BOE Approved 8/18

Cliffside Park Public Schools

Science

Unit Name: Animals Two By Two (Life Science)

Resource: FOSS Next Generation, Delta Education

Duration: Ten Weeks

Enduring Understandings

Goldfish & Guppies

- Fish are animals and have basic needs.
- Fish have structures that help them live and grow.
- Different kinds of fish have similar but different structures and behaviors.
- Birds are animals that have basic needs.
- Different kinds of birds have similar but different structures and behaviors.

Water & Land Snails

- Different kinds of snails have some structures and behaviors that are the same and some that are different.
- Snails are animals and have basic needs—water, air, food, and space with shelter.
- There is great diversity among snails.
- Shells differ in size, shape, pattern, and texture.
- Snails have senses.

Big & Little Worms

- Worms are animals and have basic needs.
- Worms have identifiable structures.

- Different kinds of worms have similar structures and behaviors; they also have different (size, color).
- Worm behavior is influenced by conditions in the environment.
- Worms change plant material into soil.

Pill Bugs & Sow Bugs

- Isopods are animals and have basic needs: water, air, food, and space with shelter.
- Different kinds of isopods have some structures and behaviors that are the same and some that are different.
- There is great diversity among isopods.
- Isopod behavior is influenced by conditions in the environment.

Essential Questions

Goldfish & Guppies

- What are the parts of a goldfish?
- What do goldfish need to live?
- What do goldfish do?
- How are guppies and goldfish different?
- How are they the same?

Water & Land Snails

- What birds visit our schoolyard?
- What are the parts of a water snail?
- How can shells be grouped?
- What do land snails do?

Big & Little Worm

- What are the parts of a redworm?
- What do redworms need to live?
- How are red worms and nightcrawlers different?
- How are they the same?

Pill Bugs & Sow Bugs

- What are isopods?
- How are pill bugs and sow bugs different?
- How are they the same?
- How do isopods move?
- What do animals need to live?

Focus of Standards

Student Outcomes	**Skills**	**Assessments**
Goldfish & Guppies ● I can observe and compare the structures and behavior of two kinds of fish and ask questions based on observations. ● I can help provide for the needs of aquarium fish. ● I can observe and record changes in an aquarium over time. **Water & Land Snails:** ● I can observe the structures and behaviors of land snails in a terrarium. ● I can observe the structures and behaviors of water snails in an aquarium. ● I can describe, compare, and communicate the similarities and differences of the two kinds of snails. **Big & Little Worm:** ● I can observe and compare the structures and behaviors of red worms and nightcrawlers. ● I can compare how redworms and nightcrawlers are the same and different.	● Asking Questions and Defining Problems ● Developing and Using Models ● Classifying Information ● Observing Investigations ● Exploring New Ideas ● 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	***Assessments:*** ● **Formative**: Notebook Entries: ○ Notebook Entries ○ Teacher Observation ○ Anecdotal Records/Notes ○ Science notebook ○ Embedded Assessment Notes ● **Summative Performance** ○ Foss Post-test on Animals Two By Two ○ Vocabulary check ● **Benchmark Assessments**: ○ Investigation Checks ○ Matching- Fish to needs and environment ○ Matching- worms to needs and environment ○ Matching- bugs to needs and environment ○ Constructing /drawings of animals in native environments ● **Alternative:** ○ Conferences

● I can communicate observations of the structures, behaviors, and needs of earthworms. **Pill Bugs & Sow Bugs** ● I can observe the structure and behavior of isopods. ● I can compare two kinds of isopods, commonly known as pill bugs and sow bugs. ● I can observe several kinds of animals living together in a terrarium habitat. ● I can communicate observations of animal structures and behaviors.		○ Diagrams ○ Word Bank for vocabulary ○ Modeling ○ Illustrations of energy processes and sequences ○ Storybook assembly

NJ Student Learning Standards: Science
K-LS1 From Molecules to Organisms: Structures and Processes
K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.
K-ESS2 Earth's Systems
K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.
K-ESS3 Earth and Human Activity
K-ESS3-1. Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.
NJ: 2014 SLS: 21st Century Life and Careers
NJ: Grade 4
ELA: RI.K.1, RI.K.2, RI.K.3, RI.K.4, RI.K.5,
Math: K.CC.A.1, K.CC.A.2, K.CC.A.3, K.CC.B.4, K.CC.B.5, K.CC.B.6, K.OA.A.1, K.OA.A.2, K.OA.A.3, K.MD.A.1
9.2 Career Awareness, Exploration, And Preparation
Strand A: Career Awareness
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.
9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.
9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.
NJ: 2014 SLS: Technology
NJ: Grades K-2
8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to

solve problems individually and collaborate and to create and communicate knowledge.
A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.
8.1.2.A.1 Identify the basic features of a digital device and explain its purpose.
8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.
8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.
A. The Nature of Technology: Creativity and Innovation
Technology systems impact every aspect of the world in which we live.
8.2.2.A.1 Define products produced as a result of technology or of nature.
8.2.2.A.2 Describe how designed products and systems are useful at school, home and work.
B. Technology and Society: Knowledge and understanding of human, cultural and societal values are fundamental when designing technology systems and products in the global society.
8.2.2.B.1 Identify how technology impacts or improves life.
8.2.2.B.2 Demonstrate how reusing a product affects the local and global environment.
8.2.2.B.3 Identify products or systems that are designed to meet human needs..
C. Design: The design process is a systematic approach to solving problems.
8.2.2.C.1 Brainstorm ideas on how to solve a problem or build a product.
8.2.2.C.2 Create a drawing of a product or device that communicates its function to peers and discuss.
8.2.2.C.3 Explain why we need to make new products.

Core Instructional Materials:

- FOSS Next Generation: Animals Two By Two(2016)

Supplemental Materials: (videos, leveled readers, Readworks, recommended books etc.)

Videos: https://www.fossweb.com/moduledetail?dDocName=G3842595&classId=
Recommended books: https://www.fossweb.com/additional-resources-books-xslt?dDocName=G4292315#non-fiction-books

NJ Student Learning Standards: Science and Engineering Practices
Practice 1. Asking questions (for science) and defining problems (for engineering) Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions that can be tested.
Ask questions based on observations to find more information about the natural and/or designed world(s).
Ask and/or identify questions that can be answered by an investigation.
Practice 2. Developing and using models Modeling in K–2 builds on prior experiences and progresses to include using and developing

models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.
Distinguish between a model and the actual object, process, and/or events the model represents.
Compare models to identify common features and differences.
Develop and/or use a model to represent amounts, relationships, relative scales (bigger, smaller), and/or patterns in the natural and designed world(s).
Develop a simple model based on evidence to represent a proposed object or tool.
Practice 3. Planning and carrying out investigations: Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.
With guidance, plan and conduct an investigation in collaboration with peers (for K).
Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.
Evaluate different ways of observing and/or measuring a phenomenon to determine which way can answer a question.
Make observations (firsthand or from media) and/or measurements to collect data that can be used to make comparisons.
Make observations (firsthand or from media) and/or measurements of a proposed object or tool or solution to determine if it solves a problem or meets a goal.
Make predictions based on prior experiences.
Practice 4. Analyzing and interpreting data: Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.
Practice 5. Using mathematics and computational thinking: Mathematical and computational thinking in K–2 builds on prior experience and progresses to recognizing that mathematics can be used to describe the natural and designed world(s).
Describe, measure, and/or compare quantitative attributes of different objects and display the data using simple graphs.
Practice 6. Constructing explanations (for science) and designing solutions (for engineering): Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.
Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.
Use tools and/or materials to design and/or build a device that solves a specific problem or a solution to a specific problem.
Generate and/or compare multiple solutions to a problem.
Practice 7. Engaging in argument from evidence: Engaging in argument from evidence in K–2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s).
Distinguish between explanations that account for all gathered evidence and those that do not.
Distinguish between opinions and evidence in one's own explanations.
Construct an argument with evidence to support a claim.
Make a claim about the effectiveness of an object, tool, or solution that is supported by relevant evidence.

21st Century Themes

- **Global Awareness:** students come to understand that humans use natural resources for everything they do and that people affect the world around them.
- **Environmental Literacy:** students will explore the origins of materials and resources that we use everyday (paper, fabric, wood.)

Students will learn that these resources are finite and explore strategies for conserving natural resources (recycling.)

21st Century Skills

Creativity and Innovation

- Critical Thinking and Problem Solving
- Communication and Collaboration

Flexibility and Adaptability

- Productivity and Accountability
- Leadership and Responsibility

Interdisciplinary Connections

Language Arts:

- Ask and answer questions about key details in a text.
- Identify the main topic and retell key details of a text.
- describe the connection between two individuals, events, ideas, or pieces of information in a text.
- Ask and answer questions about unknown words in a text.
- Identify the front cover, back cover, and title page of a book.
- Describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).
- Identify the reasons an author gives to support points in a text.
- Identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).
- Actively engage in group reading activities with purpose and understanding.

Foundational Skills

- Demonstrate understanding of the organization and basic features of print. a. Follow words from left to right, top to bottom, and page by page. b. Recognize that spoken words are represented in written language by specific sequences of letters. c. Understand that words are separated by spaces in print. d. Recognize and name all upper- and lowercase letters of the alphabet.
- Know and apply grade-level phonics and word analysis skills in decoding words. a. Demonstrate basic knowledge of one-to-one letter/sound correspondences by producing the primary sound or many of the most frequent sounds for each consonant. b. Associate the long and short sounds with common spellings (graphemes) for the five major vowels. c. Read common high-frequency words by sight (e.g., the, of, to, you, she, my, is, are, do, does). d. Distinguish between similarly spelled words by identifying the sounds of the letters that differ.
- Read emergent-reader texts with purpose and understanding.

Writing Standards

- Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book (e.g., My favorite book is . . .).
- Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.
- Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.
- With guidance and support from adults, respond to questions and suggestions from peers and add details to strengthen writing as needed

- Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).
- With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

Speaking and Listening Standards

- Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups. a. Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion). b. Continue a conversation through multiple exchanges.
- Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.
- Ask and answer questions in order to seek help, get information, or clarify something that is not understood.
- Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.
- Add drawings or other visual displays to descriptions as desired to provide additional detail.
- Speak audibly and express thoughts, feelings, and ideas clearly.

Mathematical Practices:

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- Reason abstractly and quantitatively.
- Model with mathematics.
- Use appropriate tools strategically.

Differentiation/Accommodations/Modifications ***(Alternate Modes of Instruction and Support)***		
Modifications to Support Gifted and Talented Students	**Modifications to Support English Language Learners**	**Modifications to Support Our Learners (Students with IEPs/504s and At-Risk Learners)**

Recommended non fiction books https://www.fossweb.com/additional-resources-books-xslt?dDocName=G4292315#non-fiction-books Invent an Insect Draw and describe a fish and its needs Draw and describe a sowbug and its needs Debate / Compare and contrast- uniqueness of water and the availability of all three forms on earth. Provide appropriate challenge for wide ranging skills and development areas. Participate in inquiry and project-based learning units of study Assigning roles within partnerships Differentiated supports: content, process, product, environment	Equipment photo cards (spanish and english) Invent an Insect Who Needs What? The Wonders of the Rainforest Visual cues- image gallery https://www.fossweb.com/additional-resources-image-galleries-xslt?dDocName=G4292315#image-galleries Vocabulary log- Pronunciation/translation assistance https://dictionary.cambridge.org/us/ Vocabulary builder Thesaurus- https://www.thesaurus.com/ Native Language Translation (peer, online assistive technology, translation device, bilingual dictionary) Pair visual prompts with verbal presentations Front Load and immerse students in literacy and language experiences related to content Provide students with visual models, sentence stems, concrete objects, and hands-on materials. Model procedures for life skills.	Storyboard- draw and color living animals Match the animal with its environment and needs Invent an Insect Who Needs What? The Wonders of the Rainforest Melting and Freezing: https://ngss.nsta.org/Resource.aspx?ResourceID=134 Equipment photo cards Visual cues- image gallery https://www.fossweb.com/additional-resources-image-galleries-xslt?dDocName=G4292315#image-galleries Word walls Review student individual educational plan and/or 504 plan. Establish procedures for accommodations and modifications for assessments as per IEP/504. Establish procedures for modification of classwork and homework as per IEP/504. Modify classroom environment to support academic and physical needs of the students as per IEP/504. Provide appropriate accommodations, instructional adaptations, and/or modifications as determined by the IEP or 504 team. Differentiation through content, process, product, environment Provide Title I services to students not meeting academic standards in ELA and/or Math.

	Collaboration between ELL and general education teacher to maximize learning	Provide instructional adaptations and interventions in the general education classroom. Modify classroom environment to support student needs. Differentiated instruction Basic Skills Intensive individual intervention
Sources NJSLS Science Standards (2017): http://www.nj.gov/education/cccs/2016/science/ NJ: 2014 SLS: Technology: http://www.state.nj.us/education/cccs/2014/tech/8.pdf NJSLS-S: Science and Engineering Practices: http://www.nj.gov/education/cccs/2016/science/3-5-ETS1.pdf 21st Century Life and Careers: http://www.state.nj.us/education/cccs/2014/career/9.pdf Career Ready Practices: http://www.state.nj.us/education/cccs/2014/career/9.pdf 2015 FOSS Next Generation: www.FOSSweb.com **NSTA: https://ngss.nsta.org/**		