Third Grade Life Science

LIFE CYCLE MODELING: Plant and Animal

Background Information

All living organisms go through life cycles, which consist of stages from birth to death. While these stages are similar, the appearance of organisms in different stages varies. An awareness of child development is important to consider while teaching life cycles. Some research indicates that when a student is in second grade, there is a shift in his or her understanding of organisms, from representations based on perceptual and behavioral features to representations that are more scientific. Children may begin to understand death as the cessation of life processes at about 9 or 10. People of all ages have a much narrower definition of animal that biologists do. Students typically think of animals as terrestrial mammals. Children do not often think of humans as animals. Humans, insects, birds, and fish often are thought of as alternatives other than animals, not as subsets of animals.
(https://www.oesd114.org/site/handlers/filedownload.ashx?moduleinstanceid=1485&dataid=3295&FileName=Common%20Alternative%20Conceptions%20Insects.pdf)

Performance Expectation

3-LS1-1- From Molecules to Organisms: Structures and Processes

Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
https://www.nextgenscience.org/dci-arrangement/3-ls1-molecules-organisms-structures-and-processes

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.

Science and Engineering Practices

Developing and Using Models - Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.

Develop models to describe phenomena.

Crosscutting Concepts

Patterns of change can be used to make predictions.

Systems and system models: A system can be described in terms of its components and their interactions.

Objectives

- Students will identify similarities and differences of living organisms' life cycles through observations.
- Students will organize organisms based on attributes.
- Students will develop models of the life cycle of living organisms.

Materials

- Life Cycle Cards
- Life Cycle Venn Diagram (optional)
- Art Supplies
- Materials for Developing Models
- Art Paper (optional)

Suggested Implementation

Venn diagrams may be used as strategy for comparing and contrasting attributes on items, in this case living organisms and their life cycles. Distribute a set of the Life Cycle Cards to each group. Suggested group size is 4 students. Students turn the cards face up on their table. Allow time for them to explore. You may wish to prompt thinking with questions such as:

- *What is on the cards?*
- *What might this (answer to above question) be "telling" us?*

Option for Playing Card Game: Direct students to organize their cards. As this is a very vague request, there will many results. A gallery walk may develop new strategies for groups to use in sorting the cards. Allow time for this to occur. Have groups share how and why they grouped their cards. When appropriate guide groups to consider organizing the cards to tell the story of each organism's life.

Option for Playing Card Game: Students deal the cards until the deck is gone. Cards may be held in player's hands or turned face up/face down on the table. The student who begins the play turns one card face up in the center of the table. Anyone who has a card that goes along with the card that was played puts their card next to the other card in the center of the table. This continues until all of the cards for that organism are in the center of the table. Next, the group comes to consensus to the chronological order of the cards and puts the cards in that order. Play continues until all cards have been used.

If needed, explain how to use a Venn diagram to the class. No matter which option is used to play the game, groups complete the Venn diagram.

Ask groups to consider what two items they are comparing. Coach them to plants and animals.

Assist groups while they complete their diagrams. With the whole group, ask questions such as:

- *What are differences among thecards?*
- *What are similarities among the cards?*
- *What categories could the cards be place in no matter if they area plant or an animal?*
- *What do the cards tell us about the lives of plants and animals?*
- *What do you think the stages/phases of life cycle are?*

Share materials available for modeling the concept of a life cycle. Ask groups to consider, "How could you model the idea of a life cycle?" Allow time for groups to plan and build their models.

After models are complete, groups should share and explain their work.

Debrief

- *What does your model represent?*
- *What are the stages of a life cycle?*
- *Do all living things need to go through all parts of the life cycle? Explain your thinking.*

Resources

https://www.uen.org/themepark/cycles/animal.shtml - Activities to learn more about the life cycle of animals.

https://science4fun.info/life-cycle-of-plants/

Suggested books from http://www.kbs.msu.edu/wp-content/uploads/2017/02/NGSS-Interactive-Read-Alouds.pdf

- Aston, D. (2011). *A butterfly is patient.*
  From iridescent blue swallowtails and brilliant orange monarchs to the world's tiniest butterfly and the largest, an incredible variety of butterflies are celebrated here in all of their beauty and wonder.
- Swanson S. (2008). *To be like the sun.*
  Within every tiny seed lies the secret of what's to come. First a shoot, then a stem, a leaf, a bud--and finally a brilliant sunflower reaching high for the sun. Join a young girl as she waters and watches, celebrating the everyday miracles of growth and life.
- Kimura, K. (2011). *999 tadpoles.*
  "We'll have to move," says Mother, after realizing the pond is too small. But moving a family of 999 young frogs is fraught with danger! Hungry snakes are crawling through the grass. Hungry hawks are flying through the sky. A young frog makes a mighty tasty morsel. Never underestimate the quick wits of 999 young frogs!
- Guiberson, B. (1991). *Cactus hotel.*
  A story about a desert, a giant cactus, and the animals who live in it.

Assessment

The following single point rubric can be used to assess student understanding. For each of the criteria listed below, either circle the proficient description or add notes to a box indicating why the student's performance was either lacking or exceptional.

Areas that need improvement. **Developing Performance**	Criteria for **Proficient Performance**	Evidence of exceeding standards. **Advanced Performance**
	Can provide an example of similarities in organism life cycles.	
	Can provide an example of differences in organism life cycles.	
	Students are able to provide an explanation about the stages of their organism's model life cycle.	