Unit 5: Animal Structure and Function

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Title Section

Department of Curriculum and Instruction

Belleville Public Schools

Curriculum Guide

Science Grade 4

Unit 5: Animal Structure and Function

Belleville Board of Education

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Unit Overview

Unit five provides detailed information about the structure and function of animals. The content within the unit focuses on exploring the functions of internal and external animal structures. The unit explores how different animal senses work together.

(Reference HMH Science Dimensions, Unit 5)

Enduring Understanding

- External animal structures serve functions in growth, survival, behavior, and reproduction.
- Conditions in different environments can limit or control what characteristics animals that live in those environments can have to survive.
- Animals have adapted to the environments in which they live.
- Animals have internal parts with many functions.
- There are similarities and difference in the internal structure of animals.
- Internal structure help support survival and behavior for animals.
- Different parts of the body system have different receptors.

Essential Questions

- **What are external structures of animals?**
- **How do external animal structures assist with growth, survival, behavior, and reproduction?**
- **What structures do animals have in common?**
- **How do structures function similarly and differently?**
- **What are internal structures of animals?**
- **What are the functions of internal animal parts?**
- **How do internal animal structures support survival and behavior?**
- **How do senses work?**

Exit Skills

By the end of Grade 4, Science Unit 5, the student should be able to:

- Ask questions and define problems
- Construct explanations and design solutions
- Define and delimit engineering problems
- Develop possible solutions
- Optimize the design solution
- Analyze the influence of science, engineering, and technology on society and the natural world

New Jersey Student Learning Standards (NJSLS-S)

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.
4-LS1-1	Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

Interdisciplinary Connections

Connections to Math:

- View "linked" standards below

Connections to English Language Arts:

- View "linked" standards below

LA.W.4.1	Write opinion pieces on topics or texts, supporting a point of view with reasons and information.
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.4.7	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.
MA.4.G.A.3	Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

Learning Objectives

In Unit 5, students will demonstrate the ability to:

HMH Science Dimensions, Unit 5 - Lesson 1:

- **Construct** an argument that explains how external animal structures serve functions in growth, survival, behavior, and reproduction
- **Support** arguement with evidence about the function and structure of animal parts
- **Determine** the importance of external structures of animals

HMH Science Dimensions, Unit 5 - Lesson 2:

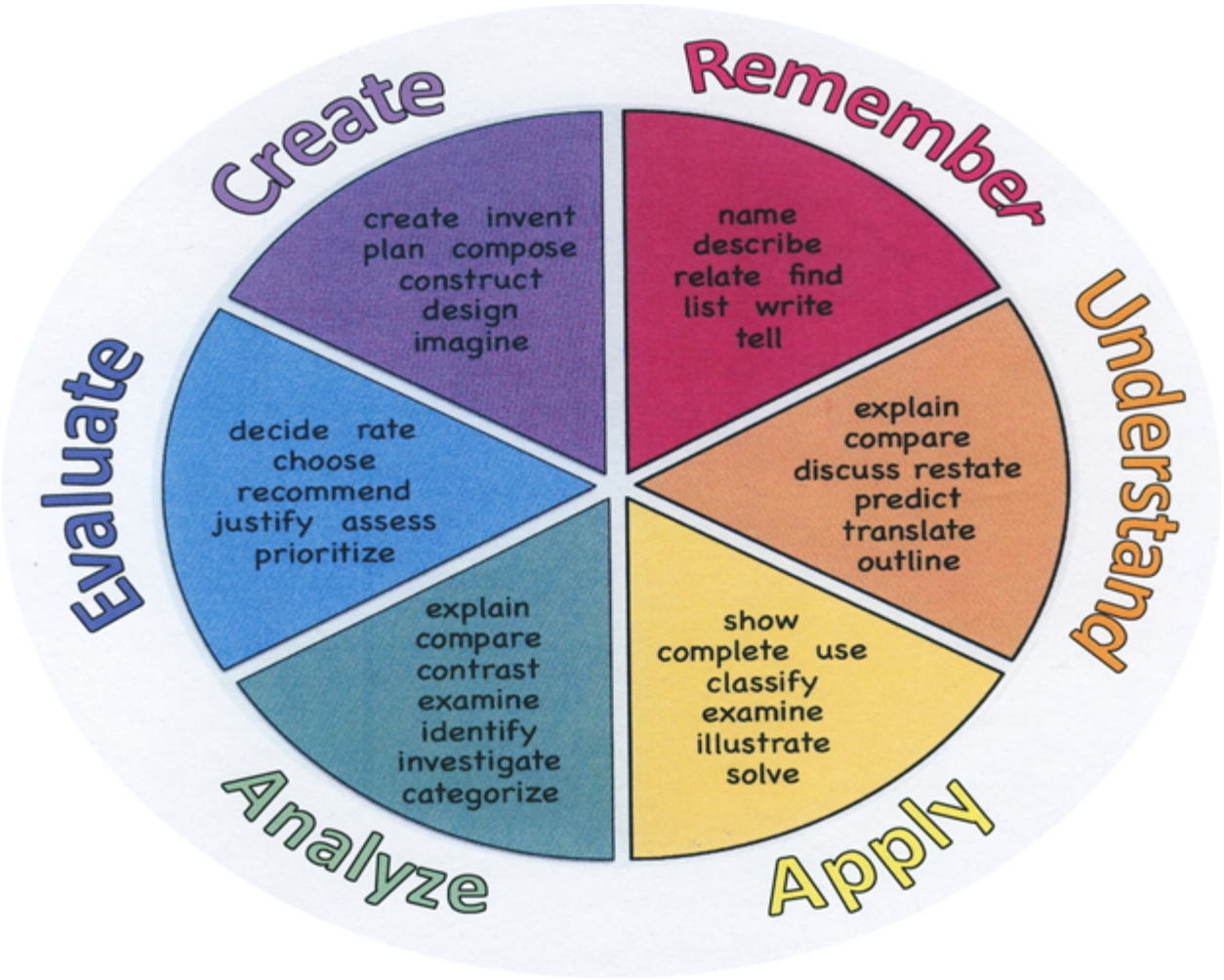
- **Compare and Contrast** the internal structure of animals
- **Analyze** how internal structures work through a hands-on activity
- **Determine** the importance of internal structures of animals

HMH Science Dimensions, Unit 5 - Lesson 3:

- **Differentiate** between the function of different receptors
- **Asses** the effectiveness of having senses
- **Analyze** how receptors word in a body system

Below are examples of action verbs associated with each level of the Revised Bloom's Taxonomy. These are useful in writing learning objectives, assignment objectives and exam questions.

Remember	Understand	Apply	Analyze	Evaluate	Create
Choose	Classify	Choose	Categorize	Appraise	Combine
Describe	Defend	Dramatize	Classify	Judge	Compose
Define	Demonstrate	Explain	Compare	Criticize	Construct
Label	Distinguish	Generalize	Differentiate	Defend	Design
List	Explain	Judge	Distinguish	Compare	Develop
Locate	Express	Organize	Identify	Assess	Formulate
Match	Extend	Paint	Infer	Conclude	Hypothesize
Memorize	Give Examples	Prepare	Point out	Contrast	Invent
Name	Illustrate	Produce	Select	Critique	Make
Omit	Indicate	Select	Subdivide	Determine	Originate
Recite	Interrelate	Show	Survey	Grade	Organize
Select	Interpret	Sketch	Arrange	Justify	Plan
State	Infer	Solve	Breakdown	Measure	Produce
Count	Match	Use	Combine	Rank	Role Play
Draw	Paraphrase	Add	Detect	Rate	Drive
Outline	Represent	Calculate	Diagram	Support	Devise
Point	Restate	Change	Discriminate	Test	Generate
Quote	Rewrite	Classify	Illustrate		Integrate
Recall	Select	Complete	Outline		Prescribe
Recognize	Show	Compute	Point out		Propose
Repeat	Summarize	Discover	Separate		Reconstruct
Reproduce	Tell	Divide			Revise
	Translate	Examine			Rewrite
	Associate	Graph			Transform
	Compute	Interpolate			
	Convert	Manipulate			
	Discuss	Modify			
	Estimate	Operate			
	Extrapolate	Subtract			
	Generalize				
	Predict				



Suggested Activities & Best Practices

HMH Science Dimensions, Unit 5 - Lesson 1:

- **Engage:** "Can You Explain It?" lesson
- **Explore/Explain:** "Body Building" and "Inspired by Nature" lessons and hands-on activity (Exploration 1 & 2)
- **Elaborate:** "Discover More" extension activity
- **Evaluate:** "Lesson Check" and "Lesson Roundup" assessments (formative/summative)

HMH Science Dimensions, Unit 5 - Lesson 2:

- **Engage:** "Can You Explain It?" lesson
- **Explore/Explain:** "Pumping Parts" and "Food for Thought" (Exploration 1 & 2)
- **Elaborate:** "Discover More" extension activity

- **Evaluate:** "Lesson Check" and "Lesson Roundup" assessments (formative/summative)

HMH Science Dimensions, Unit 5 - Lesson 3:

- **Engage:** "Can You Explain It?" lesson
- **Explore/Explain:** "Touchy, Feely," "Is That Something I Want To Eat?," and "Sights and Sounds" (Exploration 1, 2 & 3)
- **Elaborate:** "Discover More" extension activity
- **Evaluate:** "Lesson Check" and "Lesson Roundup" assessments (formative/summative)

HMH Science Dimensions, Unit 5 - Performance Task (Breathing In and Out):

- **Define Task**
- **Research**
- **Brainstorm/ Assemble Data**
- **Plan Procedure**
- **Perform and Record**
- **Communicate**

HMH Science Dimensions, Unit 5 - Unit Project (Chew Clue):

- **Research and Plan**
- **Analyze Results**
- **Claims, Evidence, and Reasoning**

Evidence of Student Learning - Checking for Understanding (CFU)

- Admit Tickets
- Anticipation Guide
- Compare & Contrast
- Define
- Describe
- Evaluate
- Evaluation rubrics

- Exit Tickets
- Explaining
- Fist- to-Five or Thumb-Ometer
- KWL Chart
- Outline
- Question Stems
- Quickwrite
- Quizzes
- Red Light, Green Light
- Self- assessments
- Study Guide
- Teacher Observation Checklist
- Think, Pair, Share
- Think, Write, Pair, Share
- Unit tests

Primary Resources & Materials

Houghton Mifflin Harcourt- HMH Science Dimensions, 2018

Ancillary Resources

Science Weekly, Scholastic News, NewsELA, YouTube/TeacherTube, National Geographics Kids, Science Channel

Technology Infusion

SMARTboard, PowerPoint, Prezi, Social Media, relevant YouTube/TeacherTube videos, HMH Science Dimensions Digital Component, Laptops, WebQuests, Kahoot, Quia

Alignment to 21st Century Skills & Technology

Key SUBJECTS AND 21st CENTURY THEMES

Mastery of key subjects and 21st century themes is essential for all students in the 21st century.

Key subjects include:

- English, reading or language arts
- Mathematics
- Science

21st Century Skills/Interdisciplinary Themes

- Communication and Collaboration
- Creativity and Innovation
- Critical thinking and Problem Solving
- ICT (Information, Communications and Technology) Literacy
- Information Literacy
- Life and Career Skills
- Media Literacy

21st Century Skills

- Environmental Literacy
- Global Awareness
- Health Literacy

Differentiation

Differentiations:

- Small group instruction
- Small group assignments
- Extra time to complete assignments
- Repeat directions
- Use manipulatives
- Center-based instruction
- Study guides
- Teacher reads assessments allowed

- Scheduled breaks
- Rephrase written directions
- Additional time
- Preview vocabulary
- Preview content & concepts
- Behavior management plan
- Highlight text
- Student(s) work with assigned partner
- Small group setting

Hi-Prep Differentiations:

- Alternative formative and summative assessments
- Choice boards
- Games
- Independent research and projects
- Learning contracts
- Leveled rubrics
- Multiple intelligence options
- Multiple texts
- Project-based learning
- Problem-based learning
- Stations/centers
- Think-Tac-Toes
- Tiered activities/assignments
- Tiered products
- Varying organizers for instructions

Lo-Prep Differentiations

- Flexible grouping
- Goal setting with students
- Jigsaw
- Mini workshops to re-teach or extend skills
- Open-ended activities
- Think-Pair-Share
- Varied supplemental materials

Intervention Strategies

- allowing students to correct errors (looking for understanding)
- teaching key aspects of a topic. Eliminate nonessential information
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning

- allowing students to select from given choices
- allowing the use of note cards or open-book during testing
- collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student, eliminate sections of the test, and determine how the grade will be determined prior to giving the test.
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes
- marking students' correct and acceptable work, not the mistakes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using authentic assessments with real-life problem-solving
- using true/false, matching, or fill in the blank tests in lieu of essay tests
- using videos, illustrations, pictures, and drawings to explain or clarify

Special Education Learning

- printed copy of board work/notes provided
- additional time for skill mastery
- behavior management plan
- check work frequently for understanding
- computer or electronic device utilizes
- extended time on tests/ quizzes
- have student repeat directions to check for understanding
- highlighted text visual presentation
- modified assignment format
- modified test content
- modified test format
- modified test length
- multiple test sessions
- preferential seating
- preview of content, concepts, and vocabulary
- reduced/shortened reading assignments
- Reduced/shortened written assignments
- secure attention before giving instruction/directions
- shortened assignments

- student working with an assigned partner
- Use open book, study guides, test prototypes

English Language Learning (ELL)

- teaching key aspects of a topic. Eliminate nonessential information
- using videos, illustrations, pictures, and drawings to explain or clarif
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning;
- allowing students to correct errors (looking for understanding)
- allowing the use of note cards or open-book during testing
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using true/false, matching, or fill in the blank tests in lieu of essay tests

Sample Lesson

Using the template below, please develop a **Sample Lesson** for the first unit only.

Unit Name:

NJSLS:

Interdisciplinary Connection:

Statement of Objective:

Anticipatory Set/Do Now:

Learning Activity:

Student Assessment/CFU's:

Materials:

21st Century Themes and Skills:

Differentiation/Modifications:

Integration of Technology: