

Investigation Six – Dinosaur Extinction

Standard IV Students will understand how fossils are formed, where they may be found in Utah, and how they can be used to make inferences.
Objective 2 Explain how fossils can be used to make inferences about past life, climate, geology, and environments.
Intended Learning Outcomes <ol style="list-style-type: none">1. Use science process and thinking skills2. Manifest Scientific attitudes and interests3. Understand science concepts and principles4. Communicate effectively using science language and reasoning

Standard
IV
Objective
2

Background Information

There are varied theories as to what caused the condition of the dinosaur. As evidence and information is gathered, some ideas become more widely accepted than do others. Some causes of extinction are as proposed:

- The Asteroid/Meteor Impact Theory
- Volcanism Theory
- Plate Tectonics
- Marine Regression
- Mammal Competition
- Disease/Epidemic
- Super Nova
- Cosmic Ray/Radiation
- Climate Changes/Orbital Changes
- Vegetation Changes

www.zoomdinosaurs.com/ has some excellent background information under Extinction: Why did the dinosaurs go extinct? Share the “Studying Extinction” information with the class before they begin their research. It will explain in simple terms to students how fossils can tell the history of Earth. “What is Extinction”, “The Alvarez Asteroid Theory,” and “Other K-T Extinction Theories” are good sources for the students to get research information from.

Pre-Assessment/Invitation to Learn

Materials

- Chart paper for brainstorming ideas
- Access to the internet (If not possible print off needed information and make copies for the students)
- Books or articles on the theories of dinosaur extinction
- Dinosaur Extinction Theory Form
- Lined paper for students formulated questions
- See Additional Resources for possible web location and links

1. Tell the students that one of the great, unsolved mysteries in science is the disappearance of the dinosaur.
2. Pose the question “What happened to the dinosaur?” to the students.
3. Brainstorm and record all the students’ responses as to what they think caused the disappearance of the dinosaurs.

Instructional Procedure

1. Using books, articles or the internet have students research one of the theories explaining the extinction of dinosaurs. (See student Web sites under Additional Resources for research locations on the web.)
2. Have the students take notes as they research. They will need to find clues as to what the cause may have been. Have them record the evidence that they find to support their theory on the Dinosaur Extinction Theory page. They should also record weaknesses in the theory.
3. Have the students formulate three to five questions that can be answered using the information they have gathered on the extinction of dinosaurs.
4. Have the students trade papers and have a partner answer their questions.

Curriculum Extensions

Language Arts –

- Have a debate featuring the two most popular theories, asteroid extinction vs. volcanic extinction. Have each group present their findings. Have the students use scientific evidence to back up their theory. (Standard I, Objective 1, 2)
- Students could study several theories of extinction. They will need to compare the information gathered for different theories and then decide which theory they think is the most likely cause of dinosaur extinction. (Standard VII, Objective 1, 2, 3)
- Have a “Scientific Conference.” Each group will present and defend their theory in a debate with other “scientists.” Explain and discuss the nature of a scientific theory. Discuss why evidence sometimes leads scientists to disagree about theories. (Standard VIII, Objective 6)

Assessment Suggestions

- Evaluate the questions the students formulated against the notes they took and the theory page they filled in. Were the questions formulated based on the research done?

- Have students do a persuasive writing response on the theory they chose. Have them give evidence for possible correctness of their theory (or evidence that disproves their theory).

Resources

Books:

- Exline, J., et al: 2002, *Earth's Changing Surface*, Prentice Hall, New Jersey
- Moyler, R., Daniel, L., Hackett, J., Baptists, P., Stryker, P., Vasquez, JH.: 2000, *Learning About Earth's History*. McGraw Hill, New York
- Moyler, R., Daniel, L., Hackett, J., Baptiste, P., Stryker, P., Vasquez, J.: 2000, *Classifying Living Things*, McGraw Hill, New York
Living Things, McGraw Hill, New York
- Palmer, D.: 1996, *Pocket Fossils*, DK Publishing, New York

Web sites:

- www.pbs.org/wgbh/evolution/educators/lessons/lesson1/act2.html
- www.search.eb.com/dinosaurs/dinosaurs/study/act03.htm
- www.zoomdinosaurs.com
- www.newscientist.com/httpics/dinosaurs
- <http://unmuseum.mus.pa.us/deaddino.htm>
- www.ucmp.berkeley.edu/diapsids/extinction.html
- <http://town.morrison.co.us/dinosaur/extinction/other.html>
- <http://web.ukonline.co.uk/a.buckley/dino.htm>
- www.dinosaur.eb.com/dinosaurs
- www.cotf.edu/ete/modules/msese/dinosaur.html
- www.frankwu.com/Jell-O.html
- <http://www.indiana.edu/~ensiweb/lessons/theor.ch.html>
- http://www.isgs.uiuc.edu/dinos/dinos_home.html
- <http://www.ugs.state.ut.su>

Homework and Family Connections

- Have the students ask their parents how they think the dinosaurs became extinct. Then have the students tell their family and parents different theories for their extinction. Have a discussion about it. (Dinosaurs Extinction Theory Page)
- Have the students tell their parents about the debate (if they had one in class) and the position they took for the argument.
- Send home the Web sites listed above for the students to look up more information about dinosaur extinction.

Name(s) _____

Date _____

Dinosaur Extinction Theory Page

Theory

Strengths: What Supports Your Theory? (Evidence)

**Weakness: What Weakens Your Theory?
(Lack of evidence)**