**Unit planning guidance**

***Enquiry question: What is climate change?***

**Unit context:**

This unit is designed to expand pupil’s knowledge of human and physical geography. In preparation for beginning this unit and to excite pupils about the content, activities from the Discovery box can be sent home. The unit begins with an exploration of land use. Pupils will gain an understanding of how climate zones effect how land is used and start to gain an understanding that if climate change occurs there are serious consequences. Pupils will have some prior knowledge of land use from the unit in Year 3. As the unit progresses two more global challenges are investigated. Pupils learn about climate change—gaining an understanding of the greenhouse effect and how this causes global warming. They will also research the effects of climate change and what individuals are doing to try and make a change. The unit takes pupils on a journey as global citizens, outlining the way we use our planet, the challenges and potential consequences we face, and ultimately the responsibility we have.

At the end of the unit, pupils will be encouraged to answer the enquiry question: *What is climate change?*

**Links to previous and future learning**

*The knowledge from previous and future units which closely link with this current unit are shown below. For more information about how this unit fits into the wider sequence of learning, please see the Geography progression document.*

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| **Year 3** | **Year 4** |
| **Climate and Climate Zones*** Climate is the average or long-term weather of a place.
* Rainfall can be measured and recorded using a rain gauge.
* Temperature can be measured to see how hot or cold it is, using a thermometer.
* Places near the Equator are hot and wet.
* Places get colder as you move from the Tropics to the Poles.
* Polar climates are the coldest. There is very little rain in a polar, climate zone.
* Subpolar zones are slightly warmer than polar zones, and have more rain, although still very little.
* Arid climate zones are the hottest on Earth. There is very little rain in an arid climate zone.
* Temperate climate zones are located north or south of the subpolar zones.
* Mediterranean zones have two seasons, and dry, very warm summers, and cool wet winters.
* Tropical climate zones are located north and south of the equatorial climate zones and have two distinct seasons, a rainy reason and a dry season.
* Equatorial climate zones are located along the Equator and are hot and humid all year round.
* Weather varies across the UK, as well as across the world. Weather from different areas can be compared.
 | **Amazon: Rivers and rainforests*** South America is a continent in the Southern Hemisphere.
* Mainland South America is made up of 12 different independent countries and 1 territory.
* There are different industries across South America, with countries exporting a range of different products.
* A tropical rainforest is an area with tall evergreen trees.
* Tropical Rainforests have hot temperatures and high amounts of rainfall all year round.
* Tropical Rainforests are located along the equator – in the equatorial climate zone.
* The Amazon Rainforest is the largest tropical rainforest in the world.
* Tropical Rainforests have four different layers: emergent layer, canopy layer, understory layer, and forest floor.
* Each layer has certain characteristics, these depend on differing amounts of sunlight and rainfall.
* Tropical rainforests are home to many animals. Animals have adapted to live in the different layers of the rainforest.
* The Amazon Rainforest is home to many different indigenous people and their settlements.
* Some tribes are known to us and some are still uncontacted.
* The Yanomami tribe is the largest in the Amazon Rainforest.
* The Amazon Rainforest is the largest remaining rainforest.
* Large areas of the rainforest are being cut down to allow a different land use.
* Many species of plants and animals, as well as indigenous people are losing their homes.
* A river is a body of water that flows across the land.
* A river will have a source, a course, and a mouth.
* Rivers can be different lengths and carry different volumes of water.
* The water cycle is an important part of making sure there is water in our rivers.
* Rivers cause erosion of the land.
* A river deposits the rock and soil it has eroded.
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**Important Notes:**

Fieldwork is not outlined in this plan—teachers should look at opportunities and weave through depending on their own locality.

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| **Unit overview** |
|  | **Key knowledge** | **Key vocabulary** |
| **Lesson 1*****How does the climate of a place influence how its land is used?*** | * Climate is the average weather conditions in a place for long period of time. (30 years or more)
* There are approximately five types of climate: subpolar, temperate, Mediterranean, arid, and tropical.
* There are three main types of land we use: agricultural land, forest land, and urban land.
* Climate changes such as rises in temperature and increases in rainfall can affect how we use land.
 | * agricultural land
* climate change
* climate zones
* forest land
* urban land
 |
| **Lesson 2*****What is climate change?*** | * Climate change is a long-term change of temperature and weather patterns in a place.
* Climate change can refer to a particular location or the planet as a whole.
* The more greenhouse gases there are in the atmosphere the more the heat gets trapped, which increases Earth’s temperature.
* The rise in the planet’s temperature is often referred to as global warming.
 | * atmosphere
* greenhouse effect
* greenhouse gases
* radiation
 |
| **Lesson 3*****What causes global warming?*** | * Climate change is a long-term alteration of temperature and typical weather patterns in a place.
* The rise in the planet’s temperature is often referred to as global warming.
* Burning fossil fuels produces energy, but also releases greenhouse gases.
 | * carbon dioxide
* deforestation
* fossil fuels
* industrial revolution
* methane
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| **Lesson 4*****What are the effects of climate change?*** | * The consequences of global warming will affect billions of people, all around the world.
* The effects of global warming include glaciers and polar ice melting, sea levels rising, patterns of rainfall changing, producing floods or droughts, and habitats changing.
 | * drought
* flood
* glacier
* habitat
* polar
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| **Lesson 5*****How does climate change affect land use?*** | * Within different climate zones, certain crops and vegetation grow.
* Climate change may cause weather patterns to be less predictable.
* Unexpected weather patterns can make it difficult to maintain and grow crops in areas that rely on farming.
* Farming depends on regular temperature and rainfall levels.
 | * infestation
* rainfall
* temperature
* vegetation
* waterlogged
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| **Lesson 6*****How can we make a difference?*** | * A global citizen is someone who is aware of the wider world and understands their place in it.
* There are simple steps each of us can do to reduce our greenhouse emissions and our carbon footprint.
* The Paris Agreement is an international treaty which aims to reduce the emissions that different countries produce and prevent the global temperature from increasing further.
* Greta Thunberg is an environmentalist activist known for her activism around the climate crisis.
 | * activist
* emissions
* environmentalist
* global citizen
* treaty
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Further to the standard lesson resources, additional resources are provided including a knowledge organiser, posters, and a discovery box containing fantastic cross-curricular activities.

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| Lesson question | Key knowledge | Learning resources | Key vocabulary |
| Lesson 1*How does the climate of a place influence how its land is used?* | * Climate is the average weather conditions in a place for long period of time. (30 years or more)
* There are approximately five types of climate: subpolar, temperate, Mediterranean, arid, and tropical.
* There are three main types of land we use: agricultural land, forest land, and urban land.
* Climate changes such as rises in temperature and increases in rainfall can affect how we use land.
 | Lesson 1 teaching slidesPupil workbookAtlasesAccess to Google MapsAccess to online search engine | * agricultural land
* climate change
* climate zones
* forest land
* urban land
 |
| Outcomes / assessment | **Disciplinary concept/s** | **Key term** | **Key takeaway** |
| Pupil workbookResponse to enquiry question | DC1: Physical world | **Land use** is the function of land—what it is used for. | The climate influences how land is used in different parts of the world. Changes to climate affect how land is used. |
| Teacher Notes:* In this lesson, pupils are learning to identify how climate zones affect land use around the world.
* The following is a great website to find out about each country: [www.indexmundi.com/factbook/countries](http://www.indexmundi.com/factbook/countries)
* Introduce the enquiry question ‘What is climate change?’.

Existing knowledge: Gauge pupils’ current knowledge of climate change. Pupils discuss what they already know about climate change and what they would like to find out.* Share the main lesson question ‘How does the climate of a place influence how its land is used?’, learning journey and specific lesson statement, key term, key knowledge, and key vocabulary.
* Key term: Land use is the function of land—what it is used for.
* Discuss any key vocabulary that the pupils already know and the definitions of any new words.
* Talk task: In talk partners, pupils discuss why they think there are different climates around the world. Teachers could also use this opportunity to assess what prior knowledge they have.
* Read: As a class, read ‘Climate versus weather’ and discuss the main similarities and differences between the five climate zones. NB There are various names for some of the same climate types, so don’t be alarmed if a pupil mentions another.
* Retrieval: Pupils answer the questions based on what they have read.
* Investigation: Ask pupils to discuss with pairs or groups before locating and labelling the following countries on the world map—Saudi Arabia, Japan, Peru, Australia, and Greenland. NB This map doesn’t mark the exact boundaries of the countries, so pupils could use the atlases to draw the boundary as well as write the name. Draw pupils’ attention to the fact that one country is not necessarily one climate zone. Ask: *Which climate zone is each country in? What climate would each experience?* If you have time, you could research about local climate zones and discuss these with the pupils.
* Read: As a class, read ‘How is the land used around the world?’ and explain that they will explore five countries and the percentage of types of land use they use.
* Retrieval: Pupils answer questions about the land use and climate zones in five different countries and study the percentage breakdown of land use. N.B. Explain that the percentage statistics are problematic for countries like Greenland—this is a good one to discuss in class as it would assume that Greenland could be 99.4% industrial/urban where in actual fact it is more likely to be barren/waste land due to the polar climate.
* Retrieval: Pupils answer the questions based on what they have read.

Learning review: Talk partners tell each other an answer to the lesson question and write three key points to summarise what they have learned. Add further review questions if you wish to. Pupils should write an independent response to the main lesson question in their ‘Knowledge record’. |

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| Lesson question | Key knowledge | Learning resources | Key vocabulary |
| Lesson 2*What is climate change?* | * Climate change is a long-term change of temperature and weather patterns in a place.
* Climate change can refer to a particular location or the planet as a whole.
* The more greenhouse gases there are in the atmosphere the more the heat gets trapped, which increases Earth’s temperature.
* The rise in the planet’s temperature is often referred to as global warming.
 | Lesson 2 teaching slides Pupil workbookAtlases | * atmosphere
* greenhouse effect
* greenhouse gases
* radiation
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| Outcomes / assessment | **Disciplinary concept/s** | **Key term** | **Key takeaway** |
| Pupil workbookResponse to enquiry question | DC1: Physical world | **Global warming** describes the rise in the average temperature of Earth’s air and oceans. | Climate change is happening and affects people and places around the world differently. |
| Teacher Notes:* In this lesson, pupils are learning to understand what climate change is and describe the role that global warming plays in climate change.
* Knowledge quiz 2.1: Pupils complete the quiz to assess knowledge from the previous lesson. They write their score on the Assessment Quiz scores page.
* Revisit the enquiry question ‘What is climate change?’.
* Existing knowledge: Gauge pupils’ current knowledge of climate change by asking *‘What do you think would happen if Earth got hotter and hotter?*’.
* Share the main lesson question ‘What is climate change?’, learning journey and specific lesson statement, key term, key knowledge, and key vocabulary.
* Key term: Global warming describes the rise in the average temperature of Earth’s air and oceans.
* Discuss any key vocabulary that the pupils already know and the definitions of any new words.
* Investigation: Pupils spend some time looking at the image and discussing with partners or groups. Then ask them to write what questions they have about climate change, and the image. Then ask pupils to write what they already know and what they can infer from the image.
* Investigation: Ask pupils to look at the chart and explain that it shows typical temperature patterns in Europe from 1901 to 2021. It shows how these patterns have changed over time. Ask pupils to write in their own words how the temperature patterns depicted in the chart have changed over time.
* Read: As a class, read ‘What is climate change?’ and encourage them to discuss what they have read in pairs.
* Write: Ask pupils to write what climate change is in their own words.
* Read: Share information on what causes climate change, which goes into detail about the greenhouse effect.
* Retrieval: Pupils will answer retrieval questions using the information. Also, ask pupils to draw a labelled diagram to explain global warming. You may wish to model this on the board or offer some starting points with this. This may be a good time to watch this National Geographic clip if you have time: <https://www.youtube.com/watch?v=G4H1N_yXBiA>. Before pupils draw their diagrams, remind them of the difference between climate change and global warming, and how these terms are not the same thing. (Global warming is the rise in global temperatures due mainly to the increase of greenhouse gases in the atmosphere. Climate change is the increasing changes in climate over a long period of time (precipitation, temperature, and wind patterns).)

Learning review: Talk partners tell each other an answer to the lesson question and write three key points to summarise what they have learned. Add further review questions if you wish to. Pupils should write an independent response to the main lesson question in their ‘Knowledge record’. |

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| Lesson question | Key knowledge | Learning resources | Key vocabulary |
| Lesson 3*What causes global warming?* | * Climate change is a long-term alteration of temperature and typical weather patterns in a place.
* The rise in the planet’s temperature is often referred to as global warming.
* Burning fossil fuels produces energy, but also releases greenhouse gases.
 | Lesson 3 teaching slides Pupil workbookAtlases | * carbon dioxide
* deforestation
* fossil fuels
* industrial revolution
* methane
 |
| Outcomes / assessment | **Disciplinary concept/s** | **Key term** | **Key takeaway** |
| Pupil workbookResponse to enquiry question | DC1: Physical world | **Greenhouse gases** that are causing climate change include carbon dioxide and methane. | The activities of people are contributing to the rise in greenhouse gases that contribute to global warming. |
| Teacher Notes:* In this lesson, pupils are learning about human activities that contribute to the emission of greenhouse gases.
* Knowledge quiz 2.2: Pupils complete the quiz to assess knowledge from the previous lesson. They write their score on the Assessment Quiz scores page.
* Revisit the enquiry question ‘What is climate change?’.
* Existing knowledge: Gauge pupils’ current knowledge of global warming by asking *‘How is Earth being affected by global warming?*’. Ask them to use evidence from their prior learning when answering this question.
* Share the main lesson question ‘What causes global warming?’, learning journey and specific lesson statement, key term, key knowledge, and key vocabulary.
* Key term: Greenhouse gases that are causing climate change include carbon dioxide and methane.
* Discuss any key vocabulary that the pupils already know and the definitions of any new words.
* Read: As a class, read ‘Global warming’ and encourage them to discuss what they have read in pairs.
* Write: Look at the graph as a class and explain that it shows Earth’s average temperature from 1860–2000. Ask pupils to write a paragraph to describe what the graph is showing. Encourage them to refer to specific years and the temperature data in their answers, as well as using terms such as increase, decrease, steep, gentle, and so on.
* Read: As a class, read ‘What is causing global warming?’ and ask if there is anything in this text that surprises them. Why?
* Group task: Pupils use what they have just read to fill in the table summarising the human activities that contribute to the emissions of greenhouse gases, and which gases are emitted by which activity. Then ask them to explain in their own words how human activity is causing global warming. They could draw pictures or diagrams to help with their explanations too.

Learning review: Talk partners tell each other an answer to the lesson question and write three key points to summarise what they have learned. Add further review questions if you wish to. Pupils should write an independent response to the main lesson question in their ‘Knowledge record’. |

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| Lesson question | Key knowledge | Learning resources | Key vocabulary |
| Lesson 4*What are the effects of climate change?* | * The consequences of global warming will affect billions of people, all around the world.
* The effects of global warming include glaciers and polar ice melting, sea levels rising, patterns of rainfall changing, producing floods or droughts, and habitats changing.
 | Lesson 4 teaching slides Pupil workbookAtlases | * drought
* flood
* glacier
* habitat
* polar
 |
| Outcomes / assessment | **Disciplinary concept/s** | **Key term** | **Key takeaway** |
| Pupil workbookResponse to enquiry question | DC3: Interdependence | **Sea levels** are the measure of the average height of a sea’s surface. | Global warming will affect people around the world. Negative consequences of global warming include sea level rises, polar ice sheets melting |
| Teacher Notes:* In this lesson, pupils are learning to describe the effects of global warming on planet Earth.
* Knowledge quiz 2.3: Pupils complete the quiz to assess knowledge from the previous lesson. They write their score on the Assessment Quiz scores page.
* Revisit the enquiry question ‘What is climate change?’.
* Existing knowledge: Gauge pupils’ current knowledge of global warming by asking *‘What do you think are the main consequences of global warming?*’. Ask pupils in groups to rank these consequences and try to justify their chosen order. Have different groups ranked the consequences differently? Why?
* Share the main lesson question ‘What are the effects of climate change?’, learning journey and specific lesson statement, key term, key knowledge, and key vocabulary.
* Key term: Sea levels are the measure of the average height of a sea’s surface.
* Discuss any key vocabulary that the pupils already know and the definitions of any new words.
* Read: As a class, read the short text about the effects of global warming, and ask pupils to discuss how these effects would impact on human lives, as well as wildlife.
* Investigation: Explain to the class that they are going to carry out an investigation into one of the effects of global warming—rising sea levels. Can any pupils think of an experiment they could carry out to investigate this?
* Explain the investigation to the class using the five steps and ask pupils to carry out the experiment. They should record the measurements from their experiment in the tables and answer the questions.
* As a class, read the text explaining what this investigation demonstrates. Did the pupils’ investigations demonstrate this as well? Why or why not? Use this as an opportunity to talk about why it is important to make scientific experiments and investigations as accurate and repeatable as possible.
* Write: Ask pupils to write a paragraph explaining what their investigations has shown them about the effects of global warming.

Learning review: Talk partners tell each other an answer to the lesson question and write three key points to summarise what they have learned. Add further review questions if you wish to. Pupils should write an independent response to the main lesson question in their ‘Knowledge record’. |

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| Lesson question | Key knowledge | Learning resources | Key vocabulary |
| Lesson 5*How does climate change affect land use?* | * Within different climate zones, certain crops and vegetation grow.
* Climate change may cause weather patterns to be less predictable.
* Unexpected weather patterns can make it difficult to maintain and grow crops in areas that rely on farming.
* Farming depends on regular temperature and rainfall levels.
 | Lesson 5 teaching slides Pupil workbookAtlases | * infestation
* rainfall
* temperature
* vegetation
* waterlogged
 |
| Outcomes / assessment | **Disciplinary concept/s** | **Key term** | **Key takeaway** |
| Pupil workbookResponse to enquiry question | DC3: Interdependence | **Agriculture** is the practice of farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food, wool, and other products. | Climate change will impact on agriculture around the world. This will have consequences for people and environments. |
| Teacher Notes:* In this lesson, pupils are learning to identify the impact of climate change on agriculture.
* Knowledge quiz 2.4: Pupils complete the quiz to assess knowledge from the previous lesson. They write their score on the Assessment Quiz scores page.
* Revisit the enquiry question ‘What is climate change?’.
* Existing knowledge: Encourage pupils to think of their prior learning (particularly from Lesson 1) by posing the questions ‘What do you think are the effects of climate change?’ and ‘Do different places on Earth experience different effects of climate change?’ Ask them to think about factors of climate change such as changes in precipitation and temperature, and how these might affect different countries in different ways.
* Share the main lesson question ‘How does climate change affect land use?’, learning journey and specific lesson statement, key term, key knowledge, and key vocabulary.
* Key term: Agriculture is the practice of farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food, wool, and other products.
* Discuss any key vocabulary that the pupils already know and the definitions of any new words. Pupils can use their knowledge organisers to help.
* Read: As a class, read ‘Climate zones and land use’ and ‘How do the climate zones affect the land use around the world?’.
* Group task: Ask pupils to complete the table to describe how the three main climate issues can affect land use. Encourage them to use information from the text they have just read.
* Investigation: Explain to the class that they are going to research the land use of a country in a particular climate zone. Give the class access to online search engines and explain that they should use the headings and questions to scaffold their research (country chosen, climate zone of their chosen country, how the land is used, the main crops that are grown there, and a prediction of how climate change may affect this in the future). You could also use the following websites to help pupils with their research: <https://kids.nationalgeographic.com/geography/countries> and <https://www.kids-world-travel-guide.com/>.

Learning review: Talk partners tell each other an answer to the lesson question and write three key points to summarise what they have learned. Add further review questions if you wish to. Pupils should write an independent response to the main lesson question in their ‘Knowledge record’. |

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| Lesson question | Key knowledge | Learning resources | Key vocabulary |
| Lesson 6*How can we make a difference?* | * A global citizen is someone who is aware of the wider world and understands their place in it.
* There are simple steps each of us can do to reduce our greenhouse emissions and our carbon footprint.
* The Paris Agreement is an international treaty which aims to reduce the emissions that different countries produce and prevent the global temperature from increasing further.
* Greta Thunberg is an environmentalist activist known for her activism around the climate crisis.
 | Lesson 5 teaching slides Pupil workbookAtlases | * activist
* emissions
* environmentalist
* global citizen
* treaty
 |
| Outcomes / assessment | **Disciplinary concept/s** | **Key term** | **Key takeaway** |
| Pupil workbookResponse to enquiry question | DC6: Young people’s lives | Your **carbon footprint** is the amount of carbon dioxide released into the atmosphere because of your own energy needs. | As responsible global citizens we can all limit the impact we have on the environment. Environmentalists actively campaign to raise awareness of this and international agreements are reached to limited people’s impact on the planet.  |
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| Teacher Notes:* In this lesson, pupils are learning how to become global citizens and the steps we can take to reduce our carbon footprint.
* Knowledge quiz 2.5: Pupils complete the quiz to assess knowledge from the previous lesson. They write their score on the Assessment Quiz scores page.
* Revisit the enquiry question ‘What is climate change?’.
* Share the main lesson question ‘How can we make a difference?’, learning journey and specific lesson statement, key term, key knowledge, and key vocabulary.
* Key term: Your carbon footprint is the amount of carbon dioxide released into the atmosphere because of your own energy needs.
* Discuss any key vocabulary that the pupils already know and the definitions of any new words.
* Read: As a class, read the text about what a global citizen is. Ask: Have you heard of global citizenship before? What does it mean to you? Ask pupils to discuss these questions in pairs. Then draw their attention to the image. Ask: *How do you think these people might be acting as global citizens?* They may know it is a protest or that the signs show they want to change the world in some way.
* Write: As a class, discuss and then write a global citizen pledge to try and reduce your personal global footprint.
* Read: Read about the Paris Agreement and how this treaty aims to reduce gas emission.
* Retrieval: Pupils answer the questions based on what they have read.
* Read: Share information on how people have made a change, discussing Greta Thunberg as an example.
* Retrieval: Pupils will answer retrieval questions using the information.
* Write: Ask the class to discuss what a global citizen pledge is, and how a pledge could help to combat climate change. Pupils write their own global citizen pledge to raise awareness of climate change.

Learning review: Talk partners tell each other an answer to the lesson question and write three key points to summarise what they have learned. Add further review questions if you wish to. Pupils should write an independent response to the main lesson question in their ‘Knowledge record’.Knowledge quiz 2.6: Pupils complete the quiz to assess their knowledge from this last lesson.Enquiry question: Pupils should now respond to the enquiry question: ‘What is climate change?’. They should use their completed knowledge records to help them. This could be in the form of an extended piece of writing, an oral presentation, an annotated poster, or another format of your choice which best suits your class. For further information to help support pupils to answer the enquiry question, please refer to the Enquiry Question Teacher Support document. |
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