Unit 2: Plants and Animal Structure

Content Area: **Science**
Course(s):
Time Period: **Full Year**
Length: **Full Year**
Status: **Published**

Unit 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. Lessons in this unit satisfy NJ Mandates in Climate Change.

Enduring Understandings

The shape and stability of structures of natural and designed objects are related to their function(s).
Different animals use their body parts to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air.
Plants have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.
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.
Human needs and desires determine which new tools are developed. Various tools can improve daily tasks and quality of life.
Limitations (constraints) must be considered when engineering designs.
Engineering design is a creative process for meeting human needs or wants that can result in multiple solutions.
Individuals collect, use, and display data about individuals and the world around them.
Data can be used to make predictions about the world.
How Do Wind Turbines Work? | Department of Energy (Climate Change)
Wind Power Station (Climate Change)
Kids Britannica (Climate Change)
A Guide to Climate Change for Kids (Climate Change)
What Is the Greenhouse Effect? | NASA Climate Kids (Climate Change)

Essential Questions

How can humans mimic how plants and animals use their external parts to help them survive and grow? 2. How are plants designed to grow, adapt and survive? 3. How are animals designed to grow, adapt and survive? 4. How can we use the design process to solve a need?

Learning Objectives

Observe and use patterns in the natural world as evidence and to describe phenomena.

Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.
Make observations to construct an evidence-based account 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.
Observe and describe how the shape and stability of structures of natural and designed objects are related to their functions.
Use materials to design a device that solves a specific problem or design a solution to a specific problem.
Use materials to design a solution to a human problem that mimics how plants and/or animals use their external parts to help them survive, grow, and meet their needs: Examples of human problems that can be solved by mimicking plant or animal solutions could include:
Designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales.
Stabilizing structures by mimicking animal tails and roots on plants.
Keeping out intruders by mimicking thorns on branches and animal quills. • Detecting intruders by mimicking eyes and ears.
Develop a simple model based on evidence to represent a proposed object or tool.
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.
Use the design process to build a product (e.g. a shoe or house projects) by mimicking how plants and/or animals use parts to help them survive, grow and/or meet needs. 9. Collaborate with peers to identify a problem that the product may solve. 10. Select tools and materials for the product. 11. Identify limits of the design process. 12. Explain the purpose of the product. 13. Identify some natural resources used to create the product.
Explain how climate change affects plants and animals.
Discover how they can prevent climate change by reducing, reusing and recycling objects or tools.
Understand how they can take care of the Earth, participate in creating a tool for birds to use and explain how this correlates to climate change
To understand how they can prevent climate change by reducing, reusing, and recycling a variety of objects or tools.
How Do Wind Turbines Work? | Department of Energy (Climate Change)
Wind Power Station (Climate Change)
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Standards: Content

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

Standards: Interdisciplinary

RI.CR.1.1	Ask and answer questions about key details in an informational text (e.g., who, what, where, when, why, how).
RI.CI.1.2	Determine main topic and retell a series of key details in informational texts (e.g., who, what, where, when, why, how).
RI.IT.1.3	Describe relationships among pieces of information (e.g., sequence of events, steps in a process, cause-effect and compare-contrast relationships) within a text.
RI.TS.1.4	With prompting and support, explain major differences between books that tell stories and books that give information, identifying various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text while drawing on a wide reading of a range of text types.
RI.PP.1.5	Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.
RI.MF.1.6	With prompting and support, use text features (e.g., diagrams, tables, animations) to describe key ideas.
RI.AA.1.7	Identify the reasons an author gives to support points in a text and explain how that information is applied, with prompting as needed.
RI.CT.1.8	Identify similarities in and differences between two informational texts on the same topic (e.g., characters, experiences, illustrations, descriptions, or procedures).
W.AW.1.1.A	Introduce an opinion.
W.AW.1.1.B	Support the opinion with facts or other information and examples related to the topic.
SL.AS.1.6	Produce complete sentences when appropriate to task and situation.

Assessment Evidence

Formative	Teacher observations, Class discussions, Lab Activities, Key concepts and vocabulary quizzes, Science Starter's/Do Nows, Open Ended Responses, Modeling, Simulations, Innovators Monthly Research, Lab Activities, Vocabulary Responses, Exit Questions, Interactive Digital Assessments embedded in Exploring Science Digital Book
Summative	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. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents Assessments could include projects, summative assessments, lab skills, reading passages, and demonstrations that verify the knowledge and skills learned
Alternative & Benchmark	Alternative - Read to the student and chart oral responses. Word banks, sentence frames, oral responses, graphic organizers, observations, portfolios of student work, orally administered assessments, and anecdotal notes. Benchmark – LinkIt Benchmark Assessment, Teacher Generated Assessments
Assessment Evidence Resource	

Instructional Resources

Smartboard, Computers, Websites and digital interactives/models, Multi-media presentations, Video Streaming, Brain Pop, Middle School Science, Generation Genius Digital Curriculum, Mystery Science Digital Curriculum, Amplify Digital Curriculum, Microsoft 365, Primary and Secondary Source Documents, crayons, markers, construction paper, scissors, glue sticks ,assorted lab materials. https://mysterydoug.com/,

Instructional Resource List

Curricular Mandates

Below are the curricular requirements as defined in NJ Administrative Code and Statute

	Amistad		Diversity, Equity, and Inclusion
	Holocaust		LGBT and Disabilities (Grades 6-12)
X	Climate Change		Asian American & Pacific Islander

Social Emotional Learning (SEL) Competencies

NJ Social and Emotional Learning Competencies & Sub-Competencies

	Self-Awareness		Relationship Skills
X	Responsible Decision-Making		Social Awareness
	Self-Management		

21st Century Skills & Themes

X	Global and Cultural Awareness		Technology Literacy		Planning and Budgeting

X	Creativity and Innovation		Financial Institutions		Risk Management and Insurance
X	Information and Media Literacy		Digital Citizenship		Economic and Government Influences
X	Critical Thinking and Problem Solving		Credit Profile		Career Awareness and Planning
	Civic Financial Responsibility		Financial Psychology		