn from rocks and fossils? How do landscapes change over time? Module 2: (Big Idea) What are the causes and effects of earthquakes? What patterns are there in the location of earthquakes? How can we model earthquake movement? What solutions can reduce earthquake damage?

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Science Unit and Module(s) Pacing Varies By Unit	Science Unit Learning Outcomes Learners will...	Science Unit Big Idea and Essential Questions
Unit 4: Information Processing and Living Things	Module 1: Consider how internal and external structures help organisms survive, grow, and reproduce. Construct an argument to explain how plants use their structures to survive, grow, and reproduce. Construct an argument to explain how animals use their structures to survive, grow, and reproduce. Module 2: Investigate how animals process and interpret information. Use a model to explain how animals sense and interpret their environment. Develop and use a model to explain how light reflecting from objects allows animals' eyes to see. Construct an explanation about how patterns are used to transmit information.	Module 1: (Big Idea) How do the structures of plants and animals help them survive? How do plant structures help them survive, grow, and reproduce? How do animal structures help them survive, grow, and reproduce? Module 2: (Big Idea) How do we transmit and interpret information? How do animals sense and interpret their environment? What is the role of the animals' eyes? How do we use patterns to transmit information?