

Health Education in Practice

Teaching Idea

An Introductory Lesson to Environmental Health: Media Analysis and Risk Reduction

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Abstract

This activity is designed to provide students with an overview of environmental health and to encourage them to think critically about how they can minimize their potential negative health impacts from environmental exposures. Objectives: Students will (a) define environmental health, (b) analyze media wherein environmental health issues are addressed, (c) classify environmental health issues by domains, and (d) select and apply appropriate prevention strategies for addressing environmental risks. Target audience: Middle school through college students with some adaptations.

Introduction

In recent years, the environment has gained national and international attention, especially from media coverage of global warming. Many individuals are increasingly conscious about their impact on the environment. The terms “environmental footprint” and “ecological footprint” are widely used to describe an individual’s environmental impact based on resource consumption patterns. Efforts to protect the environment, such as ensuring clean drinking water and proper sanitation, have been part of public health practice in the United States for more than a century, but according to the U.S. Department of Health and Human Services (2000) “the public’s awareness of the environment’s role in health is more recent” (p. 8-4).

Environmental health is 1 of 28 national health priority focus areas in *Healthy People 2010*. The primary areas of concern, or domains, are: air quality, chemical contaminants, emergency preparedness and safety, food safety, noise pollution, radiation, solid waste management, vector control and prevention, and water quality. This focus area seeks to

use education at all levels to increase public awareness of environmental health issues, leading to broad prevention efforts (U.S. Department of Health and Human Services, 2000).

The field of environmental health examines how the environment impacts human health. According to the World Health Organization (WHO) (2008), environmental health “addresses all the physical, chemical, and biological factors external to a person, and all the related factors impacting behaviours [*sic*]...It is targeted towards preventing disease and creating health-supportive environments” (para. 1). Standards 1.8.3 and 1.12.3 of the *National Health Education Standards* (NHES) incorporate how the environment affects health into the health education curriculum (American Cancer Society, Joint Committee on National Health Education Standards, 2007). In addition, other NHES standards can be applied in the context of environmental health, such as analyzing and evaluating the media’s influence on health behaviors (2.8.5 and 2.12.5), assuming individual responsibility for health behaviors (7.8.1 and 7.12.1), and demonstrating healthy practices to reduce risk (7.8.3 and 7.12.3) (American Cancer Society, Joint Committee on National Health Education Standards).

Although there are numerous environmental education resources available, the U.S. Environmental Protection Agency (EPA, n.d.) indicated those resources are under-utilized. The EPA (2009) website provides a directory for and links to content-specific teaching tools (see <http://www.epa.gov/teachers/health.htm>). However, a broad introduction to environmental health for students and their instructors may help facilitate increased interest in and utilization of existing resources. The lessons presented in this teaching strategy are designed to assist students in developing increased awareness of environmental health issues that impact them directly and indirectly, and to help them think critically about actions they can take to minimize negative health impacts from environmental exposures.

Target Audience

This strategy is designed to be implemented over two, 50-minute class sessions in a health or science course for middle school students and can be adapted for use in high school or college environmental and community health courses.

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Lesson I

Procedures.

Objectives.

At the conclusion of this lesson, students will be able to (a) define environmental health, and (b) analyze media wherein environmental health issues are addressed.

Materials and resources.

1. Chalk board/white board and writing instruments.
2. Enough environmental health news articles for each group of 3-4 students to have a different article. Articles might include boil water advisories, food safety issues, chemical contamination, relevant editorials, and articles from a newspaper "Home" section with health-related concerns. News articles could be from newspapers, news magazines, or print copies of reputable Internet-based news outlets, such as websites for TV or cable news organizations (i.e., ABC, CBS, CNN, FOX, MSNBC, NBC).
3. Enough copies of the article analysis form (Figure 1) for each group of 3-4 students to have one and additional copies for each student to take one home.

Define environmental health (20 minutes)

- Introduce the topic of environmental health by asking students to reflect about environmental issues in their community. Guiding questions might include: How do you define your environment? What environmental issues affect our community? How do environmental issues impact human health of individuals? Of families? Of communities?
- Organize students into small groups (3-4 students per group) to discuss their answers and to prepare a written group definition of environmental health.
- Have each group share their definition of environmental health and list key components of each group's definition on the board and discuss any differences. Highlight the difference between environmental issues and environmental health.
- Provide a formal definition of environmental health for the class, such as the WHO's 1993 statement as quoted by Howze, Balwin, and Kegler (2004): "those aspects of human health, including quality of life, that are determined by physical, biological, social, and psychosocial factors in the environment" (p. 432).

Name: _____
Find a current (within the past 2 weeks), credible news article related to environmental health concepts and summarize the content below. Attach a copy of your article.
Title of news article:
Source of article (name of media source, date, page number or web address):
Environmental topic:
Level (local, state, regional, national, global):
Population(s) at risk:
Prevention/Intervention methods described in article:
Source(s) cited by article (i.e., CDC, Dept. of Health, local authority, scientific research article):
Is this an authoritative source? Why or why not?
Does the information appear to be accurate? Why or why not?
Was the information presented in an objective manner? Why or why not?

Figure 1. Environmental health awareness article analysis form.

Environmental health information credibility discussion (5 minutes)

- Ask students from what sources they may learn environmental health information. Responses may include newspapers, magazines, TV, Internet, parents, friends, etc.
- Briefly discuss what sources are the most reliable and credible by addressing concepts of accuracy, authority, and objectivity. Guiding questions may include: Is the information correct? Does the author(s) have the credentials to write this information? Does the information appear to be biased? Do you think funding sources could affect the credibility of information? Why or why not?
- Summarize by stating it is important to analyze both the information and the credibility of the source to ensure students are not misinformed about environmental health issues.

Analyze media articles (25 minutes)

- Divide students into groups of 3-4 and distribute one environmental article to each group along with an article analysis form (see Figure 1).
- Allow students 10-15 minutes to review their article within their groups and complete the article analysis form.
- Have each group summarize their article and share their analysis with the rest of the class.

Authentic assessment homework assignment 1.

Have students identify one credible source of environmental health information and on a piece of notebook

paper, record the name of the source and write a brief summary of the information available as well as an explanation about why they believe the source is credible. Then, have students find one environmental article and complete an analysis form for the article. Students should bring their summary of the source, article, and article analysis form to the next class session. See Figure 2 for a sample rubric.

Lesson II

Objectives.

At the conclusion of this lesson, students will be able to (a) classify environmental health issues by domains, and (b) select and apply appropriate prevention strategies for addressing environmental health risks.

Materials and resources.

1. Tape.
2. Nine large sheets of poster board/paper labeled with the following environmental health domains: Air Quality, Chemical Contaminants, Emergency Preparedness and Safety, Food Safety, Noise Pollution, Radiation, Solid Waste Management, Vector Control and Prevention, and Water Quality.
3. A copy of each of the 15 environmental health risk questions (Figure 3) typed in large font on a piece of paper (1 question per sheet of paper).
4. A copy of the environmental health risk question responses (Figure 3) typed in large font on a piece of paper (1 response per sheet of paper) folded and placed in a paper sack.

Element	Unacceptable	Developing	Proficient	Accomplished
Environmental Health Resource and Article Selection (30%)	Did not identify an environmental health resource or an environmental health article	Identified either an environmental health resource or an environmental health article but not both or resource was not credible	Identified a credible environmental health resource and an environmental health article	Identified an environmental health resource and environmental health article with very strong credibility
Summary of Environmental Health Information (50%)	Did not complete the summary of a selected resource's content	Completed a summary of a selected resource's content but further detail/expansion was needed	Completed a thorough summary of a selected resource's content highlighting all necessary information	Completed a thorough summary of a selected resource's content highlighting all necessary information in a logical sequence with smooth transitions
Article Analysis (20%)	Did not complete the article analysis form	Completed most portions of the article analysis form, but some portions were not fully and/or properly addressed	Accurately completed all portions of the article analysis form, but some portions could have been more fully addressed	Fully and accurately completed all portions of the article analysis form

Figure 2. Sample rubric for authentic assessment homework assignment 1.

Questions	Possible Answers
How can you reduce your risk of lead ingestion if you live in an older home that may have lead water pipes?	<ul style="list-style-type: none"> - Run cold water for a minute before using it for cooking or drinking. - Don't use hot tap water for cooking. - Have lead pipes and pipe connections (solder) removed and replaced.
How can you minimize your risk of lead exposure from paint if your home was built before 1979?	<ul style="list-style-type: none"> - Don't sand or scrape lead paint, as this may cause lead dust to fill the air. - Use a wet mop and wet dust rag on a weekly basis, especially around doors, windows, and floorboards. - Cover any chipping paint or minimize access to it. - Don't garden or play near the outside of the house, due to lead paint chips and dust in the soil.
How can radon be detected in a home when it is colorless and odorless?	<ul style="list-style-type: none"> - Radon kits can be purchased for home testing.
What are potential environmental hazards in the workplace?	<ul style="list-style-type: none"> - Chemicals - Noise - Air quality
What are possible sources of chemical contamination for supermarket customers?	<ul style="list-style-type: none"> - Pesticides (on fresh produce) - Mercury and other pollutants (fish) - Bisphenol A from hard plastics
How can you reduce the risk of mercury exposure when consuming fish?	<ul style="list-style-type: none"> - Select smaller fish. - Avoid predatory fishes such as shark, king mackerel, bass, and swordfish. - Limit your serving sizes and eat a variety of different (small) fish.
How can you minimize the risk of hearing injury?	<ul style="list-style-type: none"> - Wear ear protection such as earplugs. - Minimize the amount of time and frequency of exposure to loud noises. - Minimize the use of headphones and hand-free listening devices.
What are possible sources of chemical contamination in the school setting?	<ul style="list-style-type: none"> - Asbestos, pesticides, cleaning solvents (janitorial closet), herbicides/fertilizer (grounds keeper), science class supplies.
Where can you get information about any violations during restaurant inspections?	<ul style="list-style-type: none"> - Contact your local health department, Food Safety Regulation division.
What can be done to limit vector-borne illness?	<ul style="list-style-type: none"> - Communities can use Integrated Pest Management to control mosquito populations. - Individuals should check for and promptly remove any ticks after being outdoors. - Apply insect repellent containing DEET. - Wear protective clothing.
How can you reduce your risk of food borne illness when ordering meat at a restaurant?	<ul style="list-style-type: none"> - Eating raw or undercooked meats and shellfish can be potential sources of illness, so request that meats are cooked thoroughly.
How can you reduce your risk of radiation exposure?	<ul style="list-style-type: none"> - Use sunscreen of at least 15 SPF when outdoors for more than 15 minutes. - Limit outdoor activities when your shadow is shorter than you are (between 10 AM – 4 PM). - Cover up (hats, sunglasses, long sleeves/pants). - Be aware that water and sand reflect the sun's rays and can intensify UV exposure. - Be aware of the UV ratings (often included in weather forecasts, Safe Sun Time).
How can you control rodent-related illness in the home?	<ul style="list-style-type: none"> - Rodents enter through cracks and under doors. Seal any obvious entry points. - Use mouse traps and/or poison to eliminate rodent infestations. - Keep homes clean and food in mouse-proof containers (metal, glass, hard plastics) to limit the rodents' food supply.
How can you limit radiation exposure when undergoing medical treatment?	<ul style="list-style-type: none"> - Hospital staff should provide you a lead apron to cover parts of your body not being examined.
Mold can trigger asthma and cause other health problems. What action steps can you take to limit or reduce your exposure?	<ul style="list-style-type: none"> - Use a fan vented to the outside when bathing/showering. - Wipe down shower walls with a squeegee or towel after bathing/showering. - Use storm windows to reduce water condensation around windows. - Increase air flow around problem areas (move furniture away from outside walls). - Repair leaky roofs, walls, doors, windows, faucets, etc. immediately. - Store clothes and towels clean and dry; don't let them stay wet in the washer or laundry basket.

Figure 3. Environmental risk questions and responses.

Set-up.

- Tape the poster boards headed by the nine environmental health domain titles around the classroom, but do not tape to the front wall.
- Tape the 15 risk questions to the front of the classroom so that students will be facing the questions from their desks. Place the paper sack with folded responses at the front of the room.

Procedures.

Environmental health domains (30 minutes)

- Referencing the poster boards posted around the room provide a brief explanation for each environmental health domain (for example, “air quality” involves both indoor and outdoor contaminants, such as tobacco smoke, dust and pollen), and explain any unfamiliar terms such as “vectors are insects and rodents.”
- Ask students to take out the article for which they completed their article analysis (Authentic Assessment from Lesson I) and direct each student to stand by the poster board with the appropriate heading for her/his article.

- Go around the room and allow each student to explain why s/he chose the domain and what prevention/interventions were addressed in her/his article.
- Ask the other students if they agree with the student’s selection and have students move to different poster boards if necessary, but be sure to discuss how some articles may address more than one domain.
- After all students have addressed their articles, have students tape their article to the appropriate poster boards for display.

Environmental risks and risk reduction strategies (20 minutes)

- Hand the paper sack with the risk question responses to one student and have the student draw a response and read it aloud to her/his classmates.
- As a class, decide to which question the drawn response applies and tape the response under that question.
- Pass the paper sack to another student and continue with the same procedure until all the responses are appropriately placed.
- Conclude the activity by emphasizing how it is possible to reduce one’s risk regarding these factors by implementing some of the risk reduction strategies highlighted.

Element	Unacceptable	Developing	Proficient	Accomplished
Identification of Environmental Health Issue and Risk Reduction Strategies (30%)	Did not identify an environmental health issue and three risk reduction strategies	Identified an environmental health issue and three risk reduction strategies, but the health issue or one or more of the strategies was not appropriate	Identified an appropriate environmental health issue and three appropriate risk reduction strategies, at most only minor modifications were needed regarding the risk reduction strategies	Identified an environmental health issue with obvious personal health implications and three risk reduction strategies that needed no modifications
Reflection (40%)	Did not complete reflection paper	Completed reflection paper but personal evaluation was limited and/or did not make adequate connections among environmental health issue, risk reduction strategies, and self; discussion too brief	Completed reflection paper and included a personal evaluation of the experience while making sufficient connections among environmental health issue, risk reduction strategies and self, by providing some examples of personal knowledge, attitudes, experiences, and behaviors	Completed reflection paper and included a thorough personal evaluation of the experience while making a strong connection among environmental health issue, risk reduction strategies and self, by providing numerous examples of personal knowledge, attitudes, experiences, and behaviors
Mechanics (30%)	Many minor and/or major grammatical, spelling, or punctuation errors	Several minor and/or a few major grammatical, spelling, or punctuation errors	Some minor grammatical, spelling, or punctuation errors	No or almost no grammatical, spelling or punctuation errors

Figure 4. Sample rubric for authentic assessment homework assignment 2.

Authentic assessment homework assignment 2.

Assign students to choose an environmental health issue that directly impacts them. Then, have each student identify three strategies s/he can implement individually to minimize her/his potential negative health impacts from that environmental exposure. Have students implement their strategies over a one-month period. At the end of the month, students should submit a reflection paper describing their experience and a personal evaluation of their prevention efforts for their selected issue. See Figure 4 for a sample rubric.

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