

Unit: 4 Lesson Plan developed for Grades 9-12

Title: Fold-it-Four Climate Change Questions

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Applies to Lesson: Projections of Future Climate Change

<http://cimss.ssec.wisc.edu/climatechange/>

Objective:

Students will learn about climate change and the facts behind scientific research for projections of global warming in the next few decades. Students will share their current knowledge of global warming and climate change with each other and use the Fold-it-Four learning technique.

Total Time Expected: 45 min.

Overview: (copied from reference 2.) To be read as an introduction for the lesson.

“Climate science is based on the assumption that Earth’s climate system is understandable and predictable. Observations, experiments, and theory used to construct and refine computer models and develop scientific explanations have led to a much better understanding of the links between the atmosphere-ocean system and how it relates to the overall climate system’s behavior. As a result, increasingly more reliable projections of future climate have developed over time. Based on computer models and observations, scientists know that Earth will continue to warm and sea levels will rise due to the greenhouse gases we have already pumped into the atmosphere.”

Sequence:

1. Instructor gives each student one copy of ***Climate Change Questions***
2. Instructor reads the paragraph printed in **Overview**.
3. Instructor gives each student one copy of the ***Back to Basics*** packet.
4. Students individually write responses to the questions.
5. Students form small groups.
6. Instructor gives each group a copy of the Fold-It-4 directions
7. Each student completes a Fold-It-4 and shares with their group

Supplies or references required:

- Print one copy for each student of ***Frequently Asked Questions about Global Warming and Climate Change: Back to Basics*** from http://www.epa.gov/climatechange/downloads/Climate_Basics.pdf
- Scissors
- Printing paper (color is good if available)
- Colored pencils
- Climate Change Questions
- Fold-it-4 instructions

Science Standards addressed:

“Students in Wisconsin will demonstrate an understanding of the structure and systems of earth and other bodies in the universe and of their interactions.”

<http://dpi.wi.gov/standards/scistane.html>

References or Related URLs:

1. Wisconsin academic standards: <http://dpi.wi.gov/standards/scie12.html>
2. Climate modeling <http://cimss.ssec.wisc.edu/climatechange/modeling/lesson13/intro.html>
3. Climate Change: Back to Basics http://www.epa.gov/climatechange/downloads/Climate_Basics.pdf

Name:_____ Period:____ Date:_____

Climate change and Global Warming

1. What is the greenhouse effect?
2. Where do greenhouse gases come from?
3. What is the difference between “climate change” and “global warming”?
4. Approximately what year did the atmospheric concentrations of carbon dioxide and methane increase significantly?
5. Is our planet warming? If so, why?
6. How does the global ocean temperature change for the previous 30 years compare to the global ocean temperature change for the last 100 years?
7. How do scientists calculate future climate change predictions?

8. What is the projected average global temperature increase by the year 2100?
9. What is the relationship between global warming and precipitation?
10. How will a warming climate affect temperature extremes?
11. What is the relationship between hurricanes and a warming of the oceans?
12. What is the average predicted rise in sea level over the next 90 years?
13. List some significant impacts which could result from drastic climate change.

Fold-It-4 – A Creative Concept Map

Methodologies: writing, inquiry, collaboration, reading

The instructor should identify a central concept being discussed and possibly some key vocabulary words which students will need to know for the current lesson or unit.

Procedure

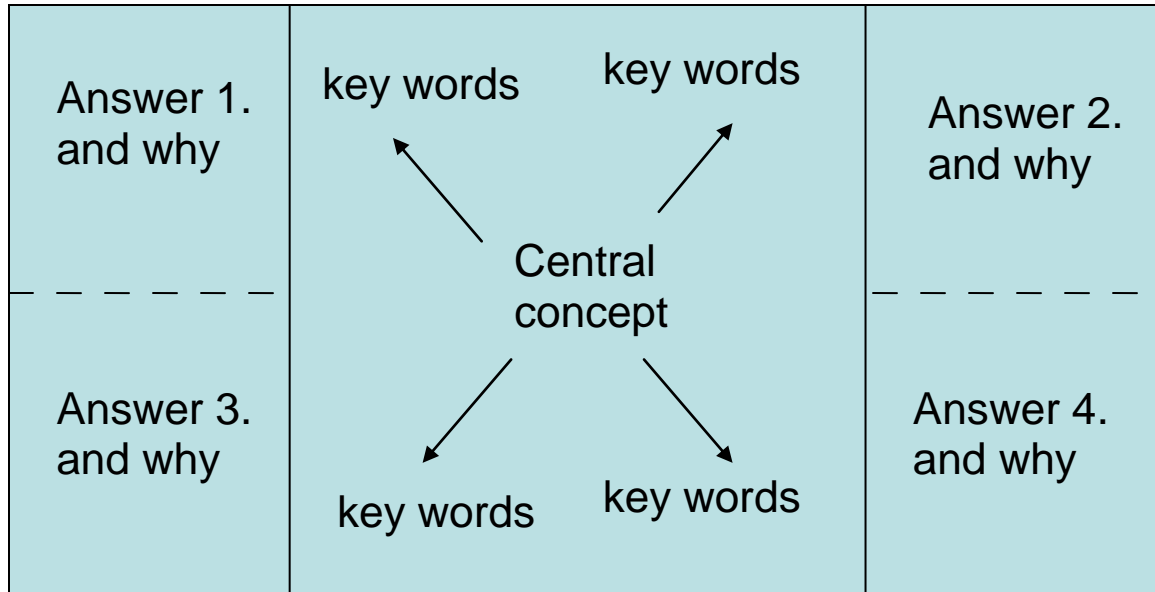
1. Tri-fold a piece of paper the long way, making two doors (colored paper if available)
2. Cut each flap in half from the outside edge to the inner crease (dotted lines in the diagram)
3. In the central area make a concept map with the vocabulary terms as spokes (like the wheel of a bike)
4. On the outside of each of the four flaps compose a riddle dealing with the key concept and include an illustration
5. On the inside of each flap write the answer and reason
6. Share with a group and/or use as an individual review

Fold-It-4 may be used for individual study review or group collaboration.

Suggestions for helping students doing this for the first time....

- a. Composing a riddle should involve more than just a question.
- b. This can be challenging and students may need significant time to be original, but keep them on task with a time limit.
- c. An illustration is required for each riddle.
- d. Color and creativity are encouraged.

The vertical lines mark where the paper is folded. The dashed horizontal lines mark where the folds are cut. This layout shows the flaps open.



This is what you see when the flaps are closed. Each square should contain a riddle and an illustration. Open the flap to see the answer and reason.