



Project Essential Questions

- What is the difference between a physical change and a chemical change?
- How can I utilize the theater to analyze a substance before, during, and after chemical reaction to find evidence of change?

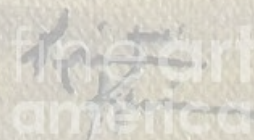
PROJECT DESCRIPTION

Students will use elements of drama to create a cooking show to dramatize the process of preparing and making foods in the kitchen. This drama will include highlighting the process of foods going through both physical and chemical transformations as they are prepared for an audience to taste. Each student will write their own script for the part they play in the production of the cooking show. Another class will be invited to partner with the class to participate as the audience.

LEARNING TARGETS

“I Can...”

- Identify the difference between a physical change and a chemical change
- Use theatrical arts to demonstrate my understanding of the properties of a substance before, during, and after chemical reaction to find evidence of change



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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: 3-4 Days

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ESSENTIAL QUESTIONS

- What is the difference between a physical change and a chemical change?
- How can I utilize the theater to analyze a substance before, during, and after chemical reaction to find evidence of change?

STANDARDS

Curriculum Standards	Arts Standards
<p>S5P2 Students will explain the difference between a physical change and a chemical change.</p> <p>a. Investigate physical changes by separating mixtures and manipulating cutting, tearing, folding) paper to demonstrate examples of physical change.</p> <p>c. Investigate the properties of a substance before, during, and after chemical reaction to find evidence of change.</p> <p>ELACC5W4 Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.</p> <p>ELACC5W5 With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.</p> <p>ELACC5SL4 Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.</p>	<p>TAES5.2 Developing scripts through improvisation and other theatrical methods.</p> <p>a. Uses a playwriting process (e.g., pre-write/pre-play; prepare to write/plan dramatization; write; dramatize; reflect and edit; rewrite/play; publish/perform).</p> <p>c. Creates an organizing structure appropriate for purpose, audience and context.</p> <p>TAES5.3 Acting by developing, communicating, and sustaining roles within a variety of situations and environments.</p> <p>a. Uses vocal elements such as inflection, pitch, and volume, to communicate the thoughts, emotions, and actions of a character.</p> <p>b. Uses body and stage movement to communicate the thoughts, emotions, and actions of a character.</p> <p>c. Uses imagination to make artistic choices in portraying characters.</p> <p>d. Collaborates with an ensemble to create theatre.</p> <p>e. 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"> ● Physical change ● Chemical change ● Mixture ● Evidence ● Reaction ● Molecules ● Atoms ● Matter
Art Vocabulary
<ul style="list-style-type: none"> ● Script: the piece of writing that shows direction to the cast within a theater piece ● Character: the actor or actress in a specified role ● Props: items that actors use in a performance to depict real-life objects. Props can also be used to help students brainstorm for their writing or character study ● Dialogue: a conversation between two or more persons ● Inflection: the modulation of intonation, or pitch in the voice ● Volume: the loudness or softness of sound ● Diction: using a “crisp & clear” actor voice that can be understood by everyone watching and listening

TECHNOLOGY INTEGRATION

- Technology will be used to record and edit the cooking show for students to view.

ASSESSMENTS

Formative	Summative
<ul style="list-style-type: none"> ● Teacher can monitor students through anecdotal notes for understanding of theater elements, the differences between physical and chemical changes, and teamwork. ● Prompts for after the cooking show has been performed: <ol style="list-style-type: none"> 1. Compare and contrast making a fruit salad and waffles discussing the physical and chemical changes that occur in both. 2. Analyze the importance of teamwork in the production of a cooking show. 	<ul style="list-style-type: none"> ● Cooking Show Script and Performance Rubric (See Downloads)

MATERIALS

Student scripts, various types of fruits cut into pieces, 2 bowls, 2 spoons, waffle ingredients, waffle iron, small bowl and spoons for samples

Activating Strategy (5-10 min)

The teacher will lead a discussion about cooking shows. During this discussing use large chart paper to capture notes on what is discussed. If desired, the teacher can show a short clip of a cooking show and discuss the various elements seen. For example, the students might notice that they are having conversation and explaining what they are doing throughout the cooking process. The teacher might also have students note that the cooking show has different parts such as a host, a chef, an assistant, camera crew, etc...The teacher also should highlight how the performers are using pitch, volume, diction, and other theater strategies within the cooking show.

Main Activity**Part 1**

- Cooking Show Brainstorming Activating Strategy (see above for directions)
- The students will write a script using various theater techniques to work on a cooking show that they will present to another grade level. The students will explain the physical and chemical changes that occur in the cooking process (ex: fruit salad—physical; cooking waffles—chemical change). Direct students to think of a meal and its courses that include some physically changed courses and some courses that underwent chemical changes.
- The students will be placed into jigsaw groups based on their tasks in the cooking show. For example: The groups could be waffle makers, fruit salad makers, Coffee makers, and scrambled egg makers.
- In those groups, the students will write their scripts including how they plan to prepare their part of the breakfast for their portion of the show.
- Once the scripts are completed, the students will jigsaw into their filming groups, which will consist of the different courses within the meal being dramatized.

Part 2

- The students will then pair with a 2nd grade class to share their cooking shows.
- There will be multiple cooking shows happening at the same time within the classroom (this will be more time effective). The students will use their written scripts to present using inflection, pitch, and volume. Partnering with a 2nd grade class would allow them to incorporate one of their standards by having them create a how-to writing explaining the process for making the food that they observed being created.

Classroom Tips:

- If classroom space with multiple presentations is an issue, consider finding common space, such as the cafeteria, gym, or library for multiple groups to present.
- The 2nd grade class should also be split into multiple groups to watch and preview the cooking shows.

REFLECTION**Reflection Questions**

- *How did using theater elements to create a cooking show help me understand the differences between physical and chemical changes?*
- *My role in the cooking show was _____ . My role was important to the production of the cooking show because...*

DIFFERENTIATION**Remedial/EL Students:**

- These students could use drawings and gestures to express their own ideas.
- These students could also use picture examples with words on the back for reading support.

Accelerated Students:

- These students could design a menu for a restaurant and have foods in categories such as physical changes and chemical changes. Students should have at least 3 foods in each category. In order to tie in to a previous lesson, the menu art could mimic that of Wayne Thiebaud. If possible, a third category of foods could include those that go through both a physical and chemical change.
- These students could also create a theme song for their cooking show. The theme song should include statements about the different foods that will be used in the show (fruit salad and waffles) and how the preparation of these foods will demonstrate physical and chemical changes.

ADDITIONAL RESOURCES**Books**

- *The Solid Truth About Matter* by Mark Weakland
- *Pancakes, Pancakes!* by Eric Carle

Websites

- interactivesites.weebly.com/matter-chemical-physical.html
- www.gamequarium.org/dir/Gamequarium/Science/Physical_and_Chemical_Changes/

APPENDIX (See Downloads)

- **Cooking Show Script and Performance Rubric**

CREDITS

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Cooking Show Script and Performance Rubric

TASK: Write a script for a role in a cooking show to analyze how mixing and cooking foods causes physical and chemical changes. Use elements of drama to perform for an audience.

Task	4	3	2	1
Writing Process	Students devote a great deal of time and effort to the writing process (prewriting, drafting, reviewing, and editing). Student works hard to make the script 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.
Script Construction and Writing	The script depicting the physical and chemical changes within cooking is clearly developed. There is evidence that the attributes of physical and chemical changes are clearly stated.	Most of the script depicting the physical and chemical changes within cooking is clearly developed. There is evidence that the attributes of physical and chemical changes are clearly stated.	Some of the script depicting the physical and chemical changes within cooking is clearly developed. There is little evidence that the attributes of physical and chemical changes are clearly stated.	The script depicting the physical and chemical changes within cooking is not at all developed. There is no evidence that the attributes of physical and chemical changes are clearly stated.
Accuracy of Science Content	All facts presented in the script 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 script are accurate.	Most facts presented in the script are accurate (at least 70%).	There are several factual errors in the script.
Preparedness	Student is completely prepared and the script 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: _____