

Assignment Discovery Online Curriculum

Lesson title:

Effects of Lung Disease

Grade level:

6-8

Subject Area:

Health, Life Science

Duration:

Two or three class periods

Objectives:

Students will do the following:

1. Examine the long- and short-term effects of smoking
2. Develop a persuasive argument against smoking

Materials:

- Regular drinking straws (one for each student)
- Thin “coffee-stirrer” straws (one for each student)
- Newsprint and markers
- Timer or timepiece with second hand
- Colored balloons (optional)
- Computer with Internet access (optional but very helpful)

Procedures:

1. Begin the lesson by giving each student a drinking straw. Ask them to place the straws in their mouths and breathe only through the straw for 30 seconds. You will time them. It may help students to hold their noses. Be sure to let them know they can stop the activity if breathing becomes very difficult or if they feel dizzy. After one minute, ask students to write down their reactions. Some students may say their breathing felt normal; others may say it was difficult.
2. Then hand out the thinner straws. Repeat the activity, having each student breathe through a straw for 20 seconds. This may be difficult for some students, so encourage them to stop if necessary. Ask students to write down how this activity made them feel.
3. Ask students if they know what these activities illustrate. The first one simulates breathing for a smoker, and it affects people in different ways. The second simulates what it feels like to breathe with chronic lung disease.

4. Explain that chronic lung disease is one of several dangerous, long-term effects of smoking. (Others include heart disease, lung cancer, and other cancers.) Define the two types of chronic lung disease.
 - *Chronic bronchitis*. There are many bronchial tubes in the lungs that branch out like an upside-down tree. In a smoker's lungs, the chemicals from tobacco build up in these tubes, blocking or thinning the airways. This makes it difficult to breathe and get oxygen into the lungs.
 - *Emphysema*. At the end of these tubes are alveoli, or tiny air sacs, that look like bundles of grapes. When you breathe, air fills these sacs and releases oxygen into your blood. The same dangerous tobacco chemicals that block the bronchial tubes can also destroy the alveoli. With fewer sacs to fill, your lungs do not get enough oxygen.
5. To demonstrate the mechanics of emphysema, tie together a bunch of balloons. Tell students that the balloons represent the alveoli. What do they think happens to the air sacs of a smoker? (Answer: The alveoli are destroyed; indicate this by popping the balloons one by one.)
6. Remind students that smoking has many short-term effects, too. Ask students to brainstorm these effects and write their answers on the board. Their ideas may include smelly hair and clothes, bad breath, stained teeth, difficulty breathing, faster heart rate, wrinkles near the eyes and mouth, stained fingers, getting winded after walking or exercising, negative reaction from friends and family, and waste of money spent on cigarettes.
7. Finally, ask students to write a persuasive argument against smoking. They may want to write a journal entry to themselves or a letter to a friend or sibling. They should use what they've learned in class, information from the Web sites noted in this lesson plan, and the following facts to write their argument. (You may want to share these facts as printouts or on an overhead projector.)

Smoking Facts

Statistics (from the Centers for Disease Control and the American Cancer Society)

- Cigarette smoking is the single most preventable cause of premature death in the United States. Each year, more than 400,000 Americans die from the effects of cigarette smoking. In fact, one in every five deaths in the United States is smoking related.
- Cigarettes are responsible for more deaths in America than alcohol, car accidents, suicide, AIDS, homicide, and illegal drugs put together.
- On average, someone who smokes a pack or more of cigarettes each day lives seven years less than someone who never smokes.
- In a survey of U.S. teens, 65 percent said they strongly disliked being around smokers; 86 percent said they'd rather date people who don't smoke.

- Although only 5 percent of daily smokers surveyed in high school said they would definitely be smoking five years later, close to 75 percent were smoking seven to nine years later.
- Of the almost 3,000 young people who become regular smokers each day, nearly a thousand of them will have their lives shortened from tobacco-related diseases.
- The likelihood of smoking-related cancers increases the longer a person has been smoking.

Bad for Your Body

- Inhaling cigarette smoke reduces the amount of oxygen in the bloodstream.
- Smoking increases your heart rate because your heart must work harder to get oxygen to the rest of your body.
- Nicotine, a chemical found in tobacco, makes your blood vessels smaller so your heart must work harder to pump blood throughout the body.
- The tar found in tobacco sticks to the insides of your lungs, where it can cause cancer.
- Cigarette smoke contains more than 40 carcinogens, or chemicals that cause cancer.

The Why Files: Nicotine Junkies

<http://whyfiles.org/024nicotine/fact_sheet.html>

Tips4Youth

<<http://www.cdc.gov/tobacco/tips4youth.htm>>

Smoke-Free Kids

<<http://www.smokefree.gov/>>

The Whole Truth

<<http://www.wholetruth.com/menu.htm>>

Discussion Questions:

1. Given all the dangers of smoking, what are some reasons people still smoke?
2. Describe an antismoking campaign you think is effective. What makes this particular message influential?
3. If you just saw a little sister or brother smoking, what would you say to discourage them from taking up the habit?

Evaluation:

Use the following three-point rubric to evaluate how well students participate in the class experiment, discuss issues with the class, understand effects of smoking, and use facts they've learned to complete the writing assignment:

Three points: participated actively in class experiment and discussion; has good understanding of effects of smoking; demonstrated strong writing and research skills; developed a complete, thoughtful writing assignment that demonstrated a thorough understanding of the dangers and physical effects of smoking.

Two points: participated in class experiment and discussion; has on-grade-level understanding of effects of smoking; demonstrated average writing and research skills; wrote an argument that showed some thought and included only a few specific dangers and physical effects of smoking.

One point: participated little in class experiment and discussion; has below-average understanding of effects of smoking; demonstrated weak writing and research skills; wrote an incomplete argument that did not demonstrate a thorough understanding of the dangers and physical effects of smoking.

Extension:

Truth in Advertising

Encourage students to become media literate about cigarette advertising. Discuss the conflicting messages about smoking from advertising, the media, movies and television, and health organizations. How do these different sources influence adolescent smoking? Have students name examples of messages that encourage kids to smoke. Some examples might be Joe Camel, the Marlboro Man, or movies such as *Rebel without a Cause*, *Grease*, *Heathers*. Then have students work in small groups to choose one example and imagine if they could revise the message to show the truth about smoking and tobacco. Have each group create a brief presentation for the class: a skit, poster, or advertisement.

Find online examples of “truth in advertising” at these Web sites:

<http://www.cdc.gov/tobacco/posters.htm>

<http://www.notobacco.org/photos/index.htm>

Suggested Reading:

Straight Talk about Smoking

Rachel Kranz.

Facts on File, 1999.

Teenagers need to learn more than just the statistics of smoking to make thoughtful decisions about it. This book examines the history of smoking in the United States, the means tobacco companies used to promote smoking, the physical addiction and medical consequences of smoking, and ways to quit smoking. Clear, well-written explanations make this an excellent selection.

Teens Smoking: Understanding the Risks (Issues in Focus series)

Daniel McMillan.

Enslow Publishers, 1998.

This book focuses on the reasons why people smoke, on the costs of smoking—in financial and health terms—on prevention efforts, and on the difficulties of quitting. A list of tips to help people quit smoking is included. Illustrated with black-and-white photographs.

Vocabulary:

alveoli

Definition: Tiny air sacs in the lungs.

Context: Dangerous chemicals in cigarette smoke can destroy **alveoli**, causing emphysema.

bronchial tubes

Definition: Tubes or air passages in the lungs.

Context: With chronic bronchitis, chemicals deposited in the **bronchial tubes** cause them to narrow.

carcinogen

Definition: A chemical that causes cancer.

Context: Cigarettes contain many **carcinogens**, including carbon monoxide.

chronic bronchitis

Definition: A long-lasting lung disease in which the airways in the lungs are blocked or thinned, causing difficulty breathing.

Context: **Chronic bronchitis** is marked by difficulty in breathing because the chemicals in cigarette smoke are deposited in the lungs.

emphysema

Definition: An incurable chronic lung disease in which the alveoli are damaged and breathing is restricted.

Context: Heavy smokers are at great risk of suffering from **emphysema**.

nicotine

Definition: A poisonous chemical found in tobacco.

Context: **Nicotine** is the addictive substance found in cigarettes.

tobacco

Definition: The leaves of cultivated tobacco prepared for use in smoking or chewing or as snuff.

Context: **Tobacco**, the main substance in cigarettes, contains nicotine.

Academic Standards:

The following standards are from the American Association for Health Education for students in grades six through eight:

1. Students will comprehend concepts related to health promotion and disease prevention.
2. Students will demonstrate the ability to advocate for personal, family, and community health.
3. Students will analyze the influence of culture, media, technology, and other factors on health.

This lesson plan adheres to the standards set forth in the *National Science Education Standards*, in particular the category Science in Personal and Social Perspectives.

Credit: Joy Brewster, freelance writer and editor of educational material.

This lesson was developed in consultation with Nancy Hudson, health education consultant.

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