Unit 1: Paleontology and Dinosaurs

Content Area: **Gifted and Talented**
Course(s): **Gifted and Talented**
Time Period: **Week 1**
Length: **15 Weeks**
Status: **Published**

Unit Overview

During this unit, students will foster their scientific curiosity through the exploration of paleontology. Students will learn about how paleontologists use fossils to explore the past. They will have the opportunity to begin to think critically using observations and personal knowledge while increasing their knowledge about prehistoric times and dinosaurs.

Standards

SCI.3-4.5.1.4.A.2	Use outcomes of investigations to build and refine questions, models, and explanations.
SCI.3-4.5.1.4.B.2	Measure, gather, evaluate, and share evidence using tools and technologies.
SCI.3-4.5.1.4.B.3	Formulate explanations from evidence.
SCI.3-4.5.1.4.C.2	Revise predictions or explanations on the basis of learning new information.
SCI.3-4.5.1.4.C.3	Present evidence to interpret and/or predict cause-and-effect outcomes of investigations.
SCI.K-2.5.3.2.A.1	Group living and nonliving things according to the characteristics that they share.
SCI.K-2.5.3.2.B.2	Compare how different animals obtain food and water.
SCI.K-2.5.3.2.C.1	Describe the ways in which organisms interact with each other and their habitats in order to meet basic needs.
SCI.K-2.5.3.2.C.2	Identify the characteristics of a habitat that enable the habitat to support the growth of many different plants and animals.
SCI.K-2.5.3.2.D.1	Record the observable characteristics of plants and animals to determine the similarities and differences between parents and their offspring.

Essential Questions

- How do scientists learn about plants and animals that have been extinct for millions of years?
- How do dinosaurs compare with our modern day animals?
- How do scientists draw conclusions from fossils?
- How does the environment affect an animal?

Application of Knowledge and Skills...

Students will know that...

- Carbon dating helps paleontologists discover the age of fossils.
- Dinosaurs, like animals today, adapted methods of getting food and protecting themselves from predators.
- Fossils provide clues as to when, how, and where dinosaurs lived.
- Paleontologists study the natural world of the past through the excavation of fossils.
- The environment that a dinosaur lived in helped shape its behaviors.
- There are many theories about why dinosaurs became extinct.

Students will be able to...

- Compare and contrast how different animals obtain food and water.
- Describe the ways in which organisms interact with each other and their habitats in order to meet basic needs.
- Group living and nonliving things according to the characteristics that they share.
- Identify the characteristics of a habitat that enable the habitat to support the growth of many different plants and animals.
- Present evidence to interpret and/or predict cause-and-effect outcomes of investigations.
- Use outcomes of investigations to build and refine questions, models, and explanations.

Assessments

- Dinosaur Diorama Summative: Personal Project After researching a dinosaur and its habitat, students create a diorama to display their information. Students explain why they included specific items in their dioramas and the behaviors of their dinosaurs.
- Fossil Predictions Formative: Other oral assessments Using the information the class has discussed about how scientists use fossils to learn about the past, students create their own fossils to leave clues about a particular item for the rest of the class . Students make predictions about other students' fossils and items.
- Pre-Assessment Brainstorm Diagnostic: Self Assessment How do scientists learn about plants and animals that have been extinct for millions of years?
- Survival Strategies Formative: Other written assessments Using the survival techniques of modern day animals discussed in class, students work to find a dinosaur and identify its survival technique. If possible, research why paleontologists know that this strategy was used by the dinosaur.

Activities

- Brainstorm ways in which scientists learn about the past
- Look at a map of different fossil discoveries and try to predict what that tells us about where different dinosaurs lived.
- Explore the different prehistoric time periods and the dinosaurs that can be found in each one. Discuss the idea of carbon dating.
- Fossil dig activity: using teacher-created fossils or bones in a flat box of sand, students must gently uncover the fossils they find and make predictions about the type of animals that created the fossils.
- Create your own fossils: using Plaster of Paris or clay, students create fossils from items they find in nature. The other students in the class attempt to identify the fossils.
- Using bulletin board paper in the hallway, make comparative measurements among the lengths of various modern- day animals or items with the length of various dinosaurs.
- Brainstorm ways that modern animals protect themselves from predators or adapt to their surroundings. Have students try to find examples of dinosaurs who used the same techniques.
- Assign each student a different dinosaur to research, including what the dinosaur looked like, how it lived, and its habitat. Have students make a diorama of the habitat and the dinosaur. Use the dioramas to have students categorize and classify the various dinosaurs in different ways.

Activities to Differentiate Instruction

- Prehistoric time periods may be more effectively understood for different learners by showing a chart or a model.
- Students completing the dig activity may benefit from charting out on graph paper where each of the fossils was found.
- Students may want to plan out their fossils ahead of time by looking at examples of other fossil discoveries, taking cues from nature, or drawing their plan.
- For kinesthetic learners, instead of measuring out the size of dinosaurs, encourage students to line up the measured distance.

Integrated/Cross-Disciplinary Instruction

- Coordinate with science teachers regarding their instruction on inquiry and data skills.
- Coordinate with math teachers about measurement.

Resources

- Dixon, Dougal, *Amazing Dinosaurs.* Boyds Mills Press (2007). ISBN:978-1590785379
- Dixon, Dougal, *Dougal Dixon's Dinosaurs: 12 New Dinosaur Discoveries and More Feathers Than Ever.* Boyds Mills Press (2007). ISBN: 978-1590784709
- Information about dinosaurs including interactive games: http://www.dinodatabase.com/

- Dinosaur Food Game from National Park Service: http://www.webrangers.us/activities/dinodiets/

Information about dinosaurs including games