Fantastic Fossils

Overview: Have you ever found a fossil? No? Well don't worry. You can make your very own fossils out of recycled materials!

Procedure:
1) Tell students that today they are going to make their own fossils. Ask students if they can recall how fossils are formed.
2) Have students mix together coffee grounds, cold coffee, flour and salt until well mixed.
3) Next, have the students knead together the dough and then flatten onto wax paper. Have the students divide the dough into equal parts for each of them.
4) Use the can or a butter knife to cut out areas of dough large enough for your fossil objects.
6) Have the students choose what they want their fossils to be. Have the students press their object firmly into the dough.
7) Ask students what is causing the imprint of their object to be left behind in the dough (they are pressing it into the dough). Ask students how this compares to real fossils being formed (sedimentary rocks are pressed together to form fossils in between them).
8) Allow time for the fossils to dry. This can take up to two days.

SCIENCE

3S-LPS 2d: The student will investigate and understand that living things are part of a system. Key concepts include fossils provide information about living systems that were on Earth years ago.

5S-SI 1: The student will demonstrate an understand of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which
a: distinctions are made among observations, conclusions, inferences, and predictions.
b: objects or events are classified and arranged according to characteristics or properties.

5S-ESS 6: The student will investigate and understand how Earth's surface is constantly changing. Key concepts include:
a: identification of rock types
b: the rock cycle and how transformations including between rocks occur
c: Earth's history and fossil evidence

8S-ESS 7b: The student will investigate and understand that populations of organisms change over time. Key concepts include evidence of evolution of different species in the fossil record.

Extension idea:
Students can use their prior knowledge of animal evolutions to see how fossils can show that change. They can also make their own fossils that show a change.

HSS-EMP 3b: The student will investigate and understand the rock cycle as it relates to the origin and transformation of rock types and how to identify common rock types based on mineral composition and textures. Key concepts include sedimentary rocks.

HSS-COT 1 The student will investigate and understand that many aspects of the history and evolution of Earth and life can be inferred by studying rocks and fossils. Key concepts include:

a: traces and remains of ancient, often extinct, life are preserved by various means in many sedimentary rocks.

d: rocks and fossils from many different geological periods and epochs are found in Virginia

Extension idea:

Student can explore fossils that can be found where they live.

READING & WRITING

3E-RW 2a The student will use newly acquired vocabulary drawn from reading and other content areas.

b: demonstrate understanding of the meaning of newly acquired vocabulary.

3E-CN 1g: The student will sequence at least two steps in a procedure or ideas/incidents in an event.

4E-CN 1d: The student will interpret information presented visually and orally.

5E-RW 1f: The student will demonstrate understanding of content-specific words.

8E-RW 1e: The student will acquire and use content words and phrases.

8E-WP1a: The student will write to convey ideas and information including facts, details, and other information

d: The student will use content specific vocabulary when writing about a topic.

8E-WP 5b: The student will write to convey ideas and information clearly including facts, details and other information.

c: The student will produce writing that is appropriate for the task, purpose, or audience.

HSE-WP1b: The student will write to convey ideas and information using clear organization and including facts, details, and other information as well as graphics and multimedia as needed.

d: The student will produce writing that is appropriate to a particular task, purpose, and audience.

HSE-RW2c: The student will acquire and use new words and phrases.

HSE RW3c: The student will demonstrate knowledge of the meaning of words and phrases from reading and other content areas by using content.

Extension Idea

Upon completion of this experiment, students will write a text that summarizes their experiences and findings. This can be a fun way for the students to demonstrate what they have learned. Particular attention may be given to content words, figurative language, and sequence of events. Encourage students to include illustrations,

tables, graphs, and digital photographs. Texts might take the form of a PowerPoint presentation, book, journal entry, newsletter, or blog. These texts might make great additions to self-selected reading libraries.

MATH

3M-NSCE 7a: The student will differentiate between whole, half, and fourth.

5M-NSCE 2b: The student will apply the concept of fair share and equal shares to divide.

7M-PSPFA 1a: The student will describe the probability of events occurring as possible or impossible.

HISTORY

HS-H 11f: The student will demonstrate knowledge of the physical geography and native peoples, past and present, of Virginia by describing how archaeologists have recovered new material evidence at sites including Werowocomoco and Jamestown.

HS-H 18a: The student will demonstrate knowledge of how early cultures developed in North America by describing how archaeologists have recovered material evidence of ancient settlements, including Cactus hill in Virginia.

Materials Needed:

- 1 cup coffee grounds
- ½ cup cold coffee
- 1 cup flour
- ½ cup salt
- wax paper
- mixing bowl
- objects to make impressions
- empty can or butter knife

Instructional Setting:

This activity can be done in a general education or special education classroom. This activity can make a mess, so pick an area that is easy to clean.

Community Connections and/or Peer Interaction:

Students can work together in small groups. Taking a trip to a local museum to view fossils from long ago would make the activity related to the world around them. Explore in school or museum based programs to build and explore fossils in the community setting.

Functional Activity/Routine:

This activity encourages functional skills such as following instructions, working together, and measuring skills.

Strategies to Collect Evidence:
For collection of evidence, be sure that each student records a hypothesis and data individually. Assign an adult to record student responses if using a communication board or voice output device programmed for the activity.

Specific Options for Differentiating this Activity:
-Conduct the experiment on a surface that can be accessed by all students.
- Pre-make dough for students who are not able to knead it or have them work with a partner who can help them.
-For students with poor fine motor skills, give them a large surface, such as a book to place on top of their object to press into the dough.
-Take before and after pictures so students can see how the dough changed after the fossil was pressed into it.
-Allow students to use their preferred "pencil" when writing. This may include a writing utensil, keyboard, alternative pencil, or dictating to a scribe.
-Prepare, as necessary, for each student to make choices and communicate with their preferred method. This may include using augmentative communication.