

UNIT 1

ENGLISH: EXPRESSING MY FEELINGS ABOUT POLLUTION

LESSON DESCRIPTION

This lesson plan will allow the students to strengthen their listening, communication and emotion expression skills through the topic of the pollution of natural resources.



Fuente: Barretr, CCo 1.0

APPLICATION OF THE LESSON PLAN

This lesson plan corresponds with the Unit 1.1 of English. The plan should be used following a discussion of the topics: emotions and main idea.

STANDARDS AND INDICATORS**Listening**

- Ask and answer questions appropriate to the topic and in conversations offer basic opinions using learned phrases and open answers. (1.L.1ª)

Speaking

- Describe personal experiences using some new vocabulary and details of familiar topics, appropriate to the situation. (1.S.5)

Reading

- With moderate support, describes in detail key ideas, phenomena and elements of a text based on the understanding of a variety of texts from different levels and read aloud, and multimedia observation. (1.R.1)

LEARNING OBJECTIVES

- Identify different emotions.
- Recognize the different types of pollution.
- Generate options to address pollution situations in your community.

TIMING

Start (10 minutes)	Development (45 minutes)	Closing (5 minutes)
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MATERIALS

- Computer with CD
- Projector
- CD with videos
- Photocopies of worksheets (one each four students)
- Tracing paper (can be replaced by board)

- Crayons (can be replaced by chalk or whiteboard markers)

VOCABULARY

- Pollution: Pollution occurs when the environment is contaminated or contaminated by waste, chemicals and other dangerous substances. There are three main forms of pollution: air, water and soil.
- Emotions: mood variation.

CLASS GUIDE**START**

- The teacher will review with the students the topic of emotions using an educational video.
 - The following link corresponds to the video *Emotions and the Brain*:
<https://www.youtube.com/watch?v=xNYoAAUtH3g>
- At the end of the video, the teacher will perform a brainstorming exercise on the concept of contamination.
- After completing the exercise, you will explore the feelings and emotions of the students about the contamination of the environment. It will invite the students to learn about the topic of pollution and to explore different emotions on this topic.

DEVELOPMENT**Instructional Activities**Video: 10 min

- The teacher will show a video related to the topic of contamination.
- The following link corresponds to the *Pollution video*:
<https://www.youtube.com/watch?v=aXmfQLC8ju4>.
- At the end of the video, the teacher will ask comprehension questions.
- Guiding questions:
 1. What type of contamination caused the child to have red eyes and cough?
 2. How did the child feel when he learned that his cough was caused by pollution? How do you know?
 3. Name three factors that cause air pollution.
 4. How can trees help to minimize air pollution?
 5. How can children pollute the environment?
 6. How can the child promote less pollution?

Worksheet: 20 min

- The students will complete the worksheet collaboratively, so the teacher will divide the group into subgroups of four students.
- The teacher will deliver a worksheet and explain the instructions (see Appendix 2).

Discussion: 15 min

- The teacher will discuss the collaborative work done by the students.
- After the students express the form of contamination present in their community and their emotions about it, the teacher will discuss with the same ways in which

contamination can be minimized or eliminated in the community. To do this, the teacher will make a list of the options presented by the (as) students (you can see Annex 1).

CLOSING

- The teacher will ask the students to provide a summary of what was learned in the lesson.

ATTACHMENTS

Attachement 1. Educational source for the teacher

Pollution Facts & Types of Pollution

Es seguro <https://www.livescience.com/22728-pollution-facts.html>

LIVESCIENCE NEWS TECH HEALTH PLANET EARTH STRANGE NEWS ANIMALS HISTORY CULTURE SPACE

Live Science > Planet Earth

Reference:

Pollution Facts & Types of Pollution

By Alina Bradford, Live Science Contributor | February 27, 2018 09:55pm ET



Credit: Viktor Fiker | Dreamstime

Pollution is the process of making land, water, air or other parts of the environment dirty and not safe or suitable to use. This can be done through the introduction of a contaminant into a natural environment, but the contaminant doesn't need to be tangible. Things as simple as light, sound and temperature can be considered pollutants when introduced artificially into an environment.

Toxic pollution affects more than 200 million people worldwide, according to [Pure Earth](#), a non-profit environmental organization. In some of the world's worst polluted places, babies are born with birth defects, children have lost 30 to 40 IQ points, and life expectancy may be as low as 45 years because of cancers and other diseases. Read on to find out more about specific types of pollution.

Land pollution

Land can become polluted by household garbage and by industrial waste. In 2014, Americans produced about [258 million tons of solid waste](#), according to the U.S. Environmental Protection Agency. A little over half of the waste — 136 million tons— was gathered in landfills. Only about 34 percent was recycled or composted.

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Organic material was the largest component of the garbage generated, the EPA said. Paper and paperboard accounted for more than 26 percent; food was 15 percent and yard trimmings were 13 percent. Plastics comprised about 13 percent of the solid waste, while rubber, leather and textiles made up 9.5 percent and metals 9 percent. Wood contributed to 6.2 percent of the garbage; glass was 4.4 percent and other miscellaneous materials made up about 3 percent.

Commercial or industrial waste is a significant portion of solid waste. According to the [University of Utah](#), industries use 4 million pounds of materials in order to provide the average American family with needed products for one year. Much of it is classified as non-hazardous, such as construction material (wood, concrete, bricks, glass, etc.) and medical waste (bandages, surgical gloves, surgical instruments, discarded needles, etc.). Hazardous waste is any liquid, solid or sludge waste that contain properties that are dangerous or potentially harmful to human health or the environment. Industries generate hazardous waste from mining, petroleum refining, pesticide manufacturing and other chemical production. Households generate hazardous waste as well, including paints and solvents, motor oil, fluorescent lights, aerosol cans, and ammunition.

Water pollution

Water pollution happens when chemicals or dangerous foreign substances are introduced to water, including chemicals, sewage, pesticides and fertilizers from agricultural runoff, or metals like lead or mercury. According to the Environmental Protection Agency (EPA), 44 percent of assessed stream miles, 64 percent of lakes and 30 percent of bay and estuarine areas are not clean enough for fishing and swimming. The EPA also states that the United State's most common contaminants are bacteria, mercury, phosphorus and nitrogen. These come from the most common sources of contaminates, that include agricultural runoff, air deposition, water diversions and channelization of streams.



Pollution Facts & Types of Pollutants

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Water pollution isn't just a problem for the United States. According to [United Nations](#), 783 million people do not have access to clean water and around 2.5 billion do not have access to adequate sanitation. Adequate sanitation helps to keep sewage and other contaminants from entering the water supply.

According to [National Oceanic and Atmospheric Administration \(NOAA\)](#), 80 percent of pollution in marine environment comes from the land through sources like runoff. Water pollution can also severely affect marine life. For example, sewage causes pathogens to grow, while organic and inorganic compounds in water can change the composition of the precious resource. According to the EPA, low levels of dissolved oxygen in the water are also considered a pollutant. Dissolved oxygen is caused by the decomposition of organic materials, such as sewage introduced into the water.

Warming water can also be harmful. The artificial warming of water is called thermal pollution. It can happen when a factory or power plant that is using water to cool its operations ends up discharging hot water. This makes the water hold less oxygen, which can kill fish and wildlife. The sudden change of temperature in the body of water can also kill fish. According to the [University of Georgia](#), it is estimated that around half of the water withdrawn from water systems in the United States each year is used for cooling electric power plants.

"In nearly all cases, 90 percent of this water is returned to its source, where it can raise the water temperature in an area immediately surrounding the water discharge pipe. Depending on water flow, the water temperature quickly returns to ambient temperatures that do not harm fish." Donn Dears, former president of TSAugust, a not for profit corporation organization focused on energy issues, told Live Science. Nutrient pollution, also called eutrophication, is another type of water pollution. It is when nutrients, such as nitrogen, are added into bodies of water. The nutrient works like fertilizer and makes algae grow at excessive rates, according to [NOAA](#). The algae blocks light from other plants. The plants die and their decomposition leads to less oxygen in the water. Less oxygen in the water kills aquatic animals.

Air pollution

The air we breathe has a very exact chemical composition; 99 percent of it is made up of nitrogen, oxygen, water vapor and inert gases. Air pollution occurs when things that aren't normally there are added to the air. A common type of air pollution happens when people release particles into the air from burning fuels. This pollution looks like soot, containing millions of tiny particles, floating in the air.

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Another common type of air pollution is dangerous gases, such as sulfur dioxide, carbon monoxide, nitrogen oxides and chemical vapors. These can take part in further chemical reactions once they are in the atmosphere, creating acid rain and smog. Other sources of air pollution can come from within buildings, such as secondhand smoke.

Finally, air pollution can take the form of greenhouse gases, such as carbon dioxide or sulfur dioxide, which are warming the planet through the greenhouse effect. According to the [EPA](#), the greenhouse effect is when gases absorb the infrared radiation that is released from the Earth, preventing the heat from escaping. This is a natural process that keeps our atmosphere warm. If too many gases are introduced into the atmosphere, though, more heat is trapped and this can make the planet artificially warm, according to Columbia University.

Air pollution kills more than 2 million people each year, according to a study published in the journal of Environmental Research Letters. The effects of air pollution on human health can vary widely depending on the pollutant, according to Hugh Sealy, professor and director of the environmental and occupational health track at the Department of Public Health and Preventive Medicine, St. George's University, St. George's, Grenada. If the pollutant is highly toxic, the effects on health can be widespread and severe. For example, the release of methyl isocyanate gas at Union Carbide plant in Bhopal in 1984 killed over 2,000 people, and over 200,000 suffered respiratory problems. An irritant (e.g. particulates less than 10 micrometers) may cause respiratory illnesses, cardiovascular disease and increases in asthma. "The very young, the old and those with vulnerable immune systems are most at risk from air pollution. The air pollutant may be carcinogenic (e.g. some volatile organic compounds) or biologically active (e.g. some viruses) or radioactive (e.g. radon). Other air pollutants like carbon dioxide have an indirect impact on human health through climate change," Sealy told Live Science.

Noise pollution

Even though humans can't see or smell noise pollution, it still affects the environment. Noise pollution happens when the sound coming from planes, industry or other sources reaches harmful levels. [Research has shown](#) that there are direct links between noise and health, including stress-related illnesses, high blood pressure, speech interference, hearing loss. For example, a study by the WHO Noise Environmental Burden on Disease working group found that noise pollution may contribute to hundreds of thousands of deaths per year by increasing the rates of coronary heart disease. Under the Clean Air Act, the EPA can regulate machine and plane noise.

Pollution Facts & Types of Pollution x

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Underwater noise pollution coming from ships has been shown to upset **whales'** navigation systems and kill other species that depend on the natural underwater world. Noise also makes wild species communicate louder, which can shorten their lifespan.

Light pollution

Most people can't imagine living without the modern convenience of electric lights. For the natural world, though, lights have changed the way that days and nights work. Some consequences of light pollution are:

- Some birds sing at unnatural hours in the presence of artificial light.
- Scientists have determined that long artificial days can affect migration schedules, as they allow for longer feeding times.
- Streetlights can confuse **newly hatched sea turtles** that rely on starlight reflecting off the waves to guide them from the beach to the ocean. They often head in the wrong direction.
- Light pollution, called sky glow, also makes it difficult for astronomers, both professional and amateur, to properly see the stars.
- Plant's flowering and developmental patterns can be entirely disrupted by artificial light.
- According to a study by the **American Geophysical Union**, light pollution could also be making smog worse by destroying nitrate radicals that helps the dispersion of smog.

Turning on so many lights may not be necessary. Research published by **International Journal of Science and Research** estimates that over-illumination wastes about 2 million barrels of oil per day and lighting is responsible for one-fourth of all energy consumption worldwide.

Other pollution facts:

- Americans generate 30 billion foam cups, 220 million tires, and 1.8 billion disposable diapers every year, according to the Green Schools Alliance.
- According to the **WHO**, ambient air pollution contributes to 6.7 percent of all deaths worldwide.

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- The Mississippi River drains the lands of nearly 40 percent of the continental United States. It also carries an estimated 1.5 million metric tons of nitrogen pollution into the Gulf of Mexico each year, resulting in a **dead zone** each summer about the size of New Jersey.
- Pollution in China can **change weather patterns** in the United States. It takes just five days for the jet stream to carry heavy air pollution from China to the United States, where it stops clouds from producing rain and snow.
- About 7 million premature deaths annually linked to air pollution, according to WHO. That is one in eight deaths worldwide.

Source: <http://www.livescience.com/22728-pollution-facts.html>

Additional sources of information to consult:

- Ways to reduce air pollution: <http://lasp.colorado.edu/home/wp-content/uploads/2011/08/Doing-Your-Bit.pdf>

Additional sources for activities related to emotions and pollution:

- Video about emotions: <https://www.youtube.com/watch?v=37w9JjUWN3o>
- Video about air pollution: <https://www.youtube.com/watch?v=sAKyhfxr7s>
- Environmental story and emotions: <http://freestoriesforkids.com/printpdf/452>

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