



Grade 3 STEAM Unit 3 - Animal Adaptations, Life Cycles, and Environmental Engineering

Unit Focus

In this exciting unit, students explore the science of animals and their environments using LEGO Education Science and LEGO Education Spike. They will build animal prototypes that demonstrate their understanding of adaptations, genetics, and life cycles, from birth through adulthood. Students will use their models to support arguments about scientific concepts, make observations, and connect their learning to the real world.

Throughout the unit, students will apply scientific concepts to the engineering design process, designing solutions to help animals survive weather-related hazards and constructing models that demonstrate scientific phenomena. To do this, students will continue their work writing, debugging, and evaluating the success of their programs, as they did in the previous unit. They will innovate, test, and refine their designs while learning to persevere, be flexible in their thinking, and practice a growth mindset—essential skills for problem-solving and real-world innovation.

By the end of the unit, students will see themselves as environmental engineers and innovators, gaining confidence in their ability to make a positive impact. They will collaborate, communicate their ideas, and explore how creativity and science can work together to solve meaningful problems for animals and ecosystems.

Stage 1: Desired Results - Key Understandings

Standard(s)	Transfer	
Common Core English Language Arts: 3 - 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. (CCSS.ELA-LITERACY.SL.3.1) Mathematics: 3 - Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories. (CCSS.MATH.CONTENT.3.G.A.1) Next Generation Science Standards Performance Expectations: 3 - Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. (3-LS1-1) - Construct an argument that some animals form groups that help members survive. (3-LS2-1)	<i>Students will be able to independently use their learning to...</i> T1 Ask questions to gain understanding, communicate their ideas, explain their thinking process, and evaluate efficiency or connectedness to a concept. T2 Work collaboratively and contribute constructively to project teams with a broader or global perspective. T3 Use the engineering design process to invent or innovate solutions. T4 Exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems. T5 Leverage technology to demonstrate learning competencies.	
	Meaning	
	Understanding(s)	Essential Question(s)
	<i>Students will understand that...</i> U1 Effective communicators ask questions, gather and analyze information, share ideas with reasons or evidence, explain their decisions and how they impact designs, and connect their results to real-world concepts. U2 Problem solvers use strategies to understand tasks, try out solutions, evaluate results, consider feedback, and recognize that there can be multiple ways to solve a problem. U3 Collaborative problem-solvers share ideas and respect the ideas of others.	<i>Students will keep considering...</i> Q1 How can I understand a problem, develop and test a design, and use strategies to solve challenges effectively? Q2 How do I clearly communicate my ideas, thought process, and/or results? Q3 How can group members work effectively together to contribute and achieve a common goal? Q4 Why is it important to be able to persevere through challenges?

Stage 1: Desired Results - Key Understandings

- 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-LS3-1)
- 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. (3-LS4-2)
- 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-LS4-3)
- 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-LS4-4)
- Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard. (3-ESS3-1)
- Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. (3-5-ETS1-1)

CSTA: Computer Science Standards (2017)

3-5

- Test and debug (identify and fix errors) a program or algorithm to ensure it runs as (1B-AP-15)

ISTE Standards (2024)

ISTE Standards (2024): K-12

- Know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems. (1.4.a.)
- Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks. (1.4.b.)
- Develop, test and refine prototypes as part of a cyclical design process. (1.4.c.)

Madison Public Schools Profile of a Graduate

- Design: Engaging in a process to refine a product for an intended audience and purpose. (POG.2.2)
- Collective Intelligence: Working respectfully and responsibly with others, exchanging and evaluating ideas to achieve a common objective. (POG.3.1)

U4 Persevering through challenges builds one's growth mindset and builds resilience.

U5 Scientific concepts and patterns can be used to inspire technological designs and solutions to problems.

U6 Engineers utilize the engineering design process to solve problems and develop new ideas.

Acquisition of Knowledge and Skill

Knowledge

Students will know...

K1 Many characteristics of organisms are inherited from their parents.

K2 Different organisms vary in how they look and function because they have different inherited information.

K3 Organisms have different life cycles, but share a similar pattern of birth, growth, reproduction, and death.

K4 Being part of a group helps animals obtain food, defend themselves, and cope with changes.

K5 Animal groups may serve different functions.

K6 Differences in characteristics among a species provide advantages in surviving, finding mates, and reproducing.

K7 A habitat can have a direct effect on how organisms survive.

K8 Populations live in a variety of habitats, and changes to those habitats affects the organisms living there.

K9 Natural hazards result from natural processes. Humans can't eliminate these hazards, but can take steps to reduce their impact.

K10 Success of a design is determined by its criteria

K11 Design solutions are limited by available materials and resources.

K12 Shapes in different categories can share attributes.

K13 Different ideas and viewpoints can add value to collaborative discussions.

Skill(s)

Students will be skilled at...

S1 Explaining evidence that animals and plants have traits inherited from their parents.

S2 Developing life cycle models.

S3 Describing the similarities and differences between the life cycles of different organisms.

S4 Constructing an argument that some animals form groups for survival.

S5 Explaining how the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing.

S6 Using evidence to explain how and why organisms can or cannot survive in certain habitats.

S7 Making a claim about the merit of a solution to a problem caused when the environment changes and the plants and animals change.

S8 Designing a solution for environmental problems.

S9 Making a claim about the merit of a solution to a weather-related problem.

S10 Defining a simple design problem that can be solved.

S11 Naming the criteria to measure a design's success.

S12 Evaluating the constraints during the design process.

S13 Engaging in collaborative discussions.