

EDUCATOR RESOURCES
Note to Teachers

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The *Natural Inquirer* is an integrated science education journal for students aged 11-14. In the United States where the journal was first published, the *Natural Inquirer* presents research from scientists working in the United States Department of Agriculture's Forest Service. This edition of the *Natural Inquirer* presents the results of a worldwide effort to understand the world's forests, organized by the United Nations Food and Agriculture Organization, or FAO. The report from which this *Natural Inquirer* is written is the Global Forest Resources Assessment 2005. It contains information from 229 countries and territories around the world.

You can access the FAO report at <http://www.fao.org/forestry/fra2005/>.

This journal is organized into four Inquiries. Each Inquiry presents a category of findings from the Global Forest Resources Assessment 2005. Each Inquiry builds on the previous inquiry's information, and each should be considered a separate lesson. A lesson plan for each Inquiry follows this "Note to Teachers". The educational concepts, which immediately follow the "Reflection Answer Guide", summarize suggested key learning objectives for the journal.

To be most effective, the Inquiries should be presented in the order outlined in the journal. At the beginning of the journal, three sections set the context for learning. "Welcome to the World's Forest Edition of the *Natural Inquirer!*" provides an introduction to the journal. "Thinking about the Environment" presents benefits of forests and sets the stage for why it is important to understand forests at a global scale. "Thinking about Science" presents the method used by FAO to gather the information presented in the Inquiries. To be most effective, students should read these sections before they begin the Inquiries. A short lesson plan for these sections is presented on page 29.

Each Inquiry is comprised of 2 main sections: "The Situation" and "What They Discovered." "The Situation" introduces the question asked by FAO. This section also presents background information that leads to the research question. Whenever there is a scientific question to be answered, there is a situation that led to the development of the question.

"What They Discovered" presents the answer to the research question. This section includes tables and photographs as well as text. Embedded within this section are "Reflection Sections," which ask questions aimed at encouraging students to think critically about what they are reading. You may use these questions to check student comprehension. In some instances, a "You Do the Math" section provides an opportunity for students to integrate math with their scientific learning.

Before beginning any of the Inquiries, have your students read "Welcome to the World's Forests Edition of the *Natural Inquirer!*" This section introduces the journal and provides opportunity for students to begin thinking about the world's forests within their own subregion, region, and as a part of the global landscape. Students should only have to read this section once. Before they leave this section, have them locate their own region and subregion of the world.

Lesson Plan Welcome to the World's Forests Edition of the *Natural Inquirer!*

Have your students read the first paragraph. (When students read this journal, they may read silently or you may select students to read paragraphs out loud.) Next, have students “do the math” and give the answer. (In 2008, the UN was 63 years old.)

Students should then read the next paragraph. Then hold a discussion about the meaning of the word “improve.” What does it mean to them? What might improvement mean to a country in transition and modernization?

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

paragraph.

The next paragraph begins with “Trees are often planted...” Have students read this paragraph and follow up with a class discussion. Questions to get you started: “How is your life improved by forests?” “What do you think is the topic of this journal?”

Examine Figure 1. Has anyone seen a forest plantation? Have them tell about it.

Have students read the next paragraph in preparation for examining Figure 2. Have them locate their region and if appropriate, their subregion.

Lesson Plan for Thinking About the Environment

Have students read the first paragraph. Questions to generate discussion include: “What is the main idea of the paragraph?” “Who or what benefits from forests?”

Examine Figure 3. What does the photograph show?

Now do the Reflection Section on page 7. Students may read silently and write a list of benefits. Their lists should be shared with the class, where a master list can be created. As your class reads through the journal, add to the list of benefits.

Lesson Plan for Thinking About Science

Read first the paragraph. Ask students to think of a time in the last 3 days when they collected information. This can be numeric or non-numeric. Challenge students to think of numeric data recently collected. For example, they may have checked the temperature, the cost of something, or the distance to a location.

Read the next paragraph. Check for student comprehension by asking questions about using a standardized unit of measurement. (When you come to an italicized word, check

to make sure all students understand its meaning).

The following 2 paragraphs will also explain standardized units of measurement. After students read the paragraph, ask someone to explain the main idea of the paragraphs.

The final paragraph in this section introduces country correspondents. After students read this paragraph, have them clarify the role of the country correspondent in relation to FAO scientists.

Lesson Plan for Introduction to the Inquiries

Have students read this entire section silently. After they have finished, check comprehension by asking them if the correspondents used the same unit of measurement as FAO. If students understand

the term, they will know that the same unit of measurement was either necessary, or FAO had to be able to transform any data received into a standardized unit of measure.

Lesson Plan for Inquiry 1

Before beginning Inquiry 1, have students read "Thinking About the Environment" and "Thinking About Science". 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, paper, pencils, a globe or world map with lines of latitude, internet or library access, and copy of the Table on page 31.

Have students read the title and first paragraph of "The Situation". Check comprehension by asking the difference between weather and climate. Ask students to identify the two ways that FAO could have classified forests, based on the information in this paragraph. Check comprehension of the word classify. It is important for students to fully understand classification before continuing.

Have students read and answer the question in the next paragraph.

After reading the paragraph that follows, have students examine Figures 6 and 7. Explain latitude, especially as it relates to the equator and Earth's climate. Now do the activity below to determine your latitude

DETERMINING LATITUDE.

Using a globe or a world map, have students identify where on Earth they are located. Primarily, have them identify their latitude, or distance from the equator. Some maps may show latitude in degrees, minutes, and seconds. Others may only show degrees and minutes, or just degrees. Have them identify the closest degree of latitude to their geographic location. After they have located their latitude, determine how far between the equator and one of the poles their location is. (Latitude is 0 degrees at the equator, 90 degrees at the poles.)

Students should read the paragraph that begins, "About 71 percent of Earth....". After reading the paragraph, they should examine Figure 8.

After reading the next paragraph, ask students to identify the paragraph's main idea. Then, ask them to describe the natural area close by. How much rainfall does it receive? Ask students to describe the trees and vegetation growing close to home.

Students should read the next paragraph, then examine Figures 9, 10 and 12.

Next, have students do research in the library or on the internet to discover their elevation and amount of annual rainfall. Elevation is the height of the land above sea level. Using Figures 9, 10 and 12, have them identify what kind of forest, if any, should naturally grow nearby.

Using the picture of the distribution of the world's forests on page 13, you can further check the understanding of the students by asking them to explain why they think that there are no forests in North Africa.

Now, using Figure 5, have students identify into which ecozone forests close to home should be placed.

Read the paragraph beginning with "In addition to latitude,..." Hold a class discussion based on the last sentence in the paragraph. Then read the next paragraph.

Using Table 1, hold a class discussion on the closest forest to their home. Into which FAO category would they place this forest? Explore the advantages and disadvantages of each forest type. Students can work in small groups to do this. Do plantation forests look different than more natural forests? How? Do students think different animals might live in different types of forests? Why or why not? What evidence do they have to support their answer?

The next four paragraphs should be read by students, and a short class discussion should be held between each paragraph. This will

bring students to the end of The Situation.

Some ideas for discussion include:

Paragraph 1: How many of the 5 categories contain trees planted by humans? Is this a surprise? Why or why not?

Paragraph 2: Do you think fruit orchards should have been included by FAO in their study? Why or why not?

Paragraph 3: Discuss the difference between primary forests and protective plantations.

Paragraph 4: Discuss the idea of understanding trends and examining trend data.

WHAT THEY DISCOVERED

Read the entire section. Use your globe, a world map, or Figure 2 to locate the Amazon area of South America. Read the next paragraph and examine Figures 11 and 13. Ask students to identify which category of forest is comprised of the least amount of land. Have them “do the math (first problem only).” Students can use Figure 11 to do this calculation. Ask a student to explain what this

means about the current character of most of the world’s forests.

Have students “do the math” (second problem) and briefly discuss the meaning of the results.

REFLECTION SECTION:

In small groups, have students discuss the two "questions" and appoint a representative to make a short presentation to the class. You can use this presentation as an informal assessment of student comprehension.

EXTENSION:

Kenya’s Green Belt Movement (www.greenbeltmovement.org) has developed a program to reforest Kenya. The program suggests what types of trees should be planted for what purposes and where. Using the Table below (developed by the Green Belt Movement), have students identify into which of FAO’s 5 categories of forests each type of planting should be placed.

Remember that in every case and in the Table below, humans are planting trees. Therefore, none will be categorized as primary forest or modified natural forest.

PURPOSE	BEST SUITED SPECIES	PRIMARILY PLANTED IN	FAO CATEGORY
Environmental conservation	Native	Public places	
Household needs	Fast growing non-native	Farms	
Fodder	Fast growing non-native	Farms	
Medicine/herbs	Native	Public places	
Food security	Non-natives and fruit trees	Farms	
Shade	Native	Farms	
Increase biological diversity	Native (to support birds, animals, and plants)	Public places	
Protecting cultural sites	Native	Public places	

Lesson Plan for Inquiry 2

Before beginning Inquiry 2, have students read "Thinking About the Environment" and "Thinking About Science" if they have not yet done so. These sections 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, paper, copy of the Table below.

Read paragraph 1. Ask students: What is the main idea from this paragraph? (The main idea is that we have not yet learned whether forests are growing or shrinking in size worldwide.)

Read paragraph 2. Hold a class discussion about the idea of renewable resources. Here are some questions to get the discussion started. "What are renewable resources, and what makes forests renewable?" "What are some other renewable resources?" "What are some non-renewable resources?" "What is the advantage of using renewable resources?"

Examine Figure 14. Ask if any students have planted trees. If so, ask them to share their experiences.

Have a student read the next paragraph, beginning with "FAO wanted to know..." Then hold a class discussion using the Reflection Section. This may also be done in small groups.

Ask students to read the first 2 paragraphs in "What They Discovered" and examine Figure 15. Using the Table below, have students calculate the amount of forest per person for each region. Have students compare their region with other regions. Order the regions from the most forest per person to least forest per person.

Now hold a class discussion based on these questions:

1. Where is my region on the list? Is it near the top or bottom, or near the middle?
2. How does my region compare with other regions in the world?
3. What are some of the reasons my region is ranked where it is on the list?
4. How might the country I live in compare with my region as a whole? (If you have access to the internet, visit and download the FRA 2005 Global Tables in excel from the main

REGION	POPULATION (2004)	FOREST AREA (HECTARES)	AMOUNT OF FOREST PER PERSON
Africa	868 182 000	635 412 000	
Asia	3 837 943 000	571 577 000	
Europe	723 495 000	1 001 394 000	
North and Central America	508 064 000	705 849 000	
Oceania	32 764 000	206 254 000	
South America	364 668 000	831 540 000	

page. Table 1 contains population Figures and Table 3 the area of forest. Using these resources, your students can calculate an estimated amount of forest per person for any country included in the report.)

Have students read the remaining paragraphs and examine Figure 17. After examining Figure 17, have your students look at Figures 18, 19, 20 and 21. You may have to explain these maps to your students. For more information about these maps, visit <http://www.worldmapper.org/about.html>. Have them “do the math” to determine how many fewer hectares are being lost now than in the past. Hold a class discussion about these numbers. What do they tell us? Is this good news? Why or why not? (Students may break into small groups for these discussions.)

Have students read the last paragraph and examine figures 17, 20 and 21 and answer the questions. (Refer to page 37 for answers). Hold a class discussion based on the reflection questions. Here are some additional questions to get the discussion started:

1. What is happening in our region or subregion that is leading to the loss or gain of forests?
2. Do you think this trend might change in the future? Why or why not?
3. What might happen to cause a change in the trend?

Hold small group discussions about whether your current regional or subregional trend is desirable or should be changed. Remember that not all deforestation is bad. Some forests may have to be converted to agriculture to provide enough food or to provide land for roads, houses and ports. In these groups, have students identify 3 advantages and disadvantages to the current trend. Have each group develop 2 action items that will either support or try to change the trend. Each group will identify a spokesperson to present their action items and rationale to the class.

As a class, identify any action items that can be taken by the students.

EXTENSION: The Green Belt Movement
Using the internet, visit:

<http://www.greenbeltmovement.org>.

Have students research this site and others to discover how one African woman has made a difference by planting trees. If possible, explore options for planting trees near your school or in your community.

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.

Lesson Plan for Inquiry 4

Before beginning Inquiry 4, 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, paper.

Have students read the first sentence under "The Situation". Have them read the definition of sustainable. Hold a class discussion about what sustainability means. Some ideas you can use include:

1. Have students brainstorm words, phrases, or concepts that mean sustainability to them. This could be things like regular meals, going to school, being a member of a family, etc.
2. Now challenge students to think about environmental sustainability. What does environmental sustainability mean to them?
3. Have students review the definition of criteria. Make certain students understand what criteria means before continuing.
4. Examine Figure 27. Have students guess what each of these terms might mean.

Now have students read the paragraph following Figure 27. Discuss the term "indicator" with them. In small groups, have students identify 3 criteria and two indicators for each criteria. The criteria can be something from their own life. Examples of criteria might include maturity, human intelligence, good farming weather, etc. For each of the criteria identified, ask students to identify 2 indicators that can be measured. Measurable indicators are ones to which you can apply a specific number and a unit of measurement.

Before continuing, make certain students understand what criteria and indicators are.

Have students examine Table 2 (page 22) and answer the reflection question. Then, ask students if any of the indicators are not measurable. Ask students to think about whether FAO researchers could determine how sustainable the world's forest management is today if the indicators were not measurable. Hold a discussion about measurement in science. Although most science is based on measurement, not all scientific studies use measured evidence. At the scale of the planet, or even regionally and subregionally, however, it would be difficult to determine sustainability without consistent measurement.

Have students break into 6 small groups. Assign one of the next 6 paragraphs to each group. Each of these paragraphs describes in more detail one of the FAO's criteria for sustainability. Each group will read and discuss their paragraph, then explain the criteria to the class. The first paragraph begins with "You learned about the extent..." The last of the six paragraphs begins with "Forests also provide financial..." As an extension, students may use the internet or library to do additional research about their criteria. For the criterion on forest health, note that not all forest fires are negative. Some forest types, for example, depend on occasional fire to remain healthy. Emphasize that this criterion is focused on threats to forest health, not on all forest fires.

Read the next paragraph ("Using these 6 criteria..."). Ask students if they agree with the FAO's criteria for sustainable forest management. Ask students to contribute any additional criteria for sustainable forest management.

Have students complete the reflection question on page 24. You may do this as a class, or use the six small groups from the

previous exercise. If there are no forests nearby, select a forest type with familiar characteristics.

Have students read the first paragraph after What They Discovered. Students should refer to Table 3 on page 24. Ask students if, based on what they have read so far, they are surprised that scientists found both positive and negative trends across the world. Why or why not?

Read the next paragraph. Hold a class discussion about rural poverty and forest sustainability. Discuss the implications of this finding.

Have students read the remainder of the article, including an examination of Table 3. Using Table 3, have students identify their own region or subregion (if applicable). Have them look down the column at the indicators for their region or subregion. In small groups, have students develop a method to compare columns. Have each group share their assessment with the class.

Hold a discussion about forest sustainability in their region or subregion. Include the reflection questions in the discussion. Does their analysis suggest that something needs to be done? If so, discuss options for action. Are there any actions that individual students or the class can take?

EXTENSION: If the class has identified any actions that can be taken, give students time to plan and implement their action. For example, they might write letters to the government in support of reforestation. They might decide to plant trees in their community. They might start a Green Belt Movement in their community. Any action taken should be carefully considered for its practicality, keeping available resources in mind.

Reflection Answer Guide

Note: The reflection questions are meant to encourage students to think critically about what they have read. There are no right or wrong answers.

THINKING ABOUT THE ENVIRONMENT

What are some of the benefits forests provide to your community?

Students should answer this based on their own experience. Students may do this in groups or individually, or you may hold a class discussion. Students should think not only of nearby forests, but should also consider the benefits gained from forests more distantly located from the community.

INQUIRY 1

Describe the majority of forests worldwide. You can either use one or two categories to do this.

Just over half of forests worldwide are modified natural forests. These forests have native trees that have grown naturally. There is evidence of human activity in these forests, even though they have native trees that have grown naturally. A little over one-third of forests worldwide are primary forests. These forests also have native trees that have grown naturally and there is no visible sign of human activity in these forests. Therefore, over 80 percent of forests worldwide are made up of native trees that have grown naturally, and most of these forests show signs of human activity.

What are two major trends in the categories of forests?

The amount of forest with naturally-growing native trees is decreasing. The amount of forest worldwide that has been planted by humans is increasing.

INQUIRY 2

Do you think FAO found that Earth is gaining, losing, or keeping about the same amount of forests over time?

This question can be discussed as a class or in small groups. Whatever answer students

give, they should be able to back up their answer with logically-constructed arguments for why they answered as they did.

If more forests are lost than are being planted, what will happen to the benefits provided by forests?

The amount of benefit provided by forests will be reduced.

Why is it important to understand whether the amount of forest land world wide is shrinking, growing, or staying about the same?

Because forests provide benefits to people and other living beings. If we know that forests are shrinking in size worldwide, we can take action to stop that trend.

Look at Figure 17. Find the region and subregion where your home is located. How does your region or subregion compare with the rest of the world? Why do you think that is?
This must be answered individually by each classroom, group of students, or individual student. When giving reasons, the student should be able to support his or her claim with logical thinking.

Now compare cartograms 20 and 21 with the blue and green bars in Figure 17. What do Figures 17, 20 and 21 tell you about the forests in Asia?

Figure 17 shows that Asia lost forests from 1990-2000 (blue bars) but gained forests from 2000-2005 (green bars). This Figure doesn't say in which countries these changes have occurred. Cartograms 20 and 21 show that the greatest increase in forests has occurred in China, while many other countries in Asia are still losing forests.

INQUIRY 3

Reflection Section: Do you think Earth's climate could be changing due to human activity? Why or why not?

Students should be aware that the burning of fossil fuels by humans is causing the amount of carbon dioxide in the atmosphere to rise.

This rise in carbon dioxide is believed to be one of the major causes of global climate change. While most scientists believe this to be the case, some people believe the recent changes in weather patterns are not caused by an increase in carbon dioxide. Therefore, students should state what they think and be able to support their claim with a logically-constructed argument.

In Inquiry 2, you learned that more forests are being lost than are gained each year.

Now re-read the last sentence on page 19.

Does that sentence make sense in light of what you know about the loss of forests?

Why or why not?

It should make sense to students that if the amount of forests worldwide is decreasing, the amount of carbon held in the world's forests would be declining as well.

FAO scientists found that the amount of forests worldwide is declining. They also found the amount of carbon held by forests is declining. If, as most scientists believe, climate change is caused largely by an increasing amount of carbon dioxide in the atmosphere, what conclusion might you reach about the need for a greater or lesser amount of forest land?

Students should recognize that trees and forests play a role in holding carbon on Earth and keeping some of it out of the atmosphere. They should conclude, therefore, that it would be wise to protect our current forests and if possible, increase the amount of forests.

INQUIRY 4

What characteristic do all of the indicators listed in Table 2 have in common? Hint: The common characteristic has something to do with their ability to be compared across regions.

They can all be measured.

Think about a forest that is near you or that you have visited. Based on FAO's criteria and indicators, would you say that forest is sustainable?

This is an individual question and must be

answered individually. Students should be able to support their answer with logical reasons.

Do you think it is important to consider subregions of the world when trying to understand progress toward sustainable forest management? Why or why not? *This question can be answered individually, within a small group, or in a class discussion. Students should be able to support their answer with logic. Since subregions are smaller and more homogeneous than regions in general, students should realize the importance of examining sustainable management at a subregional level.*

Using Table 3, consider the indicators of forest sustainability for your own subregion or region. For which is your subregion or region doing well? What should it improve?

This answer will depend on the geographic location of the student.

Educational Concepts Addressed by the Inquiries

Note: These educational concepts have been adapted from the North American Association for Environmental Education's *Excellence in Environmental Education: Guidelines for Learning*, and focus on learning by students aged 11-14.

Inquiry Skills:

Questioning Skills

Learners are able to identify, develop, or explain inquiry questions based on personal experience, discussion, or reading.

Learners are able to summarize environmental problems or situations based on personal experience, discussion, or reading.

Data Collection Skills

Learners are able to understand and/or use measurement tools or metrics.

Learners are able to choose and synthesize materials from second-hand sources, such as books, journals, newspapers, and the internet.

Data Organization Skills

Learners are able to read and explain data summarized in tables, charts, graphs, or maps.

Learners are able to draw conclusions and develop explanations based on data or information.

Learners are able to distinguish between description and explanation.

Learners are able to propose explanations and evaluate the strengths and weaknesses of these explanations.

Learners are able to compare and contrast data representing different geographic locations.

Knowledge of Earth Systems and Processes:

Earth As a Physical System

Learners understand and are able to describe the following physical Earth processes:

- global carbon cycling
- carbon cycling in trees
- climate change (its cause and potential effects)
- latitude and its relation to tree species
- elevation and its relation to tree species.

Environment and Society:

Human/Environment Interactions

Learners understand and can explain how human-caused changes to forests have

consequences: immediately and in the future, and locally, regionally, and globally.

Natural Resources (forests)

Learners understand that natural resources (forests) are unevenly distributed across the planet.

Learners understand and can describe the multiple benefits offered by forests.

Learners understand that forests can change because of natural and man-made activity.

Learners understand that a variety of forests exist on Earth, and this variety may be created naturally or may be man-made.

Technology

Learners understand the increasing human ability to shape and control the environment as a function of the development and use of technology.

Environmental Issues

Learners understand that environmental issues occur at all scales, and that people in other places in the world experience environmental issues similar to the ones they are concerned about locally.

Skills for Understanding and Addressing Environmental Issues:

Understanding and Addressing Environmental Issues

Learners are able to apply their knowledge of ecological and human processes and systems to identify the consequences of specific environmental issues.

Learners understand the nature of trade-offs, and are able to analyze the risks and benefits of human environmental actions.

Learners are able to predict the consequences of inaction or failure to resolve an environmental issue.

Learners are able to identify and evaluate solutions and courses of action to address environmental issues.

Decision-making and Citizenship Skills

Learners are able to identify, justify, and clarify their views on environmental issues.

Learners are able to evaluate the need for citizen action and decide whether they should or could be involved.

Learners are able to set realistic goals for action.

WHAT DOES FAO DO?

FAO's Member Nations have given the Organization the task of helping them create a world where no one goes hungry.

So what exactly is FAO doing to help build a world without hunger? Its work can be divided into four main activities:

Information

First and foremost, the world needs reliable information about how many people are hungry, who they are and where they live. To help bring an end to hunger, countries need to have up-to-date and trustworthy information about all sorts of things: food production, prices and trade, land use, nutrition levels, food aid and population. FAO is the world's leading source for this sort of information and has been so for more than 50 years.

Find out more about how FAO provides the world with information (<http://www.fao.org/kids/en/information.html>).

Advice

Having mountains of information is essential. But you also need to know how to make sense of all this data to put it to practical use. When governments request assistance, FAO's experts offer advice on how to establish policies on agriculture, forestry, fisheries and rural development that can truly benefit the hungry.

A meeting place

Individual countries working on their own can't bring an end to world hunger. It's a global problem that requires international cooperation on many issues, including agriculture, fisheries, forestry, trade and the environment. FAO provides the common ground where rich and poor countries can come together to reach international agreements that can help the world's hungry.

Field work

FAO also helps countries bring technical knowledge and expertise directly to farmers to the field. The Organization coordinates thousands of field projects throughout the world. It mobilizes and manages millions of dollars provided by industrialized countries, development banks and other sources to make sure these projects are effective.

A great many of these projects are carried out in response to humanitarian emergencies arising from natural disasters or armed conflict. Find out more about FAO's work in emergencies (<http://www.fao.org/kids/en/emergencies.html>).

A broad range of expertise

To get an idea of some of the specific topics that FAO deals with, visit the links below. We guarantee you'll come across some surprises.

Forestry	http://www.fao.org/kids/en/forestry.html
Fisheries	http://www.fao.org/kids/en/fisheries.html
Food forever	http://www.fao.org/kids/en/forever.htm
Emergencies	http://www.fao.org/kids/en/emergencies.html
Clean energy	http://www.fao.org/kids/en/energy.html
Social justice	http://www.fao.org/kids/en/socialjustice.html
AIDS	http://www.fao.org/kids/en/aids.html
Global warming	http://www.fao.org/kids/en/gw.html
Poverty	http://www.fao.org/kids/en/poverty.html
Globalization	http://www.fao.org/kids/en/globalization.html
Food safety	http://www.fao.org/kids/en/safety.html
	http://www.fao.org/kids/en/

EDITORIAL REVIEW BOARD



The *Natural Inquirer* Editorial Review Board is made up of students between the ages of 12 and 13. The Editorial Review Board reads an early copy of the *Natural Inquirer* and makes suggestions for improvement. This is Mrs Ashley Potter's 7th grade Science class, Morgan County Middle School, Madison, Georgia, USA.

