Unit Plan: Is Global Warming Real

Unit Author	
First and Last Name:	Lauren Mezzetti
School District:	Lynn Public Schools
School Name:	Lynn English High School
School City, State:	Lynn MA
Unit Overview	
Unit Plan Title:	**Is Global Warming Real?**
Curriculum-Framing Questions	
Essential Question	What evidence does science have to back up the theory of global warming?
Content Questions	What is global warming? What is climate change? What is the greenhouse effect and how does it contribute to global warming and climate change? What is carbon sequestration?

Unit Summary:

Global warming is the increase in the temperature of the Earth's atmosphere due to greenhouse gases. Scientists believe the increase in the amount of **greenhouse gases** in the atmosphere is from human activity, also referred to as **AGW, anthropogenic global warming**. The burning of **fossil fuels** is responsible for releasing enormous amounts carbon dioxide into earth's atmosphere. The added **carbon dioxide** in the atmosphere traps heat that would normally be released back out to the atmosphere. This is referred to the "**greenhouse effect**" because the **greenhouse gases** act like a greenhouse.

Subject Area(s): Biology

Grade Level: 9th Grade Honors; 10th Grade Biology I

Targeted State Frameworks/Content Standards/Benchmarks: Massachusetts Standards

- **6.2**: Analyze changes in population size and biodiversity (speciation and extinction) that result from the following: natural causes, changes in climate, human activity, and the introduction of invasive, non-native species.
- **6.4:** Explain how water, carbon, and nitrogen cycle between abiotic resources and organic matter in an ecosystem, and how oxygen cycles through photosynthesis and respiration.

Student Objectives/Learning Outcomes:

- Students will explain global warming, climate change, greenhouse effect and carbon sequestration
- Students will explain the difference between global warming and climate change.
- Students will explain the effects of global warming on populations, communities and ecosystems.
- Students will make conclusions and make predictions as to what the consequences will be if nothing is done to stop the emissions of greenhouse gases
- Students will analyze and make conclusions based on scientific evidence whether global warming is caused by human activity or naturally occurring.
- Students will describe two ways that humans have modified the composition of the atmosphere and identify the possible consequences of these changes (Holt, Rinehart and Winston, 2002).
- Students will describe ways that countries and individuals can help reduce global warming.
- Students will describe events in the last 10 years give evidence for global warming.

Procedures:

Day 1 :

- Students read two articles(find in internet resources) that give opposing views for global warming
- Class discussion of global warming, is it real or naturally occurring?
- Take the Greenhouse Challenge as a pre test, check answers
- Homework-Chapter 23-1; Answer Chapter Review Questions and define Key Terms.

Day 2 & 3 :

- Review homework questions and terms
- Class lecture and Power point: Global Warming-Is it real?
- Homework-Graphic Organizer-Cause and Effect of Global Warming or Natural Occurring Climate Change

Day 4& 5:

- Quiz-Explain global warming, climate change, greenhouse effect
- Class Activity: Jigsaw Debate-Comparing global warming and natural occurring climate change (Students will work in cooperative groups, 3 pro global warming and 3 against global warming. All groups research their topic in computer lab (40) then break into 3 groups each debating their side (20). Finish with class discussion of whether global warming is real (25).
- Homework: 1-2 page report -Explain evidence scientists use to back up their theory of global warming. What events are taking place today that gives evidence of global warming?

Day 6 & 7:

- Class Activity: Each class will break into 5 groups; each group is assigned –personal, industry, home, community and school. Each group will brainstorm 10 ways their assigned topic can help reverse the effects of global warming. They will discuss their ideas and pick the 5 best ideas and create a poster displaying their ideas. If time each group will present their posters to the class.

Day 8:

- Finish projects; review global warming content
- Retest: Greenhouse Challenge-see if they improved their score from the pretest

Day 9:

- Assessment-Global Warming

Approximate Time Needed:

9 regular class periods of 50 minutes; 2 lab periods of 90 minutes each

Prerequisite Skills:

Students will need a background in the basic chemical structure of greenhouse gases, biogeochemical cycling,

Students will need their passwords for the computer lab and skills using the internet

Materials Needed:

Technology – Hardware

- Smart board
- Computer Lab
- Internet Connection
- Internet Browser

Printed Materials:	Worksheet Section 23-1 | Cause and Effect Graphic Organizer

Supplies:	Carbon Dioxide Activity: Paper, pencil Modern Biology Text p. 444	Global Warming Posters: Construction paper Markers, colored pencils crayons
Internet Resources:	**Day One Articles for discussion:** Arguments against global warming article: http://www.aproundtable.org/tps30info/globalwarmup.html Global Warming is Real: *Global Warming is Real*. (2005). Wired. Retrieved from http://www.wired.com/science/discoveries/news/2005/02/66651 **Other Internet Resources:** Greenhouse effect: http://science.howstuffworks.com/environmental/green-science/global-warming2.htm Methane: http://www.epa.gov/methane/sources.html Deforestation: http://environment.nationalgeographic.com/environment/global-warming/deforestation-overview.html Deforestation: http://www.globalchange.umich.edu/globalchange2/current/lectures/deforest/deforest.html Greenhouse challenge: http://dsc.discovery.com/convergence/globalwarming/quiz/quiz.html EPA Kids Site: http://www.epa.gov/climatechange/kids/cc.html EPA Kids Site Interactive: http://www.epa.gov/climatechange/kids/global_warming_version2.html EPA Slide Show on Climate Change: http://www.epa.gov/climatechange/indicators/pdfs/climate_indicators_slideshow.pdf NOAA Climate Services: http://www.climate.gov/#climateWatch Coral Bleaching: http://www.coral.noaa.gov/cleo/coral_bleaching.shtml	
Accommodations for Differentiated Instruction		
Resource Student:	Extended time on assignments; use of glossary for key terms	
Non-Native English Speaker:	Have key terms available for use in class	
Gifted Student:	▪ Develop a slide show presentation on the controversy surrounding global warming, or another topic related to global warming.	
Student Assessment:	Final Assessment will consist of 20 multiple choice questions and 2 open response questions on global warming.	