Computational Thinking

3rd Grade Science

Plant and Animal Life Cycles

Overview

In this module, students will investigate life cycles of animals and plants. Students will explore characteristics that contribute to the growth and development of a plant and animal and the stages from seed to flowering plant or egg/baby to adult. Students will create their own animal and plant life cycles and will identify the stages of life.

Grade Level

3rd grade

Cyber Connections

- **Computational Thinking**

CYBER.ORG
THE ACADEMIC INITIATIVE OF THE CYBER INNOVATION CENTER

Teacher Notes:

Teacher Overview

The Problem: Students need to be able to investigate and compare how animals and plants undergo a series of orderly changes in their diverse life cycles.

4 Pillars of Computational Thinking

Decomposition: Students will break down the parts of a life cycle by viewing various life cycle images and placing them into the following categories: adult, pupa, larva, egg (animals) and seed, seedling, young plant, adult plant (plants).

Pattern Recognition: Students will investigate the stages of life cycles and discover patterns that are naturally present within a life cycle for plants and animals. They will be able to identify and tell what stage comes next within a life cycle no matter what stage the cycle begins with. Looking at characteristics among organisms that are in common at different stages of the life cycle. For example: I noticed that all five of these plants have an image of a small plant with roots and little leaves that stage must be the seedling for all of these and it always comes after the seed stage and before the young plant stage.

Abstract: Students will identify key characteristics of each stage of the life cycle and what makes them unique to that life cycle stage. For example: I noticed that all of these animals have a similar picture where the organisms are just starting to develop and these are the things they have in common _____. Based on these characteristics I believe that this is the larva stage for each of these organisms.

Algorithm Design: Students will write down the steps for how to sequence a life cycle of an animal or plant based on identifiable characteristics for each stage of the life cycle.

Materials

- paper
- notecards
- paper plates
- science notebooks
- pencils
- printed images of plant and animal life cycles
- scissors
- glue
- computers/tablets for research
- crayons or colored pencils
- books that discuss or show life cycles

Teacher Notes:

Pacing Guide

This is a two- to three-day lesson with follow up through science stations for review later in the year. Third grade teachers could also share the life cycles stations with fourth and fifth grade teachers to review with as they prepare for standardized testing.

Learning Guide

Students will use computational thinking skills to explore life cycles of plants and animals through card sorts, life cycle games, and creation of individual life cycles.

Vocabulary

- *life cycle*
- *seed*
- *germination*
- *seedling*
- *flower*
- *fruit*
- *egg*
- *tadpole*
- *froglet*
- *adult*
- *larva*
- *pupa*

Teacher Notes:

What you are looking for in their answers:

Can students use specific vocabulary to define any characteristics of animals and/or plants?

Can students use specific vocabulary to define any of the characteristics of living things if they are unable to narrow it down to animals and/or plants?

Lesson Outline

Day 1

Begin the lesson by asking students to answer these questions in their science notebooks:

- What is an animal? What is a plant?
  What do you know about the life cycles of different animal and plant groups? What do they have in common? How are they different?

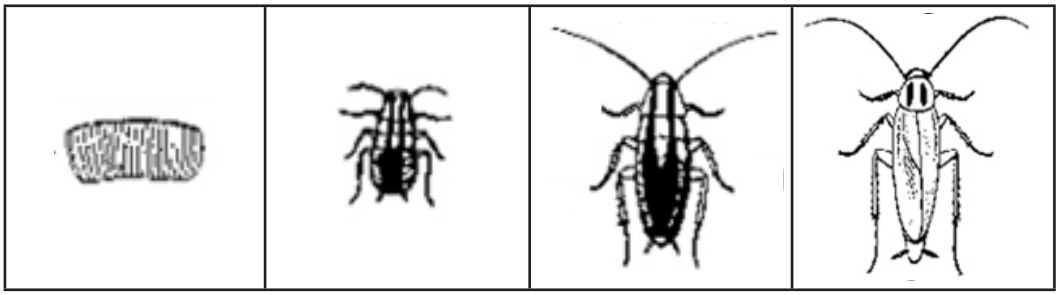
Show students several examples of life cycles either in books or through digital media. Discuss the stages of the life cycles with them through conversation and creating anchor charts or adding notes to their science notebooks. (Data Collection - The process of gathering appropriate information)

Ask students to identify the stages of both the plant and animal life cycle as you show them images.

Day 2 (Possibly extend to Day 3)

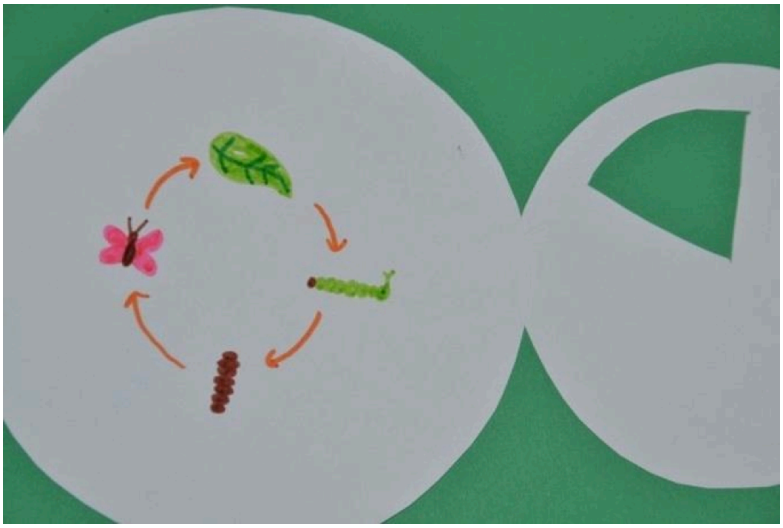
Review Day 1 then allow students to research their own animals and plants and create their life cycle models. Each student must create at a minimum one animal or insect and one plant life cycle. They can find pictures online and cut and paste actual photos or they can draw their own images.

There are many different ways for students to create their life cycles, so allow them to be creative. Students can place their cycles on index cards (one stage per card).



They can use paper plates to create a window where the images are all on the bottom plate and the top plate has a hole cut out. Spin the top plate around to see the different stages of the life cycle.

Teacher Notes:



Once students are done creating their life cycle examples, have them trade with a partner. The partner will place the cycles in order by the stages, describe characteristics of each stage, and explain how they know that stage comes next in the development of the animal, insect, or plant.

Have students continue to swap life cycle examples a few times to practice. Then place all of the student created samples, along with the provided examples with this lesson, into sealable bags and add to a life cycle station for students to use as review or to further their understanding of this topic. (Abstraction - Reducing complexity to define main idea.)

There are also several digital resources you can use for extension if time permits or if you want to provide some additional resources:

- California Academy of Sciences - Go Bug! - https://www.calacademy.org/educators/lesson-plans/go-bug
- Life Cycles Symbaloo - https://www.symbaloo.com/mix/lifecycles5
- Science A-Z Life Cycles (requires membership) - https://www.sciencea-z.com/main/MaterialDetail/material_id/81

Make sure that you do not always start the life cycles at the egg or seed stage. Students need to be able to continue the cycle beginning with any stage.