

Suitable for children aged 11 to 16

Science

Citizenship | English | Geography | ICT



How Burgers Are Damaging the World

Introduction

Start the lesson by asking the class to list ways in which we can help the environment.

Expect to get answers such as "recycle", "use energy-efficient light bulbs", "cut down on flying" and so on. Perhaps someone in the class will come up with "reduce our meat intake". Before starting the following quiz, it may be a good idea to initiate a class discussion to get students thinking about these issues.



Activity 1: Quiz

Divide the class into teams and tell them that they are going to play **20 Questions – An Environmental Quiz**. Not only should this get them more engaged in the subject matter, it will also give you a chance to assess what they already know. Ask the questions and get the groups to confer and write down what they think. Wait until the quiz is over to review the correct answers. Alternatively, you could give each group the questions and let them work on them at their own pace, going around the class to help as necessary. For younger students, you may wish to adapt the quiz so that all the questions have multiple-choice answers. It could even be prepared as a computer quiz with tick boxes. The winning team could be awarded a prize such as some fair trade, dairy-free chocolate.

Activity 2: Design a Leaflet

Using the answers to the quiz and further internet research, instruct students to design a public information leaflet. The leaflet should help the public understand the devastating environmental impact of meat, which is not widely known. How can the students get the message across most effectively?

Activity 3: Essay

Set the following essay: You can't be a meat-eating environmentalist. Would you agree?

Background

Climate change. The overexploitation of natural resources. Deforestation. The loss of land from inefficient land use. Water and air pollution. Some of the most serious environmental problems of our time are directly linked to meat-eating. These are complex issues, but this lesson tackles them in a way that seeks to engage students and get them thinking.

Learning Objectives

Students should learn the following:

- To consider how individual actions taken at a local level may have positive or negative effects locally and globally
- To identify ways in which they can help the environment
- To select and present information clearly and comprehensively, using appropriate methods

Accompanying Materials

- 20 Questions – An Environmental Quiz (student handout)
- Quiz Answers (teacher sheet)

Extension Ideas

- Some people don't believe climate change is actually happening. Have students research alternative viewpoints.
- Show students the film *Food, Inc.* starring Eric Schlosser and Michael Pollan. Available from Amazon, the film explores America's corporate controlled food industry and its effect on the planet.
- Hold a class discussion titled "Think Globally, Act Locally".
- Ask students to create the "20 Questions" quiz electronically using "forms" in Word (drop-down menus, text fields, check boxes, etc.). They may wish to add further multiple choice options on any questions they found difficult. Students can then take this to another class so that students from that class can complete it on the interactive whiteboard, or students can get friends/family members to complete it outside school.

20 Questions – An Environmental Quiz

1 Approximately how much of the Earth's land surface do you think is used for raising farmed animals?
a) 10 per cent b) 20 per cent c) 30 per cent

2 Order the following three foods according to their environmental footprint ('1' causing the most greenhouse gas emissions and '3' causing the least): cheese, tofu, beef



3 Where are rainforests cut down to make room for cattle grazing and for growing crops to feed animals?

4 Name at least one problem associated with cutting down rainforests.

5 What can soya be used for?

6 What percentage of the world's soya crop is currently fed to animals?

7 Up to how many kilograms of grain can it take to produce 1 kilogram of beef?
a) 4 kilograms
b) 8 kilograms
c) 12 kilograms



8 One method of commercial fishing is called "bottom trawling". Can you describe in one sentence what this activity might involve?

9 Some people argue that raising animals for food is very inefficient. Why?

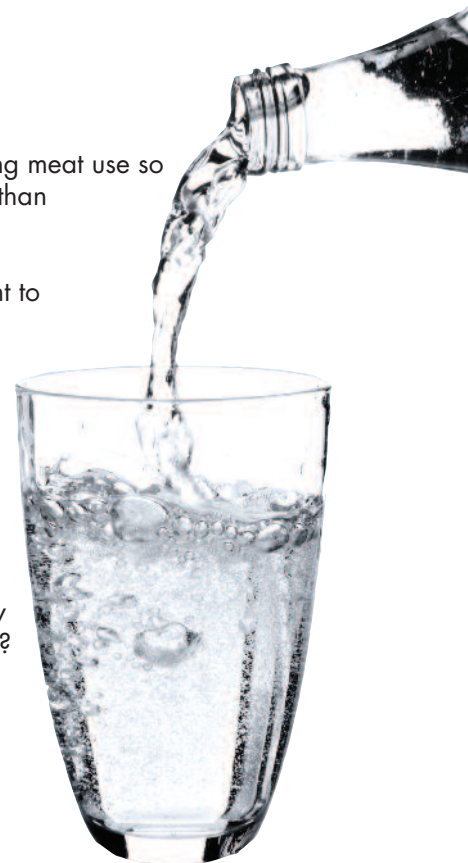
10 Name three ways in which we can conserve energy in our everyday lives.

11 Why does producing meat use so much more energy than producing plant foods?

12 Why is it important to conserve water?

13 Name one way we can all conserve water.

14 The water used to produce one beef burger could be used to produce how many soy burgers?
a) 3
b) 10
c) 15



15 According to a 2013 United Nations report, what percentage of the world's greenhouse-gas emissions does the meat industry produce?

16 CO₂, CH₄ and N₂O are three greenhouse gases. Do you know their full names?

17 Which of the greenhouse gases listed above is the most environmentally devastating?

18 Can you think of one more way in which the meat industry is damaging the environment?

19 Name three ways we can eat more sustainably.

20 Can you name five different countries which have meat free day campaigns?



Quiz Answers

1: c) 30 per cent

30 per cent of all land on Earth is used for livestock and feed production. Source: Food and Agriculture Organisation of the United Nations

2: 1) beef, 2) cheese, 3) tofu

Source: Environmental Working Group

3: South America (Amazon rainforest)

4: Possible answers: Climate change; displacing people from their homes; threatening people's livelihoods (by destroying their sources of fuel, wood, medicinal plants and food); making land infertile; endangering plant and animal species; decreasing the amount of oxygen produced by plants

5: Possible answers: Food for humans (soya milk, soya ice cream, soya yoghurt, tofu, soya mince, veggie burgers, veggie sausages), food for animals

6: 97 per cent. Source: Food and Agriculture Organisation of the United Nations

7: c) 12 kilograms

Source: US Department of Agriculture

8: Possible answer: Bottom trawling literally scrapes the ocean floor clean of life. The largest bottom trawl nets are as wide as the length of a rugby field. Using heavy metal rollers they crush everything in their path.

Source: Greenpeace

9: Because animals eat large quantities of grain, soya beans, oats and corn but produce relatively small amounts of meat, dairy products or eggs.

10: Possible answers: Turn off the lights when we leave a room, turn the TV off, use energy-efficient light bulbs, install roof and wall insulation in our homes

11: Possible answer: There are so many energy-intensive stages involved in producing meat, including growing grain for animal feed, transporting the grain, operating feed mills, operating factory farms, transporting animals to slaughter, operating slaughterhouses, transporting meat to processing plants, operating meat-processing plants, transporting meat to shops and supermarkets and keeping meat refrigerated or frozen.

12: Possible answers: We are all part of a connected system which is fragile and threatened by water shortages. Only 2.8 per cent of the Earth's water is fresh water; it is concentrated in lakes, streams, glaciers, ice caps and atmospheric water vapour. We are using the planet's fresh water faster than it can naturally be replenished. During droughts, the supply of fresh water is reduced.

NB: As Western diets spread to the rest of the world, even nations in Africa and the Middle East which have large amounts of desert land are pouring what little water they have into meat production.

13: Possible answers: Turn the taps off when we brush our teeth; don't turn the washing machine on unless we've got a full load; water our gardens with a watering can instead of a sprinkler; take a shower instead of a bath; fix dripping taps; use the minimum amount of water required when we boil water; reduce our meat intake.

14: c) 15

Source: AE Ercin, MM Aldaya and AY Hoekstra, "The water footprint of soy milk and soy burger and equivalent animal products"

15: 14.5 per cent

Source: Food and Agriculture Organisation of the United Nations

16: CO₂ = carbon dioxide; CH₄ = methane; N₂O = nitrous oxide

17: Nitrous oxide. Nitrous oxide is about 300 times more potent as a greenhouse gas than carbon dioxide. According to the UN, the meat, egg and dairy industries account for a staggering 65 per cent of global nitrous-oxide emissions. And methane is more than 23 times more powerful than carbon dioxide when it comes to trapping heat in our atmosphere.

Source: Food and Agriculture Organisation of the United Nations

18: Possible answers: Animal waste, antibiotics, hormones, fertilizers and pesticides sprayed on crops can all damage river and stream ecosystems and the surrounding environment.

19: Possible answers: Eat less meat and dairy, choose local, seasonal ingredients and use leftovers rather than throwing food away.

20: Possible answers: Argentina, Australia, Belgium, Bolivia, Brazil, Canada, Chile, Colombia, Croatia, Denmark, Estonia, France, Germany, Ghana, Honduras, Hong Kong, Hungary, Indonesia, Iran, Israel, Italy, Jamaica, Japan, Kuwait, Luxembourg, Malaysia, Mexico, Myanmar, Nepal, the Netherlands, New Zealand, Norway, Peru, the Philippines, Portugal, Russia, Slovenia, South Africa, South Korea, Spain, Sweden, Taiwan, Thailand, Togo, Turkey, the United Arab Emirates, UK, USA.