Unit 07: Evolution and Natural Selection

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 07: Evolution and Natural Selection

Essential Questions

- How do humans take advantage of naturally occurring variation among organisms?
- How do populations change over time?
- How do scientists study and work with specific genes?
- How does natural selection drive evolution?
- What evidence supports the theory of evolution?

Objectives

- 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.
- Analyze scenarios involving evolution.
- Estimate how closely related species are, based on scientific evidence
- Explain natural selection and adaptation.
- Interpret fossil, anatomical, and molecular evidence.
- Model evolution over time with population data.
- Provide a scientific explanation for the history of life on Earth using scientific evidence

Standards

SCI.9-12.HS-LS4-3	Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.

SCI.9-12.HS-LS4-4	Construct an explanation based on evidence for how natural selection leads to adaptation of populations.
SCI.9-12.HS-LS4-5	Evaluate the evidence supporting claims that changes in environmental conditions may result in (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.
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-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.

Instructional Tasks/Activities

- Amino Acid Comparison: Students compare amino acids and cytochrome c found in several mammals. Students explain how this data supports evolution.
- Bone Comparison Lab
- Chapter Test
- Fossil Sorting Activity
- Giraff Neck Debate
- 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.
- Peppered Moth Simulation
- 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
- 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
- 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