Lesson 3:
Letter Perfect and Clean Enough

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Standards and Benchmarks (see page 3.11)

Lesson Description

Students learn about the types of natural resources (plant, animal, mineral, fossil fuel, and other) that the environment provides. Then they solve a puzzle, practice their printing, and develop a scarcity slide that they use to illustrate trade-offs—letter perfect versus clean enough.

Grade Level

6-8

Economic Concepts

Natural resources

Opportunity cost

Scarcity

Trade-offs

Compelling Question

Why must people make choices about the use of natural resources? Or: How do we make choices about the use of natural resources?

Objectives

Students will be able to

- define natural resources, scarcity, opportunity cost and trade-off;
- give examples of natural resources provided by the environment;
- explain that any alternative involves benefits; and
- explain the trade-off between a perfectly clean and clean-enough environment.

Time Required

Two days: Day 1 (15-20 minutes), Day 2 (50-60 minutes)

Materials

- Visual 3-1
- A copy of Handouts 3-1 and 3-2 for each student
- Online reference materials—dictionaries, encyclopedias
- Paper, pencil, and scissors for each student

Procedure

Day 1

1. Write "natural resources" on the board. Define **natural resources** as those things that occur naturally in or on the earth that are used to produce goods and services.

2. Explain that people use natural resources to produce goods and services they want or use natural resources directly. For example, they can use trees to provide lumber for wood products or wood pulp for paper, or they can enjoy the beauty and shade that trees provide.

3. Explain that the class will talk about five general categories of natural resources—animal, plant, mineral, fossil fuel, and other. List these five categories on the board. Discuss the following:
   - Give some examples of animal resources. (*Cows, pigs, ducks, chickens*)
   - Give some examples of plant resources. (*Trees, flowers, vegetable plants*)
   - Give some examples of mineral resources. (*Zinc, bauxite, silica*)
   - Give some examples of fossil fuel resources. (*Coal, crude oil*)

4. Explain that the "other" category might include things like air, solar energy, pretty vistas, the ozone layer, water, and so on.

5. Tell students that you have a challenge for them. They must develop a list of natural resources. The list must include at least one resource from each of the five categories. All 26 letters of the alphabet must be represented somewhere in the list. The student who has the shortest list (measured by the total number of letters) that represents each category and all 26 letters of the alphabet wins.

6. Display *Visual 3-1: Natural Resource List* as an example. Point out that this list includes 59 letters. Each letter of the alphabet is represented and there is at least one natural resource from each category. Explain that you have another list that uses only 39 letters, but you will not reveal it until after they have completed their lists.

7. Tell students they may use reference materials to find examples of animals, plants, minerals, fossil fuels, and other natural resources to make their lists. Allow one or two days for students to complete the task.

Day 2

8. Ask students to present their lists to the class. Determine who has created the shortest list while meeting the criteria. Write this list on the board. If no list is shorter than 39 letters, use the following list: quartz, fox, sorghum, banyan, oil, wave, jasper, and duck. Explain that duck and fox are animal resources. Sorghum (a crop grass) and banyan (a tree) are plant resources. Oil is a type of fossil fuel. Quartz and jasper (a precious stone) are mineral resources. Wave represents water, which is a potential source of energy and fills the "other" category.

9. Instruct the students to make sure that each letter of the alphabet is represented in the list.

10. Point out that students can easily practice printing by writing and rewriting the list because every letter in the alphabet is represented on the list.

11. Distribute paper and a pencil to each student. Tell students to print the list over and over again. Each time they should try to print the letters as perfectly as they can. (NOTE: Before students begin the assignment, you may want to review correct letter formation.)

12. Have students begin printing and continue printing for 10 minutes. After 10 minutes, ask if any students think they have formed the letters perfectly. If students answer yes, check their letters. Point out that although their letters are close to perfect, they aren't perfect yet.

13. Suggest that more practice will help students produce letters that are closer to perfect. Ask students if they think there should be another 10-minute printing session. (*Answers will vary. Some students will probably say that they have practiced enough or that their letters are good enough or close enough to perfect. Others may say that their hands are tired, that they are bored with writing the list, or that they would prefer to do something else.*)

14. Explain that if the class spends more time practicing printing, it will have less time to spend doing something else like practicing and improving math skills, reading skills, or other skills. Likewise, if students spend all their time at home practicing their printing, then they have no time for other things like practicing math, cleaning their rooms, or being with friends.

15. Distribute a copy of *Handout 3-1: The Scarcity Slide* to each student. Explain that time is limited, and, as a result, people must make choices about how they use their time.

16. Explain that Handout 3-1 includes a scarcity slide. The length of the slide represents how much time students have to spend in the evening either practicing printing or cleaning their rooms. The scale on Handout 3-1 shows the results of time spent doing each of these activities; that is, the quality of printing improves as one moves up from the double line in the middle (very poor printing, very messy room), and room cleanliness improves as one moves down from the middle line.

17. Tell students to cut out the scarcity slide and cover the scale with their slides. Ask students if any part of the scale is uncovered. (*No*) Explain that this means they have enough time to have both "very good" printing and a "very clean" room.

18. Instruct students to fold along the first dashed line (from either end) of the scarcity slide so that one large and two small rectangles are visible. This means they have less time available this evening. Ask them to place the scarcity slide on the scale. Discuss the following:

    - Do you still have enough time to have both very good printing and a very clean room? (*No, they can have one or the other but not both—there just isn't enough time.*)
    - What are the choices available with this amount of time? (*A very clean room/good printing or a clean room/very good printing*)

19. Instruct students to fold along the second dashed line of the scarcity slide so that one large and one small rectangle are visible. Point out that they now have even less time this evening. Tell them to place the slide over the scale and move the slide up and down to consider the choices available. Discuss the following:

    - If you choose to have a very clean room, what will happen to the quality of your printing? (*It will be poor.*)
    - If you choose to have a clean room, what will happen to the quality of your printing? (*It will be fair.*)
    - If you choose to have good printing, what will happen to the cleanliness of your room? (*It declines to fairly clean.*)
    - If you choose to have very good printing, what will happen to the cleanliness of your room? (*It declines to messy.*)

20. Instruct students to fold their scarcity slides at the final dashed line so that only the one longer piece is visible. Again have them place the slide on the scale to identify the choices available. Discuss the following:

- Why isn't it possible to have a very clean room? (*There isn't enough time.*)
- Why isn't it possible to have very good printing? (*There isn't enough time.*)
- If you choose to have good printing, what happens to the cleanliness of your room? (*It declines to very messy.*)
- If you choose to have fair printing, what happens to the cleanliness of your room? (*It improves to messy.*)
- If you choose to have a fairly clean room, what happens to the quality of your printing? (*It declines to poor.*)
- If you chose to have a clean room, what happens to the quality of your printing? (*It declines to very poor.*)

21. Given unlimited time, students can become both letter perfect and have perfectly clean rooms. However, when time is limited, they must settle for less. Students are forced to decide how much of each is good enough given limited time.

22. Explain that just as time is limited, natural resources are scarce. **Scarcity** exists when there are not enough resources to produce everyone's wants. There aren't enough natural resources to provide all the goods people want, such as food, homes, clothing, movies, games, and toys, and abundant clean air, clean water, shade, and park space.

23. Explain that just as limited time forced students to make choices about the quality of their printing and the cleanliness of their rooms, the scarcity of natural resources requires societies to choose how many goods to produce and how much of a clean environment to produce. Societies must decide how clean is "clean enough."

24. Explain that for the students and for societies, choices involve trade-offs and opportunity cost. **Opportunity cost** is the value of the next-best alternative when a decision is made; it's what is given up. A **trade-off** involves giving up some of one thing to gain more of something else.

25. Refer students to the scarcity slide and explain that it can be used to help identify opportunity cost and trade-offs. Instruct students, using the second-shortest scarcity slide (one large and one small rectangle visible) to identify the alternatives available. (*Very good printing/messy room, good printing/fairly clean room, fair printing/clean room, poor printing/very clean room*)

26. Tell students to place the slide on the scale to show very good printing/messy room.

27. Have them move the slide to another alternative—good printing/fairly clean room. Point out that the opportunity cost of this alternative is the highest-valued alternative they give up—in this case, very good printing/messy room.

28. Explain that choosing good printing/fairly clean room requires students to trade off a little quality of printing for a little cleaner room. Students must decide if the additional benefit of this alternative offsets the additional costs.

29. Ask students to choose another alternative and to identify the opportunity cost of the choice and the trade-off made. For example, students could choose poor printing/very clean room. The opportunity cost of this choice is the highest-valued alternative they gave up—perhaps fair printing/clean room. They trade off a little quality of printing to gain additional cleanliness.

30. Explain that society can choose to produce various amounts of goods and various amounts of a clean environment. Each alternative involves opportunity cost and trade-offs for society.

Closure

31. Review the major points of the lesson by discussing the following:

    - What are natural resources? (*Things that occur naturally in and on the earth that are used to produce goods and services*)
    - Are natural resources scarce? (*Yes*) What does this mean? (*There aren't enough natural resources to provide everything we want.*)
    - What is opportunity cost? (*The value of the next-best alternative when a decision is made; it's what is given up*)
    - Give an example of a decision you made and the opportunity cost of your choice. (*Answers will vary.*)
    - What is a trade-off? (*Giving up some of one thing to gain more of something else*)
    - Suppose you have a choice between Meal Pack #1 (which includes a large hamburger, medium fries, and a medium soft drink) and Meal Pack #2 (which includes a small hamburger, large fries, and a medium soft drink). Both meal packs are the same price. Which would you choose? (*Answers will vary.*) What is your opportunity cost? (*Meal Pack #1 or Meal Pack #2, depending on the choice*) What trade-offs did you make? (*Gave up some burger for more fries or gave up some fries for more hamburger*)

Assessment

32. Distribute a copy of *Handout 3-2: Assessment* to each student. Read the directions with the students and instruct them to complete the work. Use the answer key below to review the answers.

    1. *Water is scarce in the village.*
    2. *There isn't enough water to satisfy all the villagers' wants.*
    3. *The villagers must decide how to use the water that is available.*
    4. *They give up some bathing—they could have only half as many baths as they want.*
    5. *Answers will vary.*

Visual 3-1: Natural Resource List

Elephant

Quail

Fox

Blue jay

Grass

Oak

Zinc

Copper

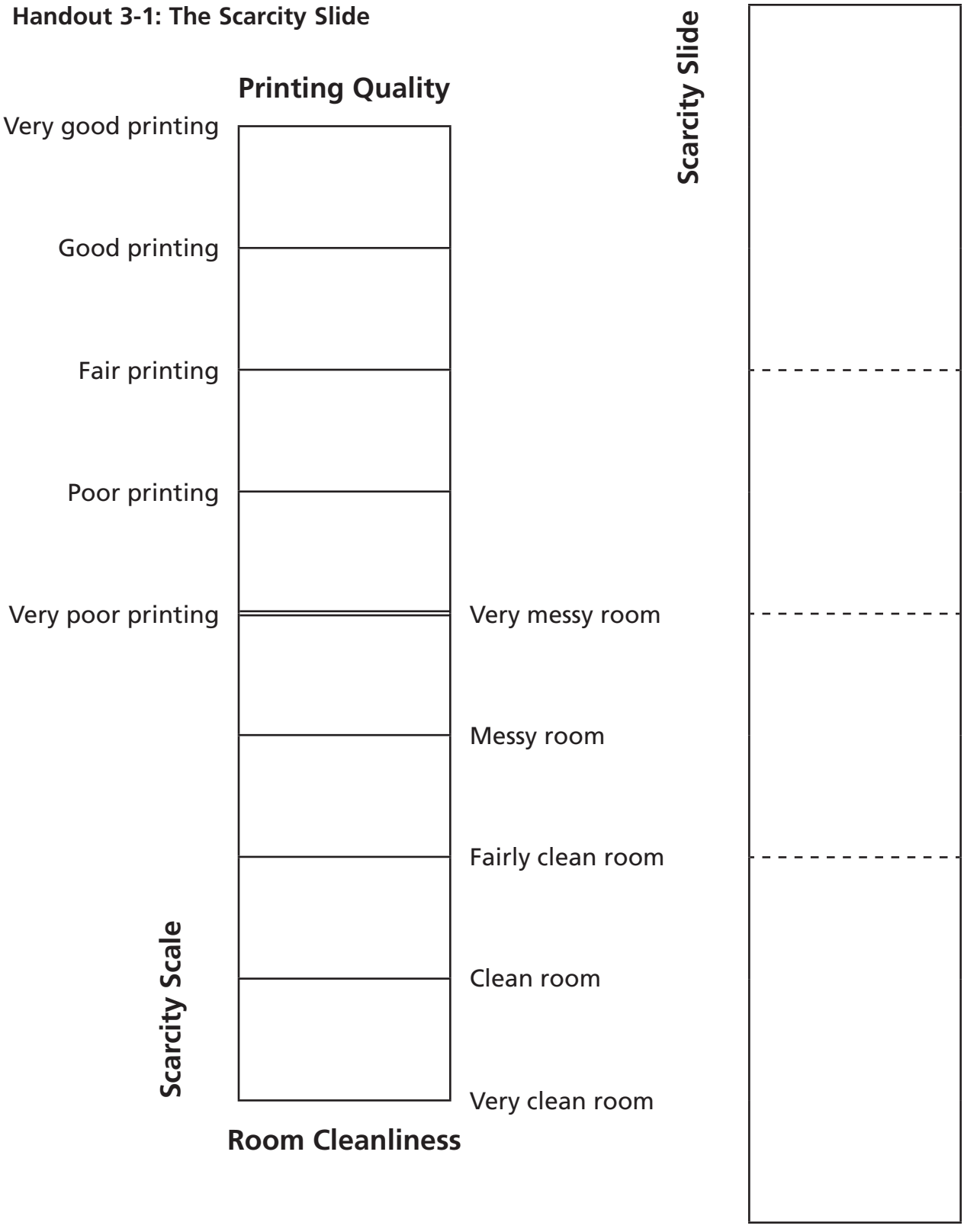
Silver

Coal

Water

Mud

Handout 3-1: The Scarcity Slide



Handout 3-2: Assessment

Directions: Read the following paragraph and answer the questions below.

A village receives all its water from a well fed by a small underground spring. If all people are to have their fill of drinking water, the village must take 100 gallons of water from the well each day. For all people to satisfy bathing wants, the village must take 200 gallons of water from the well each day. To meet all their drinking and bathing wants, the villagers would use 300 gallons of water each day. The spring supplies a total of 200 gallons of water each day.

1. What is scarce in the village?

2. Why is it scarce?

3. What are the consequences of this scarcity problem?

4. If the villagers choose to completely satisfy all their desires for drinking water, what will happen?

5. What choice would you make? Why?

Standards and Benchmarks

Voluntary National Content Standards in Economics

Standard 1: Scarcity

- **Benchmarks: Grade 4**

  1. People make choices because they can't have everything they want.
  3. People's choices about what goods and services to buy and consume determine how resources will be used.
  4. Whenever a choice is made, something is given up because resources are limited.
  5. The opportunity cost of an activity is the value of the best alternative that would have been chosen instead. It includes what would have been done with the money spent and the time and other resources used in undertaking the activity.
  7. Natural resources such as land are "gifts of nature"; they are present without human intervention.

Standard 2: Decision Making

- **Benchmarks: Grade 4**

  1. Choices involve getting more of one thing by giving up something else.
  2. A cost is what you give up when you decide to do something. A benefit is what satisfies your wants.

- **Benchmark: Grade 8**

  1. To determine the best level of consumption of a product, people must compare the additional benefits with the additional costs of consuming a little more or a little less.