

**Title:** What Killed the Dinosaurs?

**Subject:** Science

**Grade Level:** 8<sup>th</sup> – 12<sup>th</sup>

**Materials:**

- Hypotheses Support Form
- Best Explanation Form

**Background:** One of the great, unsolved mysteries in science is the disappearance of the dinosaurs. In this activity, you will study the environment of the Cretaceous period and look for clues as to what may have caused the extinction. You also will compare current hypotheses about extinction and decide which ones seem most plausible.

**Procedure:**

*Part A: Reconstructing the Past*

1. Visit the University of California Museum of Paleontology Web Geological Time Machine. Your first task is to see what the environment looked like 70 million years ago (MYA). Click on "Cretaceous" and learn more about the environment during this time period (146 to 65 MYA) by selecting stratigraphy (rock layers), ancient life, localities (places where fossils have been found), and tectonics (study of the earth's crust). Pretend you are standing on Earth 70 MYA. Write a page-long journal entry about what you see.
2. Return to the UCMP Web Geological Time Machine and select the Paleocene period, the first period in the Cenezoic Era. Write another journal entry to compare the environment to that of 70 million years ago. How has the habitat changed? What do you think caused the dinosaur extinction? Did it happen suddenly or gradually? Did all dinosaurs become extinct or just individual species? This is what scientists are trying to find out.

*Part B: Several Possible Explanations*

1. Now you will investigate the different hypotheses that scientists have formulated to solve the mystery of dinosaur extinction. Visit the What Killed the Dinosaurs? Web activity and explore four hypotheses about dinosaur extinction. Record them on the Hypotheses Support form (pdf). You may want to think of your own hypothesis. Find evidence that supports and refutes each hypothesis and record it on the form.
2. Pick the hypothesis you think has the best supporting evidence. Here are some tips:

### Criteria for Choosing the Best Explanation

A scientific explanation is best if it meets the most criteria:

1. It matches the data from a fair test. (A fair test is an observation or experiment that challenges the validity of a hypothesis. It can support two or more of the alternative possibilities and does not have the same basis as any of the alternative solutions.)
2. It is confirmed by multiple independent fair tests.
3. Initially conflicting data can be shown to agree.
4. The fair test that supports it is particularly strong.
5. There are no conflicting lines of scientific evidence.
6. The alternatives are seriously defective conceptually.
7. The overall weight of evidence is greatly in its favor.

(Adapted with permission from Craig Nelson's page on [Fair Tests](#), Evolution and the Natures of Science Institutes Web site.)

Record your hypothesis and the accompanying evidence on the Best Explanation form. You may want to visit some of the resources listed below to gather more evidence.

#### [DinoBuzz](#)

UCal Berkeley's site on Current Topics Concerning Dinosaurs will introduce you to the debate over the cause of the extinction of the dinosaurs. It discusses the complications that prevent scientists from solving this mystery and provides background on current theories. You might enjoy reading the invalid hypotheses, such as "hay fever killed the dinosaurs."

#### [Dinosaur Extinction](#)

This very readable site offers background information on dinosaur extinction, the K-T asteroid theory, other K-T extinction theories, and methods used to study extinctions. The section called "studying extinctions," includes a paragraph about radioisotope dating for those interested in one of the current processes used to date fossils.

3. Discuss your choice with a team of fellow classmates. Also discuss the following questions:
  - How do scientists use the scientific process to try to figure out why the dinosaurs became extinct?
  - Could there be more than one answer?
  - Is a new hypothesis called for?
  - What do you think it will take to find out?
  - Can we ever really know?

### What Killed the Dinosaurs? Support for Hypotheses

Hypotheses	Evidence	Evidence	Evidence

## What Killed the Dinosaurs? Best Explanation

Hypotheses
Evidence that supports hypothesis
Evidence that refutes hypothesis