**Title:**

Day 3

**Length of Time:**

1 class period between 45-50 minutes

**Environment:** The desks will be in straight rows.

**Objectives:**

After completing a think, pair, share activity along with a photosynthesis and respiration lab, students will be able to describe the process of photosynthesis and how it contributes to the flow of energy in the biosphere.

Students will be able to describe the process of cellular respiration and its importance in the production of energy for every organism after completing a think, pair, share activity along with a photosynthesis and respiration lab.

Students will be able to evaluate the information collected from the carbon cycle lab in order to predict levels of carbon dioxide in the atmosphere.

Students will be able to describe how the increasing use of fossil fuels since the Industrial Revolution has changed the way that energy flows through the biosphere after completing the carbon cycle activity.

**Standards:**

B.3.1 Describe how some organisms capture the sun’s energy through the process of photosynthesis by converting carbon dioxide and water into high-energy compounds and releasing oxygen.

\*B.3.2 Describe how most organisms can combine and recombine the elements contained in sugar molecules into a variety of biologically essential compounds by utilizing the energy from cellular respiration.

\*B.3.4 Describe how matter cycles through an ecosystem by way of food chains and food webs and how organisms convert that matter into a variety of organic molecules to be used in part in their own cellular structures.

\*B.3.5 Describe how energy from the sun flows through an ecosystem by way of food chains and food webs and how only a small portion of that energy is used by individual organisms while the majority is lost as heat.

**Materials:**

Pretest

[How Plants Get Mass Video 1](http://www.youtube.com/watch?v=2KZb2_vcNTg)

[How Plants Get Mass Video 2](http://www.cfa.harvard.edu/smgphp/mosart/video_archive_2.html)

**General Procedure:**

The Bell Ringer will be posted on the chalkboard, “How do plants get their mass?”

Students will take a pretest. (10 min.)

The videos will then be shown. (7 min)

The driving question will be introduced, “How can we best utilize local vacant land to produce biomass for fueling our cars?” Brainstorming will be used to think of various approaches to answer the question. A student choice opportunity will be implemented to allow students to sign up for the approach they wish to take on the project. For example: some approaches will look at land use, government regulations, biofuel production etc. Students will be given a copy of the rubric for the final assessment of the project and it will be explained that students will be allowed to choose their mode of communication for the final project. For example: video, PowerPoint, song, podcast, etc. (rest of class)

**Assessment** At the end of the class, students will do the exit question. “What is one question that you still have about plant biomass or photosynthesis or carbon movement?”