

Environment Protection - 10-12 years old



Lesson outline

1. Why does the environment need protection? The Tragedy of the Commons
2. Practical impact from our daily lives
3. Activity: thinking of ways to tackle environmental issues

1. Why does the environment need protection? The Tragedy of the Commons

Someone who cares about the environment might be negatively described as a “tree-hugger”. This derogatory noun was coined on environmentalists who hugged trees to prevent other people from cutting them, and who were therefore perceived as annoying. This word reveals how controversial environmental protection can be perceived.

To reflect upon the notion of environmental protection, we will study the economic theory of the Tragedy of the Commons. First, you will do an activity with the whole class, then read a text, and finally, you will answer to a group quiz.

a) Activity to introduce the Tragedy of the Commons

Materials

- large clear zip-lock bag filled with small candies. Count and record the number of candies ahead of time.

Procedure

1. Have the students sit with their chairs in a circle.
2. Display the bag of candies on a chair in the center of the circle, where it is clearly visible to all students.
3. Explain the rules:

- Remain silent during the exercise. Do not consult other students. You can claim any number of candies. Write the number and your name on a scrap of paper.
- I will collect all the claims and count the total number of candies claimed. If the total claimed does not exceed the total number of candies in the bag, each person gets their claim. If the total number of claims exceeds the number of candies in the bag, no one gets any of the candies. (You can say this but decide to distribute the candies afterwards anyway of course)

- 4. Give time to students to think and write down their claim. Collect the claims and count them. Before telling the result to the students, ask the following questions to the group:

- Who thinks that the total number of claims exceeds the number of candies that are in the bag?
- Why do you think so?
- Can some of you tell me how you decided to make your claim?

5. Then, announce the results of the claims versus the number of candies in the bag. Distribute candies accordingly.

6. Debriefing questions to the group:

- What was your thinking in making your “claim”?
- Why did the total claim exceed the total number of M&Ms?
- How did the rules of the game encourage this outcome?
- Who owned the bag of candies?
- How could you establish ownership of the candies? (the answer would be: “by making a claim.”).

7. Make a parallel between the bag of candies and the tragedy of the commons:

Suppose the candies in the bag are fish in an ocean fishery. The decline of fisheries world-wide is a significant problem. Use the following questions to help students use their experience in the candies game to understand the tragedy of the commons in ocean fisheries.

- Who owns the ocean fishery?
- How does a fisherman establish ownership (property right) to fish?
- Suppose the fishermen know that the fish stock is declining and the fishery will collapse.
- How will they change their behavior?
- Do fishermen have an incentive to protect the fish at their individual level?
- How could we change the rules of the game to provide incentives for conservation?

Following this group activity, you can move on to reading the theory of the tragedy of the commons.

b) Article from Encyclopaedia Britannica

Note for the teacher about the adaptation of the text

- Use Sans-serif fonts such as Century Gothic or OpenDyslexia
- Interline 1.5, size of the font 14
- Avoid printing on both sides
- If you know that a student in the class is heavily dyspraxic you could prepare a color coded text (e.g. alternating one blue line, one red line, one green line)

The Tragedy of the Commons

Tragedy of the commons, concept highlighting the conflict between individual and collective rationality.

The idea of the tragedy of the commons was made popular by the American ecologist Garrett Hardin, who used the analogy of ranchers grazing their animals on a common field. When the field is not over capacity, ranchers may graze their animals with few limitations. However, the rational rancher will seek to add livestock, thereby increasing profits. Thinking logically but not collectively, the benefits of adding animals adhere to the rancher alone, while the costs are shared. The tragedy is that ultimately no rancher will be able to graze the field, due to overconsumption. This scenario is played out on a daily basis in numerous instances, having grave consequences for the world's resources.

It is commonly recognized that one of the primary roles of government at the local, state, national, and international levels is to define and manage shared resources. However, there are a number of practical problems associated with this. Management inside clear political boundaries is a relatively straightforward task, but more problematic are resources shared across jurisdictions. For example, neighbouring cities may seek to maximize their benefits by competing for industry, but they may minimize their costs by pushing residents outside their jurisdictions. Another dimension is added at the international level when states are not bound by a common authority and may view restrictions on resource extraction as a threat to their sovereignty. Additional difficulties arise when resources cannot be divided or are interrelated, such as in whale hunting treaties when the fishing of the whales' food source is separately regulated.

The mechanisms to resolve these tragedies are part of a larger set of theories dealing with social dilemmas in fields such as mathematics, economics, sociology, urban planning, and environmental sciences. In these arenas, scholars have identified and structured a number of tentative solutions, such as enclosing the commons by establishing property rights, regulating through government intervention, or developing strategies to trigger collective behaviour. The American political scientist Elinor Ostrom, who was a cowinner of the 2009 Nobel Prize in Economic Sciences, argued that these strategies generally deal with problems of commitment and problems of mutual monitoring.

As the world's population rises and demands more access to resources, the issues associated with the commons become more severe. Ultimately, this may test the role and practicality of nation-states, leading to a redefinition of international governance. Among other important questions to consider is the proper role of supranational governments, such as the United Nations and the World Trade Organization. As resources become more limited, some argue, managing the commons may have neither a technical nor a political solution. This, indeed, may be the ultimate tragedy.

Source: <https://www.britannica.com/science/tragedy-of-the-commons>

c) Questions and exercises

Group quiz: ask the following questions to the students. Make sure they have a written reference to make it easier for them to follow. Ask the question, read the answers and ask students to debate.

1. What does the tragedy of the commons refer to?

- a) Overuse of a natural resource to pursue profitable activities
- b) When humans only think about their self-interest and pollute
- c) When the short-term, positive effects go to the individual, while the long-term, negative effects are spread out to the group
- d) When humans compete for resources with the environment

2. Which of the following are examples of the tragedy of the commons?

- a) Overfishing
- b) Flooding
- c) Air pollution
- d) Virus outbreaks

3. Among these statements, which is an example of a solution to the tragedy of the commons?

- a) Improving knowledge of science among the population
- b) Taxing large corporations
- c) Promoting organic agriculture
- d) Setting limits to fishing activities

2. Practical impacts from our daily life

a) The tale of the hummingbird

In this animated clip from *Dirt! The Movie*, Wangari Maathai tells the tale how something as small as a hummingbird can make a difference. [VIDEO ICON] <https://www.youtube.com/watch?v=IGMW6YWjMxw>

If your students' native language is not English, here is the transcript of the video you can read from, and then show the video.

Transcript from the video “I will be a hummingbird Wangari Maathai”

We are constantly being bombarded by problems that we face and sometimes we can get completely overwhelmed.

The story of the hummingbird is about this huge forest being consumed by a fire. All the animals in the forest come out and they are transfixed as they watch the forest burning and they feel very overwhelmed, very powerless, except this little hummingbird. It says, ‘I’m going to do something about the fire!’ So it flies to the nearest stream and takes a drop of water. It puts it on the fire, and goes up and down, up and down, up and down, as fast as it can.

In the meantime all the other animals, much bigger animals like the elephant with a big trunk that could bring much more water, they are standing there helpless. And they are saying to the hummingbird, ‘What do you think you can do? You are too little. This fire is too big. Your wings are too little and your beak is so small that you can only bring a small drop of water at a time.’

But as they continue to discourage it, it turns to them without wasting any time and it tells them, ‘I am doing the best I can.’

And that to me is what all of us should do. We should always be like a hummingbird. I may be insignificant, but I certainly don’t want to be like the animals watching the planet goes down the drain. I will be a hummingbird, I will do the best I can.

b) Food Loss and Food Waste

After introducing the concept of “doing one’s part”, you can move on to the topic of food waste. Provide the following infographic to your students. Give them enough time to read it through.

After the students have read the infographic, present them the following structure for researching a topic:

- Find important figures
- Describe the issue
- Propose solutions

Then, ask the class about these three aspects regarding food loss and food waste. You can ask if they see any link between the story of the hummingbird and what individuals can do to reduce food loss and food waste.



CUTTING FOOD LOSS AND WASTE REDUCES POVERTY AND HUNGER

Safe and nutritious food that is lost, discarded and wasted can feed some **2 billion people, or more than double the number of the undernourished** in the world.



If we saved **one fourth** of the food currently lost or wasted, we could feed **870 million** hungry people.

ENVIRONMENTAL IMPACT OF FOOD LOSS AND WASTE



Responsible for about **8% of global greenhouse gas (GHG) emissions**



Consumes **21% of all fresh water**



Uses 18% of cropland worldwide



19% of fertilizer consumption

3 EASY WAYS TO CUT FOOD LOSS AND FOOD WASTE



Remember that there are some products you can consume after the "best before" date



Shop local to keep food from travelling unnecessary miles



Home composting can potentially divert up to 150 kg of food waste per household per year

Source of the data: <http://www.fao.org/food-loss-and-food-waste/en/>

3. Activity: thinking about ways to tackle environmental issues

Divide students into groups of 3-4 people. Working in groups effectively supports students' with SLD as they can show their creativity and get support from their classmates on their weaknesses (such as reading or writing). It allows them to share the activity on an equal level.

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Remind the students about the structure presented in the previous part:

1. Find important figures
2. Describe the issue
3. Propose solutions

Then, distributes topics related to environmental issues to each group. The topics could include:

- Bees' decline,
- Air pollution,
- Water pollution,
- Water depletion,
- Global warming,
- Biodiversity loss,
- Forest fires,
- Deforestation,
- Ocean acidification,
- Ozone depletion,
- Etc.

Provide enough time for students to research the topic and prepare a 3 to 5 minutes presentation before the class. You can offer them to create a presentation on a A3 piece of paper. Encourage students to share the presentation or the roles within the team to make sure no one is left behind!