

Our Melting Ocean: Solid and Liquid Water

Second Grade - Unit PowerPoint

Sustainability for Young Learners Courses

Lessons 1-5

Standards Covered – Main Standards

- 2-ESS2-3: Obtain information to identify where water is found on Earth and that it can be solid or liquid.
- K-2-ETS1-1: Engineering Design - Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

Standards Covered – Secondary Standards

- 2-ESS2-1 Earth's Systems - Connections to the Nature of Science, Crosscutting Concepts: Science addresses questions about the natural and material world. Scientists study the natural and material world.
- 2-ESS2-1 Crosscutting Concepts - Connection to Engineering, Technology, and Application of Science: Developing and using technology has impacts on the natural world.
- Colorado Academic Standards: Second Grade, Standard 1: Physical Science. Grade Level Expectations: Matter exists as different substances that have observable different properties.

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Solid and Liquid Bodies of Water

Lesson #1



Vocabulary Words

Lesson #1, Activity #1

Solid

- Having a firm shape or form that can be measured in length, width, and height.



Liquid

- A form of matter that flows easily and can take on the shape of any container it is poured into.



Melt/Melting

- To change from a solid to a liquid state.



Ice Sheet

- A thick layer of ice covering a large area for a long time.



Climate Change

- A change in global and regional climate patterns from humans burning fossil fuels, such as electricity or natural gas.



Emissions

- Particles that are released into the air by the burning of fossil fuels.



Climate

- The usual weather conditions in a place, over the course of many years.



Weather

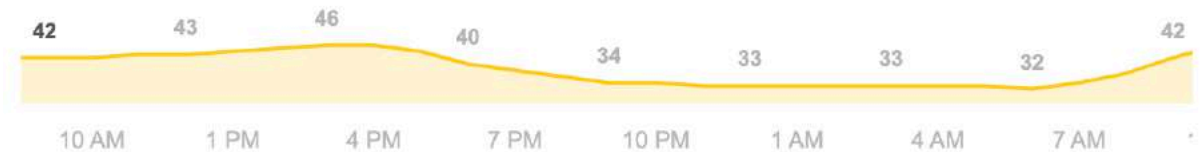
- The conditions outside right now or next week.

Denver, CO
Monday 9:00 AM
Partly Cloudy

 42° F | °C

Precipitation: 0%
Humidity: 56%
Wind: 5 mph

Temperature Precipitation Wind



Day	Icon	High/Low (°F)
Mon		46° 31°
Tue		58° 35°
Wed		49° 32°
Thu		46° 36°
Fri		63° 40°
Sat		67° 37°
Sun		52° 29°
Mon		53° 34°

Compost

- A mixture of decaying leaves, vegetables, or manure that is used to improve garden soil.





Videos, Ocean Photos & Discussion

Lesson #1, Activity #2

Solid Ocean Water



Solid Ocean Water



Solid Ocean Water



Liquid Ocean Water



Liquid Ocean Water



Liquid Ocean Water



Ilulissat Glacier Video & Discussion

- [Hyper laps video: June 2007 – June 2009](#)
- Link to the video: <https://climate.nasa.gov/interactives/global-ice-viewer/#/2/22>



Student work - “Our Oceans are Melting” poster

Solid Ocean Water	Melting Ocean water	Liquid Ocean Water
 A large, white ice shelf with a blue-tinted edge floats on a dark blue ocean under a clear sky.	 Several icebergs of various sizes are melting in the ocean, with water droplets visible on the surface.	 A close-up view of ocean waves crashing onto a sandy beach, with white foam and blue water.



How Global Warming is Heating up Our Earth

Lesson #2



Ice Cube Experiment

Lesson #2, Activity #1

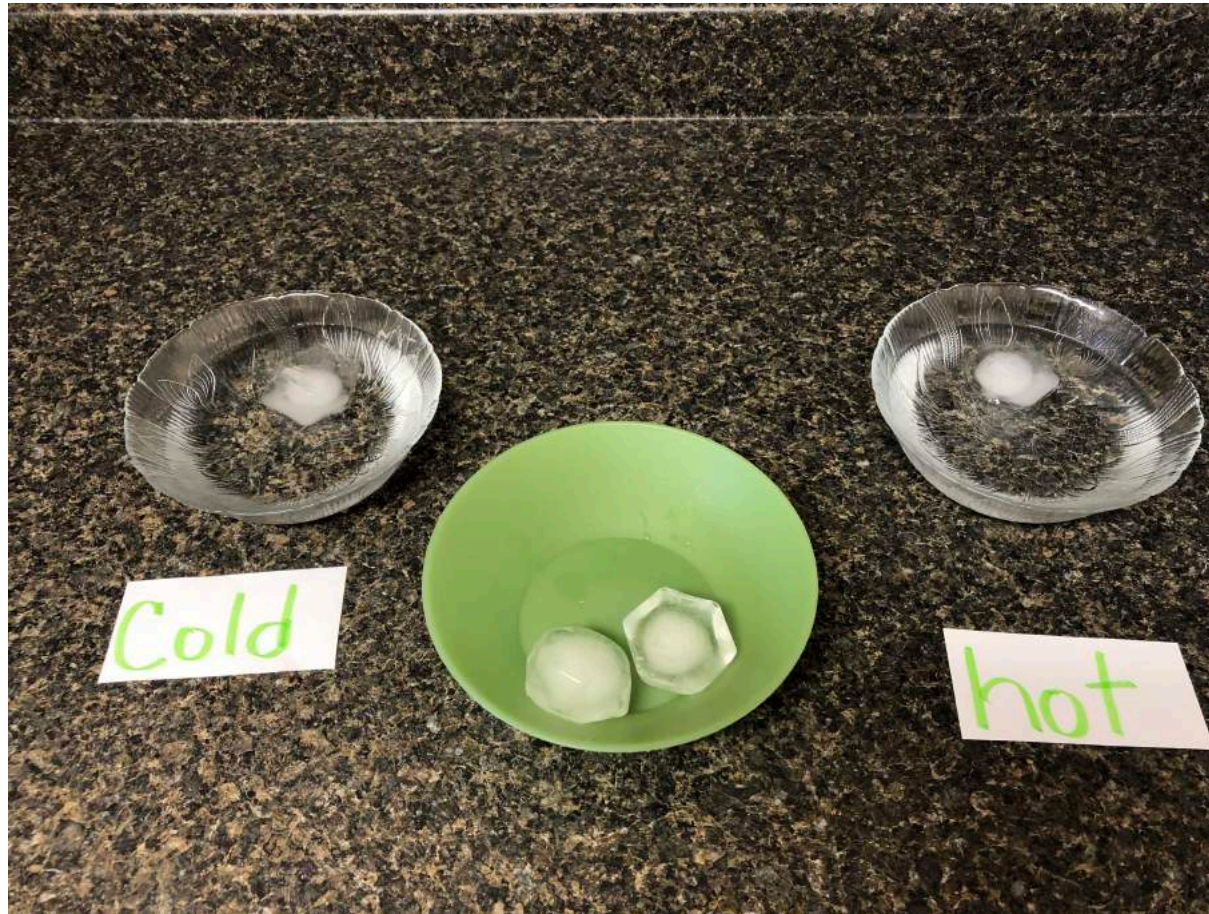
Ice Cube Experiment: Materials Needed

- Here are the materials you will need for this experiment.



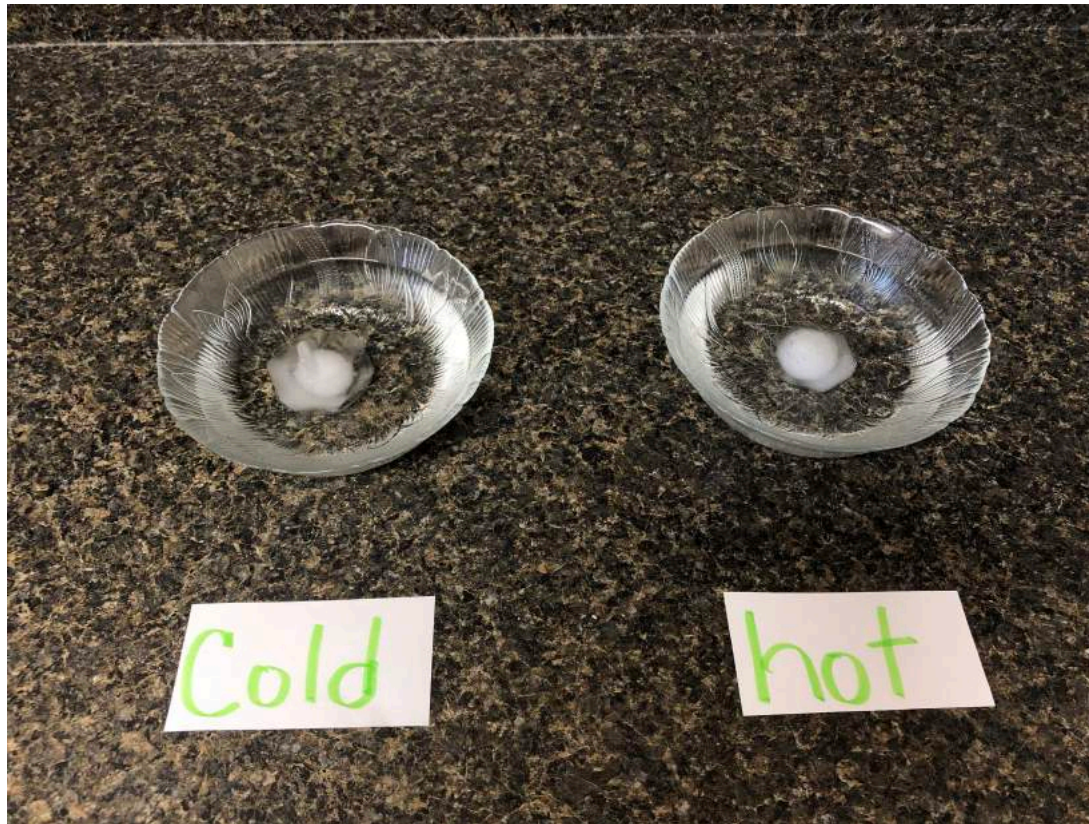
Ice Cube Experiment: Set-Up

- Here is how we will set up the experiment

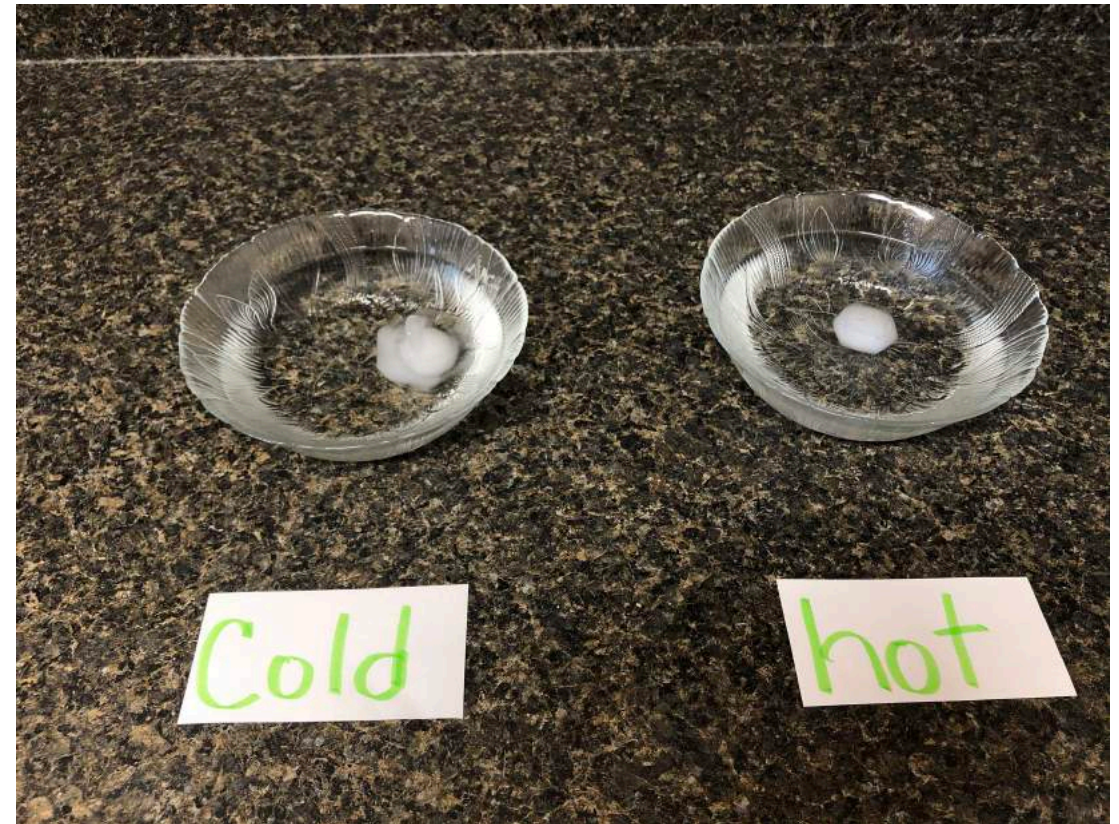


Ice Cube Experiment: Progress

1 minute



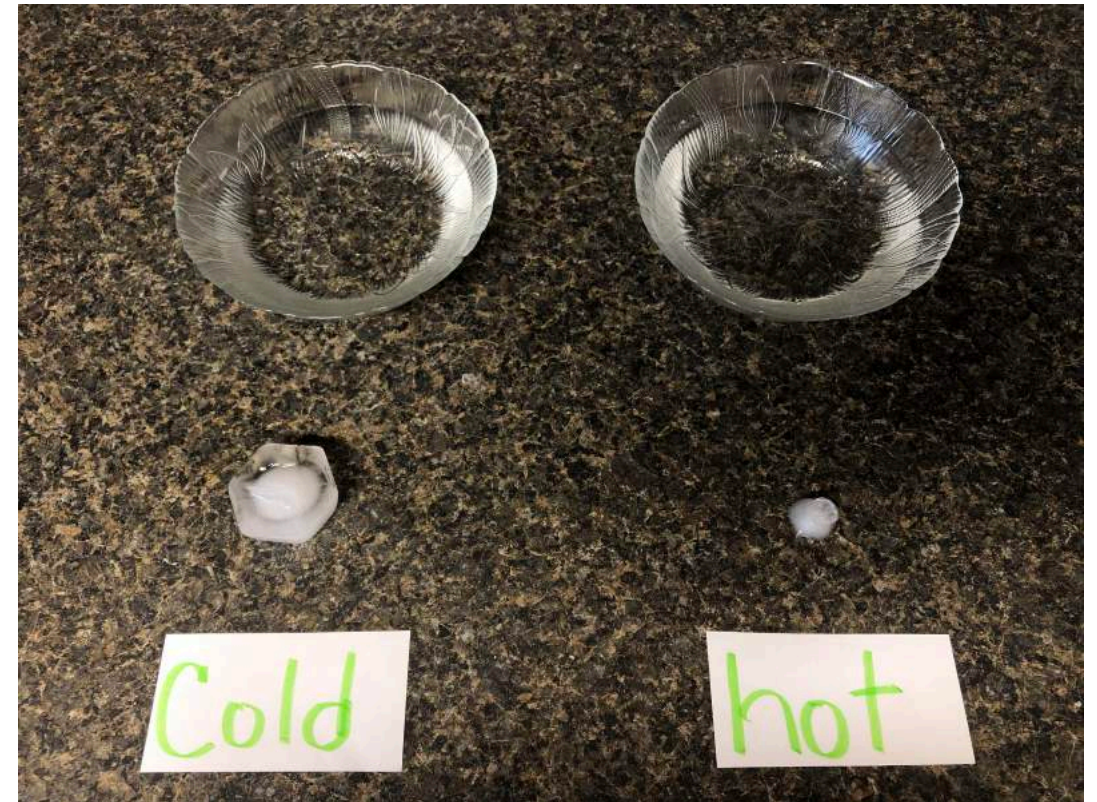
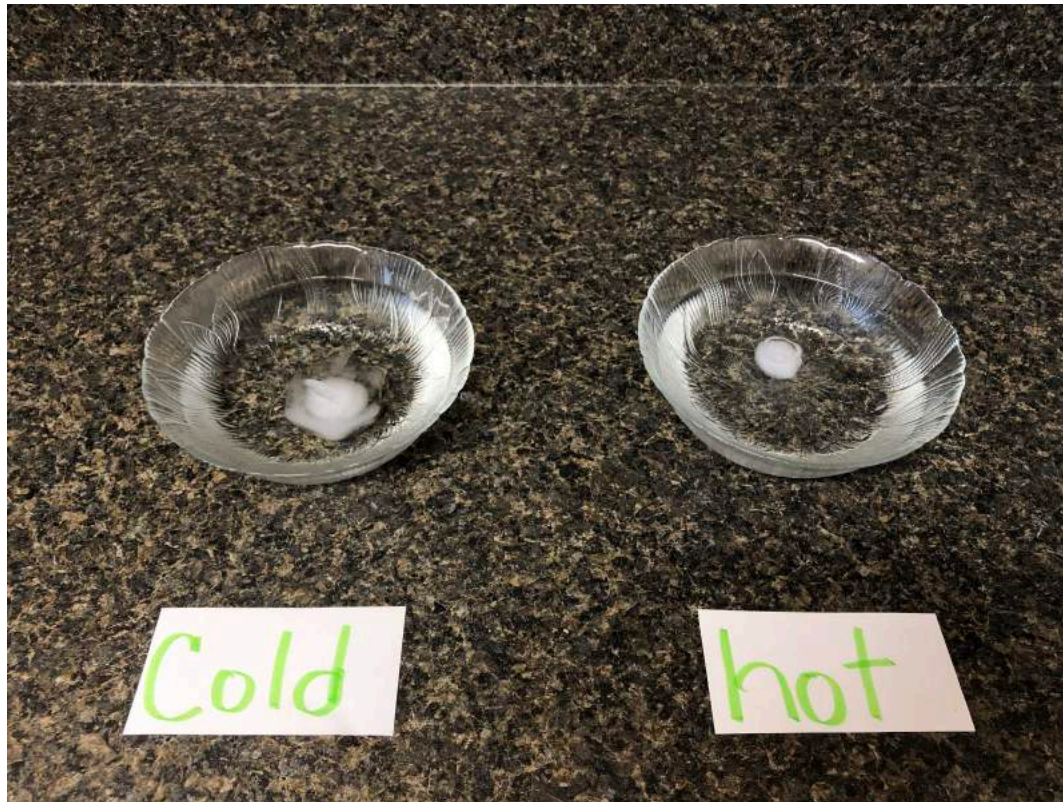
2 minutes



Ice Cube Experiment: End Results

3 minutes

4 minutes/end



Ice Cube Experiment: Student Worksheet

- Students will work on the following worksheet

STUDENT WORKSHEET

ICE CUBE EXPERIMENT

Name: _____

Describe the experiment: _____

Direction: Draw photos of what you see during each part of the experiment.

Cold Water

Start of the experiment	Middle of the experiment	End of the Experiment

Warm Water

Start of the experiment	Middle of the experiment	End of the Experiment

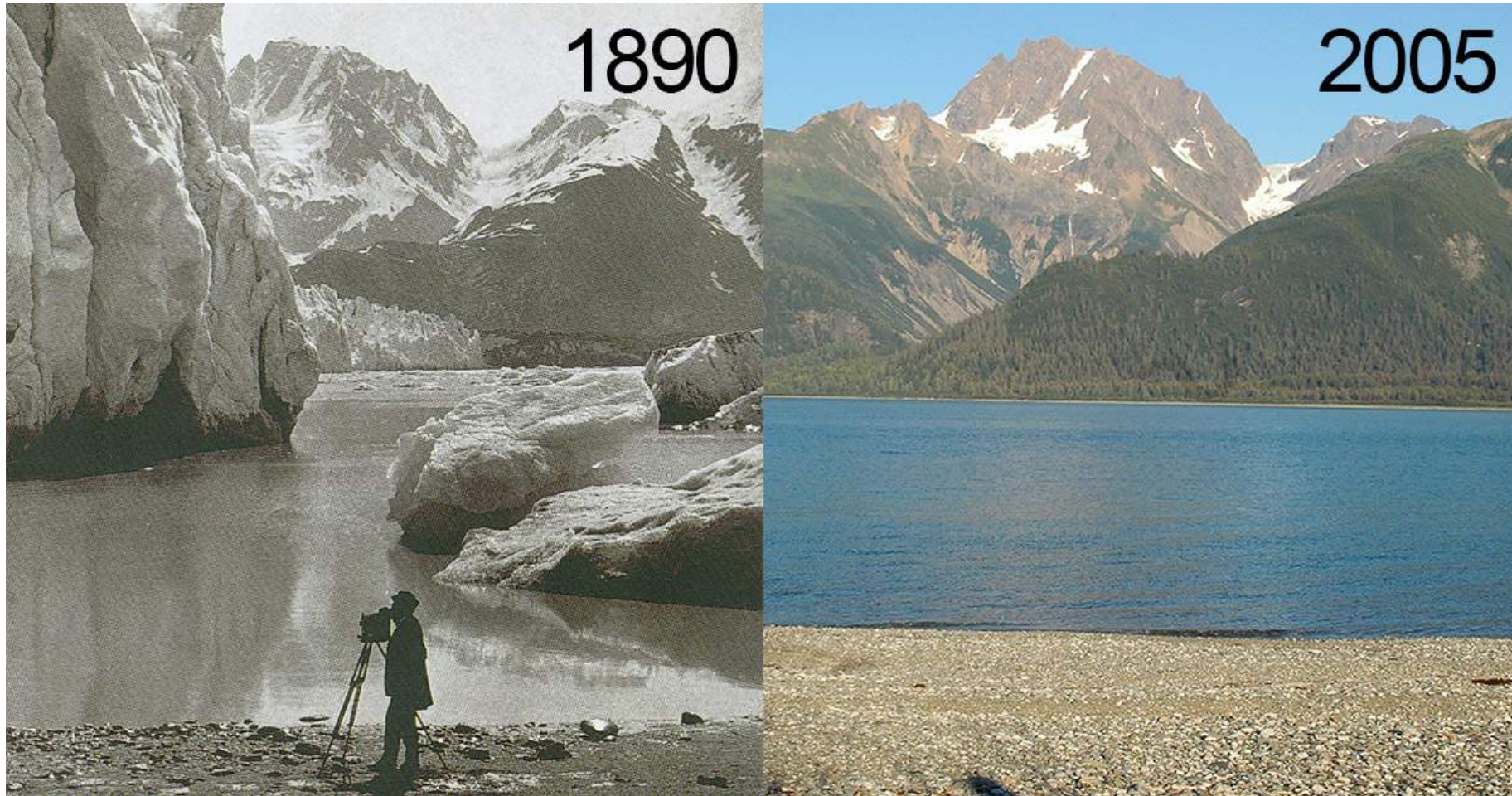
Results – Describe what you learned: _____



Melting Oceans Discussion

Lesson #2, Activity #2

Melting Oceans Discussion Time



Optional: Sea Level Rise Video

- [NASA's Earth Minute: Sea Level Rise](#)
- Link to video: <https://www.youtube.com/watch?v=msnOHuPep9I>



A watercolor-style illustration of a globe, rendered in various shades of blue, occupies the left side of the frame. The colors transition from light blue on the left to a darker blue on the right, with soft, blended edges.

Introduction to Climate Change

Lesson #3



Review

Lesson #3, Activity #1

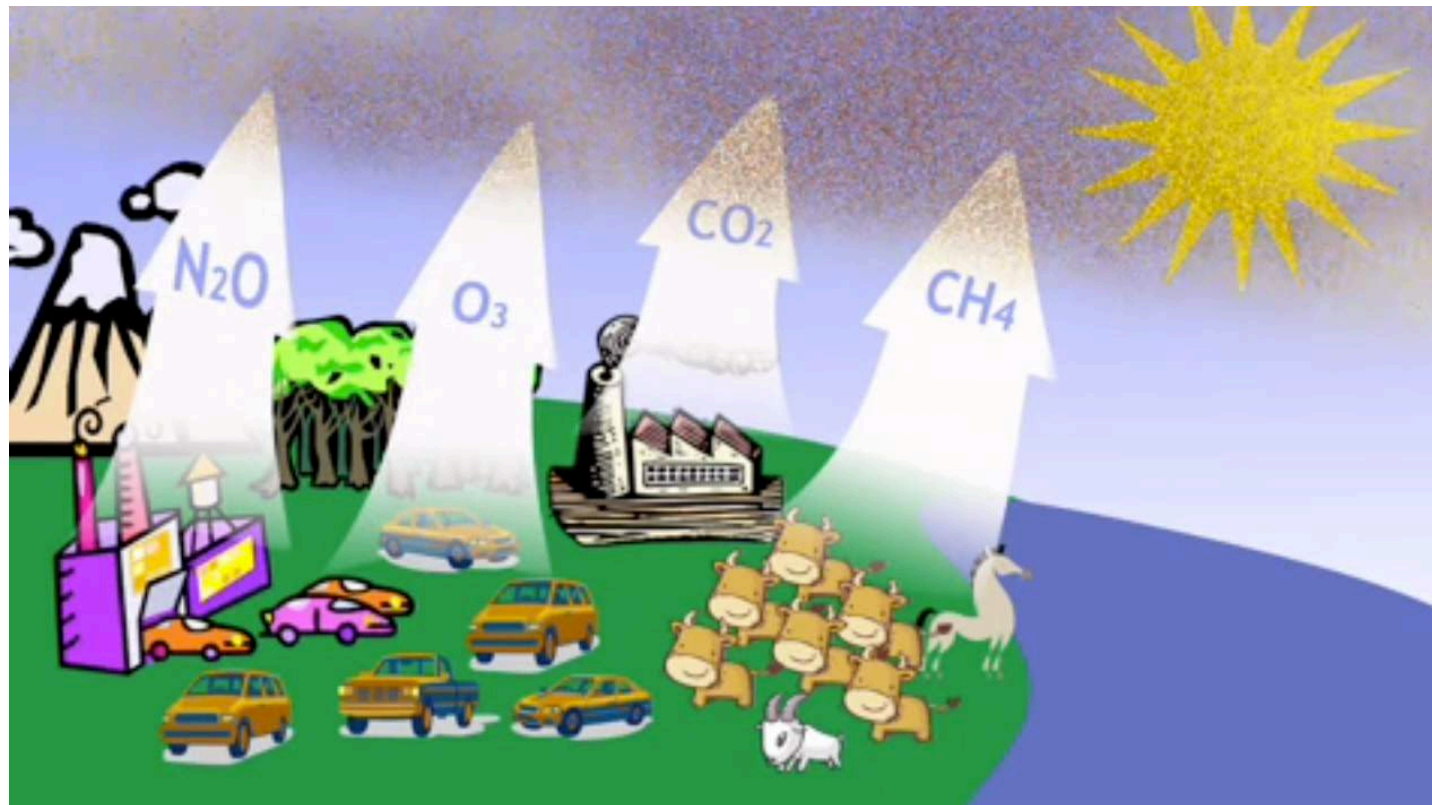
A large, circular watercolor splash in various shades of blue, centered on the page. The text is overlaid on this splash.

Climate Change Melting the Ice Sheets

Lesson #3, Activity #2

Video: Oceans of Climate Change

- [Oceans of Climate Change](#)
- Link to video: <https://climatekids.nasa.gov/ocean/>



Video: Arctic Sea Ice Each September From 1979-2018

- [“Arctic Sea Ice Each September From 1979-2018”](#)
- Link to the video: <https://climatekids.nasa.gov/climate-change-evidence/>



Discussion on the Videos





Solutions to Climate Change

Lesson #3, Activity #3

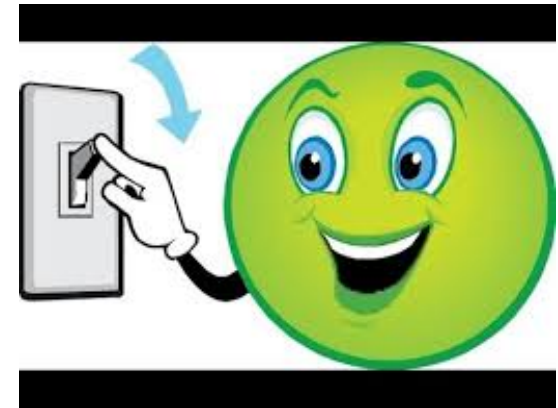
Discussion: What Causes Climate Change



Discussion: What Causes Climate Change



Discussion: Potential Solutions



What Causes Climate Change – Student Worksheet

- Students will work on the following worksheet – two sided

STUDENT WORKSHEET - PAGE 1 OF 2

WHAT CAUSES CLIMATE CHANGE & HOW TO HELP

Name: _____

Directions: Using the Problems Word Box, match the problems in the word box to the problems shown in the photo. Then, using the Solutions Word Box find a solution to solve the problem and draw a picture of the solution.



Problems Word Box


Driving a car	Throwing away food in the trash can
Using electricity when you do not need it	Buying things you do not need
Leaving the water running while brushing your teeth	

Solutions Word Box

Buying only things that you need	Turning off the lights when you leave the room
Riding a bike or taking the bus	Composting food waste
Turning off the water when you brush your teeth	

Example:




Problem	Solution
 <p><u>Problem:</u> Leave the water running while brushing your teeth</p>	 <p><u>Solution:</u> Turning off the water when you brush your teeth</p>

Problem	Solution
 <p>Problem:</p>	<p>Solution:</p>

SUSTAINABILITY FOR YOUNG LEARNERS COURSES

STUDENT WORKSHEET - PAGE 2 OF 2

WHAT CAUSES CLIMATE CHANGE & HOW TO HELP

Problem	Solution
 <p>Problem:</p>	<p>Solution:</p>
 <p>Problem:</p>	<p>Solution:</p>
 <p>Problem:</p>	<p>Solution:</p>

SUSTAINABILITY FOR YOUNG LEARNERS COURSES

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Composting 101: Information, Activity, & Worksheet

Lesson #4



Composting 101

Lesson #4, Activity #1

Video: Composting for Kids

- [“Composting for Kids”](#) video
- Link to the video: <https://www.youtube.com/watch?v=dRXNo7leky8>



Composting for Kids Video: Discussion

- What is composting?
- Why is composting important?



Video: How Compost is Made

- [“How Compost is Made” video](#)
- Link to the video: <https://www.recyclenow.com/recycle/recycle-school/composting/how-compost-made>

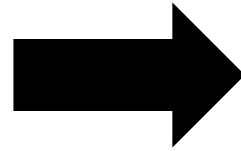


How Compost is Made Video: Discussion

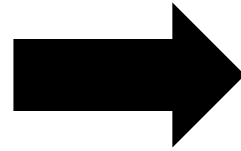
What did you learn from the video?



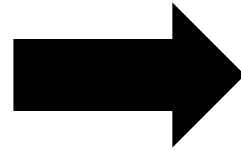
Composting Stages – Week 1



Composting Stages – Week 2 to 3



Composting Stages - Week 1 to 4



Composting Stages

- Bin #1: Compost day #1
- Bin #2: Halfway done
- Bin #3: Finished compost



Finished Compost at the bottom





Composting Hands- on Demo and Worksheet

Lesson #4, Activity #2

Composting Hands-on Demo: Small groups

- Students will work in groups on the composting activity



What to Compost Worksheet

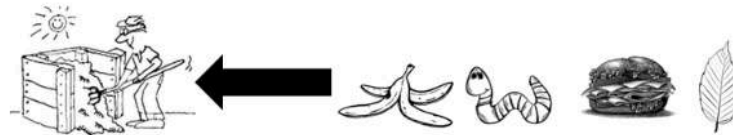
- Students will work on the following worksheet

STUDENT WORKSHEET

WHAT TO COMPOST

Name: _____

Directions: In the box below, draw different items that can be put into the compost bin.



School Compost Bin



Wrap-up & Presentation

Lesson #5



Poster Work Completion

Lesson #5, Activity #1

Poster Completion – Our Ocean Ice is Melting

- Complete the following boxes on the worksheet “Our Ocean Ice is Melting”

The ocean ice is melting, here is how we will help!

Solution #1:	Solution #2:

Student Presentation Time

Lesson #5, Activity #2





Final Discussion

Lesson #5, Activity #3

Thank you for your time.



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Master of Sustainability Leadership