Mitigation of Climate Change 1:3

Type of Lesson: Introductory

Description of lesson: What is Mitigation?

Enduring Understandings	**Essential Questions**
Climate is made up of multiple variables, a change in any of those variables can have a major impact on the planet	If predicted future impacts of Climate Change are as bad as the scientific community is predicting, is our home planet doomed or saveable?
Academic Standards: HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity HS-ESS3-6. Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity. HS-ENV1-2.* Use a computational representation to illustrate that humans are part of Earth's ecosystems and how human activities can, deliberately or inadvertently, alter ecosystems HS-ENV1-3. Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.	**Student learning targets:** ● Students will be able to define and give examples of mitigation. ● Student will be able to identify mitigation strategies for a variety of complex climate problems ● Students will identify how they can mitigate their impact on Earth and the climate
Assessment task - Formative Assessment - classroom discussion Summative Assessment - Causal Loop Diagram (Lesson Plan 3)	
Differentiation: ● Encourage students to go deeper when finding mitigation strategies for their sector. Finding more strategies or more complex ones. Students can cite sources and be encouraged to find non biased resources. ● Students can go through one sector with their teacher; (I do, We do, You do) scaffolding.	**Accommodations:** ● Notes pre-filled out for students. ● Smaller groups
Prior Learning: ● Aspects of Climate ● Impacts of Climate	**Prerequisite skills:** ● Compare and Contrast ● Research skills

Materials • White Boards •	**Technology:** Project for displaying PowerPoint and videos

Vocabulary Development: Students will be learning and using the following words: Mitigation and Cost/Benefit Analysis,

Procedures:

1. Anticipatory Set:
    a. Watch this video: https://www.youtube.com/watch?v=2vqPfY7LjP8
    b. have students define concepts of "adaptation" and "mitigation"
    c. compare and contrast the two terms.
    d. Discuss actions that climate scientists have proposed (e.g. carbon tax, sustainable usage of resources, controlled burns to prevent wildfire)
        i. Categorize proposed actions as being examples of "adaptation" or of "mitigation"
2. Begin by opening the Mitigation PowerPoint.
    a. You and the students will move through this PowerPoint as a means of guiding the class discussion and activities.
    b. Leave plenty of time for class discussion.
    c. If students are having a hard time discussing with the entire class, try having students discuss in smaller groups first to get them comfortable discussing ideas they are unfamiliar with, without the fear of looking wrong in front of their peers.
    d. When you watch the video on the Ozone layer, you may need to do a brief review of what ozone is, what is its function for habitability and how it is NOT related to climate change.
        i. Students carry around with them a huge misconceptions that an increase in Carbon Dioxide causes the thinning of the ozone and that climate change and the hole in the ozone layer are connected. Make sure you make it clear that they are two different problems that we can use mitigation strategies on to fix.
        ii. For the discussion portion, consider using giant white boards that all the students in one group can write on.
    e. For the Cost/Benefit Analysis portion, consider having the students brainstorm the cost and benefits of electric cars before giving them the answers.
3. Now give students the Mitigation Notes. These notes are used for the "Your Turn" Activity.
    a. The notes give students the issues with this particular sector.
    b. Assign a different section to each student group. Students will be responsible for researching mitigation strategies and using the template on the PowerPoint to guide their research.
    c. Have them create the template on a whiteboard and write their answers there.
    d. Walk around the room and ask students questions to guide them to the correct answers. Help them research.
    e. When students are done with researching and writing on the whiteboard, have all students walk around the room and fill in their notes from each sector.
4. Post the question on slide 10 and play the video.
    a. After the video, reinforce that climate change is not their fault, but they can help reduce (mitigate) its impact.
    b. Have students calculate their ecological footprint using this (or other) calculators.
        i. https://www.footprintcalculator.org/home/en
        ii. You may have to explain some steps to students, in addition look up how much renewable energy resources your state uses.

5. Consider ending the class with students sharing out how they can help reduce their impact on the climate and on the planet.

Other thought provoking videos:
https://youtu.be/yiw6_JakZFc
https://youtu.be/TbW_1MtC2So

Attach:
Mitigation PowerPoint
Mitigation Sector Information (Student Notes)
Mitigation Activity Template