Englewood Public School District Science Grade 1 Second Marking Period

Unit 2: Characteristics of Living Things

Overview: In this unit of study, students develop an understanding of how plants and animals use their external parts to help them survive, grow, and meet their needs, as well as how the behaviors of parents and offspring help offspring survive. The understanding that young plants and animals are like, but not exactly the same as, their parents is developed. The crosscutting concept of *patterns* is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *obtaining*, *evaluating*, *and communicating information* and *constructing explanations*. Students are also expected to use these practices to demonstrate understanding of the core ideas. This unit is based on 1-LS3-1 and 1-LS1-2.

Time Frame: 10 - 15 days

Enduring Understandings:

All living things share certain characteristics and needs. Adults and their offspring have similar and different characteristics and behaviors.

Essential Questions:

How are young plants and animals alike and different from their parents? What types (patterns) of behavior can be observed among parents that help offspring survive?

Standards	Topics and Objectives	Activities	Resources	Assessments
(<u>1-LS3-1</u>)	Topics	Chip Off the Old Block: In this	Materials:	Formative Assessments:
Make observations		lesson students compare adult	Chart paper	Students will read grade-
to construct an	Twenty-First Century	plants with young plants and	Marker for chart paper	appropriate texts and use
evidence-based	Themes and Skills	then match pictures of adult	 Photos of students and 	media to obtain scientific
account that young	include:	animals with their young. They	their parents	information to determine
plants and animals	Environmental Literacy	then are asked to identify	 Photos of teacher and 	patterns in the natural world.
are like, but not	• The Four C's	specific physical traits of plants	his/her children or	
exactly like, their	 Environmental 	and animals that can be used to	his/her parents	Students will use a Venn
parents.	Literacy	identify them. Note: The		Diagram to compare and
		Parent/Offspring photo		

Objective

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. collection on page three incorrectly states the offspring of a horse is a pony. (NJSLSA.R2), (W.1.8), (1.MD.C.4), (CRP4)

- Copies of photos of five or more famous people and their children
- Parent/Offspring photo collection
- Three adult plants and the corresponding baby plants (good options are cactus and terrarium plants
- Chip Off the Old Block handout and pencils for each student

contrast two or more types of birds.

Benchmark Assessment: Exact Path

Summative Assessments:

Students will make observations to construct an evidence-based account (orally or written) that young plants and animals are like, but not exactly like, their parents.

- Examples of patterns could include features plants or animals share.
- Examples of observations could include that leaves from the same kind of plant are the same shape but can differ in size and that a particular breed of puppy looks like its parents but is not exactly the same.

(1-LS1-2)

Read gradeappropriate texts and use media to obtain scientific information to determine patterns in the natural world.

Topics

Twenty-First Century
Themes and Skills
include:
Environmental Literacy

- The Four C's
- Environmental Literacy

Objective

Conduct a read aloud – What Makes a Bird a Bird? Then complete The Cornell Lab or Ornithology's lesson, "What Makes a Bird a Bird?" (NJSLSA.R2), (1-LS1-2)

Select lessons from The Cornell Lab of Ornithology's lessons regarding birds:

• What's in a Habitat?

Text:

What Makes A Bird A Bird? By Mary Garelick and Illustrated by Trish Hill

Web-Resources:

The Cornell Lab of Ornithology Feathered Friends https://cdn2.hubspot.net/hub/95627/file-20090696- Students will display their knowledge of the characteristics of birds by completing the true/false quiz.

Alternative Assessments:

Students will pantomime a bird's wing movement.

Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.

- Taking Flight Flying and Migration
- Move Like a Bird
- Eat Like a Bird
- If You Can Count, You Can Help a Scientist!
- Who's That...Up the Sky?
- Do You Hear What I Hear?
- Nests and Chicks! (CRP8), (8.1.2.E.1)

Enrichment Activity:

Have the students create a class book or quilt (paper or iron-on transfers onto fabric) of pictures they construct of birds they see. (See the Bird Sleuth booklet for ideas) (6.1.4.B.5), (9.2.4.A.3)

pdf/docs/penningtonlessons _allmonths.pdf#18

The Cornell Lab of Ornithology *Bird Sleuth K-*12 Booklet

Video:

http://www.zaneeducation. com/Videos/Science/Eleme ntary%20Science/Animals /Birds.php

Additional Text:

Plants and Flowers Grow Flower, Grow! The Tiny Seed (soaring, flapping, gliding, diving)

Students will observe different types of bird nests and construct a nest out of play-dough or other material. (1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.)

Topics

Twenty-First Century Themes and Skills include:

Environmental Literacy

- The Four C's
- Environmental Literacy

Objective

Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.

Why So Yummy? In this lesson students will investigate how fruits help some plants survive. The background information is important to the overall goals of this lesson. It states, "fruitbearing plants can be distinguished from other plants, because they contain a reproductive structure that develops into an edible fruit. This reproductive structure is the shelter that protects the seeds until they are mature. This is important, because seeds are not distributed to the earth for germination until they are ripe." The teacher will need to purchase some fruits ahead of time for this lesson. Identifying a variety of fruits and especially fruits children might have less experience with will enhance the experience. (6.1.P.D.4)

Enrichment Activity:

Students bring seeds that they find in nature and conduct web searches to identify its origins. (8.1.2.E.1), (8.1.2.B.1)

Materials:

- Fruits for each child [1]
- Pear or fleshy fruit FEP
- Watermelon with seeds Strawberry
- Lemon[SEP]
- Nuts
- A plastic knife for each child
- A paper plate for each child Chart paper and markers
- Fruit Dispersal photo collection

Worksheets:

- "Why So Yummy" handout- one per student
- Fruit Dispersal Photo Collection
- Fruit-Bearing Plant Life Cycle

Video:

https://www.youtube.com/watch?v=cRhGOdqWIIo

Formative Assessments:

Do Now/Ticket to Leave Journal Entry

Summative Assessment:

Students complete the "Why So Yummy?" worksheet to display their understanding of how plants survive.

Alternative Assessments:

Students will use graphic aides and drawings to identify plant structures.

Enrichment Activity

Accommodations and Modifications:

Students with special needs: Support staff will be available to aid students related to IEP specifications. 504 accommodations will also be attended to by all instructional leaders.

Physical expectations and modifications, alternative assessments, and scaffolding strategies will be used to support this learning.

The use of Universal Design for Learning (UDL) will be considered for all students as teaching strategies are considered.

ELL/ESL students: Students will be supported according to the recommendations for "can do's" as outlined by WIDA – https://www.wida.us/standards/CAN_DOs/

This particular unit has limited language barriers due to the physical nature of the curriculum.

Students at risk of school failure: Formative and summative data will be used to monitor student success at first signs of failure student work will be reviewed to determine support.

This may include parent consultation, basic skills review and differentiation strategies. With considerations to UDL, time may be a factor in overcoming developmental considerations.

More time and will be made available with a certified instructor to aid students in reaching the standards.

Gifted and Talented Students: Students excelling in mastery of standards will be challenged with complex, high level challenges related to the complexity in planning and carrying out investigations and analyzing and interpreting data.

English Language Learners

- Speak and display terminology
- Teacher modeling
- Peer modeling
- Provide ELL students with multiple literacy strategies.
- Word walls
- Use peer readers
- Give page numbers to help the students find answers
- Provide a computer for written work
- Provide two sets of textbooks, one for home and one for school
- Provide visual aides
- Provide additional

Special Education

- Utilize modifications & accommodations delineated in the student's IEP
- Work with paraprofessional
- Use multi-sensory teaching approaches.
- Work with a partner
- Provide concrete examples
- Restructure lesson using UDL principals (http://www.cast.org/ourwork/aboutudl.html#.VXmoXcfD_UA).
- Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniquesauditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).

At-Risk

- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies).
- Using visual demonstrations, illustrations, and models
- Give directions/instructions verbally and in simple written format. Oral prompts can be given.
- Peer Support
- Increase one on one time
- Teachers may modify instructions by modeling

Gifted and Talented

- Curriculum compacting
- Inquiry-based instruction
- Independent study
- Higher order thinking skills
- Adjusting the pace of lessons
- Interest based content
- Real world scenarios
- Student Driven Instruction
- Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings.
- Use project-based science learning to connect science with observable phenomena.
- Structure the learning around explaining or solving a social or community-based issue.
- Collaborate with after-school programs or clubs to extend learning opportunities.

time to complete a task • Use graphic organizers	Shorten assignments to focus on mastery of key concepts	what the student is expected to do Instructions may be printed out in large print and hung up for the student to see during the time of the lesson. Review behavior expectations and make adjustments for personal space or other behaviors as needed. Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.	
Interdisciplinary Connections:			

ELA - NJSLS/ELA:

NJSLSA.R2: Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

W.1.8: With guidelines and support from adults, recall information from experiences or gather information from provided sources to answer a question.

Social Studies:

6.1.4.B.5: Describe how human interaction impacts the environment in New Jersey and the United States.

Career Ready Practices:

CRP4: Communicate clearly and effectively and with reason.

CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.

Integration of Technology Standards NJSLS 8:

8.1.2.E.1: Use digital tools and online resources to explore a problem or issue.

8.1.2.B.1: Illustrate and communicate original ideas and stories using multiple digital tools and resources.

Integration of 21st Century Standards NJSLS 9:

9.2.4.A.3: Investigate both traditional and nontraditional careers and related information to personal likes and dislikes.

Mathematics:

1.MD.C.4: Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number category, and how Many more or less are in one category than in another.

Key Vocabulary:

Trait – a genetically determined characteristic found in a living thing

Offspring – the child of a living thing (plant, animal, or human)

Hereditary – able to be naturally passed on to a child from the parent prior to birth

DNA – a molecule that carries all of the information from a parent to determine what the offspring will be like

Gene – a segment, or part, of DNA; the basic building block of heredity

Stem- the main body or stalk of a plant

Petal- one of the segments of the corolla of a flower, which is a leaf-like, colorful substance

Seed– the embryo or unit that reproduces into a flowering plant

Fruit– the reproductive structure of a fruit-bearing plant

Germinate— to emerge at the beginning stages of growth

Reproduction— the act of recreating itself

Disperse— to distribute or place

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Analyzing and Interpreting Data	LS3.A: Inheritance of Traits	<u>Patterns</u>

 Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS3-1)

Obtaining, Evaluating, and Communicating Information

 Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world. (1-LS1-2) • Many characteristics of organisms are inherited from their parents. (3-LS3-1)

LS1.B: Growth and Development of Organisms

• Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive. (1-LS1-2)

- Similarities and differences in patterns can be used to sort and classify natural phenomena. (3-LS3-1)
- Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence. (1-LS1-2)

---- Connections to Nature of Science

Scientific Knowledge is Based on Empirical Evidence

• Scientists look for patterns and order when making observations about the world. (1-LS1-2)

Englewood Public School District Science Grade 1 Second Marking Period

Unit 3: Mimicking Organisms to Solve Problems

Overview: In this unit of study, students develop an understanding of how plants and animals use their parts to help them survive, grow, and meet their needs. Students also need opportunities to develop possible solutions. As students develop possible solutions, one challenge will be to keep them from immediately implementing the first solution they think of and to instead think through the problem carefully before acting. Having students sketch their ideas or make a physical model is a good way to engage them in shaping their ideas to meet the requirements of the problem. The crosscutting concept of structure and function is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in constructing explanations, designing solutions, and in developing and using models. Students are expected to use these practices to demonstrate understanding of the core ideas.

Time Frame: 20 - 25 days

Enduring Understandings:

All organisms have external parts.

Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air.

Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.

Essential Questions:

How can humans mimic how plants and animals use their external parts to help them survive and grow?

Standards	Topics and Objectives	Activities	Resources	Assessments
(1-LS1-1)	Topics	Eat Like a Bird:	Eat Like a Bird:	Formative
Use materials to design a				Assessments:
solution to a human	Animal and Plant Parts	Part One: Food Detective:	Part Two: The Beak	Students will build
problem by mimicking how		Students will brainstorm the	Game	models
plants and/or animals use	Themes and Skills include:	types of food that birds eat.	Food Items:	
their external parts to help	Environmental Literacy	Students are then presented	 Macaroni (small 	Students will use
them survive, grow, and	• The Four C's	with five to six foods that	animals), goldfish	graphic organizers to
meet their needs.*	Environmental Literacy	birds eat. Students will then	crackers (fish), gummy	chart to track birds,
		answer a series of questions:		beaks, and food used.

Objectives

Eat Like a Bird:

Students will be able to name at least three foods that birds eat.

Students will be able to name three adaptations birds have for survival.

Why So Yummy?

(1-LS1-2)

natural world.

Read grade-appropriate

obtain scientific information

to determine patterns in the

texts and use media to

Students will explore various methods of seed dispersal.

Changing to Survive:

Students will solve a human problem by mimicking the external parts of plants or animals. Students will also participate in small-group conversations.

5E - Ant Stations

Students will work through a series of stations that allow them to look at adaptation that ants have. Students will design a wood-chopping tool based on an ant's tool to chop a blade of grass.

- Where would you find this kind of food?
- If you are a bird, what are the challenges to getting this food?
- What kinds of tools might you (as a person) need to get and eat the food more easily? (Fingers, a spoon, tweezers, nutcracker, etc.)
- How might a bird's beak be shaped to get and eat this food? (You might wish to ask students to draw and share their response) (MP.2)

Part Two: The Beak Game

Students will try picking up different foods with a variety of beaks. They will then evaluate which beak was best for each food. Students will create a data chart to record their results. (MP.4), (CRP6)

Enrichment Activity:

Hang three to four bird feeders outside the classroom. Place a different type of food in each feeder. Have the class keep track of the birds that come to each

- worms (earth worms), chocolate
- Sprinkles (ants), peanuts, sunflower seeds, raisins, minimarshmallows (grubs/caterpillars), dry
- Cereals (insects), fruit juice (nectar)

Utensils:

Clothespin, toothpick, straw, spoon, small plastic scoop, tweezers/small scissors

Changing to Survive:

Materials:

- Edible plants (such as lettuce, beans, or carrots)
- A cactus (of any size)
- Cucumbers (one for each group of 3 students)
- Items to protect cucumbers (aluminum foil, toothpicks, paper, cloth, etc.)
- A fork

Book:

What Can Live in a Lake? By Shelia Anderson

Video:

https://www.youtube.com/watch?v=t6Ml-J7rNNc

Students will demonstrate building an Ant / Ant Hill

Students will create an Ant life cycle by using a diagram.

Benchmark

Assessment:

See Unit 2 for quarterly assessment

Summative Assessments: Eat Like a Bird:

Student chart

Why So Yummy?

Student chart and summary

Changing to Survive:

Student cucumber protection design

5E- Ant Stations:

Student science journals

Alternative Assessments:

Students will tell how they played the Beak

feeder. Students will then look at the beaks of the birds that come to each feeder. Students will then create a chart showing the birds, beak shape and food eaten. (1.MD.C.4)

Changing to Survive:

Students will explore three different types of plants. They will discuss which ones they might eat and which ones they would not eat. Students will then discuss the adaptations a cactus has to prevent it from being eaten. As a class, read "What Can Live in a Lake" aloud. Stop during the reading and record adaptations presented in the text. Students will then discuss that humans adapt by creating items to help us. Students will then work in small groups to design a way to protect a cucumber from getting scratched. (1.MD.C.4), (6.1.4.B.5), (W.1.7), (8.2.2.C.1), (NJSLSA.R2)

5E – Ant Stations

Students work together at various stations to explore how ants change the

5E - Ant Stations

- Catch the Learning Bug tri-board
- Hex bug Ant
- Copies of scaffolded Student Notebook
- Station 1 Ant life cycle puzzle and ant hill diagram puzzle (1 per pair of students) in attached Word Document
- Station 2 Cotton balls, spoons, tongs, toothpicks, chenille stems, pom-poms, glue, sticky dots, small Styrofoam balls, clothespins, small paper plates, clear plastic shoe boxes to hold supplies
- Station 3 One dice per group, 1 set of Build an Ant and Needs of Ant Cards per student, 1 set of Build an Ant Instructions per group
- Station 4 Ant Anatomy article 1 per pair

Game and justify the approach they used.

Students will retell in their own words.

environment they live in, problem solving like an ant would, the needs of ants, the life cycle of an ant, and the external body parts of an ant. Students will complete puzzles, diagrams, create a tunnel, make a prototype of a solution that solves a problem like an ant would, and play a game to discover the needs of living things. (6.1.P.D.4), (CRP4), (CRP8), (MP5)

Research an Ornithologist (9.2.4.A.1), (9.2.4.A.3)

- Station 5 Construction paper leaves, plastic berries, real acorns, rows of bubble wrap to represent ant eggs, paper towel rolls and masking tape or clear tubes with magnets
- Thought Bubbles Trifold board

Additional Text:

Ants

By: Mari Schuh

Age Level: 3-6 years

https://www.readingaz.com/book.php?id=104

Accommodations and Modifications:

Students with special needs: Support staff will be available to aid students related to IEP specifications. 504 accommodations will also be attended to by all instructional leaders. Physical expectations and modifications, alternative assessments, and scaffolding strategies will be used to support this learning. The use of Universal Design for Learning (UDL) will be considered for all students as teaching strategies are considered.

ELL/ESL students: Students will be supported according to the recommendations for "can do's" as outlined by WIDA – https://www.wida.us/standards/CAN_DOs/

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Gifted and Talented Students: Students excelling in mastery of standards will be challenged with complex, high level challenges related to the complexity in planning and carrying out investigations and analyzing and interpreting data.

English Language Learners

- Speak and display terminology
- Teacher modeling
- Peer modeling
- Provide ELL students with multiple literacy strategies
- Word walls
- Use peer readers
- Give page numbers to help the students find answers
- Provide a computer for written work
- Provide two sets of textbooks, one for home and one for school

Special Education

- Utilize modifications & accommodations delineated in the student's IEP
- Work with paraprofessional
- Use multi-sensory teaching approaches.
- Work with a partner
- Provide concrete examples
- Restructure lesson using UDL principals (http://www.cast.org/ourwork/aboutudl.html#.VXmoXcfD_UA)
- Provide students with multiple choices for how they can represent their understandings (e.g.

At-Risk

- Using visual demonstrations, illustrations, and models
- Give directions/instructions verbally and in simple written format. Oral prompts can be given.
- Peer Support
- Increase one on one time
- Teachers may modify instructions by modeling what the student is expected to do
- Instructions may be printed out in large print and hung up for the student to see

Gifted and Talented

- Inquiry-based instruction
- Independent study
- Higher order thinking skills
- Adjusting the pace of lessons
- Interest based content
- Real world scenarios
- Student Driven Instruction
- Engage students with a variety
 of Science and Engineering practices
 to provide students with multiple
 entry points and multiple ways to
 demonstrate their understandings.
- Use project-based science learning to connect science with observable phenomena.
- Structure the learning around

- Provide visual aides
- Provide additional time to complete a task
- Use graphic organizers

- multisensory techniquesauditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling)
- Shorten assignments to focus on mastery of key concepts

- during the time of the lesson.
- Review behavior expectations and make adjustments for personal space or other behaviors as needed
- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies)

- explaining or solving a social or community-based issue.
- Collaborate with after-school programs or clubs to extend learning opportunities.

Interdisciplinary Connections:

ELA - NJSLS/ELA:

NJSLSA.R2: Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

W.1.7 Participate in shared research and writing projects (e.g., explore a number of "how-to" books on a given topic and use them to write a sequence of instructions). (1-ESS1-1), (1-ESS1-2)

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-ESS1-1), (1-ESS1-2)

Social Studies:

6.1.4.B.5: Describe how human interaction impacts the environment in New Jersey and the United States.

Career Ready Practices:

CRP2: Apply appropriate academic and technical skills.

CRP4: Communicate clearly and effectively and with reason.

CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.

Integration of Technology Standards NJSLS 8:

8.2.2.C.1: Brainstorm ideas on how to solve a problem or build a product.

Integration of 21st Century Standards NJSLS 9:

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.3: Investigate both traditional and nontraditional careers and related information to personal likes and dislikes.

Mathematics:

MP.2: Reason abstractly and quantitatively.

MP.4: Model with mathematics.

MP.5: Use appropriate tools strategically.

1.MD.C.4: Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Key Vocabulary:

Stem- the main body or stalk of a plant

Petal- one of the segments of the corolla of a flower, which is a leaf-like, colorful substance

Seed– the embryo or unit that reproduces into a flowering plant

Fruit – the reproductive structure of a fruit-bearing plant

Habitat: environmental area an animal lives in

Environment: animal's surrounding **Survival**: live in an environment

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Analyzing and Interpreting Data	LS3.A: Inheritance of Traits	<u>Patterns</u>
 Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS3-1) 	 Many characteristics of organisms are inherited from their parents. (3-LS3-1) LS1.B: Growth and Development of 	• Similarities and differences in patterns can be used to sort and classify natural phenomena. (3-LS3-1)
Obtaining, Evaluating, and Communicating Information	 Organisms Adult plants and animals can have young. In many kinds of animals, parents and the 	Patterns in the natural and human designed world can be observed, used to

• Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world.

(1-LS1-2)

offspring themselves engage in behaviors that help the offspring to survive. (1-LS1-2)

2)

describe phenomena, and used as evidence. (1-LS1-2)

---- Connections to Nature of Science

Scientific Knowledge is Based on Empirical Evidence

• Scientists look for patterns and order when making observations about the

world. (1-LS1-2)