

Teacher Profile

In each issue, the *Environmental Examiner* provides a profile of an outstanding classroom teacher, one who helps students resist simple emotional appeals and become critically minded thinkers about the environment. The *Environmental Examiner* Profile also features a teaching activity developed by the winning teacher. In this issue we focus on Kathryn A. Ratté, a teacher with the Jefferson County District in suburban Denver, Colorado. Her lesson is called The Case of the Disappearing Trash.

Kathryn A. Ratté has taught in Jefferson County School District in suburban Denver for 19 years. She holds two B.A. degrees from the University of Wyoming and a Master's Degree from Purdue University. Beyond her M.A. degree she has earned more than 90 graduate credits in economics, education, and the social sciences.

Kathryn Ratté has earned several honors for her work. In their Awards for Excellence in Economic Education, the National Council on Economic Education and the International Paper Company Foundation awarded her First Place (Senior High Division) in 1994 and an Honorable Mention (Open Division) in 1996. She received the Academic Freedom Award from the National Council for the Social Studies in 1985. And she has received two state awards from the Colorado Council on Economic Education.

Her lesson plan appears on the back of this page.

Teacher's Guide Answers to the Questions for Discussion on Page 5.

Environmental Mystery: Curbside Recycling: A Waste of Resources?

1. The program is easy and convenient for city residents. Over half of all recyclable materials from households is indeed recycled.
2. (1) Voluntary recycling of bottles, cans, and papers had been going on for many years before the new curbside program. (2) Curbside recycling is costly, imposing collection fees and requiring the purchase of trucks, storage containers, and storage sites. (3) Curbside recycling increases air pollution from garbage collection trucks. (4) Curbside recycling has reduced voluntary recycling efforts for the collection of bottles, cans, and paper by community groups and has hurt the businesses that served these customers.
3. Clearly the goal of curbside recycling programs is to reduce damage to the environment. The question is, does curbside recycling actually accomplish the goal or would other alternatives be more effective and less costly? Mr. Marston stresses the success of curbside recycling in accomplishing the goal of increasing the amount of material being recycled. However, Ms. Dunaway suggests that the goal of protecting the environment is not being met or is being met at very high costs. Resources devoted to fees and the purchase of trucks, storage containers, and storage sites could be used in other ways that might be more effective.

Making Mountains (of Diapers) Out of Molehills

1. First, how well biodegradable materials biodegrade depends on the context in which they are placed. Biodegradable materials biodegrade more quickly in compost heaps than in landfills. Second, people may not know that such items as paper, food waste, yard waste, and construction materials are larger

components of landfills than are more obvious things like disposable diapers.

2. People who view solid waste as associated with wasteful lifestyles might think we should feel guilty about solid waste. It is true that Americans are often regarded as materialistic. People who view solid waste as the result of efforts we make to improve our lives by heating homes, preparing uncontaminated food, keeping children clean, and earning an income would be less inclined to associate guilt with solid waste.
3. All human societies produce solid waste. It would be illogical to imagine that all solid waste could be eliminated. Instead we should ask how much solid waste we should produce, what benefits we receive from the production of solid waste, and what are the costs of alternative methods of disposal? Clearly some methods such as the incentive-based program of Perkasio, Pennsylvania, and new forms of incineration hold promise for reducing the problem.

Point-Counter Point: The Debate Over American Garbage Solid Waste

1. Landfills today are constructed in more suitable locations, and new landfills can be opened as current ones fill. While not everyone wants to live near a landfill, given appropriate incentives, there is ample space for new landfills.
2. Landfills are unpleasant to look at, reduce land values, and pose health risks. Some current landfills have proven to be unsafe. Optimistic claims about the safety of new landfills might prove to be mistaken.
3. Encourage students to weigh the costs and benefits of landfills, given the points made in questions 1 and 2. Actual answers will vary because students' values will differ.

The Case of the Disappearing Trash

Objective Students work in small groups to analyze clues and solve a mystery. How did one community reduce its trash production while at the same time reducing its costs of trash collection?

Time Estimate 30 minutes

Materials Handout 1. Provide each group with a copy of the mystery in Handout 1. Distribute the clues separately. There are nine clues. Make enough copies of the clues in Handout 1 for each student to have at least one clue. With 27 students make three set of clues and give each student one clue. With 30 students make four sets, divide the students into groups of seven to eight, and give some students two clues, and so forth.

Teaching Procedures

1. Explain that the purpose of this lesson is for students to sharpen their critical thinking skills by using clues to solve a mystery about garbage disposal.
2. Remind the group to think economically. People respond predictably to positive and negative incentives. When solving a mystery, show me the incentives! Read the mystery in Handout 1 to the class. Invite the students to speculate about what the solution to the mystery might be.
3. Divide the class into small groups. Ask each group to select a discussion leader. Give each group a copy of the mystery in Handout 1. Then put the groups to work, with these directions: A. Their task is to propose a solution to the mystery, explaining their solution by using economic reasoning. B. They should first decide which clues provide useful information. They are only to decide which clues are relevant to solving the mystery. C. Hand each group member at least one clue. Each group member is responsible for evaluating the relevance of his or her own clue and for leading a discussion within the group of its relationship to the mystery.
4. Monitor the group discussion. You'll probably find that many students will be eager to have their clues matter. Some will go to extremes of tortured logic to argue that their clues are crucial. Remind the students in these cases that this exercise involves sorting out the useful from the irrelevant. Not all information is of equal value.
5. Ask each group to report its solution to the mystery. Most trash collection systems do not reward people for putting less trash on the curb to be picked up. Thus collection costs tend to increase with population, as evidenced in clue 6. Clue 5 makes clear that the leaders of Perkasio decided to present their citizens with new alternative-setting incentives by reducing the garbage collection fee and establishing the special bag program. While most citizens favored the convenience

of city garbage pick-up, charging a fee for each bag provided an incentive for people to use the minimum number of bags. Of course, individuals still had choices. People who wished to use more bags could do so. However, clues 3 and 9 make it clear that most Perkasioans decided to economize on their use of bags, thus reducing the amount of trash to be collected as well as the cost.

Handout 1 The Mystery

The Philadelphia suburb of Perkasio was experiencing population growth. With more people, one would expect an increase in trash and increased costs related to trash collection. Instead, however, the citizens of Perkasio have reduced the amount of trash they produced and have reduced their garbage collection costs by 40 percent. How can this be?

The Clues

1. All the people in the world today could live within the boundaries of Texas, with a standard-sized suburban house for a family of four.
2. The first law of garbage is that everyone wants you to pick it up, and nobody wants you to put it down.
3. In 1987, the town of Perkasio collected an average of 2.2 pounds of trash per person per day. In 1988, trash collection in Perkasio fell to 0.9 pounds per person per day.
4. In the late 1980s, the citizens of Philadelphia suburbs were faced with rising garbage collection fees because of declining local waste disposal space.
5. In 1988, Perkasio eliminated their \$120 per year garbage collection fee and declared that only garbage set out in specially marked bags would be picked up by the city. The bags were relatively inexpensive—the 20-pound size sold for \$.80 and the 40-pound bag for \$1.50.
6. Neighboring boroughs increased yearly garbage fees by 900 percent. Average pounds of trash collected per person per day continued to increase.
7. In 1980, 81 percent of solid waste went to landfills. By 1990, only 67 percent went to landfills.
8. According to A. Clark Wiseman, an economist at Gonzaga University, "At the current rate, if all the nation's solid waste for the next 500 years were piled or buried in a single landfill for a depth of 100 yards... this 'national landfill' would require a square site less than 20 miles wide on a side. With compaction, even this volume could be reduced."
9. The average Perkasioan household paid 30 percent less for garbage disposal in 1988 than it paid in 1987.