



## Project Essential Questions

- What is the difference between physical and chemical changes?
- How do I utilize visual arts to investigate the properties of a substance before, during, and after a chemical reaction to find evidence of change?

### PROJECT DESCRIPTION

Students will use visual arts and drama to explore the differences between physical and chemical changes. After learning about the visual art techniques of artist Wayne Thiebaud, students will create a polymer clay pastry. When the pastry art is complete, students will use prior knowledge learned about physical and chemical changes to write a narrative from the point of view of the pastry explaining the physical and chemical changes that are involved in the pastry art-making process.

### LEARNING TARGETS

“I Can...”

- Identify the differences between physical and chemical changes
- Use the visual arts to create a 3D polymer clay pastry to demonstrate my understanding of the differences between physical and chemical changes
- Write a narrative from the point of view of an object to explain the physical and chemical changes in the art process

[www.artsnowlearning.org](http://www.artsnowlearning.org)

Units provide differentiated ideas and activities aligned to a sampling of standards.

The units do not necessarily imply mastery of standards, but are intended to inspire and equip educators.

Produced through the U.S. Department of Education: Arts in Education—Model Development and Dissemination Grants Program  
Cherokee County (GA) School District and ArtsNow, Inc.

Duration: 2-3 Days

Project Description	Learning Targets
<p>Students will use visual arts and drama to explore the differences between physical and chemical changes. After learning about the visual art techniques of artist Wayne Thiebaud, students will create a polymer clay pastry. When the pastry art is complete, students will use prior knowledge learned about physical and chemical changes to write a narrative from the point of view of the pastry explaining the physical and chemical changes that are involved in the pastry art-making process.</p>	<p>“I Can...”</p> <ul style="list-style-type: none"> <li>• Identify the differences between physical and chemical changes</li> <li>• Use the visual arts to create a 3D polymer clay pastry to demonstrate my understanding of the differences between physical and chemical changes</li> <li>• Write a narrative from the point of view of an object to explain the physical and chemical changes in the art process</li> </ul>

ESSENTIAL QUESTIONS

<ul style="list-style-type: none"> <li>• What is the difference between physical and chemical changes?</li> <li>• How do I utilize visual arts to investigate the properties of a substance before, during, and after a chemical reaction to find evidence of change?</li> </ul>
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STANDARDS

Curriculum Standards	Arts Standards
<p><b>S5P2</b> Students will explain the difference between a Physical change and a chemical change.</p> <p><b>c.</b> Investigate the properties of a substance before, during, and after chemical reaction to find evidence of change</p> <p><b>ELACC5W3</b> Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.</p> <p><b>b.</b> Use narrative techniques, such as dialogue, description, and pacing, to develop experiences and events or show the responses of characters to situations.</p> <p><b>ELACC5W4</b> Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.</p> <p><b>ELACC5W5</b> With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.</p> <p><b>ELACC5W6</b> With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting.</p>	<p><b>VA5PR.3</b> Understands and applies media, techniques, and processes of three-dimensional works of art (e.g., ceramics, sculpture, crafts, mixed-media) using tools and materials in a safe and appropriate manner to develop skills.</p> <p><b>b.</b> Creates ceramic objects demonstrating refinement of the additive or subtractive method (e.g., pinch method, coil method, relief) and techniques (e.g., score and slip, wedging, slab method, surface texture).</p> <p><b>TAES5.3</b> Acting by developing, communicating, and sustaining roles within a variety of situations and environments.</p> <p><b>a.</b> Uses vocal elements such as inflection, pitch, and volume, to communicate the thoughts, emotions, and actions of a character.</p> <p><b>e.</b> Dramatizes literature and original scripts through various dramatic forms such as pantomime, process drama, puppetry, improvisation, plays, and Reader’s Theatre.</p>

**KEY VOCABULARY**

Content Vocabulary
<ul style="list-style-type: none"> <li>• Physical change</li> <li>• Chemical change</li> <li>• Reaction</li> <li>• Substance</li> <li>• Evidence</li> </ul>
Arts Vocabulary
<ul style="list-style-type: none"> <li>• Polymer clay: type of clay that is manufactured and contains plastic rather than coming from the earth</li> <li>• Form: an element of art that is three-dimensional and encloses volume, i.e. cubes, spheres, and cylinders are examples of various forms</li> <li>• Coil: a curling of material in a circular fashion</li> <li>• Surface texture: the surface quality or “feel” of an object, such as roughness, smoothness, or softness. Actual texture can be felt while simulated textures are implied by the way the artist renders areas of the picture.</li> <li>• Additive: sculptural process of manipulating space by adding material to reveal a given form</li> <li>• Form: objects that are three-dimensional having length, width and height. They can be viewed from many sides. Forms take up space and volume.</li> <li>• Subtractive: a sculptural process of manipulating a solid mass by taking away material to reveal a given form</li> <li>• Monologue: a long speech by a given character</li> <li>• Diction: using a “crisp &amp; clear” actor voice that can be understood by everyone watching and listening</li> <li>• Inflection: the modulation of intonation or pitch</li> <li>• Pitch: highness or lowness of sound</li> <li>• Volume: loudness or softness of sound</li> </ul>

**TECHNOLOGY INTEGRATION**

<ul style="list-style-type: none"> <li>• Students utilize technology to research a Wayne Thiebaud painting as a basis for their pastry art</li> <li>• Students utilize technology to type the narrative writing piece</li> <li>• Chatterpix</li> </ul>
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**ASSESSMENTS**

Formative	Summative
<ul style="list-style-type: none"> <li>• Teacher can monitor students through observation for understanding the physical and chemical changes through the art process</li> <li>• Question to ask during the art process:                             <ul style="list-style-type: none"> <li>• What piece of Wayne Thiebaud’s art influenced you most when creating your own pastry?</li> <li>• Why did you choose that particular piece of Wayne Thiebaud’s art?</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Narrative Writing Piece: Students will write a monologue from the point of view of the clay explaining the physical and chemical changes the clay goes through in the art process</li> <li>• <b>Narrative Clay Monologue Rubric</b> (see Downloads)</li> <li>• <b>Written Reflection</b> (see Downloads)</li> </ul>

<ul style="list-style-type: none"> <li>• What part of creating an art piece out of clay is a physical/chemical change?</li> <li>• What is the difference between a physical and chemical change?</li> <li>• How does a physical change and chemical change occur?</li> </ul>	
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### MATERIALS

Polymer clay, toaster oven, **Wayne Thiebaud's Paintings PowerPoint** (see Downloads) with information about the artist and examples of his paintings, **Narrative Clay Monologue Rubric** (see Downloads)

### Activating Strategy (5-10 min)

- Teacher will introduce the artist Wayne Thiebaud and his paintings with a PowerPoint encouraging students to look at the Geometric forms represented in Thiebaud's work.
- Teacher will also ask students to notice the details in the pastries he depicted.
- Teacher will lead a discussion with students about how physical and chemical changes occur through cooking and baking and creating clay art.

### Main Activity

#### Part 1

- The teacher will begin with a mini-lesson introducing the artist Wayne Thiebaud and his visual arts depicting pastries and various desserts.
- The students will research a Wayne Thiebaud painting to influence their own clay model.

#### Part 2

- Students will be given polymer clay and will create a mini-visual depiction of one of Wayne Thiebaud's art pieces.
- The teacher will explain to the students that working with polymer clay is different than working with clay that comes from the earth. Polymer clay contains plastic and is a different consistency.
- The teacher will demonstrate how to create forms out of the clay to create pastries.
- Then students will mold and mend their clay until they arrive at a completed piece of pastry art. The teacher will discuss with the students throughout the artistic process of how each step of the project is a physical or chemical change.
- To complete the process, the pastry art will be placed in a toaster oven to go through a chemical change (cooking the clay), becoming a new substance.

#### Part 3

- Students will write a narrative from the viewpoint of the clay using sensory details. Included in the narrative will be a description and identification of the physical and chemical changes that occurred during the making and baking of the pastry art. Student writing will be evaluated using the **Narrative Clay Monologue Rubric**. (see Downloads)

#### Part 4

- Students will present their clay monologue using vocal elements--inflection, pitch, and volume--to communicate the thoughts, emotions, and actions of the character (clay).
- Other classroom students may provide constructive feedback on theatrical delivery (diction, facial expression, tone, volume, pitch, etc.) using theatre arts vocabulary.

**Classroom Tips:**

- Teachers should monitor students during cooking times of clay pastries. Students who are waiting for clay to be baked may begin working on their monologue writing to accompany the clay pastries artwork.

**REFLECTION****Reflection Questions**

- *How did the art process help me understand the difference between physical and chemical changes?*
- *The vocal element I used during the monologue was \_\_\_\_\_. I made this choice because ...*

**DIFFERENTIATION****Accelerated Students:**

- These students could design a menu depicting their pastries in a café based on the art of Wayne Thiebaud. The students could use clipart or other visual arts mediums.
- These students could also write a song to accompany their narrative story. The tempo of the song/sounds included in the song should accurately reflect the tempo changes that the molecules would go through during the process.

**ADDITIONAL RESOURCES****Books**

- *Changing Matter: Understanding Physical and Chemical Changes* by Tracy Nelson Maurer
- *Make It Change!* by Anna Claybourne

**Websites**

- Sunday Morning Interview with Wayne Thiebaud:  
[https://www.youtube.com/watch?v=vl\\_QJ5D9Qm8-CBS](https://www.youtube.com/watch?v=vl_QJ5D9Qm8-CBS)

**APPENDIX (See Downloads)**

- **Narrative Clay Monologue Rubric**
- **Wayne Thiebaud's Paintings PowerPoint**

**CREDITS**

U.S. Department of Education  
Arts in Education--Model Development and Dissemination Grants Program  
Cherokee County (GA) School District and ArtsNow, Inc.  
Ideas contributed and edited by:  
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### Narrative Clay Monologue Rubric

**TASK:** Create a clay pastry art. Write and perform a monologue of the clay’s point of view through the art process including physical and chemical changes to the clay.

**Standards:** ELACC5W3b, ELACC5W4, ELACC5W5, ELACC5W6, S5P2c, VA5PR.3b, TAES5.3a and e

Task	4	3	2	1
<b>Writing Process</b>	Students devote a great deal of time and effort to the writing process (prewriting, drafting, reviewing, and editing). Student works hard to make the monologue the best it can be.	Students devote sufficient time and effort to the writing process (prewriting, drafting, reviewing, and editing).	Students devote some time and effort to the writing process, but overall more revisions are needed.	Students devote little time and effort to the writing process.
<b>Point of View of the Character (Clay)</b>	The point of view of the character (clay) portrayed in the monologue is clearly developed. There is evidence that the point of view has been analyzed thoroughly.	Most of the monologue is written from the point of view of the character (clay). The monologue wanders off at one point, but the reader can still learn something about the topic.	Some of the monologue is in the point of view of the character (clay), but the reader does not learn much about the topic.	No attempt has been made to relate the writing to any particular point of view.
<b>Accuracy of Science Content</b>	All facts presented in the monologue are accurate. The facts are fully developed and allow the audience to understand much more about the differences between physical and chemical changes.	Almost all facts presented in the monologue are accurate.	Most facts presented in the monologue are accurate (at least 70%).	There are several factual errors in the monologue.
<b>Preparedness</b>	Student is completely prepared, and the monologue is performed using a loud, clear voice.	Student seems mostly prepared, but could have benefitted from more rehearsals. Voice is mostly loud and clear.	Student is somewhat prepared, but it is clear that rehearsal was lacking. Voice is somewhat loud and clear.	Student is not prepared to present. Student often mumbles or can’t be understood.

Total Score: \_\_\_\_\_

# COOKING PASTRIES WITH WAYNE THIEBAUD

By Carol Steele and Taylor Stewart

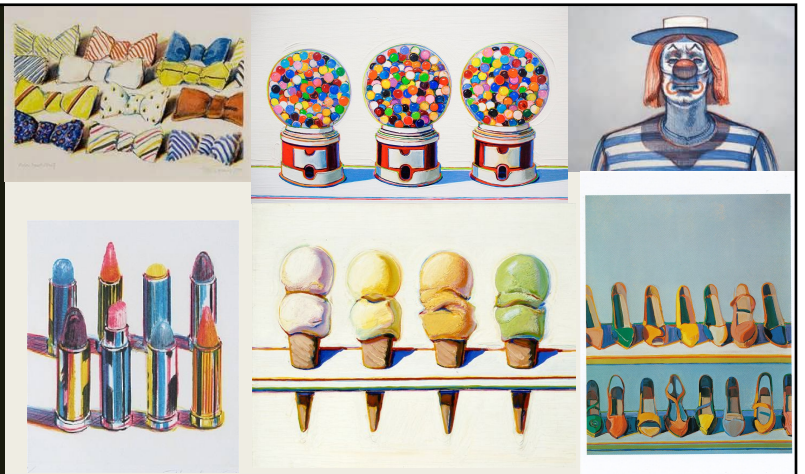


## Wayne Thiebaud Painter Born 11-19-20



- American painter and printmaker widely known for his colorful works depicting commonplace objects including pies, lipsticks, paint cans, ice cream cones, pastries, and hot dogs, as well as for his landscapes and figure paintings
- Artistic techniques-Uses real life objects, not images to create his paintings, paints objects with rich, bright colors to bring attention to form, uses loose, thick brushstrokes and exaggerated colors to depict his subjects, includes well-defined shadows characteristic of advertisements in his work
- Associated with the Pop art movement because of his interest in objects of mass culture
- Worked in animation department at Walt Disney Studios, also worked as a cartoonist, sign painter, illustrator, teacher
- In 1994, Thiebaud received the National Medal of Arts, the highest award given to an artist by the U.S. government.







## Art Terms



- **polymer clay**-a type of clay that is manufactured and contains plastic rather than coming from the earth
- **form**-an element of art that is three-dimensional and encloses volume (cubes, spheres, and cylinders are examples of various forms)
- **coil**-a curling of material in a circular fashion
- **surface texture**-the surface quality or “feel” of an object, such as roughness, smoothness, or softness. Actual texture can be felt while simulated textures are implied by the way the artist renders areas of the picture.
- **Additive**-a sculptural process of manipulating space by adding material to reveal a given form
- **Form**-objects that are three-dimensional having length, width and height. They can be viewed from many sides. Forms take up space and volume.
- **Subtractive**-a sculptural process of manipulating a solid mass by taking away material to reveal a given form



## Theater Terms

- **Monologue**-a long speech by a given character
- **Diction**-using a “crisp & clear” actor voice that can be understood by everyone watching and listening
- **Inflection**-the modulation of intonation or pitch
- **Pitch**-highness or lowness of sound
- **Volume**-loudness or softness of sound

