

# *Technology – Its Benefits and Negative Effects*

## Lesson Plan

**Grade Level:** 3-5

**Curriculum Focus:** Technology and Society

**Lesson Duration:** Two class periods

### ***Student Objectives***

- Understand that modern technology has benefited human beings by increasing production of goods and services, reducing the amount of labor needed to produce these goods and services, and providing higher living standards.
- Understand that technology has also had negative effects on society – environmental pollution, depletion of natural resources, unemployment, and the creation of ethical dilemmas, among others.

### ***Materials***

- Discovery School video on *unitedstreaming: Technology at Work, Part Two*  
Search for this video by using the video title (or a portion of it) as the keyword.

Selected clips that support this lesson plan:

- Magnetism
- Television
- Many Uses of Satellites
  
- Research materials on the history of modern technology
- Computer with Internet access

### ***Procedures***

1. Ask your students to consider advances in technology over the past several hundred years, and discuss with them ways in which these advances have benefited human beings. Examples you might start out with are the printing press, electricity, the telephone, the automobile and airplane, and the computer.
2. Before continuing the discussion, begin a chart on the chalkboard with three column headings: “Increasing Production of Goods and Services,” “Reducing Amount of Labor Needed to Produce Goods and Services,” and “Providing Higher Living Standards.” Tell students that as they continue discussing the benefits of technology, they will be classifying the benefits under

these headings. If necessary, go over the meaning of each heading with the class before you continue.

3. As students discuss the benefits of technology, list them on the chart. For example, if students say that the telephone has made it easier to talk to friends, list “telephone” under “Providing Higher Living Standards.” If they say that the dishwasher has made it easier to wash dishes, list “dishwasher” under “Reducing Amount of Labor Needed to Produce Goods and Services.” Students may decide to include some technologies under more than one heading.
4. Next, ask students if they can think of any technological advances that have had negative effects on society.
5. Before they continue the discussion of harmful side effects of technology, begin a second chart on the chalkboard with the column headings “Causing Environmental Pollution,” “Depleting Natural Resources,” “Causing Unemployment,” and “Posing Ethical Dilemmas.” Make sure students understand the meaning of each heading by giving examples of each. Especially, make sure they understand that the word *ethical* means “having to do with right and wrong” and that the word *dilemma* means “a difficult decision.” An *ethical dilemma*, therefore, is a difficult decision someone has to make about whether something is right or wrong.
6. As students continue to discuss harmful side effects of technology, record their ideas on the chart. For example, if students mention the automobile, list it under “Causing Environmental Pollution” and “Depleting Natural Resources.” If they mention the computer, list it under “Causing Unemployment” and “Posing Ethical Dilemmas.” (You might discuss how computers have posed privacy issues and freedom-of-speech issues.)
7. At this point, focus students’ attention on the column headed “Posing Ethical Dilemmas.” Discuss the dilemmas in further detail. If there are only a few entries in the column, brainstorm more entries with the class. For example, you might want to add cloning, DNA testing, nuclear power plants, and genetic engineering.
8. Divide the class into two groups, and have them choose one of the entries on the second chart as a subject for debate. Have the groups debate whether the particular technology under consideration is more helpful to society or more harmful.
9. After the debate, have the class discuss possible ways the uses of the technology could be controlled to minimize negative effects.

### **Discussion Questions**

1. Today we can be educated, entertained and shop on our TVs. What do you envision as future uses of television in our everyday lives? Contrast the pros and cons of television organizing our daily schedules.
2. The effect of violence on television is a highly debated issue today. Discuss the effects (pros and cons) that violence on TV might have on the observer. Write to your local TV station with questions regarding its policy for televised programming and violence.
3. Do you believe that children should have completely free access to any TV program or Web site on the Internet, or do you think that parents, teachers, and/or librarians should be permitted to



prevent children from accessing programs and sites adults think are inappropriate or harmful?  
Give reasons for your opinions.

4. Describe some of the many uses of satellites.
5. In general, would you say that modern technology developed over the past fifty years has made the world a better or worse place in which to live? Are people's lives happier or unhappier as a result of modern technology?

## **Assessment**

Use the following three-point rubric to evaluate students' work during this lesson.

- 3 points: Student is active in the debate; uses sound reasoning; does not interrupt other speakers; speaks audibly and clearly.
- 2 points: Student participates in the debate; uses mostly sound reasoning; occasionally interrupts others; at times, speaks inaudibly or unclearly.
- 1 point: Student is not active in the debate; often uses unsound reasoning; frequently interrupts others; speaks inaudibly or unclearly.

## **Vocabulary**

### **depleting**

*Definition:* Using up.

*Context:* Depleting natural resources is one of the negative effects of modern technology.

### **electrons**

*Definition:* Elementary particles consisting of a negative electric charge.

*Context:* First, the cameras capture the images of the race cars and transform them into electrons.

### **GPS**

*Definition:* Global Positioning System; a navigation system which utilizes a network of satellite signals for navigation.

*Context:* GPS, a space based radio navigation system consisting of 24 satellites.

### **living standards**

*Definition:* Features of human life that measure the quality of our lives.

*Context:* The telephone has improved our living standards by helping us to keep in touch with our friends and family.

### **microwave**

*Definition:* A comparatively short electromagnetic wave; especially: one between about 1 millimeter and 1 meter in wavelength.

*Context:* Then the electrons are changed into microwaves which can travel more easily.

### **revolution**

*Definition:* A sudden, radical, or complete change.

*Context:* Revolution of technology has changed the way we work, travel and communicate.

### **satellite**

*Definition:* A manufactured object or vehicle intended to orbit the earth, the moon, or another celestial body.

*Context:* Satellites are manmade robots that are circling earth sending information to us.

### **vacuum tube**

*Definition:* An electron tube from which all or most of the gas has been removed, permitting electrons to move with low interaction with any remaining gas molecules.

*Context:* Television cameras used vacuum tubes to create video signals from images.

## ***Academic Standards***

### **Mid-continent Research for Education and Learning (McREL)**

McREL's Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education addresses 14 content areas. To view the standards and benchmarks, visit <http://www.mcrel.org/>.

This lesson plan addresses the following national standards:

- Science – Nature of Science: Understands the scientific enterprise.
- Technology: Understands the relationships among science, technology, society, and the individual.
- K-4 History – The History of Peoples of Many Cultures Around the World: Understands major discoveries in science and technology, some of their social and economic effects, and the major scientists and inventors responsible for them.

### **National Academy of Sciences**

The National Science Education Standards provide guidelines for teaching science as well as a coherent vision of what it means to be scientifically literate for students in grades K-12. To view the standards, visit <http://books.nap.edu>.

This lesson plan addresses the following science standards:

- Science in Personal and Social Perspectives: Science and technology in society

### **The National Council for the Social Studies (NCSS)**

NCSS has developed national guidelines for teaching social studies. To become a member of NCSS, or to view the standards online, go to <http://www.socialstudies.org>

This lesson plan addresses the following thematic standards:

- Science, Technology, and Society



## Support Materials

Develop custom worksheets, educational puzzles, online quizzes, and more with the free teaching tools offered on the Discoveryschool.com Web site. Create and print support materials, or save them to a Custom Classroom account for future use. To learn more, visit

- <http://school.discovery.com/teachingtools/teachingtools.html>

