



Food Education Standard 3: Food and the environment are interconnected.

Growing Methods

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

Learning + Food Objectives:

Students will learn how food and the environment are interconnected by researching growing methods and creating a visual to share with middle schoolers about the methods.

Common Core Standards:

Common Core English Language Arts

Producing Clear Writing Pieces

CCSS.ELA-LITERACY.W.9-12.4

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CCSS.ELA-LITERACY.W.9-12.2

Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.



MATERIALS NEEDED

- Hydroponics Resources:
 - Text: "Garden Basic: Hydroponics" by KidsGardening.org - <https://kidsgardening.org/garden-how-to-hydroponics/>
 - Video: "What is Hydroponics" - <https://www.youtube.com/watch?v=tzBK4QZSQaY>
- Aquaponics Resources:
 - Text: "The Spotless Garden" by Benjamin Rasmussen - <https://www.nytimes.com/2010/02/18/garden/18aqua.html>
 - Video: "Understanding Aquaponics by Animation" - <https://www.youtube.com/watch?v=Gm0ojYMuHHg>

- Soil Resources:
 - Text: "Soil Basics 101" by Carlin Roland - <https://thegreenconspiracy.com/soil-basics-101-a-comprehensive-guide-for-the-garden-nerd/>
 - Video: "What's the Dirt on...Dirt" - <https://www.youtube.com/watch?v=if29mjcd5bc>
- Student Worksheet (Attached below)

CLASSROOM PROCEDURE

INTRODUCTION (10 minutes)

1. Introduce the topic of the different growing methods of edible plants.
2. Ask students to list the different ways they have seen edible plants grown.
3. Have 2 – 3 students share out the different methods.
4. Brainstorm as a class on a shared document or use an online resource such as dotstorming or padlet to capture thoughts.

INSTRUCTION (30 minutes)

1. Explain that students will be researching three methods for growing edible plants. They will be creating a visual to send to a middle school classroom who is wanting to start growing their own food at their school. It is their task to do the research and share the ways they could grow their food. Students may choose a brochure, slideshow, video, etc. to share with the middle school classroom. Students should be sure to include the following in their visual:
 - Clearly introduce and explain the growing methods in growing food
 - Use vocabulary appropriate for middle schoolers
 - Include visuals that show how the methods grow food
 - Summarizes the benefits and drawbacks for each method when growing food
2. Teacher may choose to provide the resources above or ask students to research on their own.
3. Their visual should clearly communicate the different method the middle school class could choose when growing food.

CLOSING (teacher discretion)

1. Have students share their work with a peer to receive feedback and make changes.

ADDITIONAL RESOURCES

- Introduction to three growing methods:
 - "Aquaponics vs Hydroponics vs Soil" - <https://www.youtube.com/watch?v=omNV2A47CDA>
- Article about benefits of hydroponics and aquaponics:
 - "Aquaponics: Combining Fish Farming and Hydroponics for Clean Water" - <http://savethewater.org/aquaponics-combining-fish-farming-and-hydroponics-for-clean-water/>

RECIPE FROM VIDEO

Video: Carrot Hummus by Chef Lydia Burns: <https://vimeo.com/416129906>

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.

Carrot Hummus Dip

Ingredients:

- 1 pound (bag) of carrots
- 2 garlic cloves (or more if you prefer)
- 1 inch nub of fresh ginger
- 3 1/2 tablespoons extra virgin olive oil (or sub an oil of your choice, sunflower, or grape seed oil)
- 1/4 cup white wine vinegar (or sub a vinegar of choice)
- 1 teaspoon salt
- 1/2 teaspoon paprika
- 1 teaspoon ground cumin
- chopped chives or fresh parsley for garnish (optional)



Directions:

1. Peel carrots and chop into even size segments (approximately 1-2 inch pieces). Drop the carrots pieces in a pot and cover with just enough water to cover the pieces plus one inch. Boil the carrots until tender - about 10 minutes (a fork should easily go through the carrots but they should still otherwise hold some form, think al dente). If you are mashing by hand, boil until an additional 5 minutes.
2. Meanwhile smash the garlic cloves and put in the blender/food processor. Peel and slice the fresh ginger and place in the blender. Blend/process for 10 seconds until both are minced up. If making by hand mince the garlic and fresh ginger first.
3. Then add the oil, vinegar, salt, paprika, and cumin and process for 30 seconds, or whisk together by hand in a large bowl until all items are incorporated.
4. Drain the carrots and add to the food processor/blender or bowl. Blend until you have a smooth, dippy consistency (2 minutes). If using a blender, scrape down the sides of the blender so all the carrot bits get evenly blended. If mashing by hand, use a wooden spoon, muddler, or potato masher, mash until smooth. The texture may be a bit different with a few larger bits of carrots, but it will still taste delicious!
5. Chill for at least 30 minutes in the fridge before serving. Garnish the dip with chopped chives or parsley, or if you prefer a bit of crunch on top, use everything spice or a dukkah of your choice.
6. Serve alongside your preferred vehicle (pita bread or chips, bread, pretzels, etc.) Make it a meal by slathering it thick on bread and topping it with your favorite protein or some sautéed veggies.

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



Growing Methods

Through research and discussion, you will learn how the environment and food are interconnected through different growing methods.

Introduction

List the ways you have seen edible plants grown.

-
-
-
-

Your task is to create a visual to send a middle school classroom who is wanting to start growing their own food at their school. You will research and share the ways they could grow their food. You may choose a brochure, slideshow, video, etc. to share with the middle school classroom as your visual. Be sure to include the following in your visual:

- Clearly introduce and explain the growing methods in growing food
- Use vocabulary appropriate for middle schoolers
- Include visuals that show how the methods grow food
- Summarizes the benefits and drawbacks for each method when growing food

Research

-
-
-
-
-
-

Draft of Visual