



Unit Overview

Climate Change



Unit Description

The objective of this unit is to educate high school students about climate change to empower students to take action and become stewards of the environment. At the end of this unit students will have sufficient background knowledge to understand the phenomena of climate change, the effects of climate change on various ecosystems, and viable solutions to climate change at a global and local level.

This curriculum integrates concepts from the earth, life, and physical sciences, as well as current data on climate systems. The student goals that frame the unit and are integrated throughout the lesson plans are listed for each lesson plan. To achieve these goals, the lesson plans include a variety of both teacher-centered and student-centered activities ranging from lectures, teacher-led demonstrations, student-led investigations, and group analysis of data. Underlying these activities is a philosophy of learning by inquiry as well as supporting claims with sound evidence. The following scope and sequence are as follows:

Lesson 1: What is climate?

Lesson 2: Abiotic factors that affect climate

Lesson 3: Relationship between solar energy and greenhouse gases

Lesson 4: Photosynthesis

Lesson 5: Cellular respiration

Lesson 6: Energy use: fossil fuels

Lesson 7: Causes of rapid climate change

Lesson 8: Effects of rapid climate change

Lesson 9: Relationship of causes and effects of rapid global climate change

Lesson 10: Global solutions to rapid global climate change

Lesson 11: Individual and community solutions to rapid global climate change

Student Objectives for each lesson:

■ Lesson 1

Students will be able to differentiate between weather and climate and recognize climate differences in various biomes.

■ Lesson 2

Students will identify and describe abiotic factors that affect global climate.

■ Lesson 3

Students will be able to understand the relationship between greenhouse gases and solar energy.

■ Lesson 4

1. Students will be able to model photosynthesis
2. Students will be able to understand the reactants and products of photosynthesis
3. Students will understand the relationship of photosynthesis within the carbon cycle

■ Lesson 5

1. 1. Students will model and understand cellular respiration
2. 2. Students will be able to understand the reactants and products of cellular respiration
3. 3. Students will understand the relationship between photosynthesis & cellular respiration

■ Lesson 6

Students will understand the formation and usage of fossil fuels and the effect of fossil fuels on rapid global climate change.

■ Lesson 7

Students will understand the various factors that cause a rapid change in global climate.

■ Lesson 8

Students will be able to list and describe the many devastating effects of rapid global climate change

■ Lesson 9

Students will be able understand the relationship between the causes and effects of rapid global climate change.

■ Lesson 10

Students will identify and describe viable global solutions to mitigate rapid climate change.

■ Lesson 11

Students will describe and develop individual and community solutions to reduce the local carbon footprint.

Time frame

Time frame for lessons depends on background knowledge and student understanding of concepts.