

Graphing with the Environment: Measuring Your Ecological Footprint

Grades Level: 5-8

Objective:

Students will be able to:

- Find their ecological footprint.
- Learn what an ecological footprint is.
- Gather data points and find the mean.
- Find ways to make their ecological footprint lower to prolong the life of the Earth.
- Realize the footprint of other people in different countries.
- Relate the differences of footprints from other countries.

Concept:

Students will use the Internet to fill out a survey in order to find their ecological footprint. This tells the students how many resources they are using from the Earth. They will develop skills of how to graph this information and realize that they must help conserve energy to prolong the life of the Earth. Also, they will see how their footprint would be different for different countries.

Source: <http://www.myfootprint.org>

Time allotted: 1 hour

TEKS:

Science:

(2) Scientific processes. The student uses scientific inquiry methods during field and laboratory investigations. The student is expected to:

(C) organize, analyze, evaluate, make inferences, and predict trends from direct and indirect evidence;

(3) Scientific processes. The student uses critical thinking and scientific problem solving to make informed decisions. The student is expected to:

(A) analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information;

(B) draw inferences based on data related to promotional materials for products and services;

- (C) represent the natural world using models and identify their limitations;
 - (D) evaluate the impact of research on scientific thought, society, and the environment;
- (14) Science concepts. The student knows that natural events and human activities can alter Earth systems. The student is expected to:
- (B) analyze how natural or human events may have contributed to the extinction of some species; and
 - (C) describe how human activities have modified soil, water, and air quality.

Background: We know that the United States is very wasteful and wants to conserve energy as much as possible. One way to make students aware of the importance of resource management is using the Ecological Footprint Quiz. This Ecological Footprint Quiz estimates how much productive land and water you need to support what you use and what you discard. After answering 15 easy questions you'll be able to compare your Ecological Footprint to what other people use and to what is available on this planet. Students will determine their footprint and will gather information with others to determine the class average. Also, students will learn how to reduce this number and set goals in order to conserve energy. Finally, students will see what number they would have if they lived in another country.

Materials needed:

- Internet source for class
- Instruction and question page given below
- Quiz also given below

Engagement: (5 minutes)

Today, students will have a lesson which uses computers to find their ecological footprint. This Ecological Footprint Quiz estimates how much productive land and water you need to support what you use and what you discard. In other words, how much of the Earth you would use in a lifetime.

Exploration: (40 minutes)

First give out the instruction/question sheet to each student. Let the students follow the directions on the sheet and go to their Internet resource. Make sure they know not to have any unnecessary use of the Internet other than what we are using it for, or else their use will be revoked. Remind students to answer the questions to the best of their ability. Also tell them to be as honest as possible. During the survey, tell students to use the city of Phoenix if they are in Texas. If you are in other town, use one closest to your city's climate. Also tell them how big your town is.

When the quizzes are completed, let the class come back together. Work together to find the class average.

Explanation: (10 minutes)

As a class, discuss what they have found. What does the ecological footprint mean? What can you do to help prolong the Earth? Why do other countries have a lower footprint? Why do we as United States citizens have a higher footprint than any other country?

Evaluation: (5 minutes)

Let the class take the quiz. Also can evaluate students' participation.

Name: _____

Ecological Footprint

Instructions:

Please follow these instructions and fill in the answers as you go through this survey. Please be as honest as possible in order to retrieve the best data.

1. First go to www.myfootprint.org.
 2. Once there, move mouse over North America. Highlight The United States of America and click English.
 3. Fill out the answers. You do not have to fill in the optional questions.
 4. When done please write down your footprint and the number of Earth's needed below.
 5. When done, click the take action button.
 6. Fill out as much as you possibly can. If you do not know, leave it blank.
 7. Let the system calculate the reduction of your footprint.
 8. Write down your reduction below.
 9. Was finding ways to reduce your footprint hard or easy?
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10. Now go back to www.myfootprint.org.
 11. Now click on another country.
 12. Again fill out the answers.
 13. Again write down your country, new footprint, and number of Earth's needed below.
 14. Is your new footprint lower or higher than before?

Your Footprint: _____

Country Used: _____

Number of Earths: _____

Footprint: _____

Reduction: _____

Number of Earths: _____

Name: _____

Footprint Quiz

1. Define Ecological Footprint.
2. Was your class average higher or lower than the average from another country? Why?
3. What was our class average's footprint?
4. Will you take action and try to reduce your footprint? How?