

Grade & Course: Zoology	Topic: Unit 5: Vertebrates --Chordata	Duration: 8.5 Weeks
Teachers: Zoology PLC Teachers		
<p>SZ1b: Analyze and interpret data to explain patterns in structure and function and construct a classification of representative animal taxa</p> <p>SZ3a: Plan and carry out investigations to determine patterns in morphology.</p> <p>SZ3b: Construct an explanation of life functions at appropriate level of organization for representative taxa</p> <p>SZ3c: Construct an explanation based on evidence to relate important structural changes across evolutionary history to key functional transitions.</p> <p>SZ4a: Construct explanations to relate structure and function of animals to ecological roles, including morphological, physiological, and behavioral adaptations</p> <p>SZ4b: Develop a model to explain patterns in various life cycles found among animals</p> <p>SZ4c: Construct an explanation based on evidence of the effects of symbiotic relationships between animals and between animals and other organisms</p>		
Narrative / Background Information		
<p>Prior Student Knowledge: (REFLECTION – PRIOR TO TEACHING THE UNIT)</p> <p>Students are expected to have background knowledge from their Biology class which includes the understanding of basic cell structures, levels of organization, evolution, geologic history of life, and basic taxonomy and classification.</p>		
<p>Year-Long Anchoring Phenomena: (LEARNING PROCESS)</p> <p>There is a wide variety of animal diversity across the planet.</p>		
<p>Unit Phenomena (LEARNING PROCESS)</p> <p>Phenomenon: Humans share many structures with other vertebrate classes</p> <p>Inquiry Statement:</p> <p>Animal diversity is influenced by human activities.</p>		
<p>Global Context:</p> <p>SCIENTIFIC AND TECHNICAL INNOVATION - How do we understand the world in which we live? - Modernization, industrialization and engineering</p>		
<p>Approaches to Learning Skills:</p> <p>SEP</p> <ul style="list-style-type: none"> -Developing & Using Models -Constructing Explanations -Plan and carry out investigations -Analyze and interpret data 	<p>Disciplinary Core Ideas: (KNOWLEDGE & SKILLS)</p> <p>CORE IDEAS</p> <p>Distinguishing characteristics of animal groups with emphasis on evolution of transitional body structures and comparison of body systems as well as human and animal interactions,</p>	<p>Crosscutting Concepts: (KNOWLEDGE & SKILLS)</p> <ul style="list-style-type: none"> ● Systems and Systems Model ● Stability and Change ● Scale, Proportion, and Quantity ● Cause and Effect ● Patterns

Possible Preconceptions/Misconceptions: (REFLECTION – PRIOR TO TEACHING THE UNIT)

- All Chordates are Vertebrates
- Chordates are Always Visible to the Naked Eye
- All Chordates have a Backbone
- Species Exist Independently of Each Other
- The Body's Systems Operate Independently
- Bones are Static and Unchanging

Key Vocabulary: (KNOWLEDGE & SKILLS)

Cartilage, neural crest, fin, scale, operculum, atrium, ventricle, nephron, spawning, swim bladder, tetrapod, cloaca, ectotherm, amnion, amniotic egg, carapace, air sac, feather, endotherm, incubate, sternum, cerebellum, diaphragm, gestation, glands, mammary glands, hair, placenta, uterus, marsupial, vertebrate, lung, capillaries, heart, herbivore, omnivore, carnivore, detritivore, scavenger, symbiosis, commensalism, predation, mutatism, mutualism, ecosystem, niche, cladogram,

Inquiry Questions:

Factual

- What characteristics distinguish Chordates from other animals?
- What are the three main subphyla of Chordata?
- What are the 2 main superclasses of Chordata?
- What are the general characteristics of each main class of chordates?
- What are the three main groups of mammals?

Conceptual

- How do structural differences in animals function to meet similar needs?
- How do vertebrates vary from invertebrates physiologically and anatomically?
- How are mammals anatomically different from other chordate classes?
- How are birds adapted for flight?

Debatable

- Does one type of symbiosis have more of an impact on the ecosystem than another?

Summative assessment

Assessment Tasks:

- CSA X 1**
- CFA X 2**

- Dissections
- Skeletal Comparisons Exploration
- Skin, Scales, vs Fur Exploration
- Symbiotic relationships activity

Relationship between summative assessment task(s) and statement of inquiry:

The tasks allow students to demonstrate their knowledge of the vertebrate groups. Students will use models and participate in dissections to analyze morphology. Additionally, they will plan and carry out an investigation to explore the varying coverings of skin. Finally they will construct explanations to explore the impacts of symbiotic relationships between various phyla.

Unit Objectives: - Teaching and learning is focused on effective teamwork and collaboration

Inquiry & Obtain: (LEARNING PROCESS)	Evaluate: (LEARNING PROCESS)	Communicate: (LEARNING PROCESS)
<p>Weeks 1-2 Skeletal Comparisons</p> <ul style="list-style-type: none"> - Skeletal comparisons Exploration - CFA #1 	<ul style="list-style-type: none"> - Students will build models of vertebrate skeletons to construct explanations of patterns of morphology - Using models, students will construct explanations to relate how evolution impacts adaptations. - Students will be assessed on their skeletal knowledge on a CFA 	<ul style="list-style-type: none"> - Students will build and then refine vertebrate models based on feedback from peers - Students will use a rubric to self check or peer check constructing explanations. Then they will have the opportunity to improve prior to submission. - Students will be formally assessed in a CFA
<p>Weeks 3-6 Major Systems</p> <ul style="list-style-type: none"> - Dissections: At least 2 of the following: Fish, frog, rat, bird, pig - Skin, fur and scales exploration - CFA #2 	<ul style="list-style-type: none"> - Through dissection, students will analyze patterns in structure and function - Students will create informational products to explain patterns in structure and function and how it impacts ecological roles - Students will plan and carry out an investigation to determine which covering is best: Skin, Fur or scales. - Students will be assessed on their skeletal knowledge on a CFA 	<ul style="list-style-type: none"> - Receive and discuss feedback dissecting skills from teacher - Students will be formally assessed in a CFA - Students will create informational products (ppt, poster, prezi) and receive feedback from the teacher based on a rubric. They will be allowed to revise before final submission. - Students will share their investigation design with another group for peer feedback.
<p>Weeks 7-8 Symbiotic Relationships and Life Cycles</p> <ul style="list-style-type: none"> - Symbiotic Relationships Activity 	<ul style="list-style-type: none"> - Students will construct explanations using evidence and research to determine the effects of symbiotic relationships between different phyla - Students will develop a model to explain life cycle patterns in 1 major class of vertebrates 	<ul style="list-style-type: none"> - Students will sit in small groups and discuss their symbiotic relationships. They will pose questions to each other to determine the impact of this relationship on the ecosystem. - Students will share their model with other groups and receive feedback via sticky notes.

<p>Weeks 8.5</p> <p>CSA</p> <ul style="list-style-type: none"> - CSA 	<ul style="list-style-type: none"> - Evaluate skills learned in this unit through a CSA (both multiple choice and short response questions). 	<ul style="list-style-type: none"> - Students will be formally assessed in a CSA
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Resources (hyperlink to model lessons and/or resources):

- Shape of Life website videos and activities
- Glencoe Science Biology book
- Youtube videos of Dissections of specific animals
- Eyewitness videos
- Preserved specimens slides for observation and dissection
- BBC nature documentaries
- Schoology school course

Reflection: Considering the planning, process and impact of the inquiry

Prior to teaching the unit	During teaching	After teaching the unit