Lesson One: Looting the Earth

About this lesson
The first lesson in this series introduces students to the concept of ‘resource depletion’, different types of resource depletion and the impact of resource depletion through a simulation game. The aim of this lesson is to start students thinking about the way we use our planet’s resources and the long term effects our use has.

Learning Objectives
- Able to explain what resource depletion is and why it happens
- Know different types of resource depletion
- Begin to understand the social, cultural and economic impact of resource depletion

Resources Required
- Handout 1.1: Global Resources
- Handout 1.2: Fishing for a Day
- Handout 1.3: Plenary Quiz

Key Concepts
- Resource Depletion
- Tragedy of the Commons
- Finite

Lesson plan

5 minutes
Start this lesson by asking students to think about their day so far and which products and food they have used/consumed. Now ask them to think about what those things were made of. Have students call out words and note them on the board. Possible answers could be: cotton, wood, metal, rubber, banana, oil, coffee, etc. Finish this section by stating that these materials are called resources and in the following lessons you will be looking at the overuse of natural resources.

25 minutes
This activity is a simulation game to encourage students to think about how resources can become depleted. Use handout 1.2 which explains the rules of the game, in which students pretend to be fishermen and will witness what happens if they catch too many fish. After the game, discuss as a class how students felt when they realized they had depleted their fish stock? How does this activity relate to real life? What other impacts does resource depletion (suggested answer could be: disrupting ocean food chains)?

10 minutes
There are several key terms that have come up throughout the lesson, so check to make sure pupils understand them. Use handout 1.1 to discuss the concepts of sustainability and resource depletion with your students, also using Garrett Hardin’s explanation of the ‘tragedy of the commons’.

15 minutes
Finish this lesson by explaining that overfishing is not the only type of resource depletion. Can students think of any other forms of resource depletion? Have them come up with their own suggestions before dividing them into groups (3 - 4 pupils) and handing out one description from handout 1.1 per group. Ask each group to read their description, come up with at least two examples of where their type of depletion is happening and what their part is in the depletion. Have all the groups feedback to the whole class.

5 minutes
Consolidate learning by going through the short quiz on handout 1.3 about resource depletion.
What is resource depletion?

Resource depletion is a term used to describe natural resources being used up to the point where there is no more of the resource left or usable. The resource is used beyond its sustainable limit. No one takes responsibility for looking after the resource. The resource becomes exhausted and may eventually disappear from our planet altogether. The resource is used beyond its sustainable limit. No one takes responsibility for looking after the resource.

The tragedy of the commons

The ‘tragedy of the commons’ is a term coined by Garrett Hardin in 1968 to describe the misuse of common resources for personal gain. His idea is that if a resource is shared and commonly owned (like fish, land, water), people want to get as much of it out of it as they can, over-exploiting it to get the most profit. The resource is used beyond its sustainable limit. No one takes responsibility for looking after the resource.

The causes behind resource depletion

- Overuse of land for growing crops and grazing animals
- Overuse of resources (e.g., as shown in Looting the Pacific)
- Overreliance on and unnecessary use of resources
- Greed and the drive to claim commons (e.g., as shown in Looting the Pacific)
- Overuse of land for growing crops and grazing animals, leading to soil depletion and erosion
- Overuse of fossil fuels, leading to global warming

What are the causes behind resource depletion?

- Population growth
- Technological and industrial advancement
- Overuse of land for growing crops and grazing animals, leading to soil depletion and erosion
- Overuse of fossil fuels, leading to global warming
- Overuse of resources (e.g., as shown in Looting the Pacific)
- Overreliance on and unnecessary use of resources
- Greed and the drive to claim commons (e.g., as shown in Looting the Pacific)
Types of Resource Depletion:

**Over-mining:**
Extracting minerals from mines at such a rate that the mines are left empty. Most of the minerals that are mined would be seen as non-renewable resources as they take millions of years to form. Oil takes millions of years to be formed and is a finite resource.

**Impact:**
Prices shoot up (like the price for petrol) and eventually alternatives will need to be found.

**Soil Depletion:**

Soil is our most precious resource, a rich base that provides us with food, clean water, and many other benefits. Over time, soil can be depleted through overuse, misuse, and lack of proper management. Soil is unique because it is made up of layers of different materials, each with its own characteristics. Soil erosion can occur when the topsoil is stripped away, leaving the underlying materials exposed to the elements. This can lead to a decrease in agricultural productivity and can also lead to water pollution.

**Impact:**
Soil erosion is a significant problem in many areas of the world, and it can have serious consequences for both people and the environment. Soil is not an infinite resource, and it can take centuries or even thousands of years to regenerate. If soil is not conserved properly, it can be lost forever.

**Hunting Animals:**

Hunting animals for their meat or certain parts of their body (fur, tusks) has been happening for hundreds of years, however the rate of hunting in the last 100 years has already led to the extinction of many species (the dodo bird perhaps one of the most famous). Many more species are at risk of extinction.

**Impact:**
Extinction of animal species, which also upset the balance of ecosystems and food chains.

**Deforestation:**

The cutting down and removal of all or most of the trees in a forested area, without replanting them. Forests still cover about 30 percent of the world’s land area, but areas the size of Panama are lost each and every year.

**Impact:**
Deforestation can erode soils, contribute to desertification and the pollution of waterways, and decrease biodiversity through the destruction of habitats. We are also dependent on trees for our oxygen supply, as forests are a major source of oxygen.

**Overfishing:**

The depletion of fish stocks by fishing at such a rate that the fish species cannot replenish itself. According to the Monterey Bay Aquarium’s Seafood Watch program, 70% of the world’s fish stocks are already fully or over-exploited.

**Impact:**
Extinction of fish species, decrease in biodiversity and upset in the balance of the oceans.

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Handout 1.2 Fishing for a day

What do you need?

- Two different types of small sweets (e.g. peanut M&Ms and plain M&Ms) which is the example we will use
- One small cup or bag and a straw per student
- One medium sized serving bowl and one spoon per group
- Copies of the Log Sheet, one per student
- If you are using sweets, make sure to check allergies in the class!
- Two small cups of bag and a straw per student
- Two different types of small sweets (e.g. peanut M&Ms and plain M&Ms) which is the example we will use
- Make sure every student has the above resources

Setting up:

- Divide your class into groups of 4 - 5 students, and for each group fill one bowl with 20 plain M&Ms and 10 peanut M&Ms. Groups can choose to name themselves after an ocean or fishing waters.
- One medium sized serving bowl and one spoon per group
- One small cup of bag and a straw per student
- The aim is to think about how we use our fish stocks.

The Game:

- Explain the rules of the game:
  a. Each round represents a season of fishing – give about 30 seconds for each round.
  b. Peanut M&Ms represent the large, most valuable fish (e.g. tuna) and plain M&Ms represent the small, normal value fish (e.g. tuna) and plain M&Ms.
  c. In order to survive a round, you must catch at least two fish.
  d. During a round students must hold their hands behind their backs and only use their fishing poles (straws) to catch fish (suck) from the ocean (bowl) and put them in their fishing boat (cup/bag).
  e. The fish that are left in the ocean (bowl) at the end of a round, represent the breeding population.
  f. The fish that are set in the ocean (bowl) at the end of a round, represent the breeding population.
  g. Each student is a fisherman whose livelihood depends on catching fish.

2. Explain the first round. They are all going fishing with the aim of thinking about how we use our fish stocks.

3. Each round represents one new fish being added for each remaining fish.

4. After each round, make sure students record how many fish they have caught on their Log Sheet.

5. In the second round, students can use their hands on the straws to represent new technologies like:

- In the third round, give one fisher from each group a spoon which represents new technologies like:

6. In the third round, give one fisher from each group a spoon which represents new technologies like:

7. When a group runs out of fish, ask them what they are going to do to survive. Fishers can invade other oceans to fish, but don’t tell them this beforehand.

8. Continue fishing until either sustainable fishing is achieved or most groups have depleted their fish stocks.

9. When a group runs out of fish, ask them what they are going to do to survive. Fishers can invade other oceans to fish, but don’t tell them this beforehand.
Handout 12 Log Sheet Fishing for a Day

<table>
<thead>
<tr>
<th>Name of Fisher:</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Fish by the group caught by you</td>
<td>Name of Fish left in the ocean</td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Season 1</td>
<td></td>
</tr>
<tr>
<td>Season 2</td>
<td></td>
</tr>
<tr>
<td>Season 3</td>
<td></td>
</tr>
<tr>
<td>Season 4</td>
<td></td>
</tr>
<tr>
<td>Season 5</td>
<td></td>
</tr>
</tbody>
</table>

Number of fish caught by you
Number of fish caught by the group
Number of fish left in the ocean
Handout 1.3 Plenary Quiz

Run through this multiple choice quiz to test student's knowledge.

1) What may be a reason for resource depletion?
   a. Too many resources
   b. Not enough trees
   c. Too many people
   d. Not enough people

2) Which of these is a renewable resource?
   a. Nuclear power
   b. Coal
   c. Natural gas
   d. Wind energy

3) Which of the following waters can you not consume?
   a. Reservoirs
   b. Ground water
   c. Glaciers
   d. Sea

4) Which of the below resources is not at risk of depletion?
   a. Fertile soil
   b. Wind
   c. Trees
   d. Water

5) Which of the following is a result of deforestation?
   a. Shortage of food
   b. Overpopulation
   c. Soil erosion
   d. Wastage of water

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