



## Classroom Teacher Preparation

### Earth Science 10: Fossils

Please use the following to prepare for the next SfS lesson.

#### Description:

Fossils are fundamental to discovering information about the Earth's past inhabitants. This module provides students the opportunity to excavate fossils from rock. Students will then use their fossils to reconstruct and analyze a fossilized skeleton for clues to the type of creature that existed during the late Jurassic period.

#### Lesson Objectives – SWBAT (“Students Will Be Able To...”):

3<sup>rd</sup>-8<sup>th</sup>

- Use the tools and techniques of a paleontologist to excavate “fossils” from their surrounding matrix
- Use information about vertebrate skeletons to aid in assembly of a mystery fossil (optional for 3<sup>rd</sup>-6<sup>th</sup> grade)

#### Disciplinary Core Idea (DCI)

LS4 Biological Evolution: Unity and Diversity - LS4.A Evidence of Common Ancestry and Diversity

- (3<sup>rd</sup>-5<sup>th</sup>) Some living organisms resemble organisms that once lived on Earth. Fossils provide evidence about the types of organisms and environments that existed long ago.
- (6<sup>th</sup>-8<sup>th</sup>) The fossil record documents the existence, diversity, extinction, and change of many life forms and their environments through Earth's history. The fossil record and comparisons of anatomical similarities between organisms enables the inference of lines of evolutionary descent.

#### Science & Engineering Practice (SEP)

Analyzing and Interpreting Data

- (3<sup>rd</sup>-5<sup>th</sup>) Analyze and interpret data to make sense of phenomena, using logical reasoning, mathematics, and/or computation.
- (6<sup>th</sup>-8<sup>th</sup>) Analyze and interpret data to provide evidence for phenomena.

#### Crosscutting Concept (CCC)

Patterns

- (3<sup>rd</sup>-5<sup>th</sup>) Patterns can be used as evidence to support an explanation.
- (6<sup>th</sup>-8<sup>th</sup>) Graphs, charts, and images can be used to identify patterns in data

#### Preparation:

This lesson is an introduction to fossil formation, and the field of paleontology. Students do not need background knowledge of the subject matter.

#### Room Set Up for Activities:

Students will work in pairs and small groups. Table or desk space is needed.



## Safety:

The primary activity for this lesson requires the use of dental tools to scrape synthetic sedimentary rock from model dinosaur bones. The tools are sharp and should be used with care. Goggles are required.

## Related Modules:

This lesson may be taught as part of a sequence or group of related modules on **Earth Science**, particularly Geology, or **Biology/Biodiversity**. Modules include:

*Earth Science 9: Rock Cycle* – Students will examine rock samples, note similarities, classify them by rock type (igneous, metamorphic, sedimentary), and identify them.

*Earth Science 2: Introduction to Tectonics* – This lesson is an introduction to basic plate tectonics. It includes a review of the earth's internal structure and the formation of continents, oceans, and mountain ranges as a result of plate movement

*Life Science 42: Mechanisms of Biodiversity in Populations* – This module explores the mechanisms by which biodiversity (genetic variation) is created within populations, including mutation, gene flow, genetic drift, and natural selection. This lesson is for 6<sup>th</sup>-8<sup>th</sup> grade.

For other module sequences and groups, look here: [www.sciencefromscientists.org/sequences](http://www.sciencefromscientists.org/sequences)

## Standards Covered:

Please click the following link to our website to review the standards covered by this lesson, listed by state: [www.sciencefromscientists.org/standards/](http://www.sciencefromscientists.org/standards/)

Lessons are matched to both national NGSS and local state standards.

## After Our Visit:

*Extend this lesson by creating your own plastic “fossil” casts.*

Access this Extension activity by visiting the Classroom Post found on our website at [sciencefromscientists.org/cohorts](http://sciencefromscientists.org/cohorts). Use the name of your school/cohort and password to log in.

To help Evaluate, check out our Open Response questions online at [sciencefromscientists.org/open-response-questions](http://sciencefromscientists.org/open-response-questions). They are freely available for all of our lessons for current teachers. Use the password supplied by your instructor to log in.

## Additional Resources:

- How are fossils formed: <http://www.fossilguy.com/what-is-a-fossil/index.htm>
- Fossils Introductory video (3:26): <http://mass.pbslearningmedia.org/resource/idptv11.sci.ess.earthsys.d4kfos/fossils/>
- Unearthing Dinosaur Bones and Fossils – Q&A with paleontologists: <https://www.scholastic.com/teachers/articles/teaching-content/unearthing-dinosaur-bones-and-fossils/>
- Fossil preparation information: <https://paleobiology.si.edu/fossilLab/preparation.html>