

Unit: 4 Life Cycles and Traits

Content Area: **Science**
Course(s): **Science - Grade 3**
Time Period: **8 weeks**
Length: **Weeks**
Status: **Published**

Unit Overview

Students observe traits to sort organisms by species. Then they look for inherited traits in order to match parents with their offspring. Students interpret flowcharts showing how plant and animal traits are influenced by both their inheritance and their environment. Students analyze a series of photographs showing plants and animals in their environments. They use visual clues to explain how the organism's traits have been changed by the environment. Students play a game to simulate birds hunting moths. They gather data during the game. They use the data to construct an explanation for why some moths have a better chance of surviving than others. Students use their bodies to model the birth, growth, reproduction, and death of a sunflower. Students work in groups to write, record, and present a story about the life cycle of a specific animal. They select visuals to enhance their presentations. Students observe real butterflies and create a model of their life cycle. They compare this model to the life cycles of other plants and animals.

Transfer

Students will be able to independently use their learning to...

- Analyze and interpret data to make sense of phenomena using logical reasoning.
- Use evidence (e.g., observations, patterns) to support an explanation.
- Develop models to describe phenomena.
- Communicate scientific and/or technical information orally and/or in written formats, including various forms of media as well as tables, diagrams, and charts.

Meaning

Understandings

Students will understand that...

- Offspring often looks like their parents because of inherited traits.
- The environment can change the traits of animals, plants, and humans.
- Many traits are affected by inheritance and the environment.
- Some individuals do not survive or reproduce because of certain traits.
- Plants have a life cycle including seed, seedling, adult plant, adult plant with seeds, and death.
- Vertebrates all go through a life cycle.
- Invertebrates all go through a life cycle.

Essential Questions

Students will keep considering...

- Why do parents look similar to their offspring?
- How does the environment affect traits?
- How are traits affected by both inheritance and the environment?
- Why do some members of a species survive and not others?
- What are the life cycles of plants?
- What are the life cycles of animals with backbones?
- What are the life cycles of animals without backbones?

Application of Knowledge and Skill

Students will know...

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Students will be skilled at...

Students will be skilled at...

- Analyzing and interpreting data
- constructing explanations and designing solutions
- developing and using models

Academic Vocabulary

inherited trait

offspring

species

trait

environment

learning behavior

genes

camouflage

mate

reproduce

survive

flower

fruit

life cycle

life span

seed

metamorphosis

vertebrate

exoskeleton

invertebrate

larva

nymph

Learning Goal 1 - Lessons 1 & 3

Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.

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SCI.3-LS3-1

Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.

Target 1 - Lesson 1

Give evidence that plants and animals contain a specific set of traits that are unique to their species.

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Target 2 - Lesson 1

Discuss how members of the same species produce offspring and pass on traits.

- Discuss how members of the same species produce offspring and pass on traits.

Target 3 - Lesson 1

Infer and give evidence as to why offspring are like and different from their parents.

- Infer and give evidence as to why offspring are like and different from their parents.

Target 4 - Lesson 3

Explain how plant traits inherited through genes can be affected by the environment.

- Explain how plant traits inherited through genes can be affected by the environment.

Target 5 - Lesson 3

Explain how animal traits inherited through genes can be affected by the environment.

- Explain how animal traits inherited through genes can be affected by the environment.

Learning Goal 2 - Lesson 2

Use evidence to support the explanation that traits can be influenced by the environment.

- Use evidence to support the explanation that traits can be influenced by the environment.

SCI.3-LS3-2

Use evidence to support the explanation that traits can be influenced by the environment.

Target 1 - Lesson 2

Explain how some characteristics result from individuals' interactions with the environment, not inheritance.

- Explain how some characteristics result from individuals' interactions with the environment, not inheritance.

Target 2 - lesson 2

Discuss the traits that can change in animals, humans, and plants.

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Learning Goal 3 - Lesson 4

Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.

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SCI.3-LS4-2

Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.

Target 1 - Lesson 4

Debate why some organisms survive and others do not. Discuss the traits that support survival.

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Learning Goal 4 - Lessons 5, 6, & 7

Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

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SCI.3-LS1-1

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Target 1 - Lesson 5

Discuss the relationship between types of plants and their life spans.

- Discuss the relationship between types of plants and their life spans.

Target 2 - Lesson 5

Describe how different plants reproduce.

- Describe how different plants reproduce.

Target 3 - Lesson 5

Compare the different life cycles of plants.

- Compare the different life cycles of plants.

Target 4 - Lesson 6

Describe the characteristics of animals with backbones.

- Describe the characteristics of animals with backbones.

Target 5 - Lesson 6

Compare the life cycles of mammals, birds, reptiles, fish and amphibians.

- Compare the life cycles of mammals, birds, reptiles, fish and amphibians.

Target 6 - Lesson 7

Describe the characteristics of animals without backbones.

- Describe the characteristics of animals without backbones.

Target 7 - Lesson 7

Compare the life cycles of animals without backbones.

- Compare the life cycles of animals without backbones.

Formative Assessment and Performance Opportunities

- TCI Lesson Game: Students test their understanding of key concepts with an education game.
- TCI Interactive Tutorial: Students can work independently to check their understanding in a safe environment that provides instant feedback but is not graded.
- TCI Interactive Student Notebook: Students record their understanding of both the reading and activity. Review during the lesson to gauge student understanding.
- TCI Vocabulary Cards: Students check their understanding of key vocabulary terms with digital flip cards.

Summative Assessment

TCI Assessment: What Are the Life Cycles of Animals with Backbones?

Teacher made assessment

Accommodations/Modifications

- After the Lesson, Introduce *Claims* and *Evidence*
- Help Students Connect Their Answers to the Visual Data
- Refocus on Cause and Effect
- Give Meaning to the Term *Environment*
- Model the Investigation Process
- Use Groups of 3 Instead of Pairs
- Drawing
- Write a story
- Model How a Flowchart Works Before Starting the Investigation
- Break Up the Reading and the Investigation
- Animal Drawing
- Flowchart
- Connect the Simulation to the Student Text
- Make a Conjecture

Unit Resources

- TCI online manual and student text books
- TCI Interactice Student Notebook
- TCI Vocabulary Cards
- TCI Teacher Material Kit
- TCI activity cards

21st Century Life and Careers

CAEP.9.2.4.A.1	Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
CAEP.9.2.4.A.2	Identify various life roles and civic and work - related activities in the school, home, and community.
CAEP.9.2.4.A.3	Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.

Interdisciplinary Connections

MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.4	Model with mathematics.
LA.RI.3.1	Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
LA.RI.3.2	Determine the main idea of a text; recount the key details and explain how they support the main idea.
LA.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.
MA.3.NBT	Number and Operations in Base Ten
LA.RI.3.7	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).
MA.3.NF	Number and Operations—Fractions
MA.3.MD.B.3	<p>Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs.</p> <p>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</p>
LA.W.3.2	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
LA.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.
LA.SL.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.