

Complete 5E Lesson Bundle

- **Lessons**
- **Activities**
- **Assessment**



SCROLL
to take a look inside!

Climate Change and Global Warming 5E Science Lesson

- Teaching Timeline
- Grade 9-12

- Lessons
- Activities & Assessment



Engagement
Exploration
Explanation
Elaborate
Evaluate

The 5 E's



✓ **Engagement Phase** - Creates interest and excitement for your students by asking questions and probing their initial conceptions.

✓ **Exploration Phase** - Students use and develop creative thinking skills, make observations, record results, and make connections through an investigation → Lab Station Activity

✓ **Explanation Phase** - This is the instructional phase where concepts are presented to the students in a clear and applicable way → Lesson.

✓ **Elaborate Phase** - This phase involves the students completing an activity or assignment that forces them to expand their thinking and knowledge of the topic. They will propose solutions and extend their learning to new situations → Scavenger Hunt Activity

✓ **Evaluate Phase** - Your students will demonstrate their understanding and evaluate their own progress through an assessment → activity, assignment, or quiz.

CLIMATE CHANGE AND GLOBAL WARMING UNIT

- Teaching Time
- Grade 8-11
- Lessons
- Activities
- Assessment/T

CLIMATE CHANGE LAB STATION ACTIVITY

7 Print-Ready Stations | JUST PRINT & GO

Device-Based Scavenger Hunt Climate Change

Includes

- 5 Unique Locations
- Online form submission
- Answer Key

Works on all smartphones, tablets, Chromebooks and laptops

100% Digital

- Simulations
- Quizzes
- Videos
- Games
- Word Scramble
- and more

Case Study – Polar Bears and Climate Change

Case Study - The Arctic Fox and Climate Change

TWF

1 Fully Editable & Engaging Lesson, Project, Test, & Quest

Videos embedded directly in your lesson

Climate Change Unit Test / 28 Name: _____

Part A: True and False:

1	2	3	4	5	6	7	8	9
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1. Climate is the average of the weather in a region over a long period of time.
2. Temperatures of locations near bodies of water don't get quite as cold in winter as nearby places away from bodies of water.
3. The troposphere is composed of approximately 60% Oxygen, 39% nitrogen and 1% other gases.
4. Greenhouse gases absorb infrared radiation and give off visible light.
5. Carbon dioxide is Earth's most abundant (present in the highest amount) greenhouse gas. /9
6. A positive feedback loop makes the following action happen to a greater extent.
7. Climate proxies are preserved physical characteristics of the past that enable scientists to predict future climate conditions.
8. The Sun provides us with all energy on Earth.
9. The mesosphere is the main portion of the atmosphere that supports life.

Part B: Multiple Choice:

10	11	12	13	14	15	16	17
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10. The ozone layer is:
a) below the mesosphere and above the troposphere.
b) below the troposphere and above the stratosphere.
c) above the stratosphere and below the mesosphere.
d) above the troposphere and below the stratosphere.

11. Water vapor makes up approximately _____ of Earth's greenhouse effect.
a) 99%
b) 98%
c) 95%
d) 90%

12. Organic carbon is found in:
a) fossil fuels.
b) the oceans.
c) the Earth's crust.
d) the atmosphere.

13. The heat from the natural greenhouse effect warms Earth's atmosphere an average of _____.
a) 43°C
b) 39°C
c) 30°C
d) 36°C
e) 33°C

14. Earth experiences an Ice Age approximately every _____ years.
a) 5,000
b) 10,000
c) 100,000
d) 150,000
e) 200,000

15. What kind of radiation do animals and plants emit?
a) UV
b) Infrared
c) Microwave
d) Radio
e) Gamma

Google Access

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Important: Before you click, make sure you're signed in to the Google account you'd like the resources placed into. If the resources are added to the wrong account, simply sign out and then into the correct one and repeat the process.

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TWF

Google Classroom Ready
One-Click Google Slides Access

Effects of Global Warming

The impacts of climate change are predicted to be serious and widespread:

- More violent weather
- Increases in global temperatures → melting glaciers, increase in sea levels, flooding
- Ecosystems → Creating unsuitable habitats (melting ice and polar bears)
- Shifting patterns of rainfall and drought

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How Humans Alter The Carbon Cycle

- Releasing carbon into the atmosphere faster than would normally occur (burning fossil fuels/wood)
- Clearing away vegetation

Climate Change – Student Lesson Outline

Climate Change vs. Global Warming

- A lot of people use Climate Change and Global Warming interchangeably when really, they are two different things
- Global Warming refers to the long-term trend of a rising average global temperature
- Climate change refers to the changes in the global climate which result from the increasing average global temperature

Weather vs. Climate

Weather: atmospheric conditions, including temperature, precipitation, wind, and humidity, in a particular location over a short period of time, such as a day or a week.

Climate: _____

Air Convection Currents

- Large convection air currents occur over the world _____
- These convection currents can greatly affect the weather in a region

Air Currents and Large Bodies of Water

- This heat is slowly released during the winter
- This causes the climate to be cooler during the summer months (heat is removed) and warmer in the winter (heat is released)

Components of Earth's Climate System

- The Atmosphere – Layers of gas
 - _____
- The Hydrosphere – Water, water vapour, ice
 - Absorbs the Sun's energy
 - Water Cycle
- The Lithosphere – Earth's Crust (land)
 - _____

Atmosphere

- We can only survive in the Troposphere
- Air in the troposphere is _____

The Ozone Layer

- Ozone depletion is caused by human-made compounds called chlorofluorocarbons (CFCs) and halons

The Ozone Layer

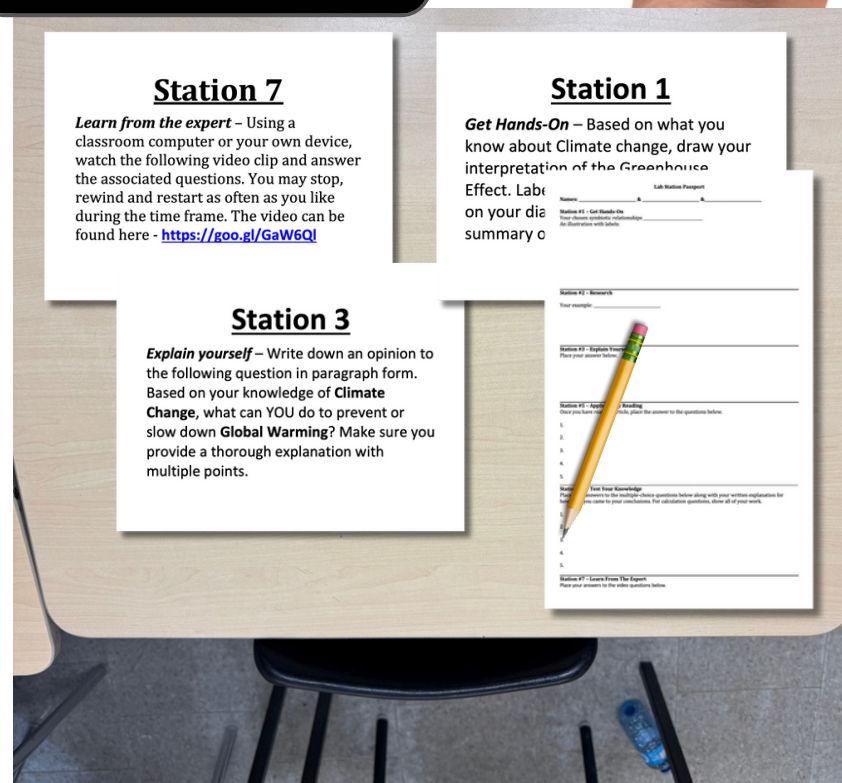
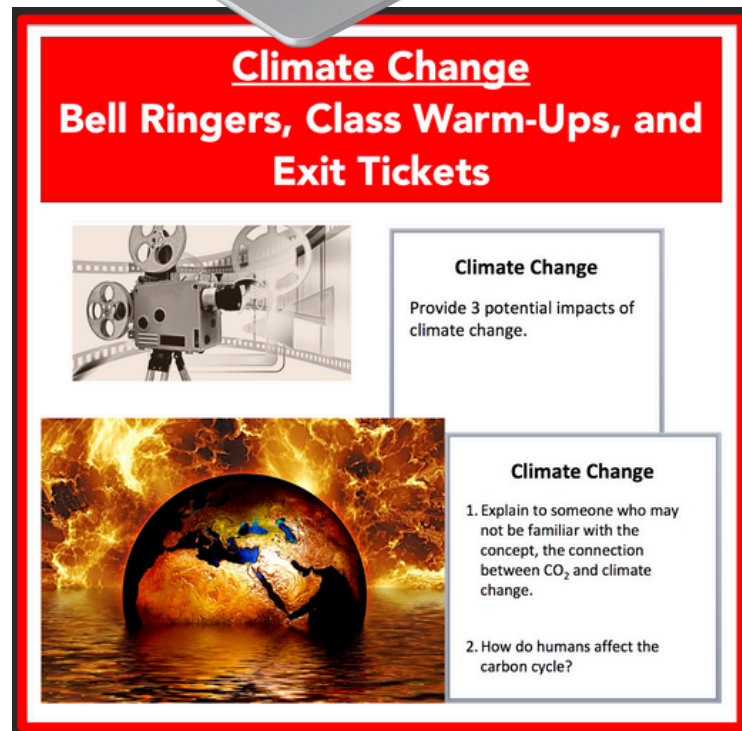
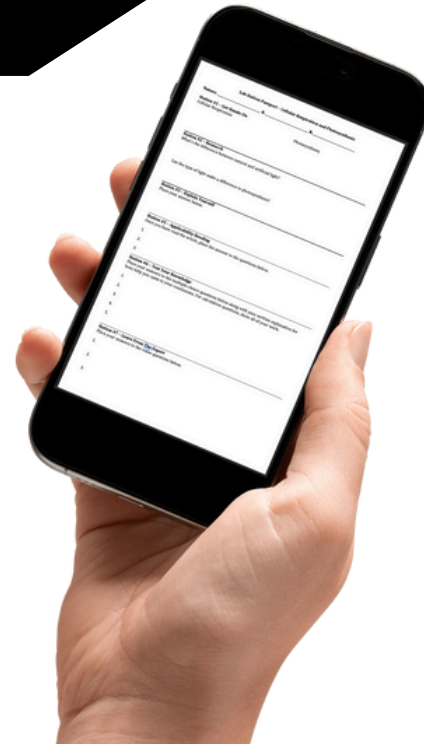
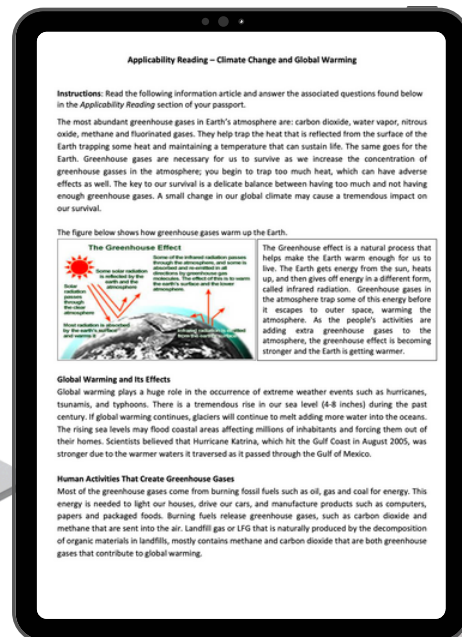
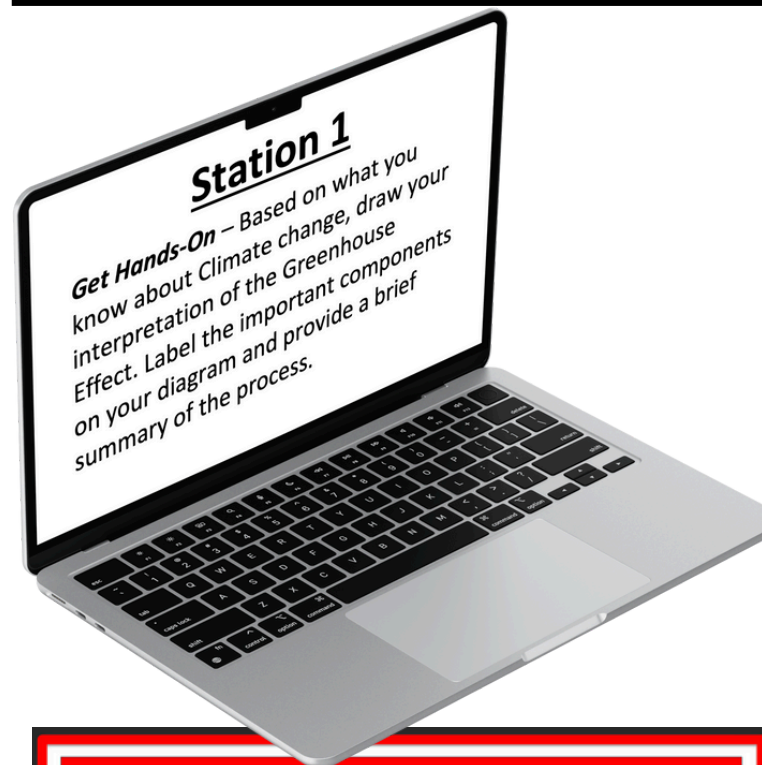
- CFCs and halons cause chemical reactions that break down ozone molecules. _____
- Many CFCs and halons have been widely used as refrigerants and propellants (in aerosol applications)
- Their manufacture has been phased out due to their harmful affects

Student Notes

Student and Teacher Versions

★★★★★ Extremely satisfied - This product is fully complete and ready to go! If you need a go to resource with minimal planning look no further! I fully endorse this product.

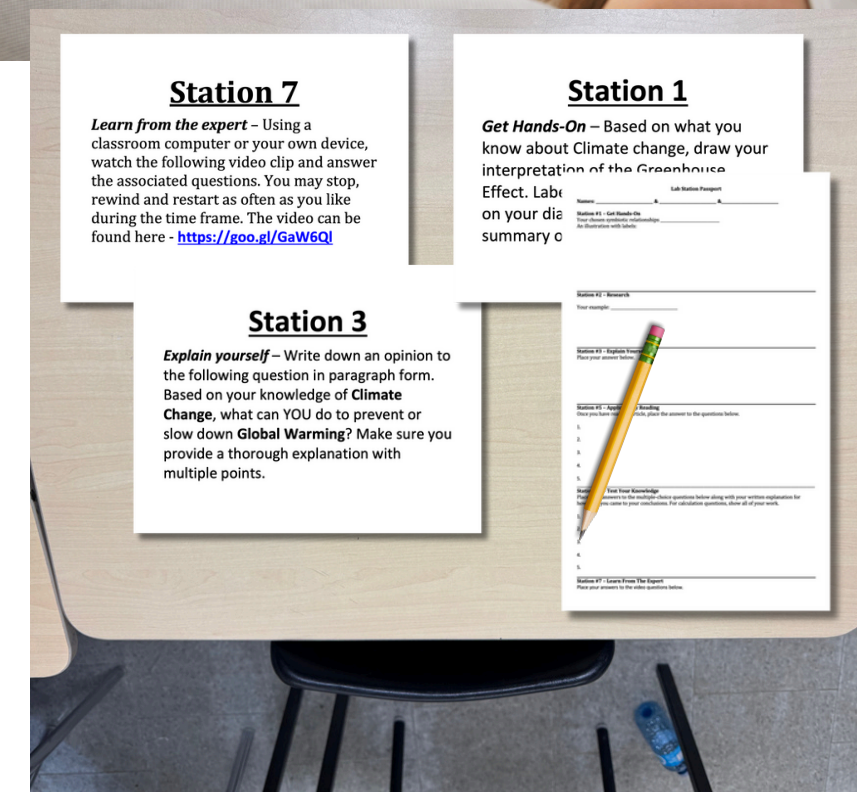
10 Engaging Activities



- ✓ 1 Lab Station Activity with 7 Engaging Station Tasks
- ✓ 1 Digital Scavenger Hunt
- ✓ 6 Climate Change Case Study Readings
- ✓ Climate Change U.N. Solution Proposal Project
- ✓ Bell Ringers Class Warm Ups and Exit Tickets

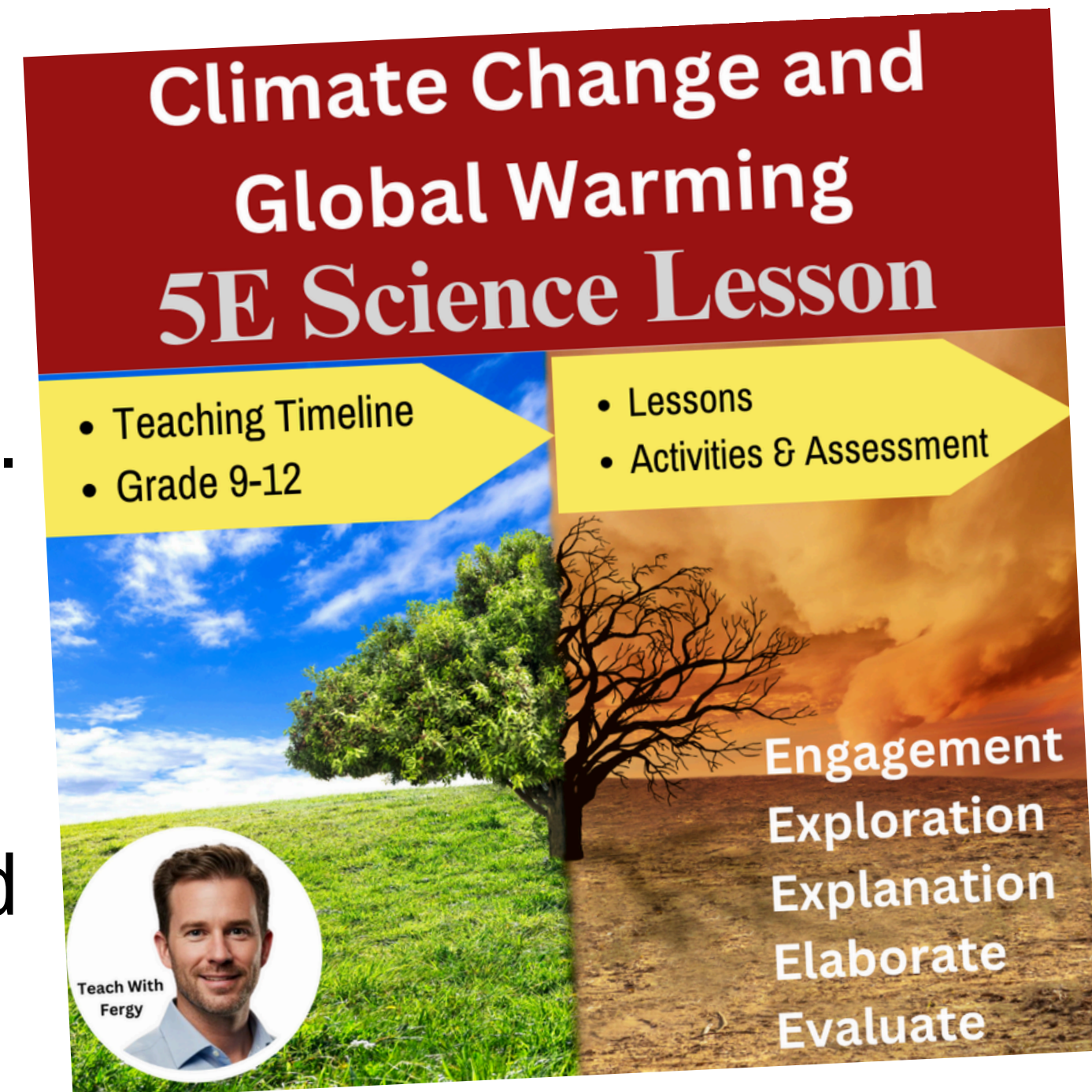
MY 5E LESSON BUNDLES SOLVE...

- ★ **Prep-time crunch** — ready-to-use slides, stations, activities, and quizzes cut planning to near zero.
- ★ **Engagement** — hands-on stations + readings and projects keep students active and curious.
- ★ **Unit flow** — 5E structure (Engage → Evaluate) gives a coherent, day-by-day sequence.
- ★ **Assessment** — activities, assignments, and auto-graded quizzes, provide evidence of learning that is quick to mark.



BY THE END OF THIS BUNDLE, STUDENTS WILL UNDERSTAND

- The effects of climate change around the world.
- How scientists study climate change dating back thousands of years.
- The different ways humans influence Earth's climate.
- The greenhouse effect and how humans are enhancing it.
- Appropriate vocabulary including but not limited to climate, weather, anthropogenic, greenhouse, cycles.
- The role humans play in increasing the amount of CO₂ in the atmosphere and how this leads to climate change and global warming.
- What we can do to curb climate change.



Daily Teaching Schedule

Day-by-day teaching schedule so you'll know what to teach and when each day.

“

★★★★★

Extremely satisfied -
Very easy to use and
modify for my class.
Great resource!

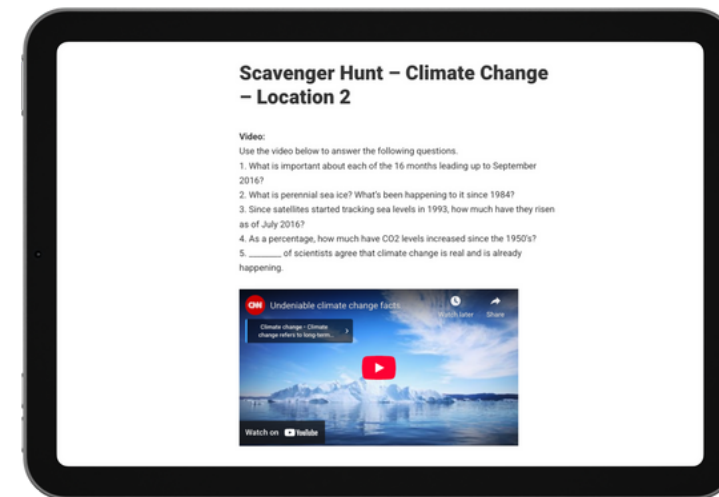
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Climate Change and Global Warming - 5E Unit			
Engagement Phase Climate Change video - Start by having your students answers the following three questions prior to watching the video - Do you believe in climate change? - What is climate change? - What causes climate change? - Watch the video – <i>Climate Change 101 with Bill Nye</i> which can be accessed here - http://www.teachwithfergy.com/climate-change-101-with-bill-nye/ - Once it's done, ask your students to review and revise their answers - Use their answers (old and new) to discuss the importance of learning about climate change Teacher Note: - The video is about four minutes long - If for some reason the video doesn't play, go to www.youtube.com and type in "Climate Change 101 with Bill Nye I National Geographic" to locate it.	Duration 10-15 min. Teacher Role – Facilitate learning and guide student understanding Goal ☐ Connect student experiences ☐ Create interest ☐ Ask questions ☐ Understand objectives of	Explanation Phase Explanation - Climate Change Lesson - Go through – <i>Explanation – Climate Change and Global Warming Lesson</i>. This lesson is designed to be completed over three days - There are many opportunities to engage your students <i>Climate Change and Global Warming</i>. This lesson covers the following topics: ✓ Weather vs. Climate ✓ Earth's energy supply ✓ The atmosphere ✓ Greenhouse gases ✓ The greenhouse effect ✓ Enhanced greenhouse effect ✓ The role of the carbon cycle ✓ Effects of global warming ✓ Historic climate change ✓ Climate proxies ✓ What you can do Teacher Notes: - No prior knowledge is required - All videos can be accessed directly from the PowerPoint. To retrieve them, click on the video icon while in slideshow mode and it will automatically open for you. If they don't open, right-click the image and select Edit Hyperlink or something similar. - I've created a video walkthrough if needed. It can be accessed here - https://youtu.be/oCIKIP9SaDQ - I have also enclosed a .PDF version of both the teacher and student versions	
		Duration: 3 hours Teacher Role – Explain the concepts by presenting the material found in the presentation. Goals ☐ Students develop understanding of the content ☐ Observations and experiences are discussed and critiqued ☐ Students develop vocabulary ☐ Students are able to connect the content presented to previous experiences	
Exploration Phase Exploration - Climate Change Lab Station Activity - In groups of 2-3, have your students complete <i>Exploration – Lab Station Activity</i>. Once they're done, they will submit their passport to you. Teacher Notes: - The complete instructions for my Lab Station activity can be found in the <i>START HERE – Instructions</i> file.	Duration: 55-60 min. Teacher Role - learning and guide student understanding Goal ☐ Students receive experience with topic ☐ Students use develop creative thinking skills ☐ Students make observations	Elaborate Phase Elaborate – Scavenger Hunt Activity Duration: 1 hour Teacher Role – Facilitate learning and keep	

Each Phase is Clearly Described

Editable and Interactive

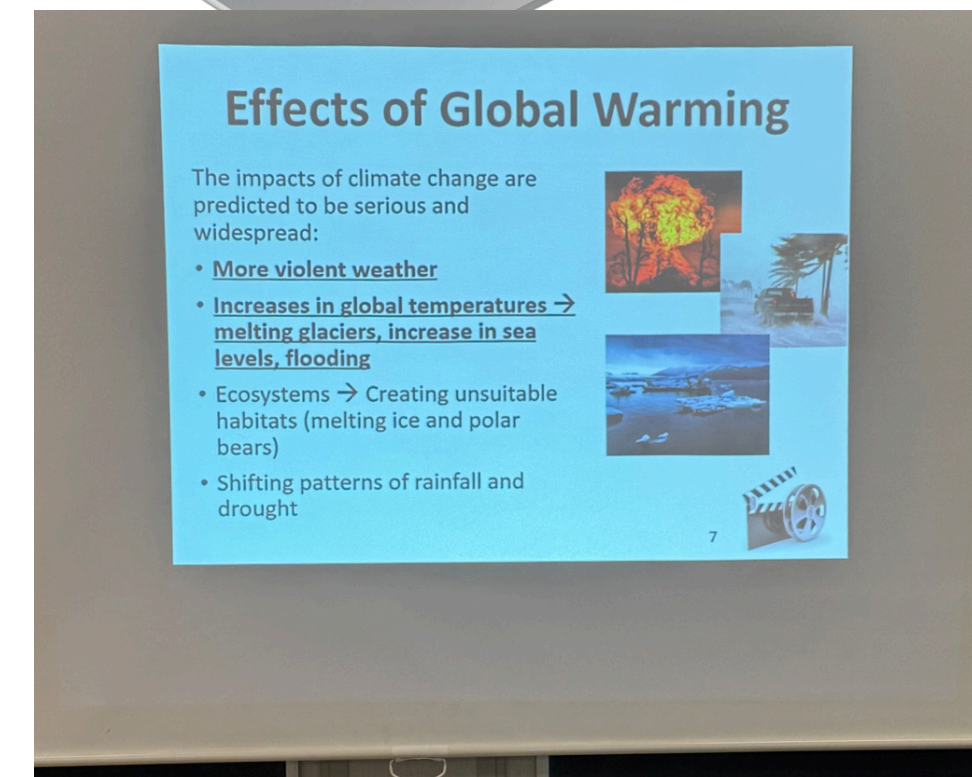
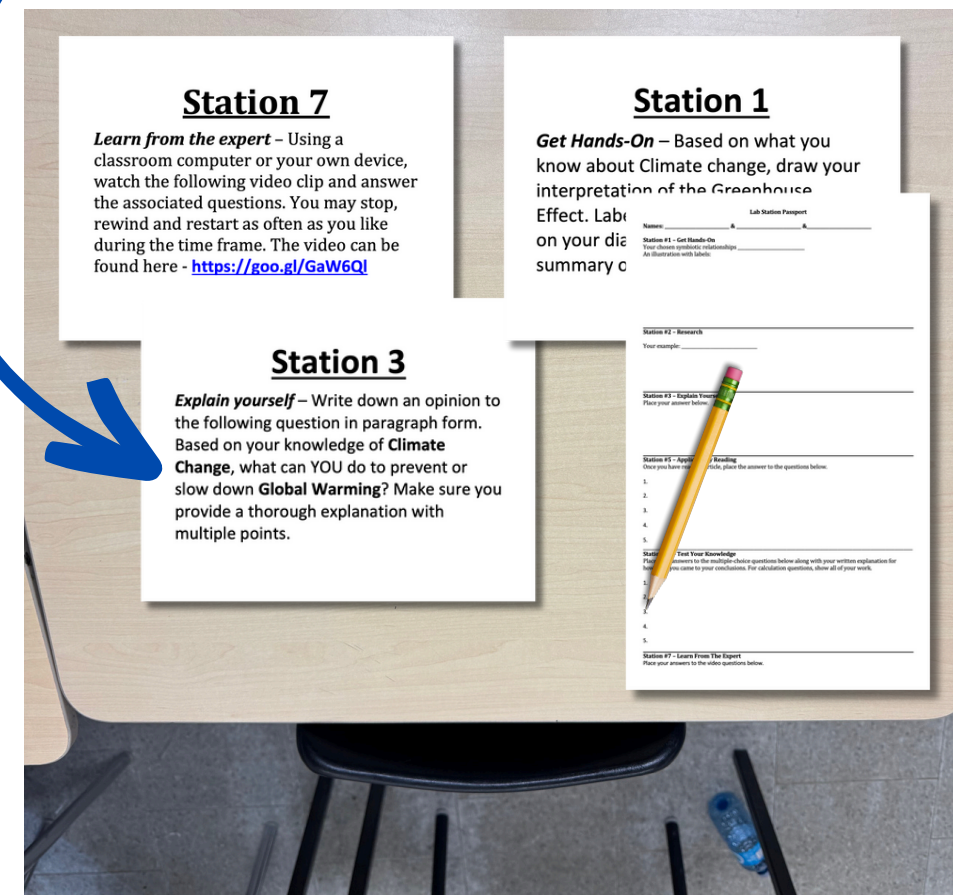
Office, Google,
and PDF Versions
Fully Editable



Engaging and Colorful Lesson



Hands-on and
Interactive Activities



WHAT TEACHERS SAY

★★★★★ Extremely satisfied - This product is fully complete and ready to go! If you need a go to resource with minimal planning look no further! I fully endorse this product.

★★★★★ Extremely satisfied - Thank you for this! Very clear and well organised

★★★★★ Extremely satisfied - Another great product. Very through unit. Highly recommend!

★★★★★ Extremely satisfied - Amazing! Such a time saver and my class loved the whole unit.

★★★★★ Extremely satisfied - This lesson ended up being a several week unit based on student interest. I really like how the resources allowed students to collect evidence and come to their own conclusion. Well done!

★★★★★ Extremely satisfied - Great resource for Climate Change and Global warming and using NGSS.