1st Grade Unit 1: Built for Life - How Plants and Animals Survive

Content Area: **Science**
Course(s): **Science Grade 1**
Time Period: **MP1**
Length: **41 days**
Status: **Published**

NJSLS - Science

K-2-ETS1-1	Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
K-2-ETS1-3	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
1-LS1-1	Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.
1-LS1-2	Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.
1-LS3-1	Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.

Science and Engineering Practices

Constructing Explanations and Designing Solutions
Use materials to design a device that solves a specific problem or a solution to a specific problem. (1-LS1-1)

Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (1-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)

Asking Questions and Defining Problems
Ask questions based on observations to find more information about the natural and/or designed world(s). (K-2-ETS1-1)

Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)

Developing and Using Models
Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2)

Analyzing and Interpreting Data
Analyze data from tests of an object or tool to determine if it works as intended. (K-2-ETS1-3)

Disciplinary Core Ideas

LS1.A: Structure and Function

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. (1-LS1-1)

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)

LS1.D: Information Processing

Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs. (1-LS1-1)

LS3.A: Inheritance of Traits

Young animals are very much, but not exactly like, their parents. Plants also are very much, but not exactly, like their parents. (1-LS3-1)

LS3.B: Variation of Traits

Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. (1-LS3-1)

ETS1.A: Defining and Delimiting Engineering Problems

A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1)

Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)

Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1)

ETS1.B: Developing Possible Solutions

Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (K-2-ETS1-2)

ETS1.C: Optimizing the Design Solution

Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3)

Crosscutting Concepts

Structure and Function

The shape and stability of structures of natural and designed objects are related to their function(s). (1-LS1-1, K-2-ETS1-2)

Patterns

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

Rationale and Transfer Goals

In this unit, students will embark on an exploration of the natural world to discover how plants and animals survive, grow, and thrive. Students will investigate how the external parts of plants and animals function as tools to help them meet their basic needs, find safety, and grow. Through hands-on exploration and design challenges, students will observe these natural structures and apply their findings to solve human problems (biomimicry).

Moving from individual survival to family dynamics, students will analyze the unique behaviors and communication patterns animal parents and their offspring use to ensure survival, such as signaling for food or seeking protection. Finally, students will make observations to compare the traits of young plants and animals with their parents. They will discover that while offspring closely resemble their parents, they also possess unique variations that make them distinct. By the end of the unit, students will have a foundational understanding of the interconnectedness of structure, function, behavior, and inheritance in the living world.

Enduring Understandings

Plants and animals have specific external parts that function as tools to help them grow, find food, stay safe, and survive in their environments.

Humans can observe and mimic the clever designs found in nature (biomimicry) to invent creative solutions to human problems.

Animal parents and their offspring use predictable patterns of behavior and communication (like sounds, movements, and signals) to protect and feed the young.

Offspring look very similar to their parents because they inherit traits, but they are never completely identical to their parents or their siblings.

Essential Questions

How do parts like claws, shells, or roots keep things alive?

How can a bird's beak or a turtle's shell help me invent something new?

How do animal parents know what their babies need?

Why do I look a little bit like my parents, but also unique?

Content - What will students know?

- Animals have body parts (claws, teeth, fur, ears) and plants have structures (roots, stems, leaves, thorns) that serve specific purposes like getting food, moving, water absorption, and protection.
- Humans can study how plants and animals use their parts to solve our own real-world problems (e.g., studying how a bird's beak works to design a pair of tweezers, or how burrs stick to clothing to invent Velcro).
- Animal parents and their babies behave in predictable ways to ensure the young survive.
- Offspring have ways to signal their needs (crying, chirping, nesting), and parents have ways to respond (feeding, comforting, protecting).
- Parents use behaviors like huddling, hiding, or fighting to keep their offspring safe from predators and harsh weather.
- Young plants and animals look very similar to their biological parents because they pass down traits (e.g., a lion cub has fur and whiskers like its parents; a young sunflower plant grows yellow petals like the adult plant).
- Even though they look similar, offspring are not identical copies of their parents or their siblings (e.g., a puppy might have different colored spots than its mother).
- A problem is a situation that people want to change or make better.
- Engineering problems have limits, such as using only the materials provided or finishing within a certain time.
- Looking at the world, asking questions, and observing things (like how a plant or animal survives) can give us ideas to solve human problems.

Skills - What will students be able to do?

- Identify and describe the functions of different external parts of plants and animals (e.g., "The turtle uses its shell to hide from danger").
- Design a solution to a human problem by mimicking a plant or animal structure (e.g., designing a coat inspired by polar bear fur, or a helmet inspired by a turtle shell).
- Sketch or build a prototype of their design and explain how it copies nature to solve the problem.
- Obtain information from age-appropriate texts, videos, or media about how animal parents care for their young.
- Identify patterns in behavior, such as noticing that many different baby animals make noise when they are hungry, and parents respond by feeding them.
- Roleplay or model the communication signals between animal parents and offspring (e.g., mimicking how a mother bird chirps to call her chicks).
- Make careful observations using eyes, magnifiers, or images to compare the physical features of adult plants/animals and their offspring.
- Construct an evidence-based account (verbal or written) explaining how a young organism is similar to, yet different from, its parents.
- Sort and match images of baby animals and plants to their adult parents based on observable traits (e.g., matching a caterpillar to a butterfly or a seedling to a tree).
- Ask questions to clarify a specific problem that needs to be solved.
- Observe a situation carefully to gather facts and data about the problem.
- Define a problem in simple, student-friendly terms (e.g., "Our problem is that it rains on recess, and we need a way to stay dry").

Activities - How will we teach the content and skills?

- Mystery Science Animal Super Powers Anchor Phenomenon
- Mystery Science Animal Superpowers Lesson 1
- Mystery Science Animal Superpowers Lesson 2
- Mystery Science Animal Superpowers Lesson 3
- Mystery Science Animal Superpowers Lesson 4

- Mystery Science Animal Superpowers Lesson 5
- Mystery Science Plant Superpowers Anchor Phenomenon
- Mystery Science Plant Superpowers Lesson 1
- Mystery Science Plant Superpowers Lesson 2
- Mystery Science Plant Superpowers Lesson 3
- Read Alouds
- BrainPop Jr. (Animals)
- Function Investigation Lab
- Animals Unit
- Eat Like a Bird!
- Multi Media Study Jams
- Build a Monster Activity

Formative Assessments

- Mystery Science Animal Superpowers Lesson 1 Assessment
- Mystery Science Animal Superpowers Lesson 2 Assessment
- Mystery Science Animal Superpowers Lesson 3 Assessment
- Mystery Science Animal Superpowers Lesson 4 Assessment
- Mystery Science Animal Superpowers Lesson 5 Assessment
- Mystery Science Animal Superpowers Performance Task
- Mystery Science Plant Superpowers Lesson 1 Assessment
- Mystery Science Plant Superpowers Lesson 2 Assessment
- Mystery Science Plant Superpowers Lesson 3 Assessment
- Teacher Observation
- Student projects/models
- Individual and Group Participation

- Exit Tickets

Summative Assessments

- Tests/Quizzes
- Mystery Science Animal Superpowers Performance Task
- Mystery Science Plant Superpowers Performance Task
- Grade 1 Science Unit 1 Benchmark

Spiraling for Mastery

Content or Skill for this Unit	Spiral Focus from Previous Unit	Instructional Activity
Conduct hands-on labs to investigate how 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. Discover how plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. Observe different plant structures. Identify how organisms stay warm outside during the winter and protect against any unsafe people or things. Use charts and create a monster with characteristics to protect itself. Use magazines and books of animals to brainstorm and identify ways animals solve problems for	This is the first opportunity for students to encounter these ideas. Asking questions, making observations, and gathering information are helpful in thinking about problems.	Read-Alouds Modeling/Think Alouds Mystery Science Experiments BrainPop Jr. (Animals) Function Investigation Lab Animals Unit Eat Like a Bird! Multi Media Study Jams

themselves. Observe how plants respond to sunlight.		Build a Monster Activity

Career Readiness, Life Literacies, & Key Skills

9.1.2.CAP.1	Make a list of different types of jobs and describe the skills associated with each job.
9.1.2.CR.1	Recognize ways to volunteer in the classroom, school and community.
9.4.2.CI.1	Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2).
9.1.2.CR.2	List ways to give back, including making donations, volunteering, and starting a business.
9.4.2.CI.2	Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a).
9.4.2.CT.1	Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).
9.4.2.CT.2	Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).
9.4.2.CT.3	Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
9.4.2.IML.3	Use a variety of sources including multimedia sources to find information about topics such as climate change, with guidance and support from adults (e.g., 6.3.2.GeoGI.2, 6.1.2.HistorySE.3, W.2.6, 1-LSI-2).

Interdisciplinary Connections

1.NBT.B.3	Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.
1.NBT.C.4	Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models (e.g., base ten blocks) or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.
1.NBT.C.5	Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
1.NBT.C.6	Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
1.M.A.1	Order three objects by length; compare the lengths of two objects indirectly by using a third object.
RL.CR.1.1	Ask and answer questions about key details in a literary text (e.g., who, what, where, when, why, how).
RI.CR.1.1	Ask and answer questions about key details in an informational text (e.g., who, what,

	where, when, why, how).
RL.CI.1.2	Determine central message and retell a sequence of events in literary texts (e.g., who, what, where, when, why, how).
W.WR.1.5	With prompting and support, generate questions through shared research about a topic and determine possible sources to obtain information on that topic.
W.SE.1.6	With guidance and support from adults, gather and select information from multiple sources to answer a question or write about a topic.