

Climate change

Key Stage 3 and 4

Learning objectives

To describe how using energy can affect a named animal species.

To describe how recycling can help reduce climate change.

Session content

This 40 minute session provides an interesting look at global warming by investigating how an increase in global temperatures could affect some species. Students will work in groups to put together stories about specific species which will help them make the link between our energy consumption and possible extinctions. The session also provides opportunities to discuss how students can reduce the impact they have on the environment.

This session is not an introduction into climate change but builds on lessons they have completed at school on global warming and the greenhouse effect.

Learning outcomes

At the end of this session...

- Most students will be able to describe how energy consumption can cause climate change and how an increase in temperature could affect a named species. They will also be able to describe how recycling reduces the amount of energy used and how this can help reduce climate change.
- Some students may have progressed further and will be able to confidently explain the link between energy use and possible animal extinctions with at least 2 named examples. They will also be able to list ways in which humans can reduce their energy consumption and describe how this can reduce climate change.
- Some students may not have progressed as far and will be able to list 3 or more species that could be affected by climate change and may begin to make simple links between an increase in temperature and the survival of a species.

National Curriculum links

- **KS3 Sci 3.4c** - Human activity and natural processes can lead to changes in the environment.
- **KS3 Sci 4c** - Use real life examples as a basis for finding out about science.
- **KS3 Sci 4e** - Experiencing science outside the school environment.

GCSE specification links

- **AQA Science A, B and biology 11.8** – Increasing levels of gases may be causing global warming by increasing the ‘greenhouse effect’.
- **AQA Applied Science (Double Award) 11.3** – Appreciate the problems of burning fossil fuels (global warming and its effect on climate)
- **Edexcel Science 360**
 - **C1 b 7.3** – Explain how burning of fossil fuels may lead to global warming.
 - **C1 b 7.7** – Explain the importance of recycling waste products such as glass, metal and paper.
- **Edexcel Additional Science B2 4.2** – Investigate the impact of human activity on the environment, including the pollution of air.



- **OCR 21st Century Science A C1** – Understand how burning fossil fuels in power stations and for transport pollutes the atmosphere.
- **OCR Gateway Science B and Biology B B2** – Explain the effect of increasing amounts of pollution e.g. global warming from increasing levels of carbon dioxide.

Other links: GCSE Environmental Science, Entry Level Certification in Science, BTEC Firsts in Applied Science, GCSE Geography

Assessment opportunities

During the session students' can be assessed through questioning, listening to group discussions during sorting activity and group feedback.

Session suitability

The introduction and conclusion to this session are presented verbally and supported with text and images projected onto a screen. It is possible to provide individual materials for any partially sighted students. During the session students are asked to work in 5 mixed ability groups using printed resources and are asked to present some of their findings to the rest of the class.

Additional information

We would like to know in advance if any members of your class have learning, physical or sensory difficulties, allergies or illness which might affect their enjoyment of the session. It is usually possible to tailor the session should your group have any special requirements. Please call 01582 871330 at least 2 weeks in advance of your visit to discuss the best way to do this.

Suggested activities:

Before the visit

- Students should know how the Earth's climate is changing due to the greenhouse effect and how this impacts humans. They may also have looked at how rising temperatures or sea levels may affect ecosystems.

During the visit

- Climate change is not the only way humans are affecting ecosystems and animals. Give students to opportunity to visit some of the endangered species at the Zoo to find out other ways in which humans are impacting the environment. The following animal species have particularly useful information on why these species are endangered and what ZSL are doing to conserve them:
 - Chimpanzees
 - White rhino
 - Greater one-horned rhino
 - Lions

After the visit

- Please complete a feedback sheet (available at the session or from our website) to help improve the education provision at Whipsnade Zoo.
- Students could write an article about climate change including how it is caused and the impacts it could have on humans and other animal species. The article could give advice on how every person can help reduce climate change and explain how even little things like recycling all help.
- Students should be able to apply the knowledge gained during the session to a different context e.g.
 - Burning the rainforest down in order to clear land for farming is obviously going to have an impact on the animals that live in the rainforest but how could this type of deforestation affect other animal species e.g. polar bears. Ask the students to describe the link between deforestation and the possible extinction of the polar bear.

Useful websites

ZSL Whipsnade Zoo conservation programmes – www.zsl.org/conservation

BBC Bitesize revision site - www.bbc.co.uk/schools/revision

Oceanography in the 21st Century – An Online Textbook -

<http://oceanworld.tamu.edu/resources/oceanography-book/radiationbalance.htm>

The University Corporation for Atmospheric Research-<http://www.ucar.edu/learn/1.htm>

Waste online home page - www.wasteonline.org.uk/index.aspx

BIAZA website - www.biaza.org.uk/public/pages/publications/index.asp