



«[Science Lesson Plans](#)

## Fossil Fever- Then and Now

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### Description

The student will be learning about fossils, their formation, Earth's history, as well as comparing and contrasting fossils and their modern day descendant for gastropods, ferns, mastodon, fish, crinoids, trilobites, and bivalves.

### Grade Level

4th grade

### Lesson Objective

The student will be able to compare and contrast the fossil and their modern day descendant for gastropods, ferns, mastodon, fish, crinoids, trilobites, and bivalves.

### GLEs

4<sup>th</sup> Grade- Science

Changes in Ecosystems and interactions of Organisms with their Environments 4.3.A.a Compare and contrast common fossils found in Missouri (i.e., trilobites, ferns, crinoids, gastropods, bivalves, fish, mastodons) to organisms present on earth today. (DOK-2)

Scientific Inquiry 7.1.A.a. Formulate testable questions and explanations (hypotheses) (DOK-3)

Earth Systems 5.1.A.b. Compare the physical properties (i.e., size, shape, color, texture, layering, presence of fossils) of rocks (mixtures of different Earth materials, each with observable physical properties) (DOK-2)

4<sup>th</sup> Grade- Social Studies

Knowledge standards- SS2, SS5, SS7

Related performance goals-1.2, 1.4, 1.5, 1.6, 1.7

Objective 54- Students will describe the earth forces that shaped the land and analyze the effects of these forces on Missouri's geography.

Objective 67- Students will interpret and construct latitude and longitude on a map to locate places on a map.

Objective 69- Students will organize events on a time line in time order.

5<sup>th</sup> Grade

Earth Science 8.1.C.a. Identify how the effects of inventions or technological advances (e.g., complex machinery, technologies used in space exploration, satellite imagery, weather observation and prediction, communication, transportation, robotics, tracking devices) may be helpful, harmful, or both (DOK-2)

### Depth of Knowledge

Level 2

### Instructional Strategies

Day 1:

**Engage:** Students explore the various fossils, materials, and books using an OWL chart. **Explain:** *Fossil Fever* is read aloud to students to help explain some of their questions and misconceptions that they have about fossils. **Evaluate:** Teacher evaluates students learning by the participation in discussion.

#### Day 2:

**Engage/Explore:** Have students do a discovery time with prepared plates of seashells in Plaster of Paris (casts) and shell imprints (molds) with a magnifying glass, recording on an OWL chart. **Explain:** Build Background- Access website and discuss the pictures that show the cast and the mold in fossils. **Explore:** The students will make a plaster model with shells and molds of shell.

**Evaluate:** (From Scott Foresman) Discussion about how well students think their imprints turned out. Think/Pair/Share- show each other cast and mold on their model. Have students journal a Line of Learning in their science journals. **Extend:** (From Scott Foresman -students consider how the wetness of the plaster would affect the imprint left by the dinosaur and materials that would make good "impressions."

#### Day 3:

**Engage:** Read: *The Tale of Fern Fossil* **Explain:** Discuss research questions, note taking and scoring guide, introduce research books and materials. **Evaluate:** Each group will present the poster project on specific topics. Utilize the scoring guide to evaluate student understanding.

#### Day 4:

**Elaborate:** Students create an "accordion foldable" to take notes on and use as a study tool. **Evaluate:** Teacher rubric to evaluate foldable **Engage:** Display several mystery fossils from the site below on the projector. Invite the students to guess which fossil it is and justify their answer. Mystery fossil site. Guessing the picture of the mystery fossil. **Explain:** The students will create a foldable that compares fossils of the past to related organisms of present day. **Evaluate:** The students will create their foldable which will be used as a study guide for a later assessment.

#### Day 5-

**Engage:** Read selections from: *Fantastic Fossils*- Graphic novel. **Elaborate:** Students will "Buddy Study" with all materials created -gallery posters, OWL charts, foldable x2, journals, notes, and text. **Evaluate:** folder quiz and Line of Learning in journal.

#### Time Needed

5 days

#### Materials

Fossil Fever by Kathleen Weidner Zoefeld

Fossil samples for students to explore (See local nature center or nearby universities for examples if school doesn't have any available.)

Slide microscope

flashlight

Engaging questions prepared for projector (technology link)

11x14 in. construction paper cut in half lengthwise. (1 half piece per student)

Markers/colored pencils/crayons (whichever you prefer)

Scott Foresman science book. Pg. 244-245

Handout of Earth's history

1" open fan-type shells- 1 for every 2-3 students- (can be purchased from a craft/hobby store)

1/4" or smaller snail type shells- (can be purchased from a craft/hobby store)

1 c. prepared Plaster of Paris for each student

6" Styrofoam plates- one for each student

Plastic spoon for each student

Paper towels

Cups of water

Magnifying lens

Reference books and information on common fossils: trilobites, ferns, crinoids, gastropods, bivalves, sea urchins, horseshoe crabs, spiders, mollusks, snails, clams oysters, scallops, mussels, sand dollars.

Poster boards

index cards

markers

Tape

Fossil / Organism handout for each student (attachment)

reference books

12"x 18" paper for each student

glue sticks

scissors

markers

pencil

notes from gallery walk

## Academic Vocabulary

see lesson plan

## Lesson Plan

 [Fossil Fever- Then and Now](#)

## Resources

### Bibliography and Additional Resources

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4. Cashore, K. (No date). *Exoskeleton*. United States of America: Pearson Education, Inc.
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22. Squire, A. O. (2002). *True Books: Fossils*. United States: Children's Press.
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#### Website Resources


1. <http://www.zoomschool.com/subjects/dinosaurs/dinofossils/Fossilhow.html>  
How fossils were formed.
2. <http://www.sdnhm.org/kids/fossils/index.html>  
Where to find fossils
3. <http://www.ucmp.berkeley.edu/education/explorations/tours/fossil/index.html>  
Animated- Getting into the fossil record
4. <http://www.fossilmuseum.net/FossilGalleries.htm>  
Fossils image gallery
5. <http://www.museum.state.il.us/exhibits/larson/>  
How the Midwest looked 16,000 years ago
6. <http://pubs.usgs.gov/gip/fossils/succession.html>  
Timelines of fossils
7. <http://www.usgennet.org/usa/mo/county/stlouis/normandy.htm>  
Plant fossils of Missouri

8. <http://www.usgennet.org/usa/mo/county/stlouis/prehistory.htm>

Other fossils of MO

9.  <http://www.dnr.mo.gov/pubs/pub665.pdf>

Collecting fossils in MO

10.  [http://owensville.k12.mo.us/~SMART\\_Lessons/4/Judy%20Andrews/science/GLE%20fossils/Fossils.pdf](http://owensville.k12.mo.us/~SMART_Lessons/4/Judy%20Andrews/science/GLE%20fossils/Fossils.pdf)

Great lesson plans

11. <http://www.learn360.com/ShowVideo.aspx?SearchText=Fossils&ID=150330>

Learn 360 video- lots of videos to choose from on this site.

12. [http://images.google.com/imgres?imgurl=http://www.csama.org/safaris/safaris/Fern\\_Key.jpg&imgrefurl=http://www.csama.org/safaris/shfgkc.htm&usq=Ds-mrUJOBktTr9GnBpOmXGgM3ac=&h=703&w=821&sz=18&hl=en&start=7&siq2=z0Mmc6owNWS9ti3aAGJHVQ&um=1&tbnid=p9HVp\\_N3Fq%3Dfern%2Bfossils%26hl%3Den%26safe%3Dactive%26rlz%3D1T4DKUS\\_enUS327US329%26sa%3DN%26um%3D1&ei=Q99pSoS\\_L5C4M-O0lasL](http://images.google.com/imgres?imgurl=http://www.csama.org/safaris/safaris/Fern_Key.jpg&imgrefurl=http://www.csama.org/safaris/shfgkc.htm&usq=Ds-mrUJOBktTr9GnBpOmXGgM3ac=&h=703&w=821&sz=18&hl=en&start=7&siq2=z0Mmc6owNWS9ti3aAGJHVQ&um=1&tbnid=p9HVp_N3Fq%3Dfern%2Bfossils%26hl%3Den%26safe%3Dactive%26rlz%3D1T4DKUS_enUS327US329%26sa%3DN%26um%3D1&ei=Q99pSoS_L5C4M-O0lasL)

Missouri fossils information

13. <http://www.trilobites.info/trilobite.htm>

Trilobite information

14. [http://www.paleoportal.org/index.php?globalnav=time\\_space&ionnav=state&name=Missouri](http://www.paleoportal.org/index.php?globalnav=time_space&ionnav=state&name=Missouri)

Missouri Map of paleontology and geology-links to other sites, too.

15. <http://www.ucmp.berkeley.edu/education/explotime.html>

Interactive modules on the history of life on the earth.

16. <http://www.ecarter.k12.mo.us/dept/elementary/fourthgrade/ccrites/gles.html>

Social Studies GLE's on 4<sup>th</sup> grade- Missouri fossils

17. <http://www.sos.mo.gov/symbols/symbols.asp?symbol=fossil>

Missouri State fossil page

18. <http://www.ecarter.k12.mo.us/dept/elementary/fourthgrade/ccrites/missourinewspapers.html>

Lesson plans from East Carter Elementary

19. <http://www.lakeneosho.org/images/1GeoMap.html>

Generalized Geologic Map of Missouri

20. <http://paleobiology.si.edu/dinosaurs/interactives/dig/main.html>

Virtual Interactive Dinosaur Dig- Sponsored by the Smithsonian National Museum of Natural History.

21. <http://www.ucmp.berkeley.edu/exhibits/mysteryfossil/mysteryfossil.php>

Mystery fossil site. Guessing the picture of the mystery fossil.

22. [http://www.paleoportal.org/index.php?globalnav=fossil\\_gallery&ionnav=search&taxon\\_id=61&state\\_id=&period\\_id=&assemblage\\_id=&last\\_section=search&p=1](http://www.paleoportal.org/index.php?globalnav=fossil_gallery&ionnav=search&taxon_id=61&state_id=&period_id=&assemblage_id=&last_section=search&p=1)

Good example of difference between molds and casts of fossils.

23. <http://idahoptv.org/dialogue4kids/season6/fossils/facts.cfm>

Common questions/answers about dinosaurs for kids.

**Literature links**

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**Text book link(s)**

E

**Key concepts:** [fossils](#)

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