3rd Grade Unit 6 - Using Evidence to Show Change in Environments

Content Area: **Science**
Course(s): **Science Grade 3**
Time Period: **MP3**
Length: **18 days**
Status: **Published**

NJSLS - Science

SCI.3-5-ETS1-1	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
SCI.3-LS4-1	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.
SCI.3-LS4-4	Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

Science and Engineering Practices

Analyzing and Interpreting Data

Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS4-1)

Engaging in Argument from Evidence

Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. (3-LS4-4)

Asking Questions and Defining Problems

Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost. (3-5-ETS1-1)

Disciplinary Core Ideas

LS2.C: Ecosystem Dynamics, Functioning, and Resilience

When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. (secondary to 3-LS4-4)

LS4.A: Evidence of Common Ancestry and Diversity

Some kinds of plants and animals that once lived on Earth are no longer found anywhere. (3-LS4-1)

Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments. (3-LS4-1)

LS4.D: Biodiversity and Humans

Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)

ETS1.A: Defining and Delimiting Engineering Problems

Possible solutions to a problem are limited by the available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3-5-ETS1-1)

Crosscutting Concepts

Scale, Proportion, and Quantity

Observable phenomena exist from very short to very long time periods. (3-LS4-1)

Systems and System Models

A system can be described in terms of its components and their interactions. (3-LS4-4)

Interdependence of Science, Engineering, and Technology

Knowledge of relevant scientific concepts and research findings is important in engineering. (3-LS4- 4)

Scientific Knowledge Assumes an Order and Consistency in Natural Systems

Science assumes consistent patterns in natural systems. (3- LS4-1)

Influence of Science, Engineering, and Technology on Society and the Natural World

People's needs and wants change over time, as do their demands for new and improved technologies. (3-5-ETS1-1)

Rationale and Transfer Goals

What do fossils tell us about the organisms and the environments in which they lived?

In this unit of study, students develop an understanding of the types of organisms that lived long ago and also about the nature of their environments. Students develop an understanding of the idea that when the environment changes, some organisms survive and reproduce, some move to new locations, some move into the transformed environment, and some die. The crosscutting concepts of systems and system models; scale, proportion, and quantity; and the influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in asking questions and defining problems, analyzing and interpreting data, and engaging in argument from evidence. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Enduring Understandings

Physical characteristics, temperature, and resource availability are affected by the environment.

Fossils help us learn about the environment and organisms.

Essential Questions

What do fossils tell us about the organisms and the environments in which they lived?

What happens to the plants and animals when the environment changes?

Content - What will students know?

- Observable phenomena exist from very short to very long periods of time.
- Science assumes consistent patterns in natural systems.
- Some kinds of plants and animals that once lived on Earth are no longer found anywhere.
- Fossils provide evidence about the types of organisms that lived long ago, and also about the nature of their environments.
- A system can be described in terms of its components and their interactions.
- People's needs and wants change over time, as do their demands for new and improved technologies.
- Populations live in a variety of habitats, and change in those habitats affects the organisms living there.
- When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, others move into the transformed environment, and some die.
- Possible solutions to a problem are limited by available materials and resources (constraints).
- The success of a designed solution is determined by considering the desired features of a solution (criteria).
- Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success.

Skills - What will students be able to do?

- Describe a system in terms of its components and interactions.
- Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of a problem.
- Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. (Assessment is limited to a single environmental change and does not include the greenhouse effect or climate change.) Examples of

environmental changes could include changes in land characteristics, water distribution, temperature, food, or other organisms.

- Define a simple design problem that can be solved through the development of an object, tool, process, or system and that includes several criteria for success and constraints on materials, time, or cost.
- Define a simple design problem reflecting a need or want that includes specified criteria for success and constraints on materials, time, or cost.
- Use evidence to discover and explain how fossils can tell us about organisms and their former environments.
- Describe what happens to plants and animals when environmental changes occur.
- Create solutions to environmental problems affecting organisms.

Activities - How will we teach the content and skills?

- Mystery Science Heredity, Survival, & Selection Anchor Phenomenon
- Mystery Science Heredity, Survival, & Selection Lesson 1
- Mystery Science Heredity, Survival, & Selection Lesson 2
- Mystery Science Heredity, Survival, & Selection Lesson 3
- Mystery Science Life Cycles Lesson 2
- Whole group instruction and discussion.
- Read Alouds
- Group and Individual Projects
- Hands-on discovery when possible; creating models
- Webquests/Internet “field trips”

Evidence/Assessments - How will we know what students have learned?

- Mystery Science Heredity, Survival, & Selection Lesson 1 Assessment
- Mystery Science Heredity, Survival, & Selection Lesson 2 Assessment
- Mystery Science Heredity, Survival, & Selection Lesson 3 Assessment
- Mystery Science Animals Through Time Performance Task
- Mystery Science Life Cycles Lesson 2 Assessment
- Teacher Observation

- Student projects/models
- Exit Tickets
- Tests/Quizzes
- Grade 3 Science Benchmark #3 (taken after Unit 6)

Spiraling for Mastery

Content or Skill for this Unit	Spiral Focus from Previous Unit	Instructional Activity
• Populations live in a variety of habitats, and change in those habitats affects the organisms living there. • When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, others move into the transformed environment, and some die.	Kindergarten: Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. Kindergarten: Asking questions, making observations, and gathering information are helpful in thinking about problems. Grade 2: Plants depend on water and light to grow. Grade 2: Plants depend on animals for pollination or to move their seeds around.	K-ESS2-2 Activities K-ESS3-1 Activities 2-LS2-1 Activities 2-LS2-2 Activities

Key Resources

Mystery Science

21st Century Life and Careers

WRK.9.2.5.CAP.3	Identify qualifications needed to pursue traditional and non-traditional careers and occupations.
WRK.9.2.5.CAP.4	Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements.

Career Readiness, Life Literacies, & Key Skills

TECH.9.4.5.CI.1	Use appropriate communication technologies to collaborate with individuals with diverse perspectives about a local and/or global climate change issue and deliberate about possible solutions (e.g., W.4.6, 3.MD.B.3,7.1.NM.IPERS.6).
TECH.9.4.5.CI.2	Investigate a persistent local or global issue, such as climate change, and collaborate with individuals with diverse perspectives to improve upon current actions designed to address the issue (e.g., 6.3.5.CivicsPD.3, W.5.7).
TECH.9.4.5.IML.3	Represent the same data in multiple visual formats in order to tell a story about the data.

Interdisciplinary Connections/Companion Standards

NJSLS ELA

RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS4-1, 3-LS4-4)

RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS4-1, 3-LS4-4)

RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS4- 1, 3-LS4-4)

W.3.1 Write opinion pieces on topics or texts, supporting a point of view with reasons. (3-LS4-1, 3-LS4-4)

W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS4-1, 3-LS4-4)

W.3.8 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-LS4-1)

W.5.7 Conduct short research projects that use several sources to build knowledge through investigation of

different aspects of a topic. (3-5-ETS1-1)

W.5.8 Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work and provide a list of sources. (3-5-ETS1-1)

W.5.9 Draw evidence from literary or informational texts to support analysis, reflection, and research. (3-5-ETS1-1)

SL.3.4 Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS4-4)

NJSLS Mathematics

MP.2 Reason abstractly and quantitatively. (3-LS4-1, 3-LS4-4, 3-5-ETS1-1)

MP.4 Model with mathematics. (3-LS4-1, 3-LS4-4, 3-5-ETS1-1)

MP.5 Use appropriate tools strategically. (3-LS4-1, 3-5-ETS1-1)

3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. (3-LS4-1)

3-5.OA Operations and Algebraic Thinking (3-5-ETS1-1)