GROUNDBREAKING
02.24.17 – 04.16.17
K-5
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![Art starts here](image-url)


**lesson overview**

**lesson plan**
Designed to extend and enhance the learning experience of our exhibits while linking to core curriculum subject matter.

**lesson objectives**
- To explore the origin and properties of clay.
- To identify layers of the earth's surface and understand their importance in learning about the earth's history.
- To develop an understanding of impressions, molds and casts.

**core curriculum tie-ins**
Kindergarten through Fifth Grades: Visual Art and Science.

**lesson overview**
On the A.R.T.S. tour, students will learn about the work of the artists featured in the exhibit *Groundbreaking* and how their practices are rooted in the history of clay and its specific physical qualities. They will investigate the earth's layers, and learn about how fossils are formed. Students will put this knowledge into practice by creating their own molds and casts.

**length of class**
One to Three Class Sessions.

**supplies**
- Soil Samples.
- Images of Strata Layers in Utah.
- Baby Powder.
- Modeling Clay.
- Rolling Pins.
- Plastic Cups.
- Objects from the Classroom.
- Plaster.
Kindergarten Visual Art

**Strand: CREATE:**
Students will generate artistic work by conceptualizing, organizing, and completing their artistic ideas. They will refine original work through persistence, reflection, and evaluation.

Build skills in various media and approaches to art-making; use art materials, tools, and equipment in a safe way; and create art that communicates a story about a natural or constructed environment.

1st grade Visual Art

**Strand: CONNECT:**
Students will relate artistic skills, ideas, and work with personal meaning and external context.

Relate artistic ideas and works with societal, cultural, and historical context to deepen understanding that people from different times and places have made art for a variety of reasons.

2nd grade Physical Science

**Standard 3:**
Students will gain an understanding of Physical Science through the study of the forces of motion and the properties of materials.

**Objective 2:** Compare and contrast the differences in how different materials respond to change.
  a. Model physical changes of various materials.
core curriculum tie-ins

2nd grade Life Science

**Standard 4:**
Students will gain an understanding of Life Science through the study of changes in organisms over time and the nature of living things.

**Objective 1:** Tell how external features affect an animal's ability to survive in its environment.
  c. Create possible explanations as to why some organisms no longer exist, but similar organisms are still alive today.

4th grade Life Science

**Standard 3:**
Students will understand the basic properties of rocks, the processes involved in the formation of soils, and the needs of plants provided by soil.

**Objective 1:** Identify basic properties of minerals and rocks.
  c. Classify common rocks found in Utah as sedimentary, conglomerate, igneous and metamorphic.

**Objective 2:** Explain how the processes of weathering and erosion change and move materials that become soil.

4th grade Life Science

**Standard 4:**
Students will understand how fossils are formed, where they may be found in Utah, and how they can be used to make inferences.

**Objective 1:** Describe Utah fossils and explain how they were formed.
  b. Describe three ways fossils are formed in sedimentary rock.
ABOUT

Groundbreaking

In *Groundbreaking*, come see historical tableware patterns that have been reimagined across large installations, vessels that have been deconstructed and pushed almost to the point of collapse, and figures that, while rooted in traditional forms, have become canvases for approaches that are psychological, conceptual, and abstracted.

For thousands of years, clay has been dug from the ground and transformed into objects of functional, symbolic, or decorative use. *Groundbreaking* presents compelling works by 12 artists turning longstanding traditions upside down. With work by Akio Takamori, Lauren Mabry, Christina West, and more, the exhibition brings together nationally-recognized artists from across the country who are creating riveting new compositions and pushing the boundaries of clay.

KURT WEISER – TFRUIT STORY
AKIO TAKAMORI – A
LAUREN GALLASPY – THIN SKINNED
1. What is clay and where does it come from? Since the earliest of times, humankind has used clay as a building material and in pottery. But where does this 'mud' come from? Clay is a natural material made up of tiny rock particles. It is the result of erosion: very fine particles of dirt float in a stream or river and then sink to the bottom forming clay. Use the resources below to talk further about the natural processes of weathering and erosion.

2. Clay is one type of soil layer that can be found in nature. As a class take a fieldtrip outside to explore the local soil layers. (Choose an appropriate spot before-hand and start the dig for the students. It is best to have a smooth vertical face on one side of the pit to clearly indentify layers). Look at the different colors and textures found in each horizontal layer, this is also called the strata. Students can take notes about the topsoil and subsoil including measurements, color, composition, texture and even organisms. Students can continue gathering information by collecting samples and bringing them into the classroom.

3. Discuss how geologists use digs to understand the earth's history. They look at the strata to observe layers of rock and soil as time intervals in earth's history. Show students an image of a geologic cross section from Utah.

4. Discuss the students personal soil dig experiments, and how they might have found organisms in addition to rock. Explain how geologists also find traces of organisms. Fossils are preserved remains of organisms from the past. Why can they not find the entire organism? Trapped, bacteria breaks down tissue so that only the shell or skeletons can be preserved.

5. Look at images of fossils. What is an impression? Talk about how impressions have preserved information about the past. Tell students that they will be creating their own impressions of objects to better understand molds of organisms that have been preserved over time.
6. As a class, collect everyday objects. Start by looking around the classroom and find objects that create an interesting impression (a specific detail or a very recognizable shape). Pass out a small ball of modeling clay to each student. Demonstrate how to roll out the clay with a rolling pin and press the object into the clay to create an impression. Look at the impressions and talk about texture and silhouette. Is the design raised or indented? Concave or convex? Students can also share the story of these pressed shapes.

7. Share with students that sometimes a cast is formed when sand and other minerals fill the impression, or when a geologist fills the mold to form a replica of the original organism. Tell students that they are now going to create a cast of their object (a positive) to recreate their object.

8. Pass out cups to students and have them ball up their modeling clay and pack it into the cups. Optional: give students additional clay for the cups so that they keep their original impressions. Students will then create an impression of their object in the clay. Students can sprinkle some baby powder on their object to insure it creates a clean impression.

9. Mix plaster for the students and pour it in the molds. For tips on mixing plaster, see the resources below. Allow plaster to dry. When plaster sets, it will heat up because of a chemical reaction. When it has cooled, it is safe to remove the casts, about 45 minutes to an hour after pouring.

10. Remove casts from molds. Discuss how a negative impression has created a positive object. When is this process used in the modern world? Today molds are used to mass produce objects. Look around the classroom and talk about what objects might be created with this mold and cast method. Some clay artists create molds and pour clay to make work faster and on a larger scale. Ask students: Why or when would a clay artist choose to use this method?
vocabulary

**Cast** – a cast is an object formed by a mold.

**Erosion** – Erosion is the displacement of solids (earth, mud, rock and so on) through natural causes like water or wind movements.

**Fossil** – A fossil is the remains of a plant or animal that existed in a past geological age and that has been excavated from the soil.

**Geology** – Geology is the science and study of the earth, its history, and the processes that shape it.

**Mold** – A mold is a container into which liquid is poured to create a given shape when it hardens.

**Organism** – An organism is a living thing that has (or can develop) the ability to act or function independently.

**Plaster** – Plaster is a mixture of lime or gypsum with sand and water; hardens into a smooth solid; used to cover walls and ceilings.

**Soil** – Soil is the uppermost layer of the earth’s surface.

**Weathering** – Weathering is the action of wind, rain, frost, sunlight and biological processes on rocks, which breaks them down into smaller particles.
resources

Geology:

http://researchquests.org

http://geology.utah.gov/popular/general-geology/dinosaurs-fossils/

https://pubs.usgs.gov/imap/i2720/

http://www.theowlteacher.com/weathering-and-erosion/

https://www.youtube.com/watch?v=exS9gFXgib0

http://www.soils4teachers.org/lessons-and-activities

http://www.earthsciweek.org/classroom-activities/dig-soil

Molds and Clay:

http://www.kinderart.com/sculpture/clay.shtml

http://www.firstpalette.com/tool_box/quick_how_to/plasterofparismixture/plasterofparismixture.html

http://ceramicartsdaily.org/category/ceramic-supplies/ceramic-molds/

https://www.nps.gov/brca/learn/education/paleoact4.htm