



Recycling—Lesson Plan

Student Objectives

- Develop a deeper understanding of the extended manufacturer responsibility principle.
- Appreciate the tension between the long-term environmental benefits of recycling and the immediate costs of recycling to manufacturers and/or consumers.
- Consider the different ways that recycling policies affect various stakeholders, including governmental authorities, manufacturers, retailers, distributors, and consumers.
- Examine how democracies that share common principles and face similar problems can still develop very different solutions.
- Analyze the reasons supporting and opposing the government's requirement of manufacturers to recycle their products.
- Identify areas of agreement and disagreement with other students.
- Decide, individually and as a group, whether the government should require manufacturers to recycle their products.
- Reflect on the value of deliberation when deciding issues in a democracy.

Question for Deliberation

Should our democracy require manufacturers to recycle their products?

Materials

- Lesson Procedures
- Handout 1—Deliberation Guide
- Handout 2—Deliberation Activities
- Handout 3—Student Reflection on Deliberation
- Reading
- Selected Resources
- Deliberation Question with Arguments
(optional—use if students have difficulty extracting the arguments or time is limited)



Recycling—Reading

1 The amount of trash that human societies create is alarming. So much of our waste has ended
2 up in the ocean that a giant garbage patch—over twice the size of Texas or Ukraine—exists
3 1,000 miles from the U.S. West Coast (Weiss, 2006). The patch does not disappear because so
4 much of our trash contains non-biodegradable plastics. Scientists estimate that the polyethylene
5 used to make the 60,000 plastic bags that the U.S. uses every 5 seconds (see Figure 1) takes at
7 least 500 years to dissolve. Each year, our
9 plastic waste kills an estimated 1 million
11 seabirds and 100,000 sea turtles, seals, whales,
13 and other marine mammals (Weiss, 2006).

15 Our garbage also includes hazardous
17 chemical compounds—like lead and mercury—
18 that can pollute air, soil, and groundwater.



Figure 1: Close-up of Chris Jordan's "Plastic Bags"

19 This contamination ultimately harms plants and animals, including human beings. Some
20 governments are trying to reduce the waste created by human activities. Reusing materials when
21 manufacturing products is one way to do so.

22 **Extending Manufacturer Responsibility for Recycling**

23 Certain manufacturers have participated in recycling for a long time. In 1947, for example,
24 the U.S. beverage industry put 100% of soft drinks in glass bottles. Consumers paid a deposit for
25 these bottles and received a refund upon returning them to the store. Bottling plants then washed,

26 refilled, and resold those bottles. However, the widespread availability of non-reusable
27 aluminum cans and plastic bottles in the 1970s transformed the industry. Consumers liked not
28 having to return their beverage containers to the site of purchase, and distributors saved money
29 by not having to pick up empty bottles. Additionally, bottlers no longer had to wash and inspect
30 returned bottles. Thus the discarding of beverage containers became common (Institute for Local
31 Self-Reliance, 2002).

32 The explosion of can and bottle litter concerned environmentalists who saw more and more
33 non-biodegradable beverage containers ending up in landfills or along waterways and roads.
34 They also worried about the pollutants released into the environment during the production of
35 metal cans and plastic bottles. Governments, too, began worrying about the wastefulness of
36 beverage manufacturing. As a result, when an aluminum can manufacturer built a plant in
37 Sweden during the 1980s, the Swedish government threatened to ban the use of aluminum
38 beverage containers unless the industry managed to reclaim 75 percent of its products. The
39 industry met and surpassed this goal by using a deposit/refund system that resembled the original
40 refillable bottle model described above (Franklin, 1997).

41 Sweden's policy shows how governments can hold manufacturers accountable for the waste
42 they create, not only during the production process—which includes the mining of bauxite (the
43 rock from which aluminum comes)—but also after the product is thrown away. The goal of such
44 policies is to give manufacturers an incentive to think about the well-being of the environment
45 when they design and select materials for their products. The central idea is that manufacturers
46 will make less waste and pollution if they have to pay for these by-products.

47 **Alternatives and Opposition to Extended Manufacturer Responsibility**

48 Some manufacturers, like the beverage industry, have volunteered to use recovered materials
49 when making goods because they can save money by doing so. Other manufacturers have made a
50 voluntary commitment to recycling because they want to prevent waste and/or use waste as a
51 resource. For example, European paper companies teamed up with paper recyclers to create the
52 European Declaration on Paper Recycling (EDPR) in 2000. By 2005, the EDPR had successfully
53 recovered and reused 56% of the paper and board used in Europe and formed a council to
54 monitor this voluntary initiative. The EDPR's success led it to strive for an even higher paper-
55 recycling rate (66%) by 2010.

56 Other industries worry that the cost of using recycled goods will put them out of business.
57 Computer companies, for example, must hire workers to take apart used machines. This is a
58 time-consuming task; to remove a single lithium battery from a computer can require taking out
59 30 different screws (Chabrow, 2005)! For these producers, to recover and reuse materials is
60 inefficient and expensive. Therefore, some people argue that it is unfair to require that
61 manufacturers reclaim their materials without giving them financial incentives to do so.

62 Some opponents to increasing manufacturer responsibility for electronic waste, or “e-waste,”
63 suggest shifting the recycling burden to consumers. One way to do so is through an “advanced
64 recovery fee system.” In California, for example, whenever consumers buy televisions, laptops,
65 or computer monitors, they pay a \$6 to \$10 fee at the time of purchase. This fee helps to fund
66 recyclers. Consumers must then take these electronic products to recycling centers when they
67 want to dispose of them (Foley & Lardner, 2007). Such policies, however, cost retailers that sell
68 the products a lot of money. Not only do these retailers have to program their cash registers to

69 charge the advanced recovery fee when a customer buys an electronic product; they also have to
70 send the collected fees to the appropriate government agency (Hileman, 2006).

71 Those who believe that consumers should not bear the cost of recycling products oppose
72 advanced recovery fee systems. Indeed, some argue that when recycling waste costs more energy
73 and resources than using new or “virgin” resources, recycling policies actually do more
74 environmental harm than good. Recycling green-colored glass, for example, costs more money
75 and can be more dangerous to the environment (due to contaminants released during the melting
76 of the glass) than making glass from sand. According to political scientist Michael Munger,
77 “Given the resource costs of recycling, treating green glass as garbage is the environmentally
78 responsible thing to do.”

79 **Supporters of Mandatory Extended Manufacturer Responsibility**

80 In 2002, the European Union (EU) passed the Waste Electrical and Electronic Equipment
81 (WEEE) law, which requires manufacturers to take back electronic products at the end of their
82 useful life. Although plenty of people oppose this policy, its supporters insist that making the
83 polluter pay is the best way to influence how products are created in the first place. Some
84 supporters also argue that computer manufacturers may be able to make a profit by reclaiming
85 their products, which contain valuable metals like gold, silver, and copper. Additionally, all
86 countries do not insist that manufacturers comply with WEEE in a single way. Instead, they
87 allow manufacturers to determine the best way to meet WEEE’s requirements. In Lithuania, for
88 example, so long as manufacturers collect and recycle a certain amount of e-waste (the
89 government determines this number annually), they follow the law (Sander et al., 2007).

90 In 2003, the EU passed another law called the Reduction of the Use of Certain Hazardous
91 Substances (RoHS). This law sets limits on the amount of toxic materials that can be used in the

92 making of new electronic equipment. RoHS supporters argue that eliminating materials like lead,
93 mercury, and cadmium from the manufacturing process is better for the environment. It also
94 makes the future recycling of products safer and, therefore, more likely. What is more, RoHS
95 promises to reduce e-waste on a global scale. If Chinese, Japanese, and U.S. high-tech
96 companies want to continue selling their products to European countries, they too must comply
97 with RoHS. Because it is not practical or profitable for these manufacturers to make some
98 electronics that meet RoHS requirements and others that do not, “EU design requirements will
99 become global requirements” (Isaacs in Grossman, 2006).

100 In the U.S., various cities and states have begun implementing recycling laws similar to those
101 in Europe, largely because no federal policy exists. Those supporting a national recycling policy
102 argue that local laws often conflict with each other, making it difficult for manufacturers to
103 comply with all of them. “A manufacturer in one state, for example, may have an advance
104 recovery fee placed on its products, whereas in another state, the same manufacturer may have to
105 take back its products and pay for recycling” (Stephenson in Chabrow, 2005). Not having a
106 standardized approach to recycling also means the U.S. has a hard time monitoring what happens
107 to e-waste after it is collected.

108 Indeed, the U.S. Government Accountability Offices estimates that “50-80% of the devices
109 collected for recycling in the U.S. end up in Asia or Africa” (Hileman, 2006). Once there, e-
110 waste may be scattered along rivers and roads or openly burned in large piles, as it is in Nigeria.
111 Given that the inappropriate disposal or taking apart of electronic waste is dangerous to workers
112 and the environment, this unmonitored exporting of electronic waste is unacceptable.

113 The U.S. is not alone in sending e-waste to China, India, Pakistan, Senegal, Kenya, and
114 Tanzania. Although it is illegal for European companies to ship unusable electronic devices to

115 developing countries, governmental authorities often do not test products to see if they can be
116 recycled before they are shipped off. Some people argue that the only practical solution to this
117 problem is to require manufacturers to reduce or eliminate toxic materials from electronic
118 products, as RoHS aims to do.

119 Regardless of whether or not people support or oppose laws requiring manufacturers to take
120 responsibility for the waste they create, “there is an almost universal belief among producers,
121 government officials, consumers, and NGOs [non-governmental organizations] that e-waste
122 should not end up in landfills or on ships bound for Asia or Africa” (Hileman, 2006).



Recycling—Selected Resources

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Recycling—Deliberation Question with Arguments

Deliberation Question

Should our democracy require manufacturers to recycle their products?

YES—Arguments to Support the Deliberation Question

1. An effective way to reduce waste is to make the polluter pay. If manufacturers have to be responsible for their products after they are thrown away, they will be more likely to include environmental concerns in their production plans.
2. To reduce waste and pollution we should prevent its production in the first place. Advanced recovery fee systems, which require consumers to pay for recycling costs, and other alternatives to extended manufacturer responsibility policies will not force manufacturers to change their product designs or the raw materials they use to create products.
3. Electronic waste is becoming a serious problem. Not only is there a ton of it, but it also contains hazardous waste. Moreover, several countries are sending their e-waste to developing countries, which do not have the resources to recycle it safely. Requiring manufacturers to reclaim their products and make them less hazardous is the best way to deal with e-waste.
4. Manufacturers can save money and even profit from recycling their products. Many computers that are currently sitting in landfills contain precious metals, like gold, silver, and copper. Computer manufacturers could recover these materials when recycling their products.



Recycling—Deliberation Question with Arguments

Deliberation Question

Should our democracy require manufacturers to recycle their products?

NO—Arguments to Oppose the Deliberation Question

1. No one likes trash. If recycling their products provides more benefits than costs, they will do so voluntarily, as the European paper industry has done. Forcing companies to recycle when it is not cost-effective does not make any sense. It just puts manufacturers out of business.
2. If governments want to reduce waste, they should give manufacturers financial incentives to recycle their products, not force them to do so. When recycling products is inefficient and expensive, as is the case in the computer industry, manufacturers need extra resources to redesign their products and pay for new equipment.
3. The burden for recycling should not fall solely on the manufacturers' shoulders. If people want to use products that create waste and pollution, they should pay for at least part of these by-products. Advanced recovery fee systems, which require consumers to pay a fee when they buy a product, force consumers to bear some responsibility for human-created waste.
4. Sometimes recycling causes more environmental harm than good. When recycling a product costs more money or emits more pollution than making that product from raw materials, requiring manufacturers to recycle it is not economically or environmentally sound.



Lesson Procedures

Step One: Introduction

Introduce the lesson and the Student Objectives on the **Lesson Plan**. Distribute and discuss **Handout 1—Deliberation Guide**. Review the Rules of Deliberation and post them in a prominent position in the classroom. Emphasize that the class will deliberate and then debrief the experience.

Step Two: Reading

Distribute a copy of the **Reading** to each student. Have students read the article carefully and underline facts and ideas they think are important and/or interesting (**ideally for homework**).

Step Three: Grouping and Reading Discussion

Divide the class into groups of four or five students. Group members should share important facts and interesting ideas with each other to develop a common understanding of the article. They can record these facts and ideas on **Handout 2—Deliberation Activities** (Review the Reading).

Step Four: Introducing the Deliberation Question

Each **Reading** addresses a Deliberation Question. Read aloud and/or post the Deliberation Question and ask students to write the Deliberation Question in the space provided on **Handout 2**. Remind students of the Rules for Deliberation on **Handout 1**.

Step Five: Learning the Reasons

Divide each group into two teams, Team A and Team B. Explain that each team is responsible for selecting the most compelling reasons for its position, which you will assign. Both teams should reread the **Reading**. Team A will find the most compelling reasons to **support** the Deliberation Question. Team B will find the most compelling reasons to **oppose** the Deliberation Question. To ensure maximum participation, ask everyone on the team to prepare to present at least one reason.

Note: Team A and Team B do not communicate while learning the reasons. If students need help identifying the arguments or time is limited, use the **Deliberation Question with Arguments** handouts. Ask students to identify the most compelling arguments and add any additional ones they may remember from the reading.

Step Six: Presenting the Most Compelling Reasons

Tell students that each team will present the most compelling reasons to **support** or **oppose** the Deliberation Question. In preparation for the next step, Reversing Positions, have each team listen carefully for the most compelling reasons.

- Team A will explain their reasons for **supporting** the Deliberation Question. If Team B does not understand something, they should ask questions but NOT argue.
- Team B will explain their reasons for **opposing** the Deliberation Question. If Team A does not understand something, they should ask questions, but NOT argue.

Note: The teams may not believe in or agree with their reasons but should be as convincing as possible when presenting them to others.

Step Seven: Reversing Positions

Explain that, to demonstrate that each side understands the opposing arguments, each team will select the other team's most compelling reasons.

- Team B will explain to Team A what Team A's **most compelling** reasons were for **supporting** the Deliberation Question.
- Team A will explain to Team B what Team B's **most compelling** reasons were for **opposing** the Deliberation Question.

Step Eight: Deliberating the Question

Explain that students will now drop their roles and deliberate the question as a group. Remind the class of the question. In deliberating, students can (1) use what they have learned about the issue and (2) offer their personal experiences as they formulate opinions regarding the issue.

After deliberating, have students find areas of agreement in their group. Then ask students, as individuals, to express to the group their personal position on the issue and write it down (see My Personal Position on **Handout 2**).

Note: Individual students do **NOT** have to agree with the group.

Step Nine: Debriefing the Deliberation

Reconvene the entire class. Distribute **Handout 3—Student Reflection on Deliberation** as a guide. Ask students to discuss the following questions:

- What were the most compelling reasons for each side?
- What were the areas of agreement?
- What questions do you still have? Where can you get more information?
- What are some reasons why deliberating this issue is important in a democracy?
- What might you or your class do to address this problem? Options include teaching others about what they have learned; writing to elected officials, NGOs, or businesses; and conducting additional research.

Consider having students prepare personal reflections on the Deliberation Question through written, visual, or audio essays. Personal opinions can be posted on the web.

Step Ten: Student Poll/Student Reflection

Ask students: "Do you agree, disagree, or are you still undecided about the Deliberation Question?" Record the responses and have a student post the results on www.deliberating.org under the partnerships and/or the polls. Have students complete **Handout 3**.



Handout 1—Deliberation Guide

What Is Deliberation?

Deliberation (meaningful discussion) is the focused exchange of ideas and the analysis of arguments with the aim of making a decision.

Why Are We Deliberating?

Citizens must be able and willing to express and exchange ideas among themselves, with community leaders, and with their representatives in government. Citizens and public officials in a democracy need skills and opportunities to engage in civil public discussion of controversial issues in order to make informed policy decisions.

Deliberation requires keeping an open mind, as this skill enables citizens to reconsider a decision based on new information or changing circumstances.

What Are the Rules for Deliberation?

- Read the material carefully.
- Focus on the deliberation question.
- Listen carefully to what others are saying.
- Check for understanding.
- Analyze what others say.
- Speak and encourage others to speak.
- Refer to the reading to support your ideas.
- Use relevant background knowledge, including life experiences, in a logical way.
- Use your heart and mind to express ideas and opinions.
- Remain engaged and respectful when controversy arises.
- Focus on ideas, not personalities.



Handout 2—Deliberation Activities

Review the Reading

Determine the most important facts and/or interesting ideas and write them below.

- 1) _____
- 2) _____
- 3) _____

Deliberation Question

Learning the Reasons

Reasons to Support the Deliberation Question (Team A)	Reasons to Oppose the Deliberation Question (Team B)

My Personal Position

On a separate sheet of paper, write down reasons to support your opinion. You may suggest another course of action than the policy proposed in the question or add your own ideas to address the underlying problem.



Name: _____

Date: _____

Teacher: _____

Handout 3—Student Reflection on Deliberation

Large Group Discussion: What We Learned

What were the most compelling reasons for each side?

Side A:

Side B:

What were the areas of agreement?

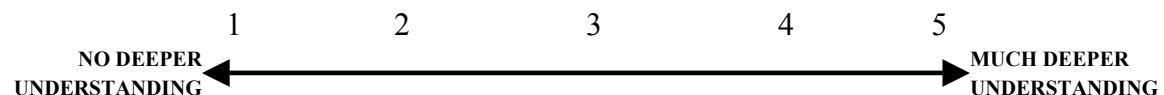
What questions do you still have? Where can you get more information?

What are some reasons why deliberating this issue is important in a democracy?

What might you and/or your class do to address this problem?

Individual Reflection: What I Learned

Which number best describes your understanding of the focus issue? [circle one]



What new insights did you gain?

What did you do well in the deliberation? What do you need to work on to improve your personal deliberation skills?

What did someone else in your group do or say that was particularly helpful? Is there anything the group should work on to improve the group deliberation?