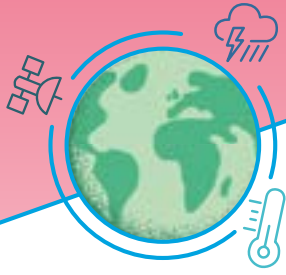


Teacher Guidance



What can we see from space?

Introduction

This lesson has been designed to support the UK Space Agency's Logo Lift Off competition, which is the search for a logo that will go on the first ever rockets to be launched from the UK in 2022. The competition also aims to help engage young people with STEAM subject matter, through the lens of space, satellites, and climate change. Students will need to show understanding of the role of small satellites in informing solutions to climate change in their entries to the Logo Lift Off competition.

In this lesson students will use satellite images to investigate the devastating effects of climate change. They will look at a variety of satellite images to see the impact on the earth and will research further to investigate the causes and consequences of climate change. Older or more able children will also conduct their own research, and present their findings in interesting and creative ways, encouraging creative thinking around how information can be shared with others.

Preparation

This lesson is designed to be run in the classroom. Facilitators should familiarise themselves with the resources required for the session (see **Resources** section in this guidance). They should print necessary sheets, have research material and equipment available for students i.e. internet access or a library collection of books. Be prepared to put children into groups of mixed ability and levels for the research portion of the session. Younger pupils will need support for the research section, or this can be scaled back.



Learning Outcomes

- I can use satellite images to identify the impact of climate change issues
- I can use research material to enquire about climate change issues
- I can share and present my findings

Timings and setting

30-60 minute class-based lesson, depending on learner ability. Optional experiments that can be done at home in addition.

Resources

1. Photo Collection
2. Satellite Image and Information Sheets
3. Research Planning Sheet
4. Ice Caps Experiment Sheet



Teacher Guidance



Lesson Plan



Icebreaker

- **Use Photo Collection (Resource 1)** to look at the picture of the person as a baby and compare it to the picture of that same person as an adult.
- Discuss what the students notice. Ask what has changed? Ask what hasn't changed?
- Reinforce and connect the idea that images can show change over time but in this case, this is a natural and normal change.
- Then ask the students what satellite images are and how they are different from other kinds of images, like photos.
- If internet access is possible, use Google Maps to find your school's location. Switch to 'satellite view' on the map and ask the students to explain what the differences are between the original Google Map image and the satellite image they see now.
- Explain and discuss why satellite images are helpful (e.g. like photos, they can track changes over time, we can see a detailed image of an area etc.)

Curriculum links

England: Science, Geography, Computing, English, PSHE

Scotland: Sciences, Technologies, Languages

Wales: Humanities, Languages, Literacy and Communication, Science and Technology

Northern Ireland: The World Around Us, Language and Literacy

Differentiation

If working with younger children (under 7) you should:

- Work as a whole class - exploring one or two main climate change issues
- Match the satellite image to the climate change issue only – do not complete the research
- Give the students a specific website to use for their research as well as guiding questions to look for the answers to

Tell the children that they are now going to do a research project which will look into a number of different climate change issues with a specific focus on the satellite images that allow us to see and track the changes caused over time.

Let students know that in 2022, small satellites like those that took the images they are looking at will be launched from the UK for the first time. There is a competition called Logo Lift Off to find a logo to go on rockets that launch from the UK in 2022; this activity is going to help them learn what they need to know to enter! Watch [this video](#) to find out even more about Logo Lift Off and get your students excited about entering.

Teacher Guidance



Lesson Plan

Main Activity

- Use **Satellite Images and Information (Resource 2)**
- Put the children in groups and give each group one of the sheets from the Resource 2 pack.
- Ask each group to review their given satellite image and information sheet and discuss using some of the initial conversation prompts on the information sheet.
- Encourage students to share their initial findings and thoughts with the class.
- Optional for older/more able groups: Further investigation: Group Research
- Provide students with further opportunity to research their climate change issue to present to the class.
- Children use the **Research Planning Sheet (Resource 3)** to collate ideas and information. Encourage the use of satellite images i.e. Ask them to find two images to compare the same area and how it's changed over time?

Extension

- Students can work in pairs instead of groups
- Use search engines appropriately, inputting keywords to source information and images from a range of websites and sources (suggestions provided in Resources)
- Try to find a series of images over a time period linked to their given climate change issue.
- Challenge: Can you find instances of improvement over time? (e.g. CO2 emissions during the COVID pandemic) What does this mean? How could we use this information to help initiate change?

From Lesson to Logo

Recap the purpose of this lesson: to use satellite imaging to investigate the impact of climate change. Remind children about entering the Logo Lift Off design competition. Ask students some of the following questions to help them link the learning done with the logo they will need to design to enter:

- What images or symbols can you think of that describe or represent what you've learnt today?
- What have you learnt today that you might like to include as a logo design or symbol in your Logo Lift Off entry?

Taking it further/Try this at home:

- Research can be done at home and then fed back to the rest of the group
- Climate Change Experiment Time:
 - Complete **Ice Caps Experiment (Resource 4)**

Resource pack:

Research website suggestions:

Here are some websites to help kick start your classes research projects.

https://www.esa.int/ESA_Multimedia/Images

<https://zoom.earth/>

<https://scihub.copernicus.eu/>

<https://search.earthdata.nasa.gov/search>