Sept. Grade 4: Unit 1 :Plants and Animals

Content Area: **Science**
Course(s):
Time Period: **September**
Length: **6-8 Weeks**
Status: **Published**

Unit Overview

In this unit students will learn about how plant structures work to support growth, protection, and reproduction, and how plants respond to thier environment. They will also learn how animal structures support digestion, circulation, movement, protection, reproduction and sensing the environment.

Enduring Understandings

All plants have physical strutures to support life and help them to respond to thier environment.

All animals have physical structures to support life and help them respond to thier enviroment.

Essential Questions

What structures of a plant help them to survive, thrive and reproduce?

How do plants repond to thier environment?

What structures in animals help them survive, thrive and reporduce?

How do animals structurres help them to respond to thier environment?

Instructional Strategies & Learning Activities

TEACHERS: These units are linked directly to TCI Science Alive! NGSS teaching materials.

- 1
  What Plant Structures Are Used for Support and Growth?
  Students watch a series of videos and ask questions about plant structures. They analyze a diagram and a video about photosynthesis. They conduct a celery investigation to learn about the vascular system.
  Reading Further: It’s Not Stealing, or Is It?

- 2

What Plant Structures Are Used for Protection?
Students explore the various structures plants use for protection. They use what they learn to design and present a method of protecting a hypothetical plant.
Reading Further: Hey, Don't Eat My Plants

- 3
  What Plant Structures Are Used for Reproduction?
  Students dissect a flower and draw its reproductive parts. They explain how the components of a flower's reproductive system interact. They form an argument about the structures plants use for reproduction.
  Reading Further: Saving Seeds for the Future

- 4
  How Do Plants Respond to Their Environment?
  Students use their bodies to model how a plant might respond to its environment. The model will provide evidence that plants use various structures to respond to the environment around them.
  Reading Further: Plants That Trap Insects

- 5
  What Animal Structures Are Used for Digestion and Circulation?
  Pairs watch several silent videos depicting how animals carry out digestion and circulation. They write and record a narration for each video and share it with the class.
  Reading Further: Some of My Best Friends Are Bacteria

- 6
  What Animal Structures Are Used for Support, Movement, and Protection?
  Students observe and ask questions about pill bugs. They look for evidence that pill bugs have structures and systems they use for support, protection, and movement.
  Reading Further: Robo Motion

- 7
  What Animal Structures Are Used for Reproduction?
  Students fly around the world to different ecosystems in a hot air balloon. They descend to the ground and observe the reproductive structures of various animals.
  Reading Further: Vet Tech

- 8
  What Animal Structures Are Used for Sensing the Environment?
  Students build a pinhole camera. They use this camera as a model for understanding how an eye sees images.
  Reading Further: Super Senses

- 9
  How Do Animals Respond to Their Environment?

Students use their senses to find Snowball, a lost pet rabbit. Students use a model of how animals respond to their environment to describe how a rabbit would react to different sensory information. Then they look at their evidence and construct an argument about where to find Snowball.
Reading Further: Elephant Smarts

Integration of Career Exploration, Life Literacies and Key Skills

	An individual's passions, aptitude and skills can affect his/her employment and earning potential.
9.2.5.CAP.1	Evaluate personal likes and dislikes and identify careers that might be suited to personal likes.
9.2.5.CAP.2	Identify how you might like to earn an income.
9.2.5.CAP.3	Identify qualifications needed to pursue traditional and non-traditional careers and occupations.
9.2.5.CAP.4	Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements.
9.4.5.CI.3	Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a).
9.4.5.CT.2	Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem (e.g., 2.1.5.CHSS.1, 4-ESS3-1).
9.4.5.CT.4	Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global (e.g., 6.1.5.CivicsCM.3).
	Digital tools and media resources provide access to vast stores of information, but the information can be biased or inaccurate.
9.4.5.IML.1	Evaluate digital sources for accuracy, perspective, credibility and relevance (e.g., Social Studies Practice - Gathering and Evaluating Sources).
CRP.K-12.CRP1	Act as a responsible and contributing citizen and employee.
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP5	Consider the environmental, social and economic impacts of decisions.
CRP.K-12.CRP7	Employ valid and reliable research strategies.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP.K-12.CRP9	Model integrity, ethical leadership and effective management.
CRP.K-12.CRP11	Use technology to enhance productivity.
CRP.K-12.CRP12	Work productively in teams while using cultural global competence.

Technology and Design Integration

-Online games for each unit

-Generation Genius

-Bill Nye

-Brainpop

-TCI website

8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim. Individuals can select, organize, and transform data into different visual representations and communicate insights gained from the data.
8.1.5.DA.3	Organize and present collected data visually to communicate insights gained from different views of the data.
8.1.5.DA.5	Propose cause and effect relationships, predict outcomes, or communicate ideas using data.
TECH.8.1.5.A.1	Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
TECH.8.1.5.A.CS1	Understand and use technology systems
TECH.8.1.5.A.CS2	Select and use applications effectively and productively.

Interdisciplinary Connections

LA.RI.4.1	Refer to details and examples in a text and make relevant connections when explaining what the text says explicitly and when drawing inferences from the text.
LA.RI.4.2	Determine the main idea of a text and explain how it is supported by key details; summarize the text.
LA.RI.4.3	Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
LA.RI.4.4	Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.
LA.RI.4.5	Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.
LA.RI.4.6	Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided.
LA.RI.4.7	Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.
LA.RI.4.8	Explain how an author uses reasons and evidence to support particular points in a text.
LA.RI.4.9	Integrate and reflect on (e.g., practical knowledge, historical/cultural context, and background knowledge) information from two texts on the same topic in order to write or speak about the subject knowledgeably.
LA.RI.4.10	By the end of year, read and comprehend literary nonfiction at grade level text-complexity or above, with scaffolding as needed.
LA.RF.4.3	Know and apply grade-level phonics and word analysis skills in decoding and encoding words.

LA.RF.4.3.A	Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.
LA.RF.4.4	Read with sufficient accuracy and fluency to support comprehension.
LA.W.4.2	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
LA.W.4.4	Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
LA.W.4.5	With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.
LA.W.4.6	With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting.
LA.W.4.7	Conduct short research projects that build knowledge through investigation of different aspects of a topic.
LA.W.4.8	Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.
LA.W.4.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.
LA.SL.4.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
LA.SL.4.2	Paraphrase portions of a text read aloud or information presented in diverse media and formats (e.g., visually, quantitatively, and orally).
LA.SL.4.3	Identify the reasons and evidence a speaker provides to support particular points.
LA.SL.4.4	Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
LA.L.4.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
LA.L.4.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
LA.L.4.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.
LA.L.4.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies.
LA.L.4.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., quizzed, whined, stammered) and that are basic to a particular topic (e.g., wildlife, conservation, and endangered when discussing animal preservation).

Differentiation

- Understand that gifted students, just like all students, come to school to learn and be challenged.
- Pre-assess your students. Find out their areas of strength as well as those areas you may need to address before students move on.
- Consider grouping gifted students together for at least part of the school day.

- Plan for differentiation. Consider pre-assessments, extension activities, and compacting the curriculum.
- Use phrases like "You've shown you don't need more practice" or "You need more practice" instead of words like "qualify" or "eligible" when referring to extension work.
- Encourage high-ability students to take on challenges. Because they're often used to getting good grades, gifted students may be risk averse.

- **Definitions of Differentiation Components**:

    - Content – the specific information that is to be taught in the lesson/unit/course of instruction.
    - Process – how the student will acquire the content information.
    - Product – how the student will demonstrate understanding of the content.
    - Learning Environment – the environment where learning is taking place including physical location and/or student grouping

Differentiation occurring in this unit:

Utilize differentiation suggestions in the TCI Science Alive! program for enrichment and support.

Modifications & Accommodations

Refer to QSAC EXCEL SMALL SPED ACCOMMOCATIONS spreadsheet in this discipline.

Modifications and Accommodations used in this unit:

Utilize 504 and IEP accommodations where required.

Benchmark Assessments

Benchmark Assessments are given periodically (e.g., at the end of every quarter or as frequently as once per month) throughout a school year to establish baseline achievement data and measure progress toward a standard or set of academic standards and goals.

Schoolwide Benchmark assessments:

Aimsweb benchmarks 3X a year

Linkit Benchmarks 3X a year

DRA

Additional Benchmarks used in this unit:

-End of unit assessments

-Online quizzes

-TCI packet responses

Formative Assessments

Assessment allows both instructor and student to monitor progress towards achieving learning objectives, and can be approached in a variety of ways. **Formative assessment** refers to tools that identify misconceptions, struggles, and learning gaps along the way and assess how to close those gaps. It includes effective tools for helping to shape learning, and can even bolster students' abilities to take ownership of their learning when they understand that the goal is to improve learning, not apply final marks (Trumbull and Lash, 2013). It can include students assessing themselves, peers, or even the instructor, through writing, quizzes, conversation, and more. In short, formative assessment occurs throughout a class or course, and seeks to improve student achievement of learning objectives through approaches that can support specific student needs (Theal and Franklin, 2010, p. 151).

Formative Assessments used in this unit:

TCI worksheets, quizzes

Discussion

Teacher observation

Labs and Hands on activities

Summative Assessments

Summative assessments evaluate student learning, knowledge, proficiency, or success at the conclusion of an instructional period, like a unit, course, or program. Summative assessments are almost always formally graded and often heavily weighted (though they do not need to be). Summative assessment can be used to great effect in conjunction and alignment with formative assessment, and instructors can consider a variety of ways to combine these approaches.

Summative assessments for this unit:

Unit assessments in the TCI program

Instructional Materials

Materials for labs indicated in TCI program

Standards

3-5-ETS1-2	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
4-LS1	From Molecules to Organisms: Structures and Processes
4-LS1-1	Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
	Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin.
	Assessment is limited to macroscopic structures within plant and animal systems.
	Engaging in Argument from Evidence
	Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).
	Construct an argument with evidence, data, and/or a model.
LS1.A	Structure and Function
	Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.
	Systems and System Models
	A system can be described in terms of its components and their interactions.
4-LS1-2	Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
	Emphasis is on systems of information transfer.
	Assessment does not include the mechanisms by which the brain stores and recalls information or the mechanisms of how sensory receptors function.
	Developing and Using Models
	Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.
	Use a model to test interactions concerning the functioning of a natural system.
LS1.D	Information Processing
	Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions.

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