



Understanding Gluten & Its Effects

Grade Levels & Subjects: Grades 6 - 8 English Language Arts

Learning + Food Objectives:

Students will express their knowledge of gluten by gathering relevant details necessary to develop a 4-week Gluten-free Meal Plan.

Common Core Standards:

Common Core English Language Arts

Using multiple sources to create a final product

CCSS.ELA-LITERACY.RST.6-8.1

Cite specific textual evidence to support analysis of science and technical texts.

CCSS.ELA-LITERACY.RI.7.7

Compare and contrast a text to an audio, video, or multimedia version of the text, analyzing each medium's portrayal of the subject.



MATERIALS NEEDED

- Student Worksheet (Attached below)

CLASSROOM PROCEDURE

INTRODUCTION (10 minutes)

1. Instruct students to form small groups of 4-6 students.
2. 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. Instruct students to return to their seats. Explain that today's lesson will focus on understanding what gluten is and how it affects the body.
2. Direct students to access their student worksheets. Point out the Resource Table and inform students the readings, videos and images being used today are listed in this table.
3. 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 that align with the sections of the article.
 - b. Begin reading the article aloud, pausing to allow time for students to write or copy/paste 1-2 facts about gluten from each section of this article.
 - c. The teacher should consider reading 1 or more sections aloud, alternating with the student readers.
4. Instruct students to move to their assigned groups pre-determined by the teacher. Once grouped, instruct students to refer to their vocabulary tables.
5. Instruct them to update their vocabulary table (column 3) with any new information they learned from the video or the article. Explain that they'll need this information for their project.
6. After about 10 minutes, introduce the group project - 4-week Gluten-Free Eating Plan
 - a. Student groups should create a 4-week Gluten-Free Eating Plan
 - b. This plan must include gluten vocabulary, facts, and images.
 - c. Students are essentially developing a daily or weekly meal plan for people to follow.
 - d. Groups can decide the format of that plan - whether they want to create a calendar-style plan, a table, slide deck or some other format.
7. Before releasing students to begin on their project take some time to review the Recipe and the Resource Table. Remind students that they should use this list to gather information for their projects.
8. Allow students time to work on their projects (at least 50-60 minutes).
9. 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. *Why is there so much confusion about gluten?*
 - b. *What can be done to avoid confusion in the future?*

ADDITIONAL RESOURCES

- Articles for further reading:
 - "Celiac Disease: An Infographic to Understand" by Mind the Graph - <https://mindthegraph.com/blog/ceciac-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.

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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			
	Word	Definition from dictionary	Draw a picture OR Describe in your own words
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 6 - 8

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 Fivate
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: 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-Free Meal Plan Note-Catcher

Directions: Use the space below to jot down relevant information from videos, images, or articles that you plan to use for your project. In the last 4 rows, write out ideas for your meal plan (recipes, ingredients, images, etc.).

Title of Resource 1:	
Type of Resource:	
Resource 1 Notes:	
Title of the Resource 2:	

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Type of Resource:	
Resource 2 Notes:	
Title of the Resource 3:	
Type of Resource:	
Resource 3 Notes:	
Week 1 Meal Plan Ideas:	
Week 2 Meal Plan Ideas:	
Week 3 Meal Plan Ideas:	
Week 4 Meal Plan Ideas:	