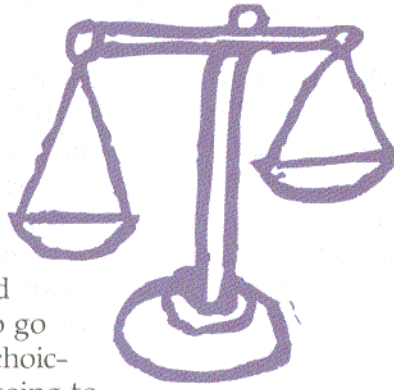


Overview

Managing risk includes deciding which option is best at reducing risks. The process requires incorporating the data obtained from risk assessments plus the social, ethical, cultural, economic, and political values of the time. In this activity, students will explore the risk management process for personal choices while “grocery shopping.” They will also debate the use of cost/benefit analysis for making public policy decisions using the protection of endangered species as an example.

Background

In making decisions about whether or not to take a particular action, we often ask, “Is it worth doing?” For example, upon waking one morning you feel somewhat sick and you need to decide whether or not to go to the doctor. Thinking about your choices, you may decide that the cost of going to the doctor is not worth the expected results because she will probably tell you to take some aspirin and get some rest. However, if upon waking you feel *terribly ill*, you may decide that the benefit of the visit to the doctor exceeds the cost because you may have a serious illness that requires immediate medical attention. These kinds of situations, where we weigh the costs and benefits of a particular action, come up in everyday life and are part of how we make decisions.



CHALLENGES TO COST/BENEFIT ANALYSIS

- ▶ Placing a monetary value on things not normally assigned a price tag, such as a human life, biodiversity, or an ecosystem.
- ▶ Placing a monetary value on the potential impacts of a decision on future generations.
- ▶ Factoring into the cost/benefit equation any potential for an unequal distribution of the costs and benefits among those affected by such a decision.

When risk managers are required to make decisions about a risk reduction option, they too may ask, “Is it worth doing?” Finding the answer to this question often involves a **cost/benefit analysis**, which is an economic technique that produces information intended to improve the quality of public policy decisions. A cost/benefit analysis seeks to quantify all of the costs and benefits of a particular risk reduction option in monetary terms. If the outcome of the analysis shows that the benefits outweigh the costs, then it makes economic sense to take that course of action. If, however, the costs are greater than the benefits, the risk manager(s) may choose to consider a different course of action.

Subjects

Biology, Debate, Ecology, Economics, Environmental Science, Health, Language Arts, Math, Social Studies

Concepts

- ▶ Governmental, social, and cultural structures and actions affect the management of resources and environmental quality. (12.2)
- ▶ Although species become extinct naturally, the increasing number of extinctions in recent history may be linked to the rapid increase in human population. (13.2)

Skills

Analyzing, Comparing and Contrasting, Debating, Discussing, Evaluating, Identifying Attributes and Components, Organizing Information

Objectives

Students will (1) investigate their own ability to balance costs and benefits when making decisions, (2) understand that making decisions depends on multiple factors, and (3) debate the use of cost/benefit analysis for making decisions regarding the management of environmental risks.

Materials

Copies of the Student Pages “Grocery List,” “Cost/Benefit Analysis and Ethical Considerations,” “Endangered Species,” and “Economic Considerations Within the Endangered Species Act” on pages 85–91, and the Student Page “Debate Score Sheet” on page 193 of Appendix 5. Option: newspaper inserts from local supermarkets.

Time Considerations

Preparation: 30 minutes
Activity:
Part A—one 50-minute period, optional field trip, homework
Part B—one 50-minute period

Cost/benefit analysis is one way for risk managers to organize information and to look at tradeoffs as they go through the process of making decisions about how to reduce risk. And yet, making decisions about human health risks and ecological risks often involves examining tradeoffs between costs and benefits that are not normally thought of in monetary terms. For example, what is the appropriate balance between the value of saving an endangered species and the cost of saving it? How do we decide how much a human life, an ecosystem, a job, or a culturally significant landmark is worth? While economists have developed certain techniques to help quantify these types of nonmarket goods, it is also important to recognize that there are other factors, such as politics, ethics, and cultural beliefs that are incorporated into considering risk reduction options. (Please refer to the Background Information for Educators for more information on ethics and environmental justice.)

The role of cost/benefit analysis in public policy decision making (especially with respect to environmental regulation) has been addressed at the executive, legislative, and judicial branches of government. In this activity, students will first have the opportunity to use cost/benefit analysis to make a personal decision. They will then explore the interplay of ethics and economics through a debate of the following question: *What should be the role of cost/benefit analysis in the protection of endangered and threatened species?*

Part A

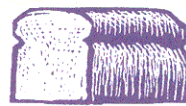
SUPERMARKET SWEEP

GETTING READY

Make copies of the Student Pages, "Grocery List" and "Cost/Benefit Analysis and Ethical Considerations" for each student. Option 1: Arrange for the class to go to a local supermarket. Option 2: Provide newspaper inserts from local supermarkets for each student.

DOING THE ACTIVITY

1. Ask the class to think about how they choose between alternatives when making a decision (for example, whether to go to school by bus, car, bicycle, or foot). How do they decide if something is worth doing? Record their answers on the board. Guide the students to think about both costs and benefits of each option as deciding factors.
2. Hand out the Student Page "Grocery List" to each member of the class. Instruct the students to complete their shopping list with these goals in mind: (a) they have a budget of \$20 for 7 days of groceries for one person (they can spend less but can't spend more than their budget); (b) they must maximize nutrition; and (c) they must maximize satisfaction with the products purchased.



Students should use the last column on the Student Page to record why they added a product to their list and how it helped achieve the stated goals. (This assignment can be homework, can be completed in class using grocery store ad supplements from your local newspaper, or, if possible, can be part of a class trip to a local supermarket.)

3. After each student has completed his or her shopping list, divide the class into cooperative learning groups of 4-5 students. Have students discuss their lists within their groups. Are they similar or different? What tradeoffs did they make in selecting the items? Did anyone choose a product purely because of nutritional value? Taste? Price? Personal preference?
4. Instruct students in each group to choose a list that they think best meets the goals stated in Step 2. Have the groups present their decisions to the rest of the class, explaining how they came to consensus and how they evaluated the costs and benefits of their items.

