Unit 9: Evolution and Diversity

Content Area: **Template**
Course(s):
Time Period:
Length:
Status: **Published**

State Mandated Topics Addressed in this Unit

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N/A	N/A

Unit 9: Evolution and Diversity

Learning Objectives

- How do humans take advantage of naturally occurring variation among organisms?
- How do humans use genetic engineering?
- How do scientists study and work with specific genes?
- What are the ethical issues raised by genetic engineering?

Essential Skills

- Account for the appearance of a novel trait that arose in a given population.
- Account for the evolution of a species by citing specific evidence of biological mechanisms.
- Apply data representations and new models to revise predictions and explanations
- Demonstrate through modeling how the sorting and recombining of genes during sexual reproduction has an effect on variation in offspring
- Estimate how closely related species are, based on scientific evidence
- Predict the potential impact on an organism given a change in a specific DNA code, and provide specific real world examples of conditions caused by mutations
- Provide a scientific explanation for the history of life on Earth using scientific evidence

Standards

9-12.HS-LS2-1	Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.
9-12.HS-LS2-2	Use mathematical representations to support and revise explanations based on evidence

	about factors affecting biodiversity and populations in ecosystems of different scales.
9-12.HS-LS4-2	Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.
9-12.HS-LS2-8	Evaluate evidence for the role of group behavior on individual and species' chances to survive and reproduce.
9-12.HS-LS4-1	Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.
9-12.HS-LS2-6	Evaluate claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

Instructional Tasks/Activities

- Amino Acid Comparison: Students compare amino acids and cytochrome c found in several mammals. Students explain how this data supports evolution.
- Chapter Test
- Measured Evolutionary Timeline: Students create a scale of time from the beginning of the solar system to present in meters and measure a length of register tape. Students arrange major events in the history of earth at the corresponding length on the tape. Students explain how each event occurred.
- Review game
- Vocabulary Quizzes
- Woolybooger Natural Selection Simulation: Students simulate natural selection process in groups, each student using a different utensil to "obtain food." If not enough food is obtained, they are eliminated because they are not as "fit" as the others. Students explain how this activity demonstrates natural selection.

Assessment Procedure

- Classroom Total Participation Technique
- Classwork
- DBQ
- Essay
- Evidence of Evolution Poster: Students arrange pictures that corresponds to each point of Darwin's evolutionary concepts on a poster, and use the pictures as examples in an explanation of the supporting evidence for evolution.
- Exit Ticket/Entrance Ticket/Do Now
- Foldables – organization of material (homologous vs. analogous structures)
- Group discussion
- Journal / Student Reflection
- Kahoot
- Other named in lesson

- Peer Review
- Performance
- Polygenic Trait Height Activity: Students measure height of classmates, record data, find average, plot data on a graph. Students explain how range of height represents polygenic trait.
- PowerPoint presentation of material
- Problem Correction
- Project
- Quiz
- Rubric
- Scientist Timeline: Students arrange pictures, years, and contributions of scientists who contributed to evolutionary theory.
- Skull observation: Students observe similarities and differences in bone structure of skulls of human ancestors then hypothesize about why and how these changes occurred over time.
- Teacher Collected Data
- Test
- Think, pair, share (read assigned section of text individually, discuss with a partner, present material in pairs to class – use PowerPoint as a reference)
- Worksheet

Recommended Technology Activities

- Appropriate Content Specific Online Resource
- Chromebook
- Copy/Paste Content Specific Link Here
- Copy/Paste Content Specific Link Here
- Copy/Paste Content Specific Link Here
- Gimkit
- GoGuardian
- Google Classroom
- Google Docs
- Google Forms
- Google Slides
- Kahoot
- MagicSchool AI
- Other- Specified in Lesson
- Quiziz
- Screencastify

Accommodations & Modifications & Differentiation

Accommodations and Modifications should be used to meet individual needs. Their IEP and 504 plans should

be used in addition to the following suggestions.

Gifted and Talented

- Compare & Contrast
- Conferencing
- Debates
- Jigsaw
- Peer Partner Learning
- Problem Solving
- Structured Controversy
- Think, Pair, Share
- Tutorial Groups

Instruction/Materials

- alter format of materials (type/highlight, etc.)
- color code materials
- eliminate answers
- extended time
- extended time
- large print
- modified quiz
- modified test
- Modify Assignments as Needed
- Modify/Repeat/Model directions
- necessary assignments only
- Other (specify in plans)
- other- named in lesson
- provide assistance and cues for transitions
- provide daily assignment list
- read class materials orally
- reduce work load
- shorten assignments
- study guide/outline
- utilize multi-sensory modes to reinforce instruction

Environment

- alter physical room environment
- assign peer tutors/work buddies/note takers
- assign preferential seating
- individualized instruction/small group
- modify student schedule (Describe)
- other- please specify in plans
- provide desktop list/formula

Honors Modifications

N/A

Resources

- Resource 1
- Resource 2
- Resource 3
- Resource 4
- Resource 5