



## *Energy Divide*

P. D71 KEEP Guide

### **Summary:**

Students will perform an energy consumption simulation game and analyze how consumption, population, and choice of resource affect the availability of future resources.

### **Background:**

Puerto Rico is an overpopulated island. Puerto Rico is the size of Delaware and it houses 4 million people; their population continues to grow rapidly at an alarming rate. Wisconsin, a much larger state had a 1970 population of 4, 418,000 and in 2020 it is projected to be 5,677,000. The earth is like a giant island, we're becoming more and more populated each day, meaning more and more people are sharing fossil fuels. We have a limited amount of fossil fuels on the earth and our inefficient use and over consumption of energy are using these materials up rapidly. Projections of when these fuels will run out vary from 50-200 years. There is a limited amount of fossil fuels and the point is there will not be enough fossil fuels to meet our growing demands. Each individual and each country that uses less fossil fuels now will make more energy available to future users. Use the ENERGY DIVIDE activity after the students had discovered what fossil fuels are, where they come from, and what we use them for. Use the Fossil Fuel Junction Booklet produced by NSP to teach about fossil fuels.

### **Materials:**

- Energy Source Illustration Cards page D60-61 blow up larger and laminated them
- Record keeping sheets
- A bag of candy 150 pieces per group
- ENERGY DIVIDE activity from KEEP guide

### **Set Up:**

Divide the class into groups with 3 people in a group for the

**Grade Level:** Grade 4

**Goal:** To help students see the relationship between population and consumption of fossil fuels. To analyze our need to conserve them.

### **Key Concepts:**

- Fossil Fuels
- Non- Renewable energy
- Renewable energy
- Energy Consumption
- Energy Conservation

### **Objectives:**

- 1.) Students will make inferences about the relationship between increasing population and energy consumption.
- 2.) Students will explain why they need to concern themselves with the needs of future energy users.
- 3.) Brainstorm ways that we all can conserve fossil fuels more efficiently.

### **Teaching Location:**

School library tables

**Lesson Time:** 60 min.

### **Subject Areas to Infuse:**

Science and Social Studies

### **Standards:**

Science

B.4.2

B.4.3

Environmental Education

B.4.8-12

Social Studies

B.4.8

first time through. The second time through double the people in each group. Do this in the library where they have tables. First time through simulation using counters, then increase the populations of the groups and use candy.

Related books and sources:

The Lorax By: Dr. Seuss

The Wump World By: Bill Pete

Video “The Future” Fossil Fuel grade

4 Excel Energy Kit.

Digging for Coal p. D18 KEEP guide

**Procedure:**

**Introduction.**

Begin by introducing vocabulary and giving background to natural resources. Discuss why the lesson is important for today as well as future generations.

**Activity 1.**

1. Begin by giving the population background of Puerto Rico and the Wisconsin population information mentioned in background.
2. Question: How many of you have been to the Twin Cities? How did you feel when you had to drive in the traffic? What are your feelings about the Twin Cities as compared to Clear Lake? How do you think Clear Lake would change if we suddenly had to double or triple our population?

**Activity 2.**

1. Go through Randy’s population game that we did in Puerto Rico where you give the students a rectangular area on the floor and ask them to walk around, do jumping jacks, jog, and then keep increasing the number of people in that area and repeat the activities until there is no room in the area. Discuss their feelings as the population increased. Discuss what new needs the area or the people will have as the area begins to become overpopulated, what problems will arise?

**Activity 3.**

1. Introduce the simulation game “ENERGY DIVIDE”. Explain the rules to the game and allow students to ask questions, but **do not allow time discussion or strategy**. Run 4, “5 second rounds”, and the students would record their own personal data from each round. As a twist to this activity, I would have the group size increase from 3 to 6 students but I would not increase the number of energy units. The idea is to play the game, then consider what has happened and why things happened as they did. The important discussion will occur after the game is complete.

2. Rules:

- a. Divide class into groups of three. Have them seated at a table. The candy at the table represents energy units

- b. Each of you in the group are energy consumers. You are NOT allowed to talk to each other. The object of the game is to get enough energy resource units to support your basic life functions. Each round of the game will represent 20 years of your life.
- c. The minimum number of energy units you each need every round is 5 units. That means every 20 years of your life you need 5 energy units. Anything above 5 is additional energy use, anything below 5 means you do not have enough energy.
- d. You will have four 5-second rounds to collect energy. Again, each round represents 20 years of energy use. I will tell you when to start and stop collecting energy units. At the end of each round, each group member needs to record their energy units on the data sheet
- e. When the game begins, you may try to collect the energy units you need (5 per round) or you may collect more or none. If you do not get any energy units in a round, you may participate in the next round if there are still units available.
- f. If you try to take more than 5 energy units in a round, lets say 15 energy units in a round then you have decided that your lifestyle needs 15 energy units and you must try to take 15 units in the next round. Each child may eat one candy after each round.

After you play one full game with three in each group, combine the groups so that there are 6 energy consumers in a group (population doubles) but the amount of candies (energy available) remains the same. Hand out new record sheets. Play the game a second time.

**Discussion:**

- Have each group discuss within the group the following:
- Do you think that your country used its energy wisely?
- Did anyone in your group do something with their energy that you did not like?
- Was there anything that your group did that you thought was creative or unique?
- Did the members of your group cooperate?
- What do you think this simulation is trying to teach us?

**Assessment:**

The student will write down 3-5 reasons why people should conserve fossil fuels.

Record Keeping Sheet for ENERGY DIVIDE

Name: \_\_\_\_\_

***Round One***

***Round Two***

***Round Three***

***Round Four***

Group Number \_\_\_\_\_

Group Score \_\_\_\_\_