

3D Science Unit Planner

Marietta City Schools

Grade & Course: Zoology	Topic – Survey of Phylum Chordata	Duration: 11 Weeks
Teachers: Zoology PLC Teachers		
<p>Georgia Standards and Content: Georgia Standards of Excellence: SZ3 a, b, c, SZ4 a, b, c SZ5 a, b, c, d SZ3. Obtain, evaluate, and communicate information to compare and contrast the structure and function of morphological and genetic characteristics across representative taxa. a. Plan and carry out investigations to determine patterns in morphology (including organ systems, symmetry and body cavities) of representative animal taxa. b. Construct an explanation of life functions (i.e., reproduction, respiration, digestion) at appropriate level of organization for representative taxa. c. Construct an explanation based on evidence supported by evidence to relate important structural changes across evolutionary history to key functional transitions. SZ4. Obtain, evaluate, and communicate information to assess how animals interact with their environment and one another. a. Construct explanations to relate structure and function of animals to ecological roles, including morphological, physiological, and behavioral adaptations b. Develop a model to explain patterns in various life cycles found among animals (e.g., polyp and medusa in cnidarians; multiple hosts and stages in the platyhelminthes or nematode life cycle; arthropod metamorphosis; egg, tadpole, adult stages in the amphibian life cycle). c. Construct an explanation based on evidence of the effects of symbiotic relationships between animals (i.e., parasites and disease vectors) and between animals and other organisms (i.e., algae in coral; protists in termites; parasites). SZ5. Obtain, evaluate, and communicate information to analyze the relationship between humans and animals within various phyla. a. Ask questions and define problems identifying the cause and effect of human activities on the biodiversity of organisms (including habitat destruction, overharvesting, water consumption, and pollution). b. Design a solution to preserve species diversity in natural and captive environments with regard to conservation, habitat restoration, breeding programs and management of genetic diversity at local and global levels. c. Construct an argument based on evidence of the short-term and long-term impacts of legal, societal, political, ethical, and economic decisions on animal diversity. (Clarification statement: Arguments should include, but are not limited to medical, research, and agricultural use of animals.)</p>		
Narrative / Background Information		
<p>Prior Student Knowledge: (REFLECTION – PRIOR TO TEACHING THE UNIT) Students have an understanding of animal characteristics as well as an understanding of evolutionary relationships among phyla.</p>		
<p>Year-Long Anchoring Phenomena: (LEARNING PROCESS) There is a wide variety of animal diversity across the planet.</p>		
<p>Unit Phenomena (LEARNING PROCESS) Humans and other vertebrate animals have many similarities. Inquiry Statement: Human animals share many features with other members of Phylum Chordata enabling scientists to learn about human evolution through the study of other animals.</p>		
<p>Global Context: SCIENTIFIC AND TECHNICAL INNOVATION</p>		
<p>Approaches to Learning Skills and Science and Engineering Practices (SEP)</p> <ul style="list-style-type: none"> Asking Questions and Defining Problems Developing & Using Models 	<p>Disciplinary Core Ideas: (KNOWLEDGE & SKILLS)</p> <p>CORE IDEAS Evolution of body plans and symmetry Adaptations</p>	<p>Crosscutting Concepts: (KNOWLEDGE & SKILLS)</p> <p>Structure and Function Cause and Effect Patterns</p>

<ul style="list-style-type: none"> • Constructing Explanations • Give and receive meaningful feedback • Manage and resolve conflict, and work collaboratively in teams • Plan short- and long-term assignments; meet deadlines • Combine knowledge, understanding and skills to create products or solutions 	<p>Animals interact with each other and their environments</p> <p>Comparison of transitional structures</p> <p>Life Cycles</p>	
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Possible Preconceptions/Misconceptions: (REFLECTION – PRIOR TO TEACHING THE UNIT)

Insects are not animals.
 Bats are birds.
 Larval forms and adult forms do not represent the same species

Key Vocabulary: (KNOWLEDGE & SKILLS)

Invertebrates, Coelomates, Pseudocoelomates, Acoelomates, Bilateral Symmetry, Asymmetry, Radial Symmetry, Gastrovascular Cavity, Open/Closed Circulatory System, Filter-Feeders, Monoecious, Diecious, Hermaphrodite

Inquiry Questions:

Factual

What are the form and function of anatomical systems differences among the phyla?
 What are different body plan types?

Conceptual

How does the environment affect animal structure and function?

Debatable

Do invertebrates have an impact on human health?
 Do invertebrates play a role in global economic stability?

Summative assessment

Assessment Tasks:

Dissections
 Species Profile
 Quizzes

Relationship between summative assessment task(s) and statement of inquiry:
 The tasks allow students to demonstrate their knowledge of animal characteristics, use data to create a model to compare relationships among humans and other vertebrate animals and to learn about humans by comparing and contrasting structure and function of other members of Phylum Chordata.

Unit Objectives: - Teaching and learning is focused on effective teamwork and collaboration			
Learning Activities and Experiences	Inquiry & Obtain: (LEARNING PROCESS)	Evaluate: (LEARNING PROCESS)	Communicate: (LEARNING PROCESS)
Week 1	Invertebrate Chordates; Characteristics of Phylum Chordata Vertebrate webquest - overview of the vertebrate classes Shape of Life Video: Phylum Chordata	Checklist to ensure concept map of characteristics is complete Check for understanding of similarities and differences of members of Phylum Chordata	Concept map of vertebrate characteristics that are shared by classes of Phylum Chordata. Schoology assignment for future planning of species profile assignment - which groups in phylum chordata would you like to learn more about? What was most interesting to you from the webquest.
Week 2-5	Fish, Amphibians, and Reptiles	Whole group discussion focusing on comparative anatomy for each phyla Guided Reading identifying key characteristics that distinguish individual members within a phyla Perch and Frog dissections to compare features of vertebrate classes Quiz Extension: Snake Dissection	Students discussion of comparison of fish and amphibian specimens. Mini-Project Gallery Walk- groups assigned different fish, amphibian, and reptile orders to make a one-pager to share with class, gallery walk style, to discuss adaptations of the different groups around the world
Weeks 6-7:	Birds	Whole group discussion focusing on comparative anatomy of bird classes Guided Reading identifying key characteristics that distinguish individual members within a phyla Allaboutbirds.org web activity Choice Activities: ADI group activity bird comparison across regions; Data Nuggets bird studies and sharing with class Pigeon Dissection as a large group Quiz	All About Birds - Natural Selection Videos and discussion (allaboutbirds.org) Choice Activities: ADI group activity bird comparison across regions; Data Nuggets bird studies and sharing with class Bird adaptation discussion based on Pigeon Dissection demo

<p>Week 8-10:</p>	<p>Mammals</p>	<p>Whole group discussion focusing on comparative anatomy for each mammalian group - monotremes, marsupials and placental mammals</p> <p>Guided Reading identifying key characteristics that distinguish individual members within Class Mammalia</p> <p>Marine Mammal Dichotomous Key</p> <p>Rat Dissection</p> <p>DataNuggets: Sexual Selection based on teeth size</p> <p>Extension: Case Study of platypus discovery</p> <p>Extension: Human Evolution Activities</p>	<p>Dissection lab questions</p> <p>Quiz responses</p> <p>Marine Mammal Dichotomous Key discussion</p> <p>Data Nugget: poster presentations</p> <p>Extension: Case study discussion questions</p> <p>Extension: Human Evolution activities discussion</p>
<p>Week 11-13:</p>	<p>Unit and semester wrap-up: Review and Remediation</p>	<p>Final exam review guide</p> <p>Species Profile mini-project research</p>	<p>Students choose two species from the phylum based on their responses to the schoology question earlier in the unit to complete species profiles to present to the class.</p>
<p>Resources (hyperlink to model lessons and/or resources):</p> <p>www.ck12.org</p> <p>Miller and Levine Biology Textbook 2009, (Dragonfly book) workbook, text, and test bank</p> <p>Holt Biology Interactive Reader study guide</p> <p>Pearson online Biology Textbook</p> <p>Data Nuggets</p> <p>Schoology Zoology Course</p>			