Lesson Plan for Inquiry 3

Before beginning Inquiry 3, have students read "Thinking About the Environment" and "Thinking About Science" if they have not yet done so. This will give students an introduction to the importance of global forests and to FAO's effort to understand the world's forests.

Need: Journal, pencils, and paper.

Have students read the first paragraph and ask them to study the carbon cycle (Figure 22). Discuss the carbon cycle in your classroom. Before moving forward, make certain your students understand that all living things contain carbon, and that carbon moves from the atmosphere, through living matter, into the soil and water, and is released again into the atmosphere.

Ask students to read the next paragraph. Ask them to identify the main idea of the paragraph.

Now have them read the next paragraph (beginning with "From Figure 22") and examine Figures 23 and 24. Ask students if they can guess why FAO wanted to estimate the amount of carbon held by the world's forests. To do this, your students must connect information from the previous paragraphs. The logical conclusion should be that forests absorb and hold carbon, and therefore may help address climate change.

Have students read the next paragraph. That paragraph should confirm the conclusion made in the previous exercise.

Have students read the next paragraph beginning with "Scientists believe...". Check their understanding by emphasizing that after all water is removed from a tree's living parts, about half of the remaining weight is carbon. Ask students if they think humans have carbon in them as well. (This question will allow you to check their comprehension.) About 18 percent of a human body is carbon. Remind your students that carbon is the most abundant element on Earth, because all living things contain carbon.

Using the Reflection Section on page 18, hold a class discussion about the evidence for climate change. Students may have differing opinions on this, and they should examine their own reasons for believing as they do. What evidence are they using? Is that evidence credible? How do they know?

Have students read all paragraphs in "What They Discovered" and look at Figure 25. Ask them if they can guess what "biomass" is. For the purposes of this graph, biomass is the living material of trees. (Biomass usually refers to living and once-living material.) Ask students if they can guess why South America has more carbon in biomass than other regions of the world. (South America contains a large area of rain forest, which contains a massive amount of leafy green biomass).

Now have students "do the math." Considering how many elephants it would take to equal the amount of carbon in the world's forests, ask them if they think there is more carbon in plant or in animals on Earth. Earth's human population is almost 7 billion, but your students must consider that other animals live on Earth as well. (After comparing the numbers and considering the size of other animals, students should conclude that worldwide, plants must contain more carbon than animals.)

Now ask students to consider the reflection questions. This may be done in small groups. For the first question, students should conclude that the two pieces of information are compatible. That is, as more forest land is lost than is gained, it makes sense that the amount of carbon in the world's forest should be declining. Ask students to discuss the second question in small groups and report their conclusion to the class.

Based on this Inquiry, students should identify the holding of carbon as another benefit of forests. This benefit should be added to the classroom list of forest benefits.