Teacher Resource Packet
4th Grade Level

Spirit of Clay
A lesson about Science and Art

Spirit of Clay
Ceramics from the CMA Permanent Collection

Todd Leech, American (Born 1971) *Rollin'*, June 2018. Clay, glazed & sandblasted

The Museum To Go program and these educational materials are made possible by the generous funding from

Ohio Arts Council

KeyBank Foundation

This resource packet, companion artwork images, virtual tour of the exhibit "Spirit of Clay," and many other resources are available through the Canton Museum of Art website at

www.cantonart.org/learn/muesum-to-go

Canton Museum of Art

MUSEUM TO GO

Teacher Resource Packet

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Everyday People
A lesson about Science and Art

Lesson Overview

This lesson aims to **connect science and art.** The students will examine the piece *Rollin'*, by Todd Leech from the ***Spirit of Clay*** exhibition and discuss different **textures** and **colors** observed in the artwork. Students will be introduced to chemical processes that can affect how different art materials interact with one another. The students will be told about how Todd Leech uses a process to induce **physical weathering** on the surface of his pieces, how **chemical weathering** can change copper from red to green and how they can also see this process happening on Todd Leech's *Rollin'.* After the lesson and virtual tour of ***Spirit of Clay,*** The students will participate in an art project where they watch different chemical interactions take place in their own work. Using the scientific method, groups of students will ask questions about the materials at hand, hypothesize about what will happen when they come into contact with one another, experiment with the materials, record their data, and draw conclusions based on their experiements. After discussing their observed chemical reactions, each student will make an individual project from part of their group project.

Lesson Materials
Spirit of Clay Virtual Tour
Spirit of Clay Resource Packet PDF
Spirit of Clay and Chemical Reactions Powerpoint

All lesson materials are available for download at **www.cantonart.org/learn/museum-to-go**

Activity Materials
Oxidized penny
Rusted steel or iron pieces
Scientific Method Handout (for students, page 9)
Information on Todd Leech (for educator, page 10)

Sun Catchers
Group:
18x24 sheets of watercolor paper (1 per group)
Gloves (1 pair per student)
3 drop bottles of liquid watercolor
1 drop bottle of canola oil
1 drop bottle of salt
1 pair of scissors

Individual:
1 pencil per student
1 mason jar screw band per student
1 8" piece of yarn per student

Content Standards
Science
4.ESS.2
The Surface of Earth changes due to chemical, physical, and biological weathering.

Visual Art
4 2PE
Notice and describe different visual effects resulting from artmaking techniques

ELA
SL 4.1
Students are engaged effectively in a range of collaborative discussions (one-on-one, in groups, teacher-led) with diverse partners on grade 4 topics, building on others' ideas while expressing their own clearly.

Lesson Procedure

1) Museum Virtual Tour

a) Students will take a virtual tour of the **Canton Museum of Art's Permanent Collection Exhibition *Spirit of Clay*** where they will hear about why the exhibition is called Spirit of Clay. They will view the exhibition and discuss what it's like to visit a museum.

2) Powerpoint

a) Students will view Todd Leech's *Rollin'*, and talk about its meaning. They'll be asked to reflect on why it belongs in ***Spirit of Clay***. The students will discuss the color and texture of the surface.

b) Students will view a slide on physical weathering and learn about Todd Leech's sandblasting process and how he uses physical weathering to make his pieces look like they do. The students will then view a slide about chemical weathering and hear about how copper oxidation turns copper from red to green. The students will pass around a penny as the instructor talks about how there is copper in the glaze on Todd Leech's piece and how that's why the piece is greenish blue in places.The students will talk about other places they have seen chemical weathering.

3) Chemicals and Art Group Project

a) Students will be split into five groups and given a scientific method sheet. Each group will get one sheet of 18x24 watercolor paper, 3 droppers of liquid watercolor, one dropper of oil, and one dropper of salt. The students will use the scientific method while experiementing with the materials on the paper to figure out what happens when watercolor reacts to oil and salt.

b) Students will talk in their groups about their results for 5 minutes as the paint absorbs into the paper. During this 5 minutes, the instructor will hand out a mason jar screw band to each student. The students will use a pencil to trace their screw bands on a part of the 18x24 paper.

4) Sun Catcher Activity

a) Students will trace a mason jar screw cap with a pencil and cut out the circle they made on their group's paper. Once they have their paper cut out, they will tie the yarn to their screw cap and pop the paper circle inside. The students can hold their creations up to see how the light shines through them.

5) Final Wrap-Up

a) Students will share final thoughts and take a survey based on what they learned.

Lesson Vocabulary

Chemical Weathering

The disintegration of rocks, building materials, etc., caused by chemical reactions.

Physical Weathering

Disintegration of rocks, building materials, etc. caused by sand storms, wind, hail, etc.

Deterioration

The demise of something over time.

Oxidiation

Discoloration or physical change due to chemical reactions between an object, water, oxygen, and sometimes salt.

Lesson Discussion Points

Viewing of Spirit of Clay Virtual Tour

-Have you ever been to a museum?

-Why do you think this exhibition is called Spirit of Clay?

-How do artists put their own spirit into the work they make?

-How does making art make you feel?

Todd Leech and Weathering Powerpoint

-What colors and textures do you see?

-Have you ever seen something change over time? If so what was it and how did it change?

Here are some cool time lapse videos that can be used as a lesson component
https://www.youtube.com/watch?v=VHRoGHOu7N0
https://www.youtube.com/watch?v=gq6sngVAgfg

-What are other things you've seen that are rusty or oxidized?
(During this time, the teacher can pass around examples of rusted or oxidized metal, chunks of weathered rock, etc.)

Science and Art Experiment

-What happened when you mixed oil and watercolor?

-What happened when you sprinkled salt on the watercolor? On the oil?

-Are the chemical reactions you saw today similar to either type of weathering we talked about? Why do you think that?

Group Material Exploration

Pass out to each group

-1 18x24 sheet of watercolor paper
-3 drop bottles of liquid watercolor
-1 drop bottle of canola oil
-1 drop bottle of salt
-2-3 foam brushes
-1 pair of gloves per student

Tell the students

-To take 5 minutes to discuss what they think will happen and create a hypothesis
-They will be working together to experiment with watercolor paint, oil, and salt.
-This is an experiment, but also an art project.
-They must share materials, so trade often.
-They will be cutting up the final product in the end so each can make individual projects
-Appoint a person to record each.

Verbal Directions to give to the students

1. [Go over each step of the scientific method]
2. Only drip watercolor on paper, it will stain clothing.
3. Spead some of the watercolor around with a brush, observe the way the oil and salt react with spread watercolor and with drips of watercolor
4. Fill the whole paper (you can do this by brushing paint on once you squeeze it and by making drops accross the paper, not just in one spot).
5. You must put the oil and salt on while the paint is still wet so work fast!
6. After you are done making the art, draw a conclusion about what happened.

Procedure for Suncatcher Activity

1. While discussing final conclusions in student groups, the instructor will pass out pencils, yarn, and mason jar screwbands to each student with a pair of scissors to share amongst the group.
2. Each student will trace their lid on part of the the group's project and cut it out.
3. The students will tie the yarn around their lids (the instructor will give an example)
4. The students will squeeze their circle into the lid and hold it up to view the light passing through it.

Small group option:

This project is meant for a group of 30 or less. Try to split up students into 5 groups, but if it's a very small class, less groups are an option.

Scientific Method Handout

MATERIALS:
Paper, Liquid Watercolor Paint, Cooking Oil, Salt

1.) **QUESTION (What are you curious about?)**

_____
_____
_____

2.) **WHAT DO YOU KNOW? (Have you worked with these materials before? What do you already know about them?)** _____
_____
_____
_____

3.) **HYPOTHESIZE (What do you think will happen?)**

_____
_____
_____

4.) **EXPERIMENT (Use the materials in front of you)**

5.) **OBSERVE/RECORD YOUR RESULTS**

(What is happening when materials interact?)

_____
_____
_____

6.) **CONCLUDE (What happened and what did you learn?)**

_____
_____
_____

Information on Todd Leech and Rollin'

Todd Leech

Todd Leech is an American artist living right here in Ohio. The bubbly, foamy, and broken **textures** you see on his piece, *Rollin'* are the result of a ceramic technique he made up himself! **Ceramics are objects made of clay**. You might eat off of ceramic plates or drink out of ceramic cups. **The glassy coating on ceramics is called glaze**. Glaze is made up of things like **iron, copper, talc, zinc,** and many other naturally occurring **metals, minerals, and melting materials.** Todd Leech makes his glazes out of some of these things and has studied **chemical reactions** between materials that, when heated, cause the glazes to bubble up and break apart. Some of the colors in Leech's glazes happen because fire and air work to create a chemical reaction called **oxidation,** which is similar to the oxidation you might have learned about when you learned about **chemical weathering** (think of the statue of liberty which is made out of copper, or think of a rusty piece of metal). After the glazed artwork comes out of the kiln (a very high powered oven for ceramics), Todd Leech uses a technique called **sandblasting** (basically using a lot of pressure to spray sand at the sculptures) to break up the bubbly glazes even more and to make some areas more shiny. Leech's technique of sand-blasting is a lot like **physical weathering** to rocks and buildings in the desert or on the beach.

People who sculpt with clay are called ceramic sculptors. Todd Leech uses ceramic sculpture to explore weathering and the breaking-down of objects. Leech has a medical condition called Cystic Fibrosis that makes his lungs fragile. Over time, his lungs and other parts of his body have stopped working as well as they once did. Because of this, Todd Leech breaks down the surfaces of his ceramics to show how his body has broken down over time.

Possible Discussion Questions/Checking for Understanding:

*Have you ever seen something break down over time?

*How is Todd Leech's sandblasting process similar to Physical Weathering?

*What color do you think iron might make in a glaze? Copper?