3rd Grade Unit 2: The Story of Life - Fossils, Features, and Changing Homes

Content Area: **Science**
Course(s): **Science Grade 3**
Time Period: **MP2**
Length: **40 days**
Status: **Published**

NJSLS - Science

3-5-ETS1-2	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
3-LS1-1	Develop models to describe that organisms have unique and diverse life cycles, but all have in common birth, growth, reproduction, and death.
3-LS4-1	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.
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

Developing and Using Models

Develop models to describe phenomena. (3-LS1-1)

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)

Constructing Explanations and Designing Solutions

Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem. (3-5-ETS1-2)

Disciplinary Core Ideas

LS1.B: Growth and Development of Organisms

Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. (3-LS1-1)

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.B: Developing Possible Solutions

Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. (3-5-ETS1-2)

At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. (3-5-ETS1-2)

Crosscutting Concepts

Patterns

Patterns of change can be used to make predictions. (3-LS1-1)

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)

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

Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands. (3-5-ETS1-2)

Rationale and Transfer Goals

In this unit, students become scientific detectives, journeying through time to explore how organisms grow, change, and adapt to an ever-shifting Earth. Students will investigate the story of life by examining three distinct but interconnected chapters: the unique life cycles of living things, the clues left behind by ancient organisms, and the impact of environmental changes on survival. The unit begins with an exploration of Life Cycles, where students observe and compare how diverse organisms, from flowering plants to amphibians, share a common pattern of birth, growth, reproduction, and death, while developing unique traits to help their species survive. Students then transition into the role of paleontologists to analyze fossils and ancient environments. By examining fossil evidence, students will deduce what organisms looked like millions of years ago, how they behaved, and what their environments were like, discovering that the very ground beneath them has changed drastically over time. Finally, the unit connects the past to the present by looking at ecosystem changes and survival. Students will evaluate how modern environmental shifts, both natural and human-made, impact local ecosystems. They will argue from evidence how these changes present challenges to organisms, causing some to thrive, some to move to new habitats, and others to struggle for survival.

Enduring Understandings

All living things share a common life cycle of birth, growth, reproduction, and death, even though different species have unique variations and traits that help them survive.

Fossils are a window into Earth's history; analyzing them reveals clues about ancient organisms and how ecosystems have changed over millions of years.

Living things are deeply connected to their environments. When a habitat changes, it directly impacts which organisms can survive, which must move, and which will die.

Earth's ecosystems are dynamic, not static. Change is a natural and continuous part of the history of life on Earth.

Essential Questions

How do the unique life cycles of plants and animals help their species continue to exist?

What secrets do fossils reveal about ecosystems of the past?

What happens to living things when their environments change?

Content - What will students know?

- All organisms (plants and animals) have unique and diverse life cycles, but they all share a common pattern: birth, growth, reproduction, and death.
- Reproduction is essential for the continuation of a species' life cycle.
- Organisms inherit traits from their parents, but variations in these traits exist within the same species (e.g., different colored flowers or faster running speeds) which can give certain individuals an advantage in survival.
- Fossils are the remains or traces of organisms that lived long ago (such as bones, teeth, shells, imprints, and footprints) preserved in rock.
- Fossils provide a record of the types of organisms that lived on Earth, what they looked like, and the environments they lived in (e.g., finding fish fossils in a desert means that area was once covered by water).
- Many organisms that lived long ago are no longer found on Earth today (extinct species), but they often share similarities with modern, living organisms.
- Ecosystems are constantly changing due to physical factors (like droughts, floods, or fires), biological factors (like a new species entering the area), and human activities (like deforestation or building roads).

- When an environment changes, the balance of the ecosystem is disrupted, leading to three main outcomes for the organisms living there: Some organisms survive and thrive well in the new conditions, some organisms move to a new location to find the resources they need and some organisms die because they cannot adapt or move.

Skills - What will students be able to do?

- Create diagrams, drawings, or physical models to show that different organisms (such as a butterfly, a frog, or a tomato plant) go through birth, growth, reproduction, and death.
- Analyze models to identify similarities and differences between the life cycles of different species.
- Explain what would happen to a species if a specific stage of its life cycle (like reproduction) were interrupted.
- Observe images or replicas of fossils (shells, teeth, footprints) and record data about their shapes, sizes, and features.
- Use fossil evidence to determine what an area looked like millions of years ago (e.g., inferring a desert was once an ocean because of whale fossils).
- Match fossilized organisms with their modern-day relatives and describe how they have changed or stayed the same over time.
- Construct a written or oral claim about how a specific environmental change (such as a forest fire, a new highway, or a drought) impacts the organisms living there.
- Use evidence to justify why a certain change causes some organisms to survive and thrive, some to move away, and some to die.
- Look at a human-made environmental change and propose or evaluate simple solutions to help local plants and animals survive.

Activities - How will we teach the content and skills?

- Mystery Science Life Cycles Anchor Phenomenon
- Mystery Science Life Cycles Lesson 1
- Mystery Science Life Cycles Lesson 2
- Mystery Science Life Cycles Lesson 3
- Mystery Science Life Cycles Lesson 4

- Mystery Science Life Cycles Lesson 5
- Mystery Science Fossils & Changing Environments Anchor Phenomenon
- Mystery Science Fossils & Changing Environments Lesson 1
- Mystery Science Fossils & Changing Environments Lesson 2
- Mystery Science Fossils & Changing Environments Lesson 3
- Whole group instruction and discussion.
- Read Alouds
- Group and Individual Projects
- Hands-on discovery when possible; creating models
- Webquests/Internet “field trips”

Formative Assessments

- Mystery Science Life Cycles Lesson 1 Assessment
- Mystery Science Life Cycles Lesson 2 Assessment
- Mystery Science Life Cycles Lesson 3 Assessment
- Mystery Science Life Cycles Lesson 4 Assessment
- Mystery Science Life Cycles Lesson 5 Assessment
- Mystery Science Fossils & Changing Environments Lesson 1 Assessment
- Mystery Science Fossils & Changing Environments Lesson 2 Assessment
- Mystery Science Fossils & Changing Environments Lesson 3 Assessment
- Teacher Observation
- Student projects/models
- Exit Tickets

Summative Assessments

- Mystery Science Life Cycles Performance Assessment
- Mystery Science Life Cycles Unit Assessment
- Mystery Science Fossils & Changing Environments Performance Assessment
- Mystery Science Fossils & Changing Environments Unit Assessment
- Tests/Quizzes
- 3rd Grade Science Benchmark #2

Spiraling for Mastery

Content or Skill for this Unit	Spiral Focus from Previous Unit	Instructional Activity
• Adult plants and animals have young, and that animal parents engage in behaviors to help those young survive.	1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.	1-LS1-2 Activities

Key Resources

Mystery Science

Let's Hear It For Ladybugs!

Simply Butterflies!

Career Readiness, Life Literacies, & Key Skills

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).

9.2.5.CAP.1	Evaluate personal likes and dislikes and identify careers that might be suited to personal likes.
9.1.5.CR.1	Compare various ways to give back and relate them to your strengths, interests, and other personal factors.
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).
9.2.5.CAP.3	Identify qualifications needed to pursue traditional and non-traditional careers and occupations.
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.
9.4.5.DC.4	Model safe, legal, and ethical behavior when using online or offline technology (e.g., 8.1.5.NI.2).
9.4.5.DC.8	Propose ways local and global communities can engage digitally to participate in and promote climate action (e.g., 6.3.5.GeoHE.1).
9.4.5.IML.2	Create a visual representation to organize information about a problem or issue (e.g., 4.MD.B.4, 8.1.5.DA.3).
9.4.5.IML.3	Represent the same data in multiple visual formats in order to tell a story about the data.
9.4.5.TL.2	Sort and filter data in a spreadsheet to analyze findings.
9.4.5.TL.3	Format a document using a word processing application to enhance text, change page formatting, and include appropriate images graphics, or symbols.

Interdisciplinary Connections

RI.CR.3.1	Ask and answer questions and make relevant connections to demonstrate understanding of an informational text, referring explicitly to textual evidence as the basis for the answers.
RI.CI.3.2	Recount in oral and written form the key details from a multi-paragraph informational text and explain how they support the main idea.
RI.IT.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.
RI.MF.3.6	Use information gained from text features (e.g., illustrations, maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).
3.DL.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.
W.AW.3.1	Write opinion texts to present an idea with reasons and information.
W.IW.3.2	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
W.SE.3.6	Use discussion, books, or media resources to gather ideas, outline them, and prioritize the information to include while planning to write about a topic.
SL.PI.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.
SL.UM.3.5	Use multimedia to demonstrate fluid reading at an understandable pace; add visual

displays when appropriate to emphasize or enhance certain facts or details.