

CLIMATE CHANGE – REDUCING FOOD WASTE AND COMPOSTING AS A SOLUTION

FIFTH SUSTAINABILITY THEMED UNIT PLAN



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TABLE OF CONTENTS

Introduction

Standards	1
Desired Results	2
Materials Needed	3

Lesson Plans and Teacher Resources

Lesson #1: Introduction to Climate Change and Vocabulary Words	4
Lesson #2: Web Search and Report Out	6
Lesson #3: Food Waste 101	7
Lesson #4: Composting and Other Climate Solutions	10
Lesson #5: Letter to the Editor - Writing Assignment	13
Lesson #6 (Optional): Report Creation and Letter Re-write	14
Teacher Resources	15

Student Worksheets

Climate Change Information	17
Climate Change Article Research Summaries	18
Four Simple Solutions to Reduce the Effects of Climate Change	20
Letter to the Editor	21

Appendixes

Appendix #1: Entire Food System Mapping Key	23
Appendix #2: EPA's Food Recovery Hierarchy Chart	24
Appendix #3: What to Compost	25

STANDARDS

MAIN STANDARDS

5-ESS3-1: Human Impacts on Earth Systems: Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments.

5-ESS3-1: Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

STANDARD CONNECTIONS

RI.5.9 Literacy Connection - Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-ESS3-1)

W.5.8 Literacy Connection - Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (5-ESS3-1)

5-LS2-1 Science Connection - The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem.

DESIRED RESULTS

OBJECTIVE

Students will learn about various environmental problems and how these problems are impacting our world. Students will focus on problems related to food waste and sending food to the landfill. Students will learn about backyard and industrial composting as a solution.

ESSENTIAL QUESTIONS

1. How does human activity impact our world?
2. What is the problem with food waste?
3. How can humans help reverse climate change?
4. What can you compost?

FACTUAL KNOWLEDGE

Students will learn:

1. How climate change is affecting our world.
2. What is composting.
3. A basic understanding of this unit's vocabulary words pertaining to climate change.

PROCEDURAL KNOWLEDGE

Students will be able to:

1. Write a Letter to the Editor that is supported by research and data.
2. Properly compost within their home or via their school's composting program.

CONCEPTUAL KNOWLEDGE

Students will understand:

1. That human activities in agriculture, industry, and everyday life affect our environment.
2. How composting works.

PERFORMANCE TASK

Students will create a Letter to the Editor (for the newspaper) where they highlight that humans are changing the climate and then offer a few solutions to the problem.

1. The letter word limit is 250 words (for The Denver Post).

MATERIALS NEEDED

Material	Lesson and Activity
Climate Change Information – Student handout <ul style="list-style-type: none"> • One copy per student 	Lesson 1, Activity 2.1
Computers for the web search on climate change and solutions	Lesson 2, Activity 1
Climate Change Article Research Summaries – Student handout <ul style="list-style-type: none"> • Two-sided handout per student 	Lesson 2, Activity 1
One blank sheet of paper per student during this activity. Could also be a page in the student’s notebook.	Lesson 3, Activity 2
Four Simple Solutions to Reduce the Effects Climate Change – Student handout <ul style="list-style-type: none"> • One copy per student 	Lesson 4, Activity 3.2
Letter to the Editor – Student handout <ul style="list-style-type: none"> • Two-sided handout per student • The student handout is optional. Students can use any lined sheet of paper to write the letter on. 	Lesson 5, Activity 1
Letter to the Editor – Report Creation (optional activity) <ul style="list-style-type: none"> • Lined piece of paper – one per student • Poster board – 11” X 17” or any available poster board size – one per student • Markers • Colored pencils • Scissors • Glue or tape 	Lesson 6, Activity 1
PowerPoint - Fully created PowerPoint outlining all of the information within the lesson, including the vocabulary words, links to all videos, photos, and screenshots of the in-class worksheets.	Lesson 1-5

LESSON#1: INTRODUCTION TO CLIMATE CHANGE AND VOCABULARY WORDS

LESSON TIME: 45 MINUTES

ACTIVITY #1 (20 MINUTES): VOCABULARY PRIMER

Students learn about the vocabulary words for this lesson. The teacher teaches the vocabulary word, uses it in a sentence, and then asks a question about the word to gauge the student's understanding.

Vocabulary words:

1. **Climate change** - A change in global and regional climate patterns attributed to an increase in atmospheric carbon dioxide from the burning of fossil fuels.
2. **Fossil fuels** – Any carbon-containing fuel formed from the remains of prehistoric plants and animals. E.g.: coal, petroleum, and natural gas.
3. **Carbon Dioxide** - CO₂ – A heavy colorless gas that is formed by burning fuels, such as oil or gas and by the breakdown or burning of animal and plant matter, and by the act of breathing that is absorbed from the air by plants in photosynthesis.
4. **Greenhouse effect** - The warming of the earth's surface that takes place when heat from the sun is held in by the earth's atmosphere. The greenhouse effect can be caused by too much carbon dioxide being released into the air from the burning of fossil fuels.
5. **Greenhouse gas emissions** - Any atmospheric gas that absorbs and emits radiant energy and contributes to the greenhouse effect.
6. **Food waste** - Roughly one third of the food produced in the world for human consumption every year — approximately 1.3 billion tons — gets lost or wasted. This is due to growing too much food, buying too much perishable food items, and farmers throwing away crops because the food might be too “ugly” to sell.
7. **Composting** - A mixture of decaying leaves, vegetables, or manure that is used to improve garden soil.
8. **Deforestation** - The act or process of cutting down a large section of trees in a forest. Deforestation drives out animals and insects that live in and among the trees.
9. **Pollution** - Pollution happens when the environment is contaminated or dirtied by waste, chemicals, and other harmful substances. There are three main forms of pollution: air, water, and land.
10. **Non-renewable resources** – Resources that have a limited supply and cannot be replaced by natural means at a pace that meets its consumption.
11. **Renewable resources** – Any source that can or will be replenished naturally over a short amount of time to meet consumption needs. E.g.: wood or solar (sun)

ACTIVITY #2 (25 MINUTES): INTRODUCTION TO CLIMATE CHANGE

Activity 2.1 Climate Change Videos (7 minutes)

Students start by watching the first video, titled "Climate Change: Earth's Giant Game of Tetris." This video explains to kids how climate change is similar to a giant game of Tetris, and that if there are too many pieces, which represent CO₂, then the Earth will start to heat up. The second video, titled "Causes and Effects of Climate Change, National Geographic", shows what is causing global warming and then shows how global warming is affecting the oceans, weather, food, and health.

Video: Climate Change: Earth's Giant Game of Tetris, TED-Ed (2 minutes, 48 seconds)

- [Click here to watch the video](#)
- Link to the video: <https://www.youtube.com/watch?v=ztWHqUFJRTs&t=97s>

Video: Causes and Effects of Climate Change, National Geographic (3 minutes, 4 seconds)

- [Click here to watch the video](#)
- Link to the video: https://www.youtube.com/watch?v=G4H1N_yXBiA

Activity 2.2 Climate Change Information Handout (10 minutes)

Students will fill out the handout titled "Climate Change Information," in which students will write down the different information that they learned from watching the two videos on climate change. Students can work together in pairs on this project, but each student should fill out their own worksheet. This worksheet will help the students during the final project in Lesson #5, where students need to write a Letter to the Editor about climate change along with potential solutions that the students have learned throughout the unit.

Activity 2.3 Class Review - Climate Change Information Handout (8 minutes)

The class will go over the "Climate Change Information" handout together as a group. The teacher can ask each of the questions, and students can volunteer the answers. Students are free to change their answers or to fill in answers that they were not able to find. The PowerPoint has a slide for each of the correct answers for this worksheet.

LESSON #2: WEB SEARCH AND REPORT OUT

LESSON TIME: 45 MINUTES

ACTIVITY #1 (35 MINUTES): CLIMATE CHANGE & IMPACTS – WEB SEARCH AND HANDOUT

During this activity, students will work in groups of two or three to search for and read articles related to climate change and the vocabulary words that the students learned in Lesson #1, Activity #1. The students will go online to either NASA’s Climate Kids website or Newsela, which is a website that takes articles and writes them at different reading levels for kids. In the search bar, the students can either type in the words ‘climate change’ or any of the vocabulary words for this unit’s lesson. The goal of this activity is for students to search for and read different articles about climate change that might interest them. Many of these articles might propose various solutions to combatting climate change, which is also applicable to this unit. Students will also practice their note-taking skills, researching skills, and practice pulling out the main ideas of a text.

Activity #1 Deliverable: Climate Change Article Research Summaries

While searching for the articles, the students will fill out a two-sided worksheet titled “Climate Change Article Research Summaries.” In this worksheet, students will write a short summary and three key facts that they learned from three articles that they read during their research.

PowerPoint: Key words to search

On the PowerPoint, there is a list of key words and phrases that students can search for, in order to aid the students in the research process. Additionally, this PowerPoint slide contains the names of the websites that the students will use to search for articles.

Websites to search for articles and information on climate change, which are websites specifically made for kids and their reading levels.

1. [NASA’s Climate Kids Website](https://climatekids.nasa.gov/)

a. Link to the website: <https://climatekids.nasa.gov/>

2. [Newsela Website](https://newsela.com/)

a. Link to the website: <https://newsela.com/>

ACTIVITY #2 (10 MINUTES): SMALL GROUP REPORT OUT

After the students have conducted their research, small groups of students can join another one to two other groups and share some findings from their research. There should be between four to six students within each group in order for each group member to have a chance to share their findings from the research. This activity will allow students to learn about climate change, various causes, and learn about possible different solutions presented to combat climate change.

LESSON #3: FOOD WASTE 101

LESSON TIME: 45 MINUTES

Why the topic of food waste is important and related to climate change:

Food waste is a big problem because roughly 1/3 of the food that is grown worldwide is either wasted or lost throughout the entire process, from the farms, distributors, markets, restaurants, and people's homes. Decomposing food waste thrown in the landfill can produce methane, which is a harmful greenhouse gas. Throwing away 1/3 of all of the food grown wastes resources, energy to transport these products, land to grow these products, and the time spent by farmers growing these products. It also reduces animals' habitats and threatens wildlife species.

ACTIVITY #1 (15 MINUTES): FOOD WASTE 101

Activity 1.1 Educational Videos (8 minutes)

Students will start by watching the video titled, "Saving Food Educational on food waste," which explains that 1/3 of all of the food grown is wasted and gives students tips on how to combat food waste. The next two videos are the trailer and an extra clip from the documentary "Just Eat It: A Food Waste Story." The second video gives a brief overview of the film, showing perfectly edible food being wasted in the grocery stores and farmers having to throw out crops that don't meet cosmetic standards. The third video shows one cauliflower farmer talking about how a certain cauliflower has to be thrown out since it was too big and a little yellow for the supermarkets.

Video #1: Saving Food Educational on food waste (3 minutes and 29 seconds)

- [Click here to watch the video](#)
- Link to the video: <https://www.youtube.com/watch?v=0eqxgvZNn0I>

Video #2: Just Eat It: A Food Waste Story (Trailer) (1 minute, 51 seconds)

- [Click here to watch the video](#)
- Link to the video: <https://www.youtube.com/watch?v=rjm6VP9L4W8>

Video #3: Just Eat It: Second Helpings – Leftovers, Deleted Scene 2, Field Waste, Cauliflower (1 minute, 8 seconds)

- [Click here to watch the video](#)
- Link to the vide: <https://www.foodwastemovie.com/video/>
 - This is the second video under the "Leftovers" section

Activity 1.2 Class Discussion Regarding Food Waste (7 minutes)

After watching the food waste videos, there will be an in-class discussion on food waste. The goal of this discussion is to have students talk about what they saw in the documentary and to talk about food waste that they see in their daily lives.

There are a few slides on the PowerPoint that show examples of food waste that can be used to help guide the discussion. The following questions can be asked to guide the discussion:

1. What did you learn from the videos?
2. Does anyone remember how much food was wasted or lost worldwide?
 - a. Answer: Roughly 1/3 of food is wasted worldwide.
3. Why do you think that food waste is an issue?
4. What are some of the reasons that there is so much food waste?
 - a. Answers: Grocery stores only want to buy “perfect” and “pretty-looking” produce that meets aesthetic standards. However, “ugly” food still tastes the same.
 - b. Grocery stores buy too much produce to make sure the shelves are always stocked.
 - c. Consumers buy too much food and cannot eat it all before it goes bad.
 - d. There is food waste from cooking and preparing food.

ACTIVITY #2 (15 MINUTES): FOOD SYSTEM AND WASTE MAPPING ACTIVITY

Activity 2.1 Students Mapping out the Food System (5 minutes)

Students will be given five minutes to write down all of the steps that they can think of that needs to happen for food to end up in their fridge at home. The students can do this on a blank sheet of paper or within their notebooks.

Activity 2.2 The Class Mapping out the Food System (10 minutes)

After the students have mapped out the food system themselves and how they think food gets to their fridge, the class will work on this project together. Through this activity, students can see all of the inputs that goes into food ending up in their fridge. They can see the importance of only buying the food that you need and not wasting this food. The teacher will call on students to ask for the different steps in the process. The teacher will then write most, if not all of the steps, on the white board. Refer to Appendix #1: Entire Food System Mapping Key, for the whole process needed to get food from the farm into someone’s house.

- The PowerPoint contains photos of different steps in the process to help students with this assignment.

ACTIVITY #3 (15 MINUTES): HOW WE CAN SOLVE THE PROBLEM

Activity 3.1 - EPA's Food Recovery Hierarchy (7 minutes)

Students review the EPA's Food Recovery Hierarchy, which shows how people can manage food waste, with the most preferred to the least preferred options. The teacher will present this to the students via the PowerPoint, will select some students to read the table aloud, and then will ask students if they have any questions regarding the Food Recovery Hierarchy.

- Note that students will be learning more about composting in Lesson #4, which is one of the recommendations on the hierarchy.

EPA's Food Recovery Hierarchy

- Found in this document in Appendix #2: EPA's Food Recovery Hierarchy Chart
- [Click here](#) to be directed to the EPA's Food Recovery Hierarchy website
- Link to the website containing the graphic: <https://www.epa.gov/sustainable-management-food/food-recovery-hierarchy>

Activity 3.2 – Food Share Table (8 minutes)

Students will learn about the idea of Food Share Tables at their own school. This is where schools have their own share table, where students can put unopened and uneaten* food, fruits, and drinks that they received from the school's cafeteria, but did not want to eat for lunch. This way, if a student is hungry, they can go to the table and pick up something to eat for free. This cuts down on food waste within the cafeteria.

*Note: In the video, only food served in the cafeteria was allowed to go on the Food Share Table. Food from home could not be placed here.

Students will start by watching the video titled, "Food Share Table Guide for Elementary Schools," which explains the idea of a Food Share Table and shows one at a school cafeteria. After watching the video, the students will then engage in a class discussion. The discussion will be focused on the ideas of sharing food, why it is important, and if something like this could be possible at their school.

Use the following questions to guide this discussion:

1. What did the video talk about?
2. Why is a Food Share Table important?
3. Is sharing food one of the main topics on the Food Recovery Hierarchy table?
 - a. Answer: Yes, this was the second-best option behind Source Reduction.
4. Do you think we could /should have a Food Share Table at our school? Why?

Video: Food Share Table Guide for Elementary Schools by StopWaste (3 minutes, 22 seconds)

- [Click here to watch the video](#)
- Link to the video: <https://www.youtube.com/watch?v=PxqSyPZmZEG>

LESSON #4: COMPOSTING AND OTHER CLIMATE SOLUTIONS

LESSON TIME: 45 MINUTES

Why the topic of composting is important and related to climate change:

Because landfills contain no oxygen, decomposing food in landfills produce methane, which is a harmful greenhouse gas. Composting releases much less methane compared to throwing food in a landfill and also gives back nutrients to the soil. Additionally, composting also provides nutrients back to the soil and is a great fertilizer to fruits, vegetables, and plants in a backyard garden. Lastly, composting is one of the options on the EPA's Food Recovery Hierarchy, which is the best option to do with food scraps that are inedible or are by-products such as orange peels or eggshells.

ACTIVITY #1 (15 MINUTES): COMPOSTING 101

Activity 1.1: Composting videos (10 minutes)

Students will watch three composting videos. The first video gives an overview showing the students how food is turned into compost via backyard composting. This is done by going into an animated compost bin where a roly-poly teaches about the different layers and animals needed to break down food within a compost bin. The second video is about how the City of Denver is closing the loop by collecting food scraps and then selling the finished compost in a local hardware store. The third video quickly explains what goes inside of the compost bin.

Video #1: How Compost is Made (6 minutes, 30 seconds)

- [Click here to watch the video](#)
- Link to the video: <https://www.recyclenow.com/recycle/recycle-school/composting/how-compost-made>

Video #2: Discover Denver Composts (1 minute)

- [Click here to watch the video](#)
- Link to the video: <https://www.denvergov.org/content/denvergov/en/trash-and-recycling/composting/compost-collection-program.html>

Video #3: What do you put in your food waste caddy? (39 seconds)

- [Click here to watch the video](#)
- Link to the video: <https://www.youtube.com/watch?v=g1KvUWuPI7o>

Additional Resources (If time permits)

- More videos on composting and recycling can be found here:
<https://www.recyclenow.com/recycling-knowledge/food-recycling/top-tips>

Activity 1.2: Composting Questions and Discussion (5 minutes)

After watching the video, the teacher will engage the students in a quick discussion to gauge the students' understanding of composting.

The teacher can use the following questions to guide the discussion:

- What is compost?
- Why should we compost?
- Does composting help with climate change? Why?
 - Answer: Yes, composting only emits a fraction of the amount of methane, which is a harmful greenhouse gas, as compared to throwing food in the landfill.
- Where does your trash go?
- What are the other benefits of composting?
 - Answer: It reduces the amount of trash sent to the landfill. Therefore, the landfill does not fill up as much and new landfills do not need to be built as quickly.

ACTIVITY #2 (10 MINUTES): WHAT CAN BE COMPOSTED AND A COMPOSTING ACTIVITY

Activity 2.1: What can be composted? (5 minutes)

Students learn about what can be put into the commercial composting bins*. The PowerPoint contains slides to teach this part of the lesson. The PowerPoint slides show photos of the categories of items that can be composted in a commercial composting bin. Refer to Appendix #3: What to Compost, to see exactly what items can be composted.

*Note that these requirements are for the City and County of Denver. Composting will vary by city and county. Please note that what can go in the compost bin at school, which is typically processed through a commercial composting system, is different than what can go into a backyard compost pile. Backyard compost piles should not have any meat, dairy, or bread products. This is because it attracts unwanted animals to the bin. Additionally, commercial composting facilitates get warm enough to break down these meat and dairy products much quicker and more efficiently than a backyard system.

Activity 2.2: Composting PowerPoint Activity (5 minutes)

After students learn about what can be composted, they will participate in a composting activity. On the PowerPoint, there will be various photos of food and objects, some that can and some that cannot be composted. The students can either write on their white boards “yes” or “no” or put their thumb up for “yes” and down for “no” when shown various objects. The answers regarding whether the item can be composted or trashed are found on the slide after the object is shown.

ACTIVITY #3 (20 MINUTES): OTHER SOLUTIONS TO CLIMATE CHANGE

Activity 3.1: Other Solutions to Climate Change (5 minutes)

Aside from composting and reducing food waste both at home and at school, there are also many other ways that students can reduce their environmental impacts, which will be explored in this activity. Students will start by watching the video titled, “Kids Go Green: Reducing Air Pollution.” This video explains why electricity usage is bad for our environment and ways kids can reduce the use of this resource.

After watching the video, the students will be shown a chart on the PowerPoint titled, “Total U.S. Greenhouse Gas Emissions by Economic Sector in 2017,” from the Environmental Protection Agency (EPA). This chart shows the different sectors that are releasing the biggest amount of greenhouse gas emissions, with the top three being transportation, electricity, and industry. The teacher will explain the chart and tell the students that solutions in these sectors, and others, could help mitigate the effects of climate change.

Video: Kids Go Green: Reducing Air Pollution (2 minutes, 16 seconds)

- [Click here to watch the video](#)
- Link to the video: <https://www.pbslearningmedia.org/resource/ee18-sci-airpol/kids-go-green-reducing-air-pollution/>

Activity 3.2: Student Worksheet: Potential Solutions to Climate Change (15 minutes)

In this activity, students will be given 15 minutes to write about four potential solutions that they can implement into their daily lives to help mitigate climate change. This activity will be done on the worksheet titled, “Four Simple Solutions to Reduce the Effects of Climate Change.” Students can use composting and reducing food waste as two solutions, and then use the electricity video and the “Total U.S. Greenhouse Gas Emissions by Economic Sector in 2017” chart to help them think of two other solutions. This worksheet will be helpful in Lesson 5, Activity 1, where the students will write a Letter to the Editor.

LESSON #5: LETTER TO THE EDITOR - WRITING ASSIGNMENT

LESSON TIME: 45 MINUTES

ACTIVITY #1 (45 MINUTES): WRITING A LETTER TO THE EDITOR

Students will get 45 minutes to write a Letter to the Editor, where the student highlights how humans are changing our climate. They will also write about different ways that humans can help mitigate their impact on the environment, by offering composting, reducing food waste, or another activity as a solution. Students use the notes they have taken and the information that they have learned throughout the unit's lessons to help them write their letter.

- The handout titled, "Letter to the Editor," can be used for this assignment. The "Letter to the Editor" handout has 2.5-line spacing to allow the teacher to make corrections within the assignment. Students can also write their Letter to the Editor in one of their notebooks as well, depending on the preference of the teacher.
- Letter Length: The Letter to the Editor needs to be 250 words or less, using the requirements from the Denver Post. Check with your local newspaper to see the word length for a Letter to the Editor piece.

Depending on the school's policies, the students' Letter to the Editor could be sent to the local newspaper for consideration to be published within the newspaper.

LESSON #6 (OPTIONAL): REPORT CREATION AND LETTER RE-WRITE

LESSON TIME: 45 MINUTES

This lesson is designed to serve as a final project that could be put up on the walls or displayed during Open House. This lesson could take place during a science class or even an art class, since the students will be drawing a picture for this final report.

After the students write the Letter to the Editor in Lesson #6, the teacher will read over the letters and correct the letters for spelling, grammar, or punctuation mistakes.

Activity #1 (45 minutes): Creating the report.

1. Step #1: The teacher will pass back the letters the students.
2. Step #2: The student will neatly re-write their Letter to the Editor on a lined piece of paper, including all of the corrections that the teacher has made regarding spelling and punctuation.
3. Step #3: After the student has re-written their paper, they will then glue the lined piece of paper onto a larger piece of paper, such as an 11" X 17" poster paper. The students will glue their lined sheet of paper to the bottom of the poster.
4. Step #4: The students will write the title of their paper at the top of the poster.
5. Step #5: In the middle of the paper, the students will draw a visual representation depicting what the student wrote about in their Letter to the Editor.

TEACHER RESOURCES

This section contains resources for teachers to learn more about the environmental and sustainability topics presented within this unit plan, including food waste, composting, and climate change. If you need more information regarding why climate change, sustainability, and environmental literacy should be taught within elementary schools, please email the content creator of this unit plan for more information.

INFORMATION ON GLOABL WARMING

Article by WWF: [*Preventing Food Waste – What we lose when food goes bad*](#)

- This article offers many stories regarding various industries, including schools and hotels, implementing various solutions to cut down on food waste.
- One of the stories within this article discusses how a school utilized composting and share tables to reduce food waste. The results were, “Landfill waste plummeted 47%, from about 155 pounds in November (pre-composting and food share tables) to 82 pounds in February (post-composting and food share tables).”
- The article also discusses the environmental impact of food waste, including: “In effect, lost and wasted food is behind more than a quarter of all deforestation and nearly a quarter of global water consumption. It generates as much as 10% of all greenhouse-gas emissions.”

INFORMATION ON COMPOSTING

Article: [*Why Should I Compost?*](#)

- A short article explaining why composting is important for saving resources, improving soil health, reducing impacts on the environment, and saving money.

Video: [*How Composting Helps to Save the Environment*](#)

- This 3-minute video goes over why composting is a helpful tool to help save the environment. Key findings include that more than 50% of the waste that we throw away can be composted. When food and yard scraps end up in the landfill, the food scraps naturally release liquids which mixes with other harmful chemicals inside the landfill, which creates a liquid called leachate. This leachate is very harmful if exposed to groundwater, which could lead to water contamination.

INFORMATION ON GLOABL WARMING

Article by NASA: [*The Causes of Climate Change*](#)

- This article explains the root causes of climate change, explains the greenhouse effect, and discusses the various gasses which most contributes to climate change.
- “In its Fifth Assessment Report, the Intergovernmental Panel on Climate Change, a group of 1,300 independent scientific experts from countries all over the world under the auspices of the United Nations, concluded there's a more than 95 percent probability that human activities over the past 50 years have warmed our planet.”

TEACHER RESOURCES

INFORMATION ON GLOBAL WARMING (CONTINUED)

Video and Article by The Royal Society: [The Basis of Climate Change](#)

- Article contains a one-minute video titled “Climate Change in 60 Seconds.” The article covers the scientific claims that the earth has been heating at a much faster pace since the start of the Industrial Revolution, where humans began to utilize and burn fossil fuels.
- “Many other impacts associated with the warming trend have become evident in recent years. Arctic summer sea ice cover has shrunk dramatically. The heat content of the ocean has increased. Global average sea level has risen by approximately 20 cm (8 inches) since 1901, due both to the expansion of warmer ocean water and to the addition of melt waters from glaciers and ice sheets on land.”

CLIMATE CHANGE INFORMATION

Name: _____ Date: _____

1. What is climate change? _____

2. Why is the Earth warming? _____

3. How does climate change affect our **oceans**? _____

4. How does climate change affect our **weather**? _____

5. How does climate change affect our **food**? _____

6. How does climate change affect our **health**? _____

CLIMATE CHANGE ARTICLE RESEARCH SUMMARIES

Name: _____ Date: _____

Article title #1: _____

Summary of Article #1 (2-3 sentences): _____

Three key facts from Article #1:

1. _____

2. _____

3. _____

Article title #2: _____

Summary of Article #2 (2-3 sentences): _____

Three key facts from Article #2:

1. _____

2. _____

3. _____

Article title #3: _____

Summary of Article #3 (2-3 sentences): _____

Three key facts from Article #3:

1. _____

2. _____

3. _____

FOUR SIMPLE SOLUTIONS TO REDUCE THE EFFECTS OF CLIMATE CHANGE

Name: _____ Date: _____

Directions: Write about four different solutions that you can implement into your life to help reduce the effects of climate change. Write two sentences for each solution, explaining the solution and how you will incorporate these solutions into your own life.

Solution #1: _____

Solution #2: _____

Solution #3: _____

Solution #4: _____

APPENDIX #1: ENTIRE FOOD SYSTEM MAPPING KEY

Teachers can use this key to help with *Lesson #3, Activity 2.2: The class mapping out the food system*. Below are all of the steps needed to get food from seeds to a fridge at home. This example follows the life of a carrot. This key can be used to help guide the activity, with the teacher guiding the students to think of most, if not all, of these steps. The teacher can write the steps in order on the board as the students say them.

Life of a carrot

1. The farmer plants the carrot seeds.
2. The farmer waters and fertilizes the seeds.
3. The carrots are full grown after two to three months.
4. The farmer picks the carrots.
 - a. Waste #1: Some of the carrots do not meet cosmetic standards and are thrown out.
 - b. Waste #2: Too many carrots were grown and no supermarket will buy all of the farmer's carrots.
5. The farmer washes the carrots.
6. The farmer puts the carrots in bags and boxes them.
7. The box of carrots is put on a truck.
8. The truck drives to a distribution center.
 - a. Waste #3: Carrots might be discarded for going bad or appearance reasons.
9. The distribution center delivers the box to a grocery store.
10. The grocery store puts the carrots on the shelf
 - a. Waste #4: Carrots could be thrown away if the store ordered too many carrots and nobody bought them all.
 - b. Waste #5: Carrots could be thrown away if they go bad in the store.
11. You buy the carrots.
12. You drive the carrots home.
13. You put the carrots in your fridge.
14. You eat the carrots.
 - a. Waste #6: Or the carrots are thrown away because they went bad before you could eat them.

APPENDIX #2: EPA'S FOOD RECOVERY HIERARCHY CHART



APPENDIX #3: WHAT TO COMPOST

Copyrights: City and County of Denver – [Recycle, Compost, & Trash](#)

Below is a list of what can be composted in Denver, Colorado, where the compost is sent to an industrial composter. This list might be different per city and county. Please check with your local trash and composting services for the correct items that can be composted within your city and county.

- Food Scraps: Baked goods, Bones, Bread, Cereal, Cheese, Coffee grounds, Dairy products, Eggs & eggshells, Fish, Fruits, Gravy & sauces, Meat, Nuts, Pasta, Peanut butter, Pizza, Poultry, Processed foods, Rice, Salads, Sandwiches, Spoiled or moldy food, and Vegetables
- Non-recyclable paper: Coffee filters, Facial tissue, Greasy pizza boxes, Paper bags, Paper napkins, Non-coated paper plates, Paper towels, Tea bags, Small paper items, Plain white tissue paper, Waxed cardboard, and Wax paper
- Yard Debris: Flowers, Grass clippings, Houseplants, Leaves, Plant trimmings, Small branches (no larger than 4 feet in length and 4 inches in diameter), and Weeds
- Other Miscellaneous Items: Pet hair, Wooden chopsticks, stir sticks, and popsicle sticks

