VALWOOD

GO BEYOND

Fifth Grade Science Curriculum

5th Grade Overview

Course Description

In fifth grade science, students will be practicing scientific skills such as writing questions, making predictions, controlling variables, organizing data and developing logical conclusions. Students will write about investigations in science notebooks and represent data in graphs and tables. Topics will include body systems, rocks, changes in the earth's surface, space, and ecosystems.

Topics at a Glance

- Cells and Body Systems
- The Rock Cycle
- Space
- Changes in Earth's surface and landforms
- Light and Sound

Assessments

- Science Notebooks
- Teacher made assessments
- Teacher observations

Grade Level Expectations

Standard	Big Ideas for Fifth Grade
1. Physical Science	1. Sound and light travel differently through different types of matter
2. Life Science	1. Cells make up organs which make up body systems 2. Human body systems have basic structures, functions, and needs
3. Earth Systems Science	1. There are three types of rocks and they have a specific cycle 2. Earth's surface changes constantly through a variety of processes and forces 3. The solar system has many ever-changing parts

Fifth Grade Notes

- Science in fifth grade is built upon what the children already know which enables them to connect to new concepts and skills.
- Students are given the opportunity to inquire, investigate and experiment using science tools, terms and the scientific method.
- Life science gives students the opportunity to study cells, organs and body systems.
- Earth science allows students to study the rock cycle, the ever-changing earth's surface and the solar system.
- Ecology allows students to study ecosystems and discover the relationships between organisms and their physical surroundings.
- Fifth grade normally takes a field trip to Kennedy Space Center.

1. Physical Science

Students know and understand common properties, forms and changes in matter and energy.

Prepared Graduates
The preschool through twelfth-grade concepts and skills that all students who complete the Valwood education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduate Competencies in the Physical Science standard:

- Observe, explain, and predict the ways that sound can travel through the different types of matter
- Apply an understanding of sound and light related to their properties
- Apply an understanding that energy exists in various forms, and its transformation and conservation occur in processes that are predictable and measurable
- *Engage in scientific inquiry by asking or responding to scientifically oriented questions, collecting and analyzing data, giving priority to evidence, formulating explanations based on evidence, connecting explanations to scientific knowledge, and communicating and justifying explanations.*

Content Area: Science - Fifth Grade

Standard: 1. Physical Science

Prepared Graduates:

Apply an understanding of the properties of light and sound to explain, their properties.

GRADE LEVEL EXPECTATION

Concepts and skills students master:

1. Sound and light travel differently through each type of matter.

Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: a. Develop and communicate a scientific explanation for how sound travels through different matter. b. Identify different types of light on the electromagnetic spectrum.	**Inquiry Questions:** 1. How does sound travel through solids, liquids, and gases? 2. What happens when light is reflected?
	Relevance and Application: 1. Knowing how sound travels helps to better understand the molecular make up of solids, liquids, and gases. 2. Understanding the reflection of light provides information on the light spectrum.
	Nature of Discipline: 1. Select appropriate tools to conduct an experiment, use them correctly, and report the data in proper units. 2. Share results of experiments with others and respectfully discuss results that are not expected. 3. Review and analyze information presented by peers and provide feedback on their evidence and scientific reasoning about the different ways sound travels through matter.

2. Life Science

Students know and understand the characteristics and structure of living things, the processes of life and how living things interact with each other and their environment.

Prepared Graduates
The preschool through twelfth-grade concepts and skills that all students who complete the Valwood education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduate Competencies in the Life Science standard:

- Analyze the relationship between structure and function in living systems at a variety of organizational levels, and recognize living systems' dependence on natural selection
- Analyze how various organisms grow, develop, and differentiate during their lifetimes based on an interplay between genetics and their environment
- Explain how livings things are organized

Content Area: Science - Fifth Grade

Standard: 2. Life Science

Prepared Graduates:

Analyze how various organisms grow, develop, and differentiate during their lifetimes based on an interplay between genetics and their environment

GRADE LEVEL EXPECTATION

Concepts and skills students master:

1. Cells make up organs which make up body systems

Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: a. Develop and communicate an evidence-based scientific explanation of the role of different organs or structures that are important for an organism's survival – in animals b. Analyze and interpret data to generate evidence that all organisms have structures that are required for survival in both plants and animals c. Create, evaluate, *compare, and contrast models* of plant and/or animal systems or parts	**Inquiry Questions:** 1. How do plants and animals carry out processes necessary for life? *2. How do plants and animals both accomplish the function of transporting materials (water and nutrients)?* *3. What different structures do animals use to carry out the same functions (skeletons, digestive system)?* **Relevance and Application:** 1. Different organism structures are adapted to different functions to ensure survival. 2. All living things are made of cells to ensure their survival. 3. Body systems are intertwined to make up a fully functioning body. **Nature of Discipline:** 4. Review and analyze information presented by peers and provide feedback on their evidence regarding the importance of various structures to plants and animals.

Content Area: Science - Fifth Grade

Standard: 2. Life Science

Prepared Graduates:

Analyze the relationship between structure and function in living systems at a variety of organizational levels

GRADE LEVEL EXPECTATION

Concepts and skills students master:

2. Human body systems have basic structures, functions, and needs

Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: a. Develop and communicate an evidence-based scientific explanation regarding how humans address basic survival needs b. Analyze and interpret data to generate evidence that human systems are interdependent c. Assess further scientific explanations regarding basic human body system functions d. Create and evaluate models of human body systems and organs e. Compare and contrast a human system to that of another organism, and provide hypotheses about why the similarities and differences exist	**Inquiry Questions:** 1. How are human body systems similar to and different from those found in other organisms? 2. How are organs impacted when different body systems fail to work correctly? **Relevance and Application:** 1. People can create goals about their own lifestyle such as exercising every day and eating healthy foods based on an understanding of human body systems. 2. Societal norms and practices that are intended to protect our health such as wearing a bicycle helmet can be based on scientific evidence. **Nature of Discipline:** 1. Review and analyze information presented by peers on the structure and function of the human body and provide feedback on their evidence and scientific conclusions. 2. Critically evaluate models of the human body, identifying the strengths and weaknesses of the model in representing complex natural phenomena.

3. Earth Systems Science

Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space.

Prepared Graduates:
The preschool through twelfth-grade concepts and skills that all students who complete the Valwood education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduate Competencies in the Earth Systems Science standard:

- Describe and interpret how Earth's geologic history and place in space are relevant to our understanding of the processes that have shaped our planet.
- Evaluate evidence on how weathering and erosion affect the Earth.
- Describe the different objects that make up the Solar System.
- Describe and identify the 3 three types of rock and that there is a specific cycle.

Content Area: Science - Fifth Grade

Standard: 3. Earth Systems Science

Prepared Graduates: Describe and identify the 3 three types of rock and that there is a specific cycle.

GRADE LEVEL EXPECTATION

Concepts and skills students master:

1. There are three types of rock and they follow a specific cycle.

Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: a. Develop and communicate a scientific explanation about the rock cycle. b. Explain and create a description of the three types of rocks and their cycle.	**Inquiry Questions:** 1. How can rocks be classified? 2. How can you identify minerals? 3. What is the rock cycle?
	Relevance and Application: 1. Mining operations provide nonrenewable resources. 2. Geologists can learn about the past from the make-up of the Earth from an area.
	Nature of Discipline: 1. Review and analyze scientific explanations about the rock cycle presented by their peers, and provide feedback to push their peers to be scientifically accurate and base their claims on adequate and reasonable scientific evidence, not opinion.

Content Area: Science - Fifth Grade

Standard: 3. Physical Science

Prepared Graduates:

Evaluate evidence that Earth's geosphere, atmosphere, hydrosphere, and biosphere interact as a complex system

GRADE LEVEL EXPECTATION

Concepts and skills students master:

2. Earth's surface changes constantly through a variety of processes and forces

Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: a. Analyze and interpret data identifying ways Earth's surface is constantly changing through a variety of processes and forces such as plate tectonics, erosion, deposition, solar influences, climate, and human activity b. Develop and communicate an evidence based scientific explanation around one or more factors that change Earth's surface	**Inquiry Questions:** 1. How does Earth's surface change? 2. How do changes on Earth's surface impact humans? **Relevance and Application:** 1. There are benefits and dangers to humans as Earth's surface constantly changes. 2. Communities take into account the effects of the changing Earth in a variety of ways. For example, they might use springs, stilts, drainage techniques, or build off the ground because of frost heaving. 3. Some cities have emergency plans for earthquakes, flooding, eruptions, and tornadoes. 4. The development of technology led to tools that made the establishment of measurement standards – the Richter Scale – possible. **Nature of Discipline:** 1. Ask testable questions about how the Earth's surface changes. 2. Utilize a variety of media sources to collect data for analysis regarding Earth processes and the changing surface. 3. Assess and provide feedback on other's scientific explanations about factors that change Earth's surface, pushing for reasoning based on evidence and scientific principles.

Content Area: Science - Fifth Grade

Standard: 3. Earth Systems Science

Prepared Graduates:

Evaluate evidence that the Solar System is made of many different parts

GRADE LEVEL EXPECTATION

Concepts and skills students master:

3. The solar system has many ever-changing parts

Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: a. Create and observe a scale model of the solar system to compare and contrast the planets. b. Classify planets based on a variety of characteristics. c. Use a variety of tools to observe which is best for noticing changes in the solar system.	**Inquiry Questions:** 1. What parts is the solar system made of? 2. How are the planets classified? *3. What is the difference in the different kinds of stars?* **Relevance and Application:** 1. Placement of planets affects what can survive on the planet. 2. Different viewing instruments give us different views of the solar system. **Nature of Discipline:** 1. Support explanations of the solar system using evidence. 2. Understand how the solar system is grouped (Inner and outer planets). 3. Assess and provide feedback on other student's scientific explanations about planets, pushing for reasoning based on evidence and scientific principles.