Unit 3: Circle of Life [COL] & Fates of Traits [FOT]

Content Area: **Science**
Course(s): **Science 3**
Time Period: **March**
Length: **3rd Trimester**
Status: **Published**

Unit Overview

Unit 3 should be taught over the course of Trimester 3. Unit 3 includes the Science standards from Mystery Science Unit 3 (Circle of Life & Fates of Traits).

The Big Idea: *Circle of Life & Fates of Traits*

Unit 1	Topic
Anchor Phenomenon (COL)	Anchor Phenomenon
Lesson 1 (COL)	Animal Life Cycles How is your life like an alligator's life?
Lesson 2 (COL)	Environmental Change & Engineering What's the best way to get rid of mosquitoes?
Lesson 3 (COL)	Pollination & Plant Reproduction

	Why do plants grow flowers?
Lesson 4 (COL)	Fruit, Seeds, & Plant Reproduction Why do plants give us fruit?
Lesson 5 (COL)	Plant Life Cycles Why are there so many different kinds of flowers?
Performance Task (COL)	Performance Task
Lesson 1 (FOT)	Trait Variation, Inheritance, & Artificial Selection How could you make the biggest fruit in the world?
Lesson 2 (FOT)	Trait Variation, Inheritance, & Artificial Selection What kinds of animals might there be in the future?
Lesson 3 (FOT)	Trait Variation, Natural Selection, & Survival Can selection happen without people?

Lesson 4 (FOT)	Animal Groups & Survival Why do dogs wag their tails?
Lesson 5 (FOT)	Traits & Environmental Variation How long can people (and animals) survive in outer space?

Priority Standards

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-LS2-1	Construct an argument that some animals form groups that help members survive.
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.
3-LS3-2	Use evidence to support the explanation that traits can be influenced by the environment.
3-LS4-3	Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.
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.
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.

Learning Targets

- I can discover the pattern that without bees in their model garden game, plants cannot reproduce, and therefore the garden will not have flowers or fruits in future growing seasons.
- I can explain how living in groups helps animals survive
- I can explain how physical traits can be influenced by the environment.
- I can explore the pattern of similarities in life cycles among organisms.
- I can learn how nature, not human beings, can slowly change the appearance of an animal using the process of selection.

- I can learn how people create new breeds of animals by (selecting) breeds with desirable traits.
- I can learn that fruit (structure) contains seeds and helps them spread (function).
- I can observe that a plant's stigma (structure) is sticky to 'catch' pollen (function).
- I can recognize environments as a system, made up of interdependent parts that function as a whole.
- I can recognize similarities and differences among the traits of different plants as a pattern.
- I can recognize the cause and effect relationship between a change in the environment and the survival of organisms that live there.
- I can search for patterns of what all animals share (birth, growth, reproduction, death) across their unique and diverse life cycles.
- I can use patterns to sort food as a science fruit or a science vegetable.

Essential Questions

- Unit 3 Lesson 1 (COL): How is your life like an alligator's life?
- Unit 3 Lesson 1 (FOT): How could you make the biggest fruit in the world?
- Unit 3 Lesson 2 (COL): What's the best way to get rid of mosquitoes?
- Unit 3 Lesson 2 (FOT): What kinds of animals might there be in the future?
- Unit 3 Lesson 3 (COL): Why do plants grow flowers?
- Unit 3 Lesson 3 (FOT): Can selection happen without people?
- Unit 3 Lesson 4 (COL): Why do plants give us fruit?
- Unit 3 Lesson 4 (FOT): Why do dogs wag their tails?
- Unit 3 Lesson 5 (COL): Why are there so many different kinds of flowers?
- Unit 3 Lesson 5 (FOT): How long can people (and animals) survive in outer space?

Materials and Resources

- Google Drive - Third Grade Team Drive
- Mystery Science ~ Online

Unit Assessments

- Lesson 1 (COL) Exit Ticket
- Lesson 1 (FOT) Exit Ticket
- Lesson 2 (COL) Exit Ticket
- Lesson 2 (FOT) Exit Ticket
- Lesson 3 (COL) Exit Ticket
- Lesson 3 (FOT) Exit Ticket
- Lesson 4 (COL) Exit Ticket
- Lesson 4 (FOT) Exit Ticket
- Lesson 5 (COL) Exit Ticket

- Lesson 5 (FOT) Exit Ticket

Learning Plan

Trimester 3 ~ Mystery Science Unit 3 (Circle of Life [COL] & Fates of Traits[FOT])

Time Frame	Lesson	Standard(s)	Target	Assessments	Resources
					Mystery Science Labs & Worksheets:
	Anchor Phenomenon (COL)	3-LS1-1			Circle of Life Anchor Layer Teacher Guide teacher only resource
					Spotting Cycles printout
	Lesson 1 (COL)				Mystery Science Labs & Worksheets:
	Animal Life Cycles				
	How is your life like an alligator's life?	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.	I can search for patterns of what all animals share (birth, growth, reproduction, death) across their unique and diverse life cycles.	Lesson 1 Exit Ticket	Birthday Buddies Animal Cards worksheet
	Students create models of several animal life cycles. They use these models to compare the differences between the life cycles, but also			Answer Key	Birthday Buddies Timeline worksheet
					Glue Sticks
					Scissors

the similarities of birth, growth, reproduction, and death that all animals go through. Lesson 2 (COL)				Scrap Paper (8.5 x 11")
Environmental Change & Engineering What's the best way to get rid of mosquitoes? Students obtain and evaluate information from different people who live in Pondville, a town with a severe mosquito problem. Then, using this information, students design solutions that will reduce the number of mosquitoes that live in Pondville.	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. 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.	I can recognize the cause and effect relationship between a change in the environment and the survival of organisms that live there. I can recognize environments as a system, made up of interdependent parts that function as a whole.	Lesson 2 Exit Ticket Answer Key	Mystery Science Labs & Worksheets: Bug off! Backyard worksheet Bug off! Picnic Area worksheet Bug off! Playground worksheet Problem Solver's Sheet worksheet
Lesson 3 (COL) Pollination & Plant Reproduction Why do plants grow flowers?	Foundational for 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.	I can explore the pattern of similarities in life cycles among organisms. I can observe that a plant's stigma (structure) is sticky to 'catch'	Lesson 3 Exit Ticket Answer Key	Mystery Science Labs & Worksheets: Make a Flower printout Glue Sticks

		pollen (function).		Markers Scissors Dixie Cups (3 oz) File Folder Labels (Stickers) Pipe Cleaners Pollen Variety 1 (Ex. Cinnamon) Pollen Variety 2 (Ex. Ground Coffee) Mystery Science Labs & Worksheets: Science Fruit or Science Vegetable worksheet Science Fruit or Science Vegetable Answer Key teacher only resource Cutting Board Knife Celery Cucumber Paper Plates Potato
Students develop a model of a flower and bee to simulate pollination. With a partner, they carry out an investigation to determine how bees fly between flowers and cause pollination. Students analyze their data and construct an explanation for if their flower will produce seeds or not. Lesson 4 (COL) Fruit, Seeds, & Plant Reproduction Why do plants give us fruit? Students carry out an investigation to determine if a food is a science fruit or vegetable. They cut open each food to determine if there are seeds. Students analyze this data to determine if the food is a fruit or vegetable.	Foundational for 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.	I can use patterns to sort food as a science fruit or a science vegetable. I can learn that fruit (structure) contains seeds and helps them spread (function).	Lesson 4 Exit Ticket Answer Key	

				Radish Tomato Toothpicks
Lesson 5 (COL) Plant Life Cycles				Mystery Science Labs & Worksheets:
Why are there so many different kinds of flowers? Students play a game that models a small garden with annual flowering plants. Students use the models to discover that pollinators (bees) are needed to pollinate plants for future growing seasons.	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.	I can discover the pattern that without bees in their model garden game, plants cannot reproduce, and therefore the garden will not have flowers or fruits in future growing seasons.	Lesson 5 Exit Ticket Answer Key	Future Flowers Rules Sheet printout My Tiny Garden printout Plant Cards & Card Station printout Score Sheets & Bee Cards printout
				Scissors
				Mystery Science Labs & Worksheets:
Performance Task	3-LS1-1			Circle of Life Anchor LAyer Teacher Guide teacher only resource Saguaro Life Cycle printout Saguaro Life Cycle Answer Guide teacher only resource
Lesson 1 (FOT)	3-LS3-1. Analyze	I can recognize	Lesson 1 Exit	Mystery

Trait Variation, Inheritance, & Artificial Selection How could you make the biggest fruit in the world? Students engage in argument from evidence about which plants and fruits are related to one another. Students obtain, evaluate, and communicate information by sorting plant cards into groups based on similar traits. They determine which plants share wild parents and are varieties of each other	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.	similarities and differences among the traits of different plants as a pattern.	Ticket Answer Key	Science Labs & Worksheets: Fruit Cards printout Odd One Out worksheet Odd One Out & Fruit Cards Answer Key teacher only resource Scissors
Lesson 2 (FOT) Trait Variation, Inheritance, & Artificial Selection	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.	I can learn how people create new breeds of animals by (selecting) breeds with desirable traits.	Lesson 2 Exit Ticket Answer Key	Mystery Science Labs & Worksheets: Designer Dogs worksheet
Lesson 3 (FOT) Trait Variation, Natural Selection,	3-LS3-1. Analyze and interpret data to provide evidence that plants and animals have traits	I can learn how nature, not human beings, can slowly change the appearance of an animal using the	Lesson 3 Exit Ticket Answer Key	Mystery Science Labs & Worksheets: Adopt a Lizard

& Survival Can selection happen without people?	inherited from parents and that variation of these traits exists in a group of similar organisms. 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. 3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	process of selection.		worksheet Baby Lizard worksheet How Many Lizards? worksheet
Lesson 4 (FOT)				Mystery Science Labs & Worksheets:
Animal Groups & Survival Why do dogs wag their tails?	3-LS2-1. Construct an argument that some animals form groups that help members survive.	I can explain how living in groups helps animals survive.	Lesson 4 Exit Ticket Answer Key	Field Journal worksheet Field Journal Answer Key teacher only resource
Lesson 5 (FOT)	3-LS3-2. Use evidence to	I can explain how physical traits can	Lesson 5 Exit	Stapler Mystery Science Labs

Traits & Environmental Variation How long can people (and animals) survive in outer space?	support the explanation that traits can be influenced by the environment.	be influenced by the environment.	Ticket Answer Key	& Worksheets: Traits in Space worksheet Traits in Space Answer Key teacher only resource Rulers Post-Its (3")

Strategies for Multilingual Learners

- Communicating High Expectations for Each Student to Close the Achievement Gap
- Establishing & Maintaining Effective Relationships in a Student Centered Classroom
- Helping Students Engage in Cognitively Complex Tasks
- Helping Students Examine Similarities & Differences
- Helping Students Examine their Reasoning
- Helping Students Practice Strategies, Skills, & Processes
- Helping Students Process New Content
- Helping Students Revise Knowledge
- Identifying Critical Content from the Standards
- Organizing Students to Interact with Contact
- Previewing New Content
- Providing Feedback & Celebrating Success
- Reviewing Content
- Using Engagement Strategies
- Using Formative Assessment to Track Progress
- Using Questions to Help Students Elaborate on Content

Strategies for Students in Need of Intervention

- Centers to reinforce skill instruction/ skill enrichment
- Choice boards/ Activity Menu for assignments

- Flexible grouping as needed based on ability, interest, need
- Highlight key terms
- Tiered Lessons/activities
- Use graphic organizers (ex. Venn Diagram, Cause/Effect chart)
- Use of leveled readers
- Use of visual aids (For example: powerpoints, images to connect to vocabulary, flashcards, anchor charts)
- Vocabulary matching words to definitions

Interdisciplinary Connections

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.3.9	Compare, contrast and reflect on (e.g., practical knowledge, historical/cultural context, and background knowledge) the most important points and key details presented in two texts on the same topic.
MA.3.MD.A.2	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.
LA.W.3.1	Write opinion pieces on topics or texts, supporting a point of view with reasons.
MA.3.MD.B.3	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.
LA.W.3.7	Conduct short research projects that build knowledge about a topic.

Strategies for Enrichment

- Students can complete Mystery Science Mini-Lessons

Technology Integration

- Mystery Science Website ~ Online

TECH.8.1.5.A.1	Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
TECH.8.1.5.A.2	Format a document using a word processing application to enhance text and include graphics, symbols and/or pictures.
TECH.8.1.5.A.3	Use a graphic organizer to organize information about problem or issue.
TECH.8.1.5.A.CS2	Select and use applications effectively and productively.
TECH.8.1.5.B.CS2	Create original works as a means of personal or group expression.
TECH.8.1.5.C.CS1	Interact, collaborate, and publish with peers, experts, or others by employing a variety of digital environments and media
TECH.8.1.5.C.CS2	Communicate information and ideas to multiple audiences using a variety of media and

	formats.
TECH.8.1.5.C.CS3	Develop cultural understanding and global awareness by engaging with learners of other cultures.
TECH.8.1.5.C.CS4	Contribute to project teams to produce original works or solve problems
TECH.8.1.5.E.CS3	Evaluate and select information sources and digital tools based on the appropriateness for specific tasks.

21st Century Life & Career Ready Practice

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.
CAEP.9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.