

LESSON 8: CLIMATE CHANGE AND THE ECOSYSTEM SERVICES MODEL

OVERVIEW:

Students will learn about the process and importance of carbon sequestration by trees. In this process, excess carbon is removed from the carbon cycle by trees. Next, students engage in a series of review activities in which they recall the major concepts that were covered throughout the climate change module and connect them in groups to the lenses/aspects/parts of the Ecosystems Services Model as described in Lesson 6 of Module 1. Students will also participate in a round robin to discuss and explain the reasoning behind why they categorized these concepts the way they did to other groups.

SUB-QUESTION:

How do our food choices impact energy use?

WAYS OF KNOWING URBAN ECOLOGY:



Students will...

Understand

- Recognize the importance and of the carbon sequestration process. (*ecosystem change and ecosystem state and structure*)
- Connect the major scientific concepts and terms with the Ecosystem Services Model. (*ecosystem change, forces and drivers, ecosystem state and structure*)

Talk

- Provide reasoning for categorizing the major scientific concepts and terms in particular aspects of the Ecosystem Services Model.

Do

No specific goals connected with doing urban ecology in this lesson.

Act

No specific goals connected with acting on urban ecology in this lesson.

SAFETY GUIDELINES

No specific safety issues are associated with this lesson.

PREPARATION:

Time:

1-2 class periods

Materials:

Activity 8.1

White board or chalk board with terms and concepts written on it
Host Q&A sheet

Activity 8.2

Student Worksheets

Reflection:

Student notebooks

INSTRUCTIONAL SEQUENCE

Activity 8.1: Global Climate Change Concept Review Jeopardy

1. Tell your students that you will now be going over the idea of climate change from the beginning, and connecting it to the Ecosystems Services Model as described in Lesson 6 of Module 1.
2. Let them know that you will be playing Climate Change Jeopardy. You may break the class up into teams or not.
3. One (or more) person plays the host, most likely you as the teacher although you can rotate the role of host among many students. The host reads the definitions of the terms out loud to the class one at a time from the Host Q&A sheet and asks for the correct term in the form of a question. For example, the host may read, “This process removes carbon from the carbon cycle.” The correct response would be, “What is carbon sequestration?” The host should go through the definitions as quickly as possible. Definitions of the terms do not need to be written on the board.

Teaching Alternative

To make this activity run more quickly, make sure to have the words written down on the board prior to class. Or you may assign a student the role of Recorder, who writes the term on the board as it is matched with its definition.

There are computer-based Jeopardy games that you can set up with these definitions and terms. A listing of these games can be found at <http://www.shambles.net/pages/learning/games/jeopardy/>.

You may also skip the “Jeopardy” part and ask students to just define each of the terms and concepts as a class.

If there is no time for this activity, provide a copy of the Host Q&A sheet to each student.

Activity 8.2: Global Climate Change Concept Review Round Robin

1. Once all definitions have been matched with a term, break students up into groups of 3-4 students.
2. If necessary, revisit the descriptions of each of the lenses of the Ecosystems Services Model from Module 1 Lesson 6.
3. Have each group classify some of the terms and concepts from Climate Change Jeopardy into the appropriate category of the Ecological Services Model. You may assign terms to each group or allow each group to pick and choose.
4. Make sure that there are terms that are covered by more than one group, and that student groups discuss and write down responses for the “Why?” section.
5. Each student should write down the group responses on their individual sheets.

6. When the groups are done, have students rotate into different groups so that no group is the same. Make sure the students bring their worksheets with them.
7. Provide students the opportunity to share their categorization choices and the reasoning behind making these choices.
8. Prompt students to look for similarities and differences in how groups categorized their terms.

Teaching Alternative

You may skip the round robin component of this activity and lead a class-wide discussion instead.

Concluding the Lesson

1. As an end of the class reflection, have students consider the following questions: From an ecosystems services model perspective, how does climate change influence human sustainability? What can humans do about climate change that improves human sustainability?
2. You may lead a class discussion or provide students with the opportunity to write their responses in their reflection journals. Encourage students to use the vocabulary from the Ecosystems Services Model.
3. Let your students know that in the next lesson they will be working on an Action Plan related to climate change.