

SUGGESTED REFERENCES

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- Gardom, T. with Milner, A. 1993. **The Natural History Museum Book Of Dinosaurs**. London: Virgin Publishing Ltd.
- *Dinosaur Extinction Page*
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NATIONAL SCIENCE EDUCATION STANDARDS

K - 4
Life Science
Characteristic of Organisms

Earth and Space
Changes in Earth and Sky
Properties of Earth Materials

5 - 8
Earth and Space Science
Earth in the Solar System

Life Science
Diversity and Adaptations of Organisms

History and Nature of Science
Nature of Science

*Source: *National Science Education Standards, 1996, National Academy Press*

CREDITS

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SCIENCE SCREEN REPORT FOR KIDS

VOLUME 15 ISSUE 1

THEORIES OF DINOSAUR EXTINCTION



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SYNOPSIS

Millions of years ago, long before there were people, there were dinosaurs. There were many different kinds of dinosaurs that roamed the earth. They dominated the earth for over 165 million years during the Mesozoic Era, but then mysteriously became extinct. There are a lot of explanations as to why the dinosaurs so quickly became extinct. However, scientists from all over the world have gathered evidence that supports one particular hypothesis.

In this program, we will see how the scientific method and the nature of science are applied to the question of how the dinosaurs became extinct. The evidence supports one hypothesis that explains the end of the age of dinosaurs.

CURRICULUM UNITS

- ASTRONOMY
- BIOLOGY
- ECOLOGY
- ENVIRONMENTAL SCIENCE
- GEOLOGIST
- PALEONTOLOGY

RUNNING TIME

17:03

BACKGROUND

There have been many explanations of why the dinosaurs became extinct. However, scientists have found a large body of evidence to support the theory that dinosaurs were driven to extinction by one single impact. After diligent studies, they proposed that the impact was from a comet.

Using the scientific method, scientists found evidence to support their hypothesis. First, scientists looked for an element called iridium. This element, which comes only from space, would be found in rock layers around the same time the dinosaurs became extinct. When they tested the rock in the layer known as the KT layer, they found massive amounts of iridium. More importantly, this was consistent all over the earth.

Although this was evidence of an extraterrestrial impact, it wasn't enough to convince all scientists. Next, a type of quartz crystal was found. This crystal is formed only by the impact of objects from space, therefore, this is direct evidence that an impact occurred.

After a third piece of evidence was found, more scientists began supporting the impact theory. Tektites are small glass balls that form from volcanic eruptions and extraterrestrial impacts. When rock melts and is thrown high into the atmosphere, it cools quickly as it comes down and forms into small glass balls.

With this evidence, most scientists not only supported the impact theory, but now accepted it. They still didn't know where the impact crater was located. Evidence suggested somewhere in the Gulf of Mexico. Mexican scientists were looking on the Yucatan Peninsula to find oil. Since they didn't discover any oil, their work was forgotten until scientists realized that it might be the impact crater they were looking for. Gravity measurements were made of the area surrounding the failed oil wells and scientists discovered that the gravity was much lower in some areas than others. They mapped out these gravity lows and discovered a massive crater.

Evidence was found to support the theory that the impact was caused from a comet instead of an asteroid or a meteor. After careful study they concluded that an asteroid big enough to create this crater would not carry enough iridium to match the amount found in this particular crater. However, a comet of the right size would. Based on their studies, scientists think that a comet equal to the size of Mt. Everest, the tallest mountain, impacted Earth.

They believe the force of the impact ejected rocks and remains of the comet thousands of kilometers into the air. A ball of super heated gas fell back onto Earth burning and destroying life. Falling into the sea, the comet created waves as high as the clouds. Everything that flew into the air fell back to Earth extremely hot, raising the ground temperature to five hundred degrees Celsius. This heat scorched the Earth's atmosphere and the resulting soot helped form the KT boundary. A cloud of debris blocked out the sun for months. Without light, plants died off and plankton, the base of the marine food chain, became extinct.

Although the comet's impact killed off most of the species on Earth, others survived. Some of these surviving species were mammals. They existed during the time when dinosaurs ruled the lands, but there weren't as many. However, after the comet's impact, mammals and other different types of species were able to thrive and began populating Earth.

Scientists now have a greater understanding of the impact if a comet, asteroid, or meteor strikes Earth. They keep a watchful eye on the possibility of extraterrestrial impacts so that one day we may be able to prevent the same kind of disaster.

ADVANCED ORGANIZERS

Prior to showing this video students should have some understanding of the following Benchmarks for Science Literacy, Oxford University Press, which are excerpted and, in some cases, abbreviated below. Refer to the Benchmarks for more information.

Benchmark 1: The Nature of Science

Section B - Scientific Inquiry

Know by the end of Grade 2

- Describing things as accurately as possible is important in science because it enables people to compare their observations with those of others.

Know by the end of Grade 5

- Scientific investigations may take many different forms, including observing what things are like or what is happening somewhere, collecting specimens for analysis, and doing experiments.
- Scientists do not pay much attention to claims that something they know about works unless the claims are backed up with evidence that can be confirmed and with a logical argument.

Benchmark 5: The Living Environment

Section F - Evolution of Life

Know by the end of Grade 2

- Some kinds of organisms that once lived on earth have completely disappeared, although they were something like others that are alive today.

**Benchmarks can be found at www.project2061.org/tools/benchol/bolintr.htm*

CRITICAL THINKING EXERCISES

- Research various theories of why dinosaurs became extinct. Choose one to analyze. What evidence does it have to support the hypothesis? Do you support this theory? Explain your answer.
- Read aloud a book about the extinction of the dinosaurs. An example is, **WHAT HAPPENED TO THE DINOSAURS**, by Franklyn M. Branley. Have students create a story board depicting what happened to the dinosaurs.
- Based on the information from the video, write an expository essay explaining the extinction of the dinosaurs.
- Show students pictures of real dinosaurs. Have them write three clues about their dinosaur picture, such as "I have three horns on my head and a bony collar around my neck. Who am I?" As clues are read, students should try to guess the name of the dinosaur.
- Illustrate a comet and a meteor. Compare and contrast their differences and similarities.
- Research the differences between mammals and dinosaurs. Based on scientific investigations why do you think some mammals and reptiles survived, but not the dinosaurs?

VOCABULARY

- Asteroid** Any of numerous small celestial bodies composed of rock and metal that move around the sun.
- Comet** A relatively small extraterrestrial body consisting of a frozen mass that travels around the sun in an elliptical orbit.
- Crater** A bowl-shaped depression in a surface made by an explosion or the impact of a body, such as a meteoroid.
- Extinct** No longer in existence.
- Fossils** A remnant or trace of an organism of a past geologic age, such as a skeleton or leaf imprint.
- Geology (Geologist)** The scientific study of the origin, history, and structure of the earth.
- Hypothesis** A tentative explanation for an observation, phenomenon, or scientific problem that can be tested by further investigation.
- Iridium** A silver-white, hard, brittle, very heavy metallic element of the platinum group.
- Mammals** Various warm-blooded vertebrate animals including humans, characterized by having hair and, in the female, milk-producing mammary glands for nourishing the young.
- Paleontologists** The study of the forms of life existing in prehistoric or geologic times.
- Shock quartz** Crystal formed from a very high speed impact.
- Theory** A set of statements or principles devised to explain a group of facts or phenomena.

CAREER POSSIBILITIES

- ASTRONOMER
- CIVIL ENGINEER
- BIOLOGIST
- ECOLOGIST
- GEOLOGIST
- PALEONTOLOGIST