



The Function of Fire

Nate Nixdorf
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The Function of Fire – Unit Overview

Target Grade Level: High School - Ceramics

1. What overarching understandings are desired?

- Throughout time, clay has served as an integral part of societies of the world, all relying on a kiln to turn soft clay to hardened ceramic material.
- Kilns have served as meeting places for various cultural communities
- Technologies applying to fire have dramatically changed the appearance and durability of functional pottery
- Surfaces on functional pottery are not only affected by glazes, but also the type of firing.

2. What are the overarching “essential” questions?

- How have firing techniques changed throughout time?
- Why would an artist choose one firing type over another?
- How does spontaneity play a role in firing ceramic work?

3. As a result of this unit, students will be able to demonstrate an understanding of:

- Students will understand the historical and cultural context of kilns.
- Students will be able to identify different firing types, and understand the choices associated with them.
- Students will successfully create pieces to be fired using different methods

4. What “essential” and unit questions will focus this unit?

- What are your aesthetic preferences?
- Why do you value one object over another?
- What makes something valuable?
- What is the most basic method of firing ceramics?
- What makes atmospheric firings unpredictable?
- How does the atmosphere inside the kiln change the appearance of pottery?
- What are the benefits/drawbacks of the different methods of firing?
- Why are pots from atmospheric firings generally more expensive than other pots?

5. What evidence will show that students understand

- Students will identify different firing methods, and understand the historical context in which they are used.
- Students will create work that utilizes different firing methods.
- Students will engage in discussions and presentations that deal with firings methods, as well as the artists that use them
- Students will critically analyze the pieces they created, understanding spontaneity as well as how to help control the characteristics in the firing.

TOPIC/PROJECT: Aesthetics and Judgment**DURATION: 1-2 days****OVERVIEW/SUMMARY:**

As an introduction to the unit on different types of firing processes, this project will expose students to pieces that have been fired in all types of kilns. Students will use pre-made cards to help make aesthetic and value choices on the pieces.

The four cards represent:

1. Piece that is most difficult to make
2. Piece I want to learn to make
3. Piece I would like to have in my home
4. Piece that is most valuable



This lesson will help students separate different types of judgments made, and begin to establish a personal aesthetic regarding firing techniques.

ENDURING UNDERSTANDINGS / ESSENTIAL QUESTIONS:

What are your aesthetic preferences?

Why do you value one object over another?

Are your aesthetic and value preferences the same as the general public?

What makes something valuable?

VOCABULARY

Aesthetics, Pit Fire, Raku, Wood Firing, Salt/Soda Firing, Kiln, Oxidation, Reduction

INSTRUCTIONAL/ENGAGEMENT/LESSON SEQUENCE:

When students arrive in the classroom, 5-10 pieces will be placed in the room for students to view. No background information should be given for any of the pieces.

All students will be passed a set of cards(4), and after explaining the meaning behind the cards, students must place them next to the piece they believe they best represent.

Once all the cards have been placed, students will write in their sketchbooks, responding briefly about why they chose to place each card.

Students will then get into groups, and create a list of 3 similarities in their judgements, as well as 3 differences.

When the list is complete, they will write the lists on a board at the front of the room, creating a master list for the entire class.

Upon completion of the lists, the teacher will lead a discussion based on the newly created list, and also discuss the data from the group as a whole.

After all opinions have been given, background information should be given on each piece, as well as value.

Once the values and backgrounds are told, students should answer the following questions in their sketchbook/paper: 1.

1. What is the biggest surprise with the facts about the pieces?

2. Would have knowing this information first changed your decisions?

3. Do you want to change any of your choices after hearing about each piece?

PA STATE STANDARDS / ANCHORS

9.1 - PRODUCTION

9.1.12.C Vocab within each art form

9.2 - HISTORICAL/CULTURAL CONTEXTS

9.2.12.A Context of works in art

9.2.12.J Historical diff. of works in the arts

9.3.12.D Vocabulary for criticism

9.3.12.F Comparisons

9.3.12.B Criteria

9.4 - AESTHETIC RESPONSE

9.4.12.B Aesthetic interpretation

9.4.12.D Artistic choices

MATERIALS/RESOURCES/SUPPLIES:

Pre-made categorized cards, physical pieces for students to see/handle. Sketchbook or paper for reflection

ASSESSMENT/SUMMARIZING STRATEGIES/ CHECK FOR UNDERSTANDING:

The written-response to the activity can be graded for meaningful completeness, and while reading the responses given by the students, an obvious check for understanding can be obtained in the answers given.

TOPIC/PROJECT: Pit Firing – Coiled Vessels**DURATION: 6-8 days****OVERVIEW/SUMMARY:**

This project will consist of both primitive building and firing techniques. Within the studio environment, students will have the opportunity to mimic the same process as well as finish of pots that have been created for thousands of year. Only simple hand-building tools will be allowed, and the firing process will consist of only basic combustible materials in a pit. (sawdust, dung, flowers, fruit, etc.)

Student Examples:

Professional Examples on Pinterest: <http://www.pinterest.com/natenixdorf/function-of-fire/>

ENDURING UNDERSTANDINGS / ESSENTIAL QUESTIONS:

What is the most basic method of firing ceramics?

What cultures have used pit firing as a firing method?

What are the benefits/drawbacks of pit firing?

Why is function a concern with pit firing, and how is it remedied?

VOCABULARY

pit fire, terra sigillata, combustible, copper, flashing, carbon, reduction

INSTRUCTIONAL/ENGAGEMENT/LESSON SEQUENCE:

At the introduction of this lesson, physical examples as well as digital images of pit fired pieces should be accessible to students.

In their sketchbooks, students should write 3 specific characteristics/colors/textures that they find interesting from pit-fired pieces.

Using resources available, (print and digital), students should find how those types of colors are created, and document it in the sketchbook. One resource should reference pit firings done outside of the United States.

Upon completion of the written exercise students may begin the construction portion of the coil pot project. During construction, no modern tools should be used, and tools only found in their research may be used.

Students should all create a coil vessel a minimum of 6 inches tall, with coils on the inside and outside being smoothed completely. A focus on compression of the clay, as well as the blending of cracks is essential to help prevent cracking during the firing.

Once the piece has finished being shaped, the vessel should be dried until the firm leather hard stage.

At the drying stage immediately before bone-dry, students should apply thin layers of terra sigillata (provided by the teacher), and buff the surface of the terra sig to achieve a shine. The terra sigillata provides a smooth surface as well as creates a waterproof seal (when done properly). Up to three layers should be applied, allowing the surface to dry completely before the next step.

All pieces will be bisque fired

When all students have bisque fired pieces, preparation can begin by giving every student a paper bag that is the size of his/her pot

Students should wrap their pieces, add combustibles, and apply chemicals to the bag, working towards the colors/textures they found at the beginning of the lesson.

Students are encouraged to take pictures of their pieces surrounded by combustibles, and also document what was used in the bag.

When all bags are finished, they should be taped shut, and collected by the teacher.

The pit firing itself will need to be performed by the teacher, and can either be done off of school property and video-taped, or somewhere close by where a bonfire is legal. (as the pit firing will be similar)

When the pit firing is finished, students will examine their pieces, clean with wet clothes, and if necessary, apply a wax to areas that need to waterproof (if buffing did not create a seal)

At the completion of the lesson, students will finish writing in their sketchbooks, answering the following questions:

What combustible material did you use?

Was the firing successful for your pieces? Why or why not?

If you could do the firing again, what would you use inside your bag?

PA STATE STANDARDS / ANCHORS

9.1.12.D Styles in prod, perform, exhibition

9.1.12.C Vocab within each art form

9.2.12.D Historical and cultural perspectives

9.2.12.G Geographic regions in arts

9.2.12.J Historical diff. of works in the arts

9.3.12.D Vocabulary for criticism

9.3.12.F Comparisons

9.3.12.B Criteria

9.4.12.B Aesthetic interpretation

9.4.12.C Environmental influences

9.4.12.D Artistic choices

MATERIALS/RESOURCES/SUPPLIES:

Clay, paper bags, basic hand building tools, combustible/flashing material for pit (ex: string, copper carbonate, dung, sawdust, wood, banana peels, wire, foil, steel wool, etc)

ASSESSMENT/SUMMARIZING STRATEGIES/ CHECK FOR UNDERSTANDING:

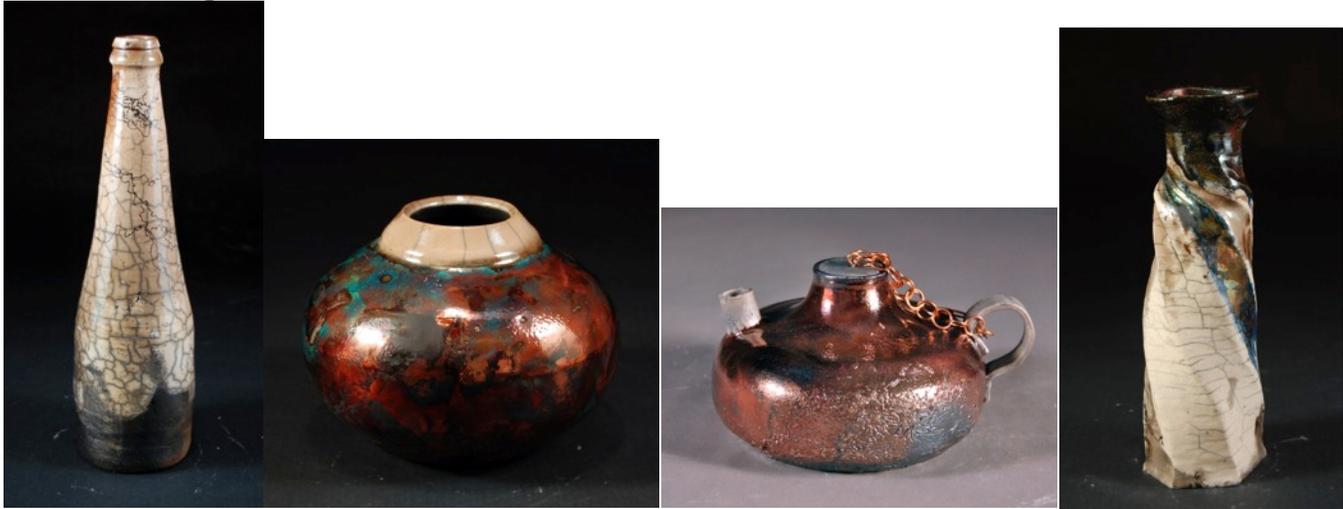
Student understanding can be checked both by the finished product that comes from the pit, as well as the pre and post comments written in the sketchbook. While students will have different results than they may have expected, they should have worked towards a type of finish and color in the piece. The physical project can be graded on similar criteria (on a rubric) as any other vessel, excluding the glazing portion.

TOPIC/PROJECT: Raku Tea Bowls – old and new **DURATION: 8-10 days**

OVERVIEW/SUMMARY:

This lesson will give students the opportunity to make a pair of tea bowls using techniques from Eastern and Western cultures. These pieces will both be raku fired in the contemporary fashion of raku, as the original raku firing contains chemicals dangerous to the user. Students will understand the cultural context of tea bowls, as well as how the firing process changed when interpreted in the United States.

Student Examples:



Professional Examples on Pinterest: <http://www.pinterest.com/natenixdorf/function-of-fire/>

Relevant Artists: Paul Soldner, Tanaka Chojiro, Steven Branfman

Video Links:

<http://youtu.be/TPzoxTlZsBg> - Paul Soldner video

<http://vimeo.com/75326976> - Steven Branfman video

ENDURING UNDERSTANDINGS / ESSENTIAL QUESTIONS:

How is raku different from other types of firing?

How is the process of firing in a raku kiln different than firing in any other type of kiln?

How is original Japanese raku different than American raku?

What are the benefits/drawbacks of raku firing?

VOCABULARY

Raku, terra sigillata, luster, carbon, combustible, reduction, tea bowl,

INSTRUCTIONAL/ENGAGEMENT/LESSON SEQUENCE:

To begin this lesson, students must investigate the shape and philosophy behind the tea bowl, as well as do some research about the raku process. Students should use computers or print materials in the classroom to answer the following questions in their sketchbooks:

What is raku?

When was raku started in Japan, in the US?

What makes raku different than other types of firings?

What is the function of the tea bowl?

Sketch the shape of a tea bowl in your sketchbook...

Students will be making two types of tea bowls. One hand built, and another on the wheel.

Students will first make a tea bowl with the 4:3 ratio on the wheel. All tea bowls should have a carved foot.

Once students have made the wheel-thrown tea bowl, they will embark on carving a tea bowl from a solid piece of clay. Students will take a solid piece of clay with the exterior shape of a tea bowl (short, squat, cylinder), and carve the interior over the span of a few days until the shape becomes something that fits comfortably in the users/makers hands.

After bisque firing the pieces, students will apply raku-specific glazes on the pieces, utilizing both positive and negative glazing space for contrast.

With the help of the instructor, students will assist in the firing of the raku tea bowls, and help remove pieces from the kiln, placing them in containers filled with combustibles.

Upon completion of the projects, students should reflect on the project and style of raku by answering the following questions in their sketchbook:

How do you feel about your raku teabowls?

Which style do you pieces fall under?

Do you prefer the Japanese or American style of Raku?

How would you change your pieces if you do this again?

PA STATE STANDARDS / ANCHORS

9.1.12.B Demonstration of visual arts

9.1.12.E Themes in art forms

9.2.12.J Historical diff. of works in the arts

9.2.12.C Styles and genres in the arts

9.2.12.K Traditions w/i works in the arts

9.3.12.C Classifications

9.3.12.F Comparisons

9.3.12.B Criteria

9.4 - AESTHETIC RESPONSE

9.4.12.B Aesthetic interpretation

9.4.12.D Artistic choices

MATERIALS/RESOURCES/SUPPLIES:

Raku clay, raku glazes, carving tools, raku kiln, reduction containers (metal trash cans work well), raku tongs, heat-proof gloves, propane, combustible material (newspaper, sawdust, leaves, etc.)

ASSESSMENT/SUMMARIZING STRATEGIES/ CHECK FOR UNDERSTANDING:

Student understanding as regards to the historical and cultural value of raku can be checked through the sketchbook responses, both pre and post project. Students should be responding with comments about both the aesthetics and characteristics of raku.

Understanding pertaining to tea bowls can be assessed through the production of the tea bowls. Wheel thrown pieces should be even, centered, and comfortable to touch. Hand built pieces should follow the same criteria, but will be more difficult as students are doing the project using a subtractive method of sculpture.

Glazing should be graded only on preparation of pieces, and not necessarily on the finished product, as spontaneity and other factors can play a role in the final appearance.

TOPIC/PROJECT: Color Theory & Glaze – Electric Kiln Firing **DURATION:** 5-6 days

OVERVIEW/SUMMARY:

For most students, firing in an electric kiln is their only firing experience. Because of the low cost of firing, predictability, and accessibility of glazes, this is the method utilized in most all school situations. Because this method is utilized by so novices and schools, it is often considered a lesser method of firing, which is completely untrue. Electric kiln firing (oxidation) offers the most color control of any type of firing, and is predictable from one firing to another. This lesson will allow students to further explore color possibilities they have already had experience with, and gain a stronger command of color usage on clay.

Personal Examples:



Professional Examples on Pinterest: <http://www.pinterest.com/natenixdorf/function-of-fire/>

Relevant Artists: Sergei Isupov, Linda Arbuckle

ENDURING UNDERSTANDINGS / ESSENTIAL QUESTIONS:

How an electric kiln different than one that uses other fuels for firing?

Why are electric kilns the most common kilns used in ceramic studios?

What are the benefits/drawbacks of firing in an electric kiln?

VOCABULARY

Electric kiln, cone(s), oxidation, underglaze, overglaze, wax, complimentary colors, tints, shades, monochromatic

INSTRUCTIONAL/ENGAGEMENT/LESSON SEQUENCE:

For this lesson, students will be drawing on their skills from Ceramics 1, and will be creating a pair of mugs. Students will have the opportunity to construct the mugs in whatever method they choose (wheel-thrown, slabs, sculpted). The freedom with the construction technique will be balanced with the control required for the glaze technique.

Students should see (both in person and digitally) examples of exemplar pieces of glaze work using underglazes. As electric firing is the most common methods of firing, examples are EVERYWHERE. Students are not assumed to have advanced painting skills for this project, so subject in the glaze work is not necessarily as important as use of color/color theory.

Once the mugs are constructed and fired, students will choose a complimentary color scheme, and choose one color for one mug, and the compliment for the other.

Students should show a competency with mixing tints and shades of colors by mixing the chosen underglazes.

On each mug, a minimum of 5 tints and shades of that color must be utilized to create either a design or a gradation between tint/shades.

Mugs will be fired to harden the surface of the glaze, and after fired, can be coated with a clear glaze for shine and functionality.

PA STATE STANDARDS / ANCHORS

9.1 - PRODUCTION

9.1.12.A Elements Principles in each art form

9.1.12.B Demonstration of visual arts

9.1.12.C Vocab within each art form

9.2 - HISTORICAL/CULTURAL CONTEXTS

9.2.12.C Styles and genres in the arts

9.4 - AESTHETIC RESPONSE

9.4.12.D Artistic choices

MATERIALS/RESOURCES/SUPPLIES:

Clay, various underglazes, clear overglaze, brushes, kiln

ASSESSMENT/SUMMARIZING STRATEGIES/ CHECK FOR UNDERSTANDING:

Student understanding can be assessed through their use of 5 tints and shades, as well as their application of the glaze. Glazes should be consistent, even, and the chosen design should show clear differences in the color. The application of clear glaze should also be clean and even, and show no inconsistencies once fired. Glaze should be wiped from the bottom, and no glaze running should occur.

TOPIC/PROJECT: Into the Atmosphere**DURATION:** 8-12 days**OVERVIEW/SUMMARY:**

For many reasons, most students at the k-12 level don't have access to atmospheric firings. The cost of firing is expensive, the maintenance and labor involved is extensive, and the time necessary to master the technique is vast. Students will have the opportunity to both look into each type of atmospheric firing as well as create a pair of pieces to place into each of the kilns. Initial expectations will be documented, as well as post-firing reactions for comparison. Students will research and present specific topics associated with wood and salt/soda firings, and will then present their findings to the class. (all before the production of the pieces) These presentations will help students formulate ideas for their own projects.

Personal Examples:

Professional Examples on Pinterest: <http://www.pinterest.com/natenixdorf/function-of-fire/>

Relevant Artists: Chris Gustin, Shoji Hamada, Lorna Meaden, Ron Nagle, Anders Ruhwald, Tara Wilson

ENDURING UNDERSTANDINGS / ESSENTIAL QUESTIONS:

What are reduction, wood and salt/soda firing called atmospheric?

How does the atmosphere inside the kiln change?

What makes atmospheric firings unpredictable?

What happens to unglazed areas in an atmospheric kiln?

Why are pots from atmospheric firings generally more expensive than other pots?

VOCABULARY

Wood kiln, wood ash, soda ash, reduction, flashing, carbon, reduction, wadding, glaze, cone(s)

INSTRUCTIONAL/ENGAGEMENT/LESSON SEQUENCE:

In this lesson, students will be making pieces to be placed in both chambers of the kiln, so a total of four pieces will be made. Students will first be researching the historical methods of wood firing used across the globe, and use that information to both influence their shapes, colors, and design expectation for the firing.

Students will be divided into groups for the research component of this lesson, and each group will be responsible for researching a specific type of kiln or artist to present to the class. A list of artists, kilns and designers should be provided by the teacher so that students can find extensive information on the topic. The list may include:

Anders Ruhwald, (artist) Tara Wilson (artist), Chris Gustin (artist), Shoji Hamada (artist), Lorna Meaden (artist), Ron Nagle (artist), Anagama firing (kiln), Noborigama (kiln), Fred Olsen (artist and kiln designer), Kevin Crowe (artist and kiln designer), Jack Troy (artist and kiln designer)

A brief (5 minute) presentation should be given by the class answering the following questions:

What does the subject offer to the ceramic world?

Why should someone use the methods of the artist/kiln for their work?

What are examples of the artist/kiln/style?

What influences does this subject draw from?

Using the information presented by their classmates, students should begin to formulate ideas for their own work, and gain some 'loose' expectations about what they will get from the firing.

Students will work to create two pairs of objects (student choice), similar in shape and texture. These objects can be wheel thrown or sculpted, as the goals for the project revolve around firing, not creating.

One piece from each of the pair will be glazed for the firing, and the other will be fired completely. This will give students an opportunity to see what exactly the kiln does to the surface of the pieces, as well as the variation the kiln will give to glazes.

Students will assist with the preparation, loading and firing of the kiln.

Once the pieces are fired students will reflect with the following questions in their sketchbooks:

Do your pieces meet your expectations? Why or why not?

How did the fuel and atmosphere affect your pieces?

Do you like the glazed piece, or bare piece? Why or why not?

How would you deal with the pieces differently if you were to fire again?

What artist/style does your work most reflect?

PA STATE STANDARDS / ANCHORS

9.1.12.D Styles in prod, perform, exhibition

9.1.12.C Vocab within each art form

9.2.12.K Traditions w/i works in the arts

9.2.12.E Hist. cult. impacts of works in the art

9.2.12.J Historical diff. of works in the arts

9.3.12.D Vocabulary for criticism

9.3.12.F Comparisons

9.3.12.B Criteria

9.4 - AESTHETIC RESPONSE

9.4.12.B Aesthetic interpretation

9.4.12.D Artistic choices

MATERIALS/RESOURCES/SUPPLIES:

Clay, tools necessary for construction techniques, Glazes specific for atmospheric firings, an atmospheric kiln...

ASSESSMENT/SUMMARIZING STRATEGIES/ CHECK FOR UNDERSTANDING:

As there are multiple components to the project, student understanding can be assessed in multiple areas.

Research/Presentation: Students should present relevant aspects of their particular person/style, as it relates to the project. Examples of pieces, historical relevance, and location are examples of relevant aspects. Presentations should show a clear understanding of the material.

Production/Glaze: Projects created can be assessed with a rubric based on criteria used for each particular type of construction. (all projects will be different) Specific construction techniques and craftsmanship are examples of criteria that could be used.

Student Understanding: Based on the written component in the sketchbooks, students should demonstrate an understanding with their reflection and thoughts on the firing, as well as their particular pieces.

References

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