

Mind-Mapping Climate Change

Subject Biology | Geography | Economy
Level medium
Duration 50 minutes

EXERCISE

L

Learning Objectives

Competences	Detailed Description
Social and civic competences	The students get to know some general causes and effects of climate change and to distinguish between natural factors and anthropogenic influences and to find information relating to the consequences of these processes.
Sense of initiative and Learning to learn	The sequence of steps of work enables a process orientated form of learning through enquiry. The cards encourage students to work in groups and to create a mind map.
Communication in the mother tongue	The students collect information, interact with others and work on the arguments presented.

Overview

Min.	Topic	Tasks for the pupils	Tasks for the teacher	Material
15	Causes, effects and consequences of climate change	Discussing in four groups, categorizing and linking the cards		5 headline cards, 13 picture cards (resource L 1 + L 2)
25		Pulling cards from the pile. Reading these out, giving them a matching headline and trying to assign them	Hand out the description cards. These are placed down on the table in a pile	Post-Its, 13 description cards (resource L 3)
10		Looking at the classifications of other groups and answering the reflective questions	Ask reflective questions	created mind maps

Detailed Description

STEP 1

Divide the class into four groups. Each group receives the headline and picture cards (resource L1 + L2). Ask them to sort the picture and headline cards into groups and establish a connection with them. Then you are encouraged to develop the discussion thoroughly.

STEP 2

As soon as the pupils have agreed on an effective structure, present them with a water-soluble overhead marker and the description cards (resource N3). These are placed down on the table in a pile. The pupils pull a card from the pile. They read these out, attach a Post-It to the card, give it a matching headline (for example volcanic eruption, or sea level increase) and try to assign them. "Incorrect" classifications for the mind map can be moved. Under Solution (below), you can see a photograph of a possible mind map.

STEP 3

Invite the pupils upon the completion of their mind map to look at the classifications of other groups and then as a plenary ask the following reflective questions:

- How did you fare with the classification?
- Do all mind maps look the same?
- Are the cards clear as to the causes or effects? Think for example of agriculture or farming.
- What role do trees and forests play in climate discussion? Do you know what trees store and what happens when forests are cleared?
- Does climate change affect you? If so, in what way?

Variant

In order to make the classification of pictures easier for the students, you can provide the description cards (resource L3) with the following titles;

Orbit, radiation, volcano eruption, meteorite, 3 x man made greenhouse gas releases (Transport, Agriculture, Industry), sea level increase, drought and extreme temperatures, intensive storms, fall of ice and snow measures, intensive rain and floods, warming and pollution of the ocean.

Background Information

The causes of the observed climate changes are manifold and complicated, many events only last a few years, others hundreds of years, some repeat themselves regularly, others run for thousands or millions of years and many only happen once. As such this exercise makes no claim to completeness. In order to avoid too much complexity, the exercise has been done without a detailed description of continental drift, the earth's axis, forest clearing and ocean currents, or a discussion of the subject of so-called 'tipping points'. The thawing of permafrost counts as well, which would free up lots of the greenhouse gas methane. These tipping points truly play an important role in the climate discussion, but would go beyond the framework of this exercise. International climate research is agreed that our climate changes both due to natural reasons as well as human influences. Since the industrial revolution raw fossil materials have been used intensively, which extended technological possibilities, and enabled the growing movement of goods and services. Population growth and growing urbanisation increased the demands for fossil commodities and the affluence of many people. In so far as global injustice is considered, those who strongly drive the heating of the earth are not those who feel the increased consequences of climate change. Competing interests of the economy, politics and society make the introduction of political climate measures more difficult. In case the students still cannot imagine the natural greenhouse effect, here is a little explanation; the greenhouse effect is a natural phenomenon and is essential for life on our planet. The earth is surrounded by an air cover we call the atmosphere. In this atmosphere there are different gases. Many of these greenhouse gases let sunlight through onto the earth, but also hold back the warmth that is reflected from Earth into the atmosphere. If they didn't do that, it would be much too cold on our planet. Steam is one of the most important gases and stems from the circulation of water on the earth. But carbon dioxide too, which originates from fires and volcanic eruptions, or methane, which rises into the air from marshes, bogs and forests, are all important components of natural greenhouse effects. People influence this natural process increasingly in that they set various greenhouse gases free and thereby strengthen the natural greenhouse effect. The more greenhouse gases are found in the atmosphere, the more heat is retained and the temperature of the Earth rises as a consequence.

3.L CLIMATE CHANGE AND ITS IMPACT GLOBALLY

Mind-Mapping Climate Change

Solution

