



Food Education Standard #5: Food impacts health.

To Gluten or Not to Gluten?

Grade Levels & Subjects: Grades 9 - 12 English Language Arts

Learning + Food Objectives:

Students will express and integrate their understanding of gluten by collaborating in the development of a gluten awareness campaign for their school.

Common Core Standards:

Common Core English Language Arts

Using multiple resources to compile awareness campaign

CCSS.ELA-LITERACY.RST.9-10.1

Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

CCSS.ELA-LITERACY.RST.9-10.4

Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context



MATERIALS NEEDED

- Student Worksheet (Attached below)

CLASSROOM PROCEDURE

INTRODUCTION (10 minutes)

1. Instruct students to form small groups of 4-6 students (of their own choosing).
2. Once settled, direct students' attention to the *Vocabulary Table* in the student worksheet and review the instructions. *Teacher can omit or add words to fit the needs of students.*
 - a. Groups should divide up the list of vocabulary words below and find the definitions for the words that you're responsible for using a dictionary or the internet.

INSTRUCTION (80 - 100 minutes)

1. Explain that today's lesson will focus on understanding what gluten is and how it affects the body. Direct students to access their student worksheets.
2. Start the lesson by showing the ASAP Science video "What the Heck is Gluten? (ASAP Science)".
3. Engage students in a discussion about what they heard or saw in the video. Write their observation on the board before proceeding to the independent reading activity. An optional video note-catcher has been provided.
4. Direct students' attention to the student worksheet. Point out the Resource Table and inform students the readings, videos and images being used today are listed in this table.
5. Ask students to access the article, "What is Gluten and Why is it Bad for Some People?"
 - a. Point out the section titles in the note-taking table. Remind students to pay attention to the main idea of each section so they can write them down in the table.
 - b. Instruct students to silently read the article on their own making sure to pause after each section to write or copy/paste 1-2 facts about gluten from each section of this article.
 - c. Allow about 15 minutes for this activity – checking in with students to see if they need assistance or more/less time.
6. Instruct students to move to their assigned groups pre-determined by the teacher. Once grouped, instruct students to access their vocabulary tables.
7. Instruct groups to work together to update column 3 of the Vocabulary Table with any new information they learned from the video or the article. Explain that they'll need this information for their project.
8. After about 10 minutes, introduce the group project - Gluten Awareness Campaign.
 - a. Student groups should create visual and other media for a schoolwide Gluten Awareness Campaign.
 - b. Groups should develop at least 2 posters or infographics (visual media) and 1-2 audio recordings or videos. The corresponding Brainstorming Table in the student worksheet has space for students to document their project ideas.
 - c. This plan must include gluten vocabulary, facts, and images.
 - d. Before releasing students to begin on their project take some time to review the sample Recipe and the Resource Table.
 - e. Remind students that they should use this resource list to gather information for their projects.
9. Allow students time to work on their projects (at least 60-70 minutes).
10. Discuss deadlines and logistics for the day projects are due before the end of class.

CLOSING (10 minutes)

1. Exit Slip: Ask students to respond to the following questions in writing:
 - a. *Based on what you learned about gluten's effect on the body, what changes, if any, do you plan to make in your diet? Why?*

ADDITIONAL RESOURCES

- Articles for further reading:
 - "Celiac Disease: An Infographic to Understand" by Mind the Graph - <https://mindthegraph.com/blog/celiac-disease/#.YTV3tp5uc-Q>
 - "What is Gluten?" By Fitivate - <https://fitivate.com/what-is-gluten/>
 - "More Evidence that You Should be Eating Gluten" by Susan Rinkunas - <https://www.vice.com/en/article/wnwgj5/gluten-free-foods-higher-in-calories-lower-in-protein-study>
 - "Gluten the Pros and Cons" by Pacifica Compounding Pharmacy - <http://www.pacificapharmacy.com/2020/07/02/gluten-the-pros-and-cons/>
- Videos:
 - "Science: What is Gluten? Here's How to See and Feel Gluten" by America's Test Kitchen - <https://www.youtube.com/watch?v=zDEcvSc2UKA>
 - "What is Gluten?" by Sutter Health - <https://www.youtube.com/watch?v=1Bsd4MVqmZg>
 - "Is Gluten That Bad for Your Health" by What I've Learned - <https://www.youtube.com/watch?v=M0La27FNrA4>
 - "Gluten is Perfectly Fine for the Vast Majority of People" by Markham Heid - <https://www.vice.com/en/article/9k47w8/gluten-is-perfectly-fine-for-the-vast-majority-of-people>

RECIPE FROM VIDEO

Video: Banana Muffins by Chef Kayla White (<https://vimeo.com/408610213>)

Below is the recipe from the video in this lesson. Pilot Light Anywhere lessons are designed to be able to be delivered from a remote setting; however, this recipe can be demoed by the teacher virtually/in person, sent home to families, or used for reference.

Banana Muffins

Serves: 12

Ingredients:

- 2/3 Cup Chopped Dates
- 6 Very Ripe Bananas
- 1/2 Cup + 2 Tablespoons Unsalted, Melted Butter
- 2 Large Eggs
- 2 Cups Gluten Free Flour
- 2 1/4 Teaspoons Baking Powder
- 1 1/4 Teaspoons Baking Soda
- 1/2 Teaspoon Salt

Materials:

- 12 count muffin pan
- Glass bowl
- Stove
- Pan to boil water
- Food processor or fork

Preparation:

1. Preheat the oven to 400 degrees Fahrenheit and spray a 12 count muffin pan.
2. Put bananas in a glass bowl and cover. Microwave for 4-6 minutes until soft.
3. Using a strainer, let the liquid from the bananas drain into a small pot, you should have about 1 cup.
4. Reduce the liquid to about half and set aside.
5. Boil enough water to cover the dates and let them soak for about 25 minutes or until soft.
6. In a food processor or using a fork, mash the bananas.
7. Mix in the eggs, melted butter, banana liquid, and dates until everything is fully incorporated.
8. Whisk all dry ingredients together and fold into the wet ingredients.
9. Divide batter between all 12 muffins.

10. Bake until slightly golden and springs back when lightly touched - about 18 minutes.

Notes: The beauty of this recipe is that you can add or substitute as you like. Cinnamon would be a nice addition instead of cardamom or star anise. The dates could be substituted for chocolate chips of any kind, dried fruit, or swirl some Nutella in there. Dates were used to keep the muffins sugar free but you can use anything. All-purpose flour can be used instead of gluten free flour if gluten isn't an issue. Be creative and enjoy!

The student worksheet below can be printed or copied onto
any online learning platform.



To Gluten or Not to Gluten?

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Directions: In your group, divide up the list of vocabulary words below and find the definition for each word that you're responsible for.

Gluten Vocabulary Table		
	<p>2nd column: Use dictionaries or the internet to define each term.</p> <p>3rd column: After the whole class reading and video review, draw a picture or describe each term in your own words.</p>	
1	Gluten	
2	digestive system	
3	small intestine(s)	
4	Gastrointestinal	
5	celiac disease	
6	villi	
7	Antigen	
8	Nutrients	
9	Protein	
10	Intolerance	
11	Inflammation	
12	amino acid	

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Resources for Grades 9 - 12

Article	Videos	Images or Infographics
What is Gluten and Why is it Bad for Some People? By Medical News Today	What the Heck is Gluten? (ASAP Science)	How Much Do You Know About Gluten? (NeoGen)
Celiac Disease by Nemours Kids Health	Ask Dr Smarty: ABCs of Gluten Free	4 Hidden Sources of Gluten (Univ of Utah)
Information for Kids (BeyondCeliac.org)	What's the Big Deal with Gluten (Ted-Ed)	Gluten-Free Foods Infographic (InfographicNow.com)
Types of Gluten Intolerance by Children's National	Mayo Clinic Minute: The Truth about Gluten	What is Gluten? (image, part of an ISSA article)
Which types of flour are gluten-free? By Very Well Fit	What is Gluten (Sutter Health)	What is Gluten? By Fitivate
5 Symptoms of Gluten Intolerance by Paleo Foundation	Science: What is Gluten? Here's How to See and Feel Gluten (America's Test Kitchen)	How Long After Eating Gluten Do you feel sick? (image in an Eats By April article)
More Evidence that you Should be eating Gluten by Susan Rinkunas	5 Signs & Symptoms of Gluten Intolerance (Healthline)	The Rise of Gluten Free Products by Gluten Bee
Gluten is Perfectly Fine for the Vast Majority of People by Markham Heid	Is Gluten That Bad for Your Health? By What I've Learned	Gluten in Kids' Crafts by Simply Gluten Free
Gluten the Pros and Cons by Pacifica Compounding Pharmacy	Celiac Disease: & Gluten Disorders in Children (Children's Hospital in Philadelphia)	Celiac Disease: An Infographic to Understand (Mind the Graph)

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Gluten Article Note Catcher

Directions: Silently read the article and fill in the chart below with the key details of each section and based on the chart in the concluding paragraphs. Be sure to include a minimum of 2 ideas per section/box.

Article Title	What is Gluten and Why is it Bad for Some People? By Medical News Today
<i>What is Gluten?</i>	
<i>Problems with Gluten</i>	
<i>Gluten Intolerance</i>	
<i>FODMAPs</i>	
<i>Foods High in Gluten</i>	
<i>Gluten Free Diet</i>	
<i>Who should avoid Gluten?</i>	
Finish this sentence: <i>My big takeaway from this article and the list is that</i> _____	

Gluten Video Table

Directions: Use the space below to write and draw based on what you learned from the video.

Video Title: What the Heck is Gluten? (ASAP Science)

To Gluten or Not to Gluten?



Gluten Awareness Campaign Brainstorming Table

Directions: Use the space below to jot down relevant information from videos, images, or articles that you plan to use for your campaign. In the last rows, plan out ideas for your campaign. As a group, decide how you want to divide up the tasks related to your campaign. Each person should have their own copy of these notes.

Title of Resource 1:	
Type of Resource:	
Resource 1 Notes:	
Title of the Resource 2:	
Type of Resource:	
Resource 2 Notes:	
Title of the Resource 3:	
Type of Resource:	
Resource 3 Notes:	
Picture/Infographic #1 Ideas:	
Picture/Infographic #2 Ideas:	

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Video/Audio Recording #1 Ideas:	
Video/Audio Recording #2 Ideas:	