

# 2nd Grade American Online School

## SCIENCE CURRICULUM

### Discovering Patterns in Nature, Earth, and the Sky

Version May/2025

## 1. Introduction

### The Role of Science Education in 2nd Grade

In 2nd grade, science education introduces students to the living world, Earth's systems, and basic astronomical patterns. Learners develop inquiry and observational skills while exploring life cycles, heredity, natural resources, and the celestial bodies above. Through engaging experiments, nature walks, and model-building, students begin to see themselves as budding scientists who ask questions, seek evidence, and make sense of the world around them.

By the end of this course, students will:

- ✓ Describe and sequence the life cycles of plants and animals.
- ✓ Recognize inherited traits and similarities between parents and offspring.
- ✓ Understand how rocks, water, and air interact in Earth's environment.
- ✓ Observe and explain patterns in the Sun, Moon, and stars.
- ✓ Use scientific tools and drawing to document observations and discoveries.

## 2. Core Competence Areas

### SCI.1 Life Science – Life Cycles and Heredity

#### Learning Outcomes

By the end of this course, students will be able to:

- ✓ **Sequence life cycles of familiar plants and animals.**
- ✓ **Identify similarities and differences between parents and their offspring.**
- ✓ **Understand that traits can be inherited or influenced by the environment.**

#### Competencies

##### SCI.1.A.1 – Understanding stages of growth and change.

- Create diagrams of butterfly, frog, sunflower, and bean life cycles.
- Use time-lapse videos or class experiments (e.g., plant growing kits).

##### SCI.1.A.2 – Exploring heredity through patterns and observation.

- Compare family pets, human families, or trees in a forest.
- Draw and label traits like fur color, leaf shape, or body structure.

---

### SCI.2 Earth Science – Rocks, Water, Air, and the Land

#### Learning Outcomes

By the end of this unit, students will be able to:

- ✓ **Identify types of rocks, sources of water, and changes to Earth's surface.**
- ✓ **Describe the roles of air, wind, and water in shaping land.**
- ✓ **Observe seasonal and environmental changes in their surroundings.**

#### Competencies

##### SCI.2.A.1 – Investigating natural resources and processes.

- Sort rocks by color, texture, and use magnifiers to describe patterns.
- Explore erosion with sand/water models and wind fans.

### **SCI.2.A.2 – Connecting Earth materials to human use.**

- Discuss the importance of clean air and water.
  - Create art or stories based on landscapes observed in nature.
- 

## **SCI.3 Earth and Space – Sun, Moon, and Stars**

### **Learning Outcomes**

By the end of this unit, students will be able to:

- ✓ **Observe and describe patterns of movement and light in the sky.**
- ✓ **Explain how the Sun gives light and warmth to Earth.**
- ✓ **Track changes in the Moon's shape and location over time.**

### **Competencies**

#### **SCI.3.A.1 – Observing the sky and documenting changes.**

- Use a Moon journal to record daily moon phases for a month.
- Construct models of the Earth-Sun system and simulate day/night.

#### **SCI.3.A.2 – Identifying light sources and celestial bodies.**

- Recognize constellations and model star patterns using stickers or apps.
  - Watch videos about astronauts and the Moon landing to inspire exploration.
- 

## **3. Assessment and Evaluation**

### **Formative Assessments – Daily Observation and Inquiry**

- ✓ **Science sketchbooks and journals.**
- ✓ **Peer discussions and questioning games.**
- ✓ **Vocabulary games and visual exit tickets.**

### **Summative Assessments – Projects and Performance Tasks**

- ✓ **Life Cycle Poster and Oral Explanation.**
- ✓ **Earth Material Diorama.**
- ✓ **Sky Patterns Chart and Summary.**

### **Authentic Assessment – Hands-On and Creative Demonstration**

- ✓ “Moon Explorer Diary” storytelling presentation.
  - ✓ Class garden planting + observation log.
  - ✓ Group science station showcase and tour.
- 

## **4. Instructional Strategies for Online Learning**

### **Hands-On Discovery and Outdoor Learning**

- ✓ Use nature walks, simple experiments, and classroom gardens.
- ✓ Encourage noticing and wondering before introducing vocabulary.

### **Visual and Kinesthetic Tools**

- ✓ Science drawing boards, picture books, and movement-based simulations.
- ✓ Use songs, hand motions, and chants to reinforce key concepts.

### **Integration with Art and Language**

- ✓ Draw life cycle scenes, paint moon phases.
- ✓ Write stories about animal families or imaginary space travels.

### **Learning Culture**

- ✓ Cultivate a classroom of young scientists who observe with wonder.
- ✓ Celebrate questions, curiosity, and collaborative learning.
- ✓ Highlight student science journals and discoveries in class “Science Spot”.