Unit 3: Life Science- Structures of Life

Content Area: **Science**
Course(s):
Time Period: **Trimester 3**
Length: **10-12 weeks**
Status: **Published**

Summary

Introduction: In this unit of study, students acquire an understanding of the diverse organisms in our world. Students will explore the various inherited traits that animals pass to their offsprings and that the environment can also affect the traits that an organism develops. They will 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. Students will also gain understanding of various life cycles. Additionally, students will develop an understanding of the idea that when the environment changes, some organisms survive and reproduce, some move to new locations, some move into the transformed environment, and some die. The crosscutting concepts of cause and effect and the interdependence of science, engineering, and technology are called out as organizing concepts for these disciplinary core ideas. Students will demonstrate grade-appropriate proficiency in engaging in argument from evidence and are also expected to use this practice to demonstrate understanding of the core ideas. This unit will be taught utilizing the Life Science : Structures of Life FOSS program kit.

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Essential Questions/ Enduring Understandings

Essential Questions:

- How do plants grow and survive?
- What environmental factors might influence the traits of a specific organism?
- What kinds of traits are passed on from parent to offspring?
- What characteristics allow animals to survive and reproduce in an environment?
- How does living in groups help organisms?
- What do fossils tell us about the organisms and the environments in which they lived?

Enduring Understandings:

- In a particular habitat, some organisms can survive well, some can survive less well, and some cannot survive at all.
- Organisms have different inherited traits and their environment can affect the traits they develop. Animals pass these various inherited traits to their offsprings.
- Animals form and travel in groups to help them survive.
- When the environment changes, some organisms survive and reproduce, some move to new locations, some move into the transformed environment, and some die.

Fossils provide scientists with information about the types of organisms that lived in the past and their

environments.

Objectives

Students will know…

- The life cycle is a sequence of stages in which a plant or animal grows and reproduces
- Traits can be influenced by the environment
- Animals form and travel in groups to help them survive
- In a particular habitat, some organisms can survive well, some can survive less well, and some cannot survive at all
- When an environment changes and the types of plants and animals that live there may change
- Fossils provide information about the past

Students will be skilled at…

- Asking questions and defining problems
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating and communicating information

Learning Plan

- FOSS Kit- Structures of Life- Required investigations as follows:
    - Investigation 2, All Parts (Prior to investigation 2 start sprouting seeds)

      Investigation 3, Read Text for Part 1, Then Parts 2-5

      Investigation 4, Parts 1-2

- Preview essential questions and connect learning through the unit
- Gain students understanding and prior knowledge of structures of life
- Read literature about the life cycle
- Read literature about animals and their habitats
- Utilize Foss Kit with materials: Structures of Life
- Examine and sort seeds based on their properties
- Compare similarities and differences in the way that organisms grow
- Make observations about the life cycle of a bean plant

- Explore the root and shoot of different plants found outdoors
- Examine plant structures and functions
- Observe and compare the characteristics of a crayfish to other organisms
- Observe crayfish behavior and map where they spend time in their habitat
- Read about and discuss animal adaptations
- Investigate the variation of traits in species and how it might affect the species survival
- Explore food chains
- Read about the human skeleton
- Build skeleton puzzles
- Discuss the functions of bones, muscles, and joints
- Dissect rodent bones from owl pellets and compare them to human bones
- Make and analyze fingerprint patterns
- Watched videos on life cycles, animal adaptations and the human skeleton
- Maintain observational journals with student note taking and drawings of investigations
- Incorporate literature about structures of life, make connections to everyday life

Optional Engineering Design Challenge (Lesson plan provided in "Materials" section

Assessment

Science is designed to promote skill attainment. Student progression and pace through which they proceed through the performance tasks is based on their affinity for and ability to reach skill attainment. The teacher will determine formative and summative skill attainment; alternative assessments will be incorporated for each student based on their strengths and challenges.

Formative: Teacher observation, student responses during lessons

Summative: FOSS investigation checklist, science notebook (response to focus questions)

Benchmark: I-Check Assessments, science notebook

Alternative: Oral presentation, student produced projects

- Investigation 1.1 FQ: How are seeds alike and different? (optional)
- Investigation 1.2 FQ: What effect does water have on seeds? (optional)
- Investigation 1.3 FQ: How much water does a seed soak up? (optional)
- Investigation 1.4 FQ: How do seeds disperse away from the parent plant? (optional)
- Investigation 2.1 FQ: What structures does a seedling have to help it grow and survive?
- Investigation 2.2 FQ: What is the sequence of the bean plant’s life cycle?

- Investigation 2.3 FQ: How do the roots of schoolyard plants compare to the roots of bean plants?
- Investigation 3.1 FQ: What are the structures of a crayfish?
- Investigation 3.2 FQ: How do crayfish structures and behaviors help crayfish survive? How does variation in traits among individuals of a species affect survival?
- Investigation 3.3 FQ: What kind of behavior do crayfish display in their habitat?
- Investigation 3.4 FQ:How are the characteristics of crayfish and other animals alike and different?
- Investigation 3.5 FQ: What is needed to sustain a food chain?
- Investigation 4.1 FQ: What are the functions of the skeletal system?
- Investigation 4.2 FQ: In what ways are the skeletons of a rodent and a human similar?
- Investigation 4.3 FQ: What makes our skeletal system flexible? (optional)
- Investigation 4.4 FQ: How are fingerprints alike and different? (optional)

Standards

P.1	Act as a responsible and contributing community members and employee.
P.3	Consider the environmental, social and economic impacts of decisions.
P.4	Demonstrate creativity and innovation.
P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
P.8	Use technology to enhance productivity increase collaboration and communicate effectively.
P.9	Work productively in teams while using cultural/global competence.
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.M	Measurement
3-LS1	From Molecules to Organisms: Structures and Processes
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.
	Changes organisms go through during their life form a pattern.
	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.
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-LS2	Ecosystems: Interactions, Energy, and Dynamics
3-LS2-1	Construct an argument that some animals form groups that help members survive.
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.TS.3.4	Utilize and reference features of a text when writing or speaking about a text, using text features (e.g., graphics, images, captions, headings) and search tools (e.g., key words, sidebars, hyperlinks) to locate and integrate information relevant to a given topic

	efficiently.
3-LS3	Heredity: Inheritance and Variation of Traits
3.DL.B	Represent and interpret data
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	Biological Evolution: Unity and Diversity
3-LS4-1	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.
SL.PE.3.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.
SL.ES.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
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.
SL.AS.3.6	Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.
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-ESS2	Earth's Systems
3-ESS2-1	Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.
3-ESS2-2	Obtain and combine information to describe climates in different regions of the world.
3-ESS3	Earth and Human Activity
3-ESS3-1	Make a claim about the merit of a design solution that reduces the impacts of climate change and/or a weather-related hazard.

Materials

Core Book List

FOSS Kit: Structures of Life

Brainpop

Discovery Education

Scholastic News

Science notebook for assessment and journaling

Mystery Science

Optional Culminating Engineering Design Challenge

Integrated Accommodations and Modifications, Special Education students, English Language Learners, At-Risk students, Gifted and Talented students, Career Education, and those with 504'sNew Section

https://docs.google.com/spreadsheets/d/18L1CWhQ5Lmq4mBwSrGh_Dw4T7zKNOyCDRdR9voGmHtw/edit#gid=1426178898