



Marietta City Schools
2024-2025 District Unit Planner

Science Grade 7 Advanced Studies

| Unit title | Classification | MYP year | 2 | Unit duration (hrs) | 20 Hours |
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Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): *What will students learn?*

GSE Standards

Standards

S7L1. Obtain, evaluate, and communicate information to investigate the diversity of living organisms and how they can be compared scientifically.

- Develop and defend a model that categorizes organisms based on common characteristics.
- Evaluate historical models of how organisms were classified based on physical characteristics and how that led to the six kingdom system (currently archaea, bacteria, protists, fungi, plants, and animals).

(Clarification statement: This includes common examples and characteristics such as, but not limited to, prokaryotic, eukaryotic, unicellular, multicellular, asexual reproduction, sexual reproduction, autotroph, heterotroph, and unique cell structures. Modern classification will be addressed in high school.)

Gifted Standards

S2C. Develop and apply the cognitive components of creating thinking, fluency, flexibility, originality, and elaboration.

S3A. Develop and apply core critical thinking skills of metacognition, observation, questioning, prediction, analysis, interpretation, inference, summarization, evaluation, synthesis, explanation, and transference.

S5E. Advocate for self.

S6D. Take initiative to pursue opportunities to share and use abilities.

Prior Student Knowledge: (REFLECTION – PRIOR TO TEACHING THE UNIT)

By the end of grade 5, SWBAT

S5L1. Obtain, evaluate, and communicate information to group organisms using scientific classification procedures.

- Develop a model that illustrates how animals are sorted into groups (vertebrate and invertebrate) and how vertebrates are sorted into groups (fish, amphibian, reptile, bird, and mammal) using data from multiple resources.
- Develop a model that illustrates how plants are sorted into groups (seed producers, non-seed producers) using data from multiple sources.

Concepts/Skills to be Mastered by Students

- Cell structure and function

- Levels of organization
- Energy transfer
- Diversity
- Variation of traits

Key Vocabulary: (KNOWLEDGE & SKILLS)

Diversity, clade(s), domain, kingdom, phylum, class, order, family, genus, species, Carolus Linneaus, dichotomous key, Archaea, Bacteria, Eukaryotes, Protista, Fungi, Plantae, Animalia, prokaryotic, eukaryotic, unicellular, single-celled, multicellular, asexual reproduction, sexual reproduction, autotroph, heterotroph, cell wall, chitin, cellulose, chloroplast

Year-Long Anchoring Phenomena: (LEARNING PROCESS)

Humans have the ability to positively and/or negatively impact biological and ecological systems.

Unit Phenomena (LEARNING PROCESS)

How/why do we classify all life into six kingdoms?

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

- Students may not be aware that all life is classified into six kingdoms.
- Students may have difficulty remembering the levels of taxonomy – a mnemonic is helpful for this.
- Students may think that once an organism is classified, that classification remains fixed.
- Students may be confused by outdated schemes of classification.

| Key concept | Related concept(s) | Global context |
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| <p>Relationships</p> <p>Relationships are the connections and associations between properties, objects, people and ideas— including the human community’s connections with the world in which we live. Any change in relationship brings consequences—some of which may occur on a small scale, while others may be far-reaching, affecting large networks and systems such as human societies and the planetary ecosystem.</p> | <p>Form/Structure (MYP/CCC) Function (MYP)</p> | <p>Identities and relationships</p> <p>Who we are: an inquiry into the nature of the self; beliefs and values; personal, physical, mental, social and spiritual health; human relationships including families, friends, communities and cultures; rights and responsibilities; what it means to be human.</p> |
| Statement of inquiry | | |
| Structure and function can be used to identify and classify organisms based upon similar characteristics. | | |
| Inquiry questions | | |

Factual

What is classification?

What are the levels of taxonomy for organisms?

What are the six kingdoms of life?

What is the history behind the six kingdom system of life?

Conceptual

How can I develop a model that can be used to classify organisms by their similarities and differences?

How are the characteristics of organisms used to classify them into a six-kingdom system?

Debatable

Given a set of organisms, can I develop and defend an efficient model of classification for the identification of each organism?

Given a newly discovered organism, can I make an argument for how it should be classified into the six-kingdom system?

The six-kingdom system has evolved over time. How might it change in the future?

| MYP Objectives | Assessment Tasks | |
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| <i>What specific MYP objectives will be addressed during this unit?</i> | <i>Relationship between summative assessment task(s) and statement of inquiry:</i> | <i>List of common formative and summative assessments.</i> |
| <p>Science:</p> <p>Criterion A: Knowing and Understanding</p> <p>i. describe scientific knowledge</p> <p>ii. apply scientific knowledge to solve problems set in familiar and unfamiliar situations</p> <p>iii. analyze information to make scientifically supported judgments</p> <p>Criterion C: Processing and Evaluating</p> <p>v. describe improvements or extensions to the method</p> | <p>SOI: Structure and function can be used to identify and classify organisms based upon similar characteristics.</p> <p>In this unit, students are tasked with comparing and contrasting the characteristics of organisms in order to develop a model of classification, while also identifying the organism's classification into the appropriate kingdom. Students will differentiate between organisms by examining their observed characteristics (unicellular/multicellular, autotroph/heterotroph, asexual/sexual reproduction) in order to classify them into the appropriate kingdoms. These tasks will lead to a culminating project-based learning opportunity, in which students will design a system of classification for a "new species" of organism, with multiple variations.</p> | <p><u>Formative Assessment(s):</u></p> <p>Classification Project</p> <p><u>Summative Assessment(s):</u></p> <p>Classification Project</p> |

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| <p>Criterion D: Reflecting on the Impacts of Science</p> <p>iii. apply scientific language effectively</p> <p>Design B: Developing Ideas</p> <p>iii. present the chosen design and outline the reason for its selection</p> <p>Design C: Creating the Solution</p> <p>iii. create the solution, which functions as intended</p> <p>v. present the solution as a whole</p> <p>Design D: Evaluating</p> <p>ii. explain the success of the solution against the design specification</p> | | |
| Approaches to learning (ATL) | | |
| <p>Category: Thinking</p> <p>Cluster: Critical-Thinking</p> <p>Skill Indicator: Use models and simulations to explore complex systems and issues. Gather and organize relevant information to formulate an argument.</p> | | |

| <p><u>Learning Experiences</u></p> <p>Add additional rows below as needed.</p> | | |
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| Objective or Content | Learning Experiences | Personalized Learning and Differentiation |
| <p>S7L1. Obtain, evaluate, and communicate information to investigate the diversity of living organisms and how they can be compared scientifically.</p> <p>a. Develop and defend a model that categorizes organisms based on common</p> | Classification of an Extraterrestrial Nation | <ul style="list-style-type: none"> • Capstone Connections • Discovery Education High School Biology Techbook • NGSS Case Study 7: Gifted and Talented Students |

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| characteristics. | | <ul style="list-style-type: none">● NGSS: All Standards, All Students● Extensions - Enrichment Tasks/Projects ● Introduction of Clades (SB4.a.)● Student Choice of Classification System● Tiered Dichotomous Keys● Multiple Media/Resources for Project |
| S7L1. Obtain, evaluate, and communicate information to investigate the diversity of living organisms and how they can be compared scientifically. b. Evaluate historical models of how organisms were classified based on physical characteristics and how that led to the six kingdom system (currently archaea, bacteria, protists, fungi, plants, and animals). <i>(Clarification statement:</i> This includes common examples and characteristics such as, but not limited to, prokaryotic, eukaryotic, unicellular, multicellular, asexual reproduction, sexual reproduction, autotroph, heterotroph, and unique cell structures. Modern classification will be addressed in high school.) | Taxonomy NearPod Kingdoms Graphic Organizer | |
| Content Resources | | |
| Discovery Education Science Techbook: Unit 5: Classifying Living Things -Concept 5.1: Levels of Classification Discovery Education High School Biology Science Techbook: Unit 5: Diversity of Living Things -Concept 5.1: Classification -Concept 5.2: The History of Life on Earth GaDOE Instructional Segment: Patterns in Living Systems | | |
| Capstone Connections | | |
| Capstone Presentation Development | | |