

# GSHPA

## Teaching Scheme of Work

### Key Stage 2

### Year 5



## The National Ground Source Heat Pump Association has compiled a Scheme of Work for Schools entitled

### 'Our Earth -Use It; Don't Abuse It.'

It is aimed at teaching pupils about the importance of using the earth as a renewable energy source - and not abusing it using non-renewable energy sources.

The collective schemes are aimed at school age pupils in Key Stages 1,2,3 and 4.

The rationale for selecting Year 5 was to avoid disruption due to SATS in Year 6 in the areas of the UK where SATS are still in place.

This is a 6 Lesson Programme of Work which can easily be expanded into other subject areas.

**This Scheme of Work focuses on the following aspects of the  
English National Curriculum Guidance.  
It can be adapted to the Welsh and Scottish Curriculum Guidance.**

**Science 3**

**Materials, their Properties & The Earth.**

**Scientific and Technological Development in Everyday Life**

**Reversible and Irreversible Changes**

**Benefits and Drawbacks of the Use of Fossil Fuels**

**Earth is a source of limited resources**

**Formation and Use of rocks in Renewable Energy**

**Geography**

**The change in climate**

**How human & physical processes interact to influence and change landscapes**

**Environments and the Climate**

**How human activity relies on effective functioning of natural systems**

**The distribution of natural resources**

**How environments can change and that this can sometimes pose dangers to living things**

**Citizenship**

**The ways in which citizens work together to improve their communities.**

**The different ways in which a citizen can contribute to the improvement of his or her community.**

**It is not exhaustive and there are many more cross curricular links involved.**

## **Guidance on following the scheme of work for non-teachers:**

- GSHPA** Each session can be taught within the geography or science national curriculum.
- GSHPA** This is a 6 lesson Programme of Study (POS) which, on average, is a half-term.
- GSHPA** Expected Learning Outcomes – this is what you want the children to develop understanding of within the lesson.
- GSHPA** Method / Activity – this is how the teacher will divide the lesson time of an hour.
- GSHPA** Suggested Resources – these are resources suggested to the teacher that will allow him/her to deliver the lesson. These are suggestions and staff may decide they have something more suitable for them. Follow links and some are within the attachments.
- GSHPA** Differentiation – the main activity is the ‘core’ lesson aimed at the majority of the pupils in the group. The ‘support’ suggestions are for the less able pupils and the ‘extension’ suggestions are for the more able once they have completed the core activities.
- GSHPA** Assessment Opportunities – teachers may choose to do a ‘teacher assessment’ on the levels the individual pupils are working within based on the area mentioned from within the lesson. They may also elect for pupils to carry out a self-assessment.
- GSHPA** National Curriculum Level Descriptors – these are what levels the pupils are aiming to be working within at Key Stage 2 / Year 5. This Scheme of Work is aimed at Levels 3 – 5.
- As guidance for you:
- Level 2 is the average level for when pupils leave Year 2, or infants. (Key Stage 1 – ages 3 – 7 years)
- Level 4 is the average level for when pupils leave Year 6, or juniors. (Key Stage 2 – ages 7 – 11 years)
- GSHPA** Homework Opportunities – these are ideas and suggestions for homework activities to extend the lesson.
- GSHPA** Key Words / Phrases – these are subject specific to the lesson and ones which are often unique to the topic.
- GSHPA** Cross Curricular – these are other national curriculum subjects that are inclusive within the lesson but not required to be recorded as this is a science / geography POS.

## **Long Term Plan**

### **Natural Resources, Renewable and Non-Renewable Energy, Sustainability**

**Week/Lesson 1 What is Energy Used For?**

**Week/Lesson 2 Where Does Energy Come From?**

**Week/Lesson 3 Introduction to Carbon Footprint.**

**Week/Lesson 4 Introduction to Air Quality, Climate Change and Global Warming.**

**Week/Lesson 5 What are Green Technologies?**

**Week/Lesson 6 Are Renewable Energies one of the Solutions to Climate Change and Global Warming?**

#### **Extension:**

**Visit a renewable energy venue such as:**

**Centre for Alternative Technology, Machynlleth, <https://www.cat.org.uk>**

**The National Self Build and Renovation Centre, Swindon <https://www.nsbrc.co.uk>**

**The Crystal, London <https://www.thecrystal.org/exhibition/educational>**

#### **Song**

***Ongoing: Build a Classroom Display for use in Week / Lesson 6***

## ***Medium Term Plan***

### **Week/Lesson 1 What is Energy Used for?**

	Expected Learning Outcome <i>To develop understanding of:</i>	Method/activity <i>Assume 1 hour per lesson</i>	Suggested Resources <i>See Week 1 Attachment</i>	Differentiation <i>Throughout this module teacher encouragement for pupils to make increasingly independent contributions.</i>	Assessment Opportunities
<p>Week / Lesson 1</p>	<p>What we use energy for with focus on electricity.</p> <p>The types of energy we use.</p>	<p>Teacher to show <a href="https://www.tes.com/teaching-resource/teachers-tv-things-that-use-electricity-6084847">https://www.tes.com/teaching-resource/teachers-tv-things-that-use-electricity-6084847</a> and ask pupils to record as many items that use electricity as possible. Did they notice any other types of energy being used? Can they think of any that may have been being used but they did not see?</p> <p>Example gas for cooking or heating or oil for heating? (<i>They may also record batteries as power.</i>) Could show Doodly short video too. <b>(15 minutes)</b></p> <p>Teacher led discussion about how pupils use energy around the home. Extend beyond electricity. Children to list as many ways as they can of how they have used energy in home and school so far today.</p> <p>Extend to how many ways others have, or will have, used energy for them before the end of the day – e.g. kitchen and cleaning staff in school, parents / guardians at home. Extend the list to include a column for what type of energy is used for activities such as cleaning, cooking, heat the home / school etc. Should include as many renewable and non-renewable energies as possible. <b>(30 minutes)</b></p>	<p><a href="https://www.tes.com/teaching-resource/teachers-tv-things-that-use-electricity-6084847">https://www.tes.com/teaching-resource/teachers-tv-things-that-use-electricity-6084847</a></p> <p>Doodly Video attached in Week 1 called Energy</p> <p><a href="https://www.childrensuniversity.manchester.ac.uk/learning-activities/science/energy-and-the-environment/what-is-energy/">https://www.childrensuniversity.manchester.ac.uk/learning-activities/science/energy-and-the-environment/what-is-energy/</a></p>	<p><b>Core</b> As in method/activity.</p> <p><b>Support</b> <b>Use</b> <a href="https://www.childrensuniversity.manchester.ac.uk/learning-activities/science/energy-and-the-environment/what-is-energy/">https://www.childrensuniversity.manchester.ac.uk/learning-activities/science/energy-and-the-environment/what-is-energy/</a> matching quiz.</p> <p><b>Extension</b> Write a paragraph explaining why energy is important and what they think it would be like without it.</p>	<p>Can the pupils explain how and why they use energy?</p> <p>Can the pupils record the information they have found?</p>
		<p><b>Homework Opportunities</b> <i>Pupils could:</i></p> <p>Pupils to list the types of energy they use and put them in order of what they consider to be the most to least important.</p> <p>Or find out how electricity is made <a href="https://www.childrensuniversity.manchester.ac.uk/learning-activities/science/energy-and-the-environment/how-do-we-make-electricity/">https://www.childrensuniversity.manchester.ac.uk/learning-activities/science/energy-and-the-environment/how-do-we-make-electricity/</a></p>	<p><b>Cross Curricular</b> English Maths 4 - Statistics Key Skills Citizenship PSE Developing Thinking Developing Communication Developing ICT Developing Number</p>	<p><b>Science</b> <i>Pupils describe and understand key aspects of sustainability and the use of fossil fuels.</i></p> <p><b>National Curriculum Level Descriptions</b></p> <p><b>Level 3</b> – Pupils recognise and explain the purpose of a variety of scientific and technological developments in everyday lives.</p>	

		<p>Collective discussion and collective tally charts to collate the information and discuss the most popular and least popular energies used. <i>(15 minutes)</i></p>			<p><b>Level 4</b> – Pupils recognise that reversible and irreversible changes affect sustainability in their everyday lives. <b>Level 5</b> – Pupils describe the benefits and drawbacks of using fossil fuels.</p>
			<p><b>Key Words/Phrases</b></p> <p>Electricity Environment Gas Oil Kerosene Heating Hot Water Cooking</p>		<p><b>Geography</b> <i>Pupils describe and understand key aspects of the distribution of natural energy resources.</i></p> <p><b>National Curriculum Level Descriptions</b></p> <p><b>Level 3</b> Pupils recognise that people seek to improve and sustain environments. <b>Level 4</b> Pupils understand that people can both improve and damage the environment. They offer reasons for their own views about environmental change and recognise that other people might hold different views. <b>Level 5</b> Pupils understand some ways that human activities cause environments to change. Pupils demonstrate an awareness of sustainable development and recognise the range of views help about environmental interaction and change.</p>

## Medium Term Plan

### Week / Lesson 2 Where Does Energy Come From?

	Expected Learning Outcome <i>To develop understanding of:</i>	Method/activity <i>Assume 1 hour per lesson</i>	Suggested Resources <i>See Week 2 Attachment</i>	Differentiation <i>Throughout this module teacher encouragement for pupils to make increasingly independent contributions.</i>	Assessment Opportunities
Week / Lesson 2	<p>How electricity is made.</p> <p>Where the types of energy we use come from.</p> <p>The differences between renewable and non-renewable energy.</p>	<p>Pupils to recap about how many different devices they used that needed electricity to make them work? Teacher to ask pupils to record as a hypothesis <i>'I think electricity is made using ... (10 minutes)</i></p> <p>Teacher to explain that we use oil, coal and gas to produce electricity and ask pupils to record their own opinions as to whether they think that is a good or bad idea.</p> <p>Ask pupils to record whether they think that oil, coal and gas will run out. Introduce the word sustainable and discuss sustainability and what it means.</p> <p>Introduce phrases non-renewable and renewable and what they mean. <i>(15 minutes)</i></p>	<p>Prompt Cards in Week 2 Folder</p> <p><a href="https://www.youtube.com/watch?v=NsQiVIPy6CA">https://www.youtube.com/watch?v=NsQiVIPy6CA</a></p> <p><a href="https://www.childrensuniversity.manchester.ac.uk/learning-activities/science/energy-and-the-environment/renewable-and-non-renewable">https://www.childrensuniversity.manchester.ac.uk/learning-activities/science/energy-and-the-environment/renewable-and-non-renewable</a></p> <p><a href="https://www.youtube.com/watch?v=6adfc08clo">https://www.youtube.com/watch?v=6adfc08clo</a></p> <p>Word Search in Week 2 folder</p> <p>Worksheet templates if required.</p>	<p>Core As in method/activity.</p> <p><b>Support</b> Provide assistance when recording thoughts.</p> <p><b>Extension</b> Pupils to find out where coal and oil comes from – introducing geology. <a href="https://www.youtube.com/watch?v=JaslvS7oYw4">https://www.youtube.com/watch?v=JaslvS7oYw4</a> <i>(12m 12s)</i></p> <p><a href="https://www.youtube.com/watch?v=iubWN1cwwIs">https://www.youtube.com/watch?v=iubWN1cwwIs</a> <i>(2m 47s)</i></p>	<p>Can the pupils explain the differences between renewable and non-renewable energy sources?</p> <p><b>Science</b> <i>Pupils describe and understand key aspects of sustainability and the use of fossil fuels.</i></p> <p><b>National Curriculum Level Descriptions</b></p> <p><b>Level 3</b> – Pupils recognise and explain the purpose of a variety of scientific and technological developments in everyday lives.</p> <p><b>Level 4</b> – Pupils recognise that reversible and irreversible changes affect sustainability in their everyday lives.</p> <p><b>Level 5</b> – Pupils describe the benefits and drawbacks of using fossil fuels. Pupils describe processes and phenomena relating to the properties of rocks and sediment in the earth.</p>



		<p>Pupils to watch <a href="https://www.youtube.com/watch?v=NsOiVIPy6CA">https://www.youtube.com/watch?v=NsOiVIPy6CA</a> (11 minutes, 6 seconds) to find out about how electricity is made using various resources. Teacher to pause throughout and ask pupils to record what is mentioned as being used to generate the electricity and whether they think it is renewable or non-renewable. Note with the pupils how much time is given to non-renewable fossil fuels and how little is given non-renewable. Disproportionate but it reflects how our electricity is currently made. <i>(20 minutes)</i></p> <p>Teacher led whole class plenary using interactive quiz <a href="https://www.childrensuniversity.manchester.ac.uk/learning-activities/science/energy-and-the-environment/renewable-and-non-renewable">https://www.childrensuniversity.manchester.ac.uk/learning-activities/science/energy-and-the-environment/renewable-and-non-renewable</a> which verifies which sources of energy are renewable and non-renewable or do quiz <a href="https://www.youtube.com/watch?v=6_adfcO8elo">https://www.youtube.com/watch?v=6_adfcO8elo</a> <i>(15 minutes)</i></p>	<p>Homework Opportunities</p> <p><i>Pupils could:</i> Record how electricity is made is there home and whether it is renewable or non-renewable.</p> <p>Complete Word Search in Week 2 Folder</p> <p><b>Key Words/Phrases</b> Coal Electricity Environment Gas Heat Pump Non-Renewable Oil Renewable Solar Tidal Turbine Wind</p>	<p><b>Cross Curricular</b> English Science Maths 1 -Using &amp; Applying Maths 4 - Statistics Key Skills Citizenship PSE Developing Thinking Developing Communication Developing ICT Developing Number</p>	<p><b>Geography</b> <i>Pupils describe and understand key aspects of the distribution of natural energy resources.</i></p> <p><b>National Curriculum Level Descriptions</b> <b>Level 3</b> Pupils recognise that people seek to improve and sustain environments. <b>Level 4</b> Pupils understand that people can both improve and damage the environment. They offer reasons for their own views about environmental change and recognise that other people might hold different views. <b>Level 5</b> Pupils understand some ways that human activities cause environments to change. Pupils demonstrate an awareness of sustainable development and recognise the range of views help about environmental interaction and change.</p>
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## Medium Term Plan

### Week / Lesson 3 Introduction to Carbon Footprint

	Expected Learning Outcome <i>To develop understanding of:</i>	Method/activity <i>Assume 1 hour per lesson</i>	Suggested Resources <i>See Week 3 Attachment</i>	Differentiation <i>Throughout this module teacher encouragement for pupils to make increasingly independent contributions.</i>	Assessment Opportunities
Week / Lesson 3	<p>The meaning of Carbon Footprint. <i>The amount of CO2 released into the atmosphere because of your own energy needs is called your "carbon footprint".</i></p> <p>How to Reduce their Carbon Footprint.</p>	<p>Recap last lesson focusing on renewable and non-renewable forms of energy and introduce Carbon Footprints using <a href="https://www.youtube.com/watch?v=8q7_aV8eLUE">https://www.youtube.com/watch?v=8q7_aV8eLUE</a> (2 minutes)</p> <p>Re-watch and pause where there can be discussion about the areas that their own carbon footprints could be reduced. Examples are:</p> <p>Can pupils walk or cycle instead of using the car or bus? Could they grow food at home rather than going to the supermarket and buying food from abroad? <b>(15minutes)</b></p> <p>Issue large and smaller footprints. Pupils to consider and record their own current carbon footprints using 3 items from each heading within <a href="https://www.smead.com/hot-topics/reducing-your-carbon-footprint-1846.asp">https://www.smead.com/hot-topics/reducing-your-carbon-footprint-1846.asp</a></p>	<p><a href="https://www.youtube.com/watch?v=8q7_aV8eLUE">https://www.youtube.com/watch?v=8q7_aV8eLUE</a></p> <p><a href="https://www.smead.com/hot-topics/reducing-your-carbon-footprint-1846.asp">https://www.smead.com/hot-topics/reducing-your-carbon-footprint-1846.asp</a></p> <p><a href="https://www.twinkl.co.uk/teaching-wiki/carbon-footprint">https://www.twinkl.co.uk/teaching-wiki/carbon-footprint</a></p> <p>Matching Pairs in Week 3 attachment.</p> <p>Online calculator: <a href="https://www.carbonfootprint.com/calculator.aspx">https://www.carbonfootprint.com/calculator.aspx</a></p> <p><a href="https://www.gokid.mobi/carbon-footprint-for-kids-some-facts-a-quiz-and-also-a-worksheet">https://www.gokid.mobi/carbon-footprint-for-kids-some-facts-a-quiz-and-also-a-worksheet</a></p> <p>Choose from variety of online footprint templates.</p>	<p><b>Core</b> As in method/activity.</p> <p><b>Support</b> Playing Matching Pairs Card Game where pupils place the cards on the relevant footprint pile.</p> <p><b>Extension</b> Calculate carbon footprint <a href="https://www.carbonfootprint.com/calculator.aspx">https://www.carbonfootprint.com/calculator.aspx</a></p> <p>or find out more about carbon footprints at <a href="https://www.gokid.mobi/carbon-footprint-for-kids-some-facts-a-quiz-and-also-a-worksheet">https://www.gokid.mobi/carbon-footprint-for-kids-some-facts-a-quiz-and-also-a-worksheet</a></p>	<p>Can the pupils show understanding of what Carbon Footprint Means?</p> <hr/> <p><b>Geography</b> <i>Pupils describe and understand key aspects of the distribution of natural energy resources.</i></p> <p><b>National Curriculum Level Descriptions</b> <b>Level 3</b> Pupils recognise that people seek to improve and sustain environments. <b>Level 4</b> Pupils understand that people can both improve and damage the environment. They offer reasons for their own views about environmental change and</p>

		<p>On the larger foot template note what they do now, e.g. use the car to get to school, and on the smaller templates note what they can do to reduce their footprint, e.g. walk to school. <b>USE FOR DISPLAY (25 minutes)</b></p> <p>Teacher led whole class plenary listing 4 ways pupils found they could reduce their carbon footprints. Briefly explain that food miles are ones which could be reduced if we grew our own food in UK or in their own homes. Introduce homework. <b>(15 minutes)</b></p>	<p><b>Homework Opportunities</b></p> <p><i>Pupils could:</i></p> <p>Examine the packaging of 5 -10 items of fruit or vegetables items in their homes or in the supermarket and record the countries they have travelled from.</p> <hr/> <p><b>Key Words/Phrases</b></p> <p>Coal Electricity Environment Food Miles Gas Non-Renewable Oil Renewable Solar Tidal Turbine Wind</p>	<p>Cross Curricular English Science Maths 1 -Using &amp; Applying Maths 4 - Statistics Key Skills Citizenship PSE Developing Thinking Developing Communication Developing ICT Developing Number</p>	<p>recognise that other people might hold different views. <b>Level 5</b> Pupils understand some ways that human activities cause environments to change. Pupils demonstrate an awareness of sustainable development and recognise the range of views help about environmental interaction and change.</p> <p><b>Science</b> <i>Pupils describe and understand key aspects of sustainability and the use of fossil fuels.</i> <b>National Curriculum Level Descriptions</b> <b>Level 3</b> – Pupils recognise and explain the purpose of a variety of scientific and technological developments in everyday lives. <b>Level 4</b> – Pupils recognise that reversible and irreversible changes affect sustainability in their everyday lives. <b>Level 5</b> – Pupils describe the benefits and drawbacks of using fossil fuels.</p>
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**Medium Term Plan****Week / Lesson 4 Introduction to Air Quality, Climate Change and Global Warming.**

	Expected Learning Outcome <i>To develop understanding of:</i>	Method/activity <i>Assume 1 hour per lesson</i>	Suggested Resources <i>See Week 4 Attachment</i>	Differentiation <i>Throughout this module teacher encouragement for pupils to make increasingly independent contributions.</i>	Assessment Opportunities
Week / Lesson 4	<p>What Air Quality means and how we can improve it.</p> <p>What Climate Change means and how we can control it.</p> <p>What Global warming means and how we can control it.</p>	<p>Teacher to use a board tally chart to discuss and record the countries the pupils found the fruit and vegetables were coming from in their homework exercise.</p> <p>Ask pupils how they think it gets to the local shops and then to their homes.</p> <p>Ask pupils what they think that delivering it from great distances via road, ship and aeroplanes would do to the air quality / atmosphere of the world? Ensure that pollution, air quality and atmosphere are introduced here.</p> <p>Pupils to volunteer other ways they think the air quality could be damaged.</p> <p>Pupils to write one sentence 'How I think air pollution affects humans.'</p> <p>Pupils to write one sentence 'How I think air pollution affects the planet.'</p> <p><i>(15-20 minutes)</i></p> <p>Watch <a href="https://www.youtube.com/watch?v=sAKyhfxxr7s">https://www.youtube.com/watch?v=sAKyhfxxr7s</a> (4m 57s) and pupils to record each type of pollution and how the animators have suggested we can make improvements – e.g. lots of traffic is replaced by a cyclist.</p> <p>At the end he suggests we move our factories to remote areas. Pose the question of whether the pupils think that is sensible? Wouldn't the problem still be in the atmosphere?</p>	<p><a href="https://www.youtube.com/watch?v=sAKyhfxxr7s">https://www.youtube.com/watch?v=sAKyhfxxr7s</a></p> <p><a href="https://www.youtube.com/watch?v=v8unGCTWUWI">https://www.youtube.com/watch?v=v8unGCTWUWI</a></p> <p>White boards and pens</p> <p>Prompt cards in week 4 folder</p> <p>Homework Opportunities</p> <p>How do cows and / or aerosols contribute to global warming?</p>	<p><b>Core</b> As in method/activity.</p> <p><b>Support</b> Help with writing their ideas in sentences quickly in introduction. Encourage pupils to volunteer their responses</p> <p><b>Extension</b> How do cows and aerosols contribute to global warming?</p>	<p>Can the pupils explain how we can improve air quality? Take the quiz <a href="https://study.com/academy/lesson/air-pollution-lesson-for-kids-definition-facts.html#lesson">https://study.com/academy/lesson/air-pollution-lesson-for-kids-definition-facts.html#lesson</a></p> <p>Can pupils explain how air quality contributes to climate change and global warming?</p>

		<p>Ask pupils how they think poor air quality could affect our climate. Watch <a href="https://www.youtube.com/watch?v=v8unGCTWUWI">https://www.youtube.com/watch?v=v8unGCTWUWI</a> (2m 57s)</p> <p>Ask pupils how they think our climate is changing.</p> <p>Can pupils offer explanations about what they think global warming is?</p> <p>Ask pupils why the earth has changed so much in the last 200 years. (<i>Overuse of fossil fuels</i>)</p> <p>Watch <a href="https://www.youtube.com/watch?v=v8unGCTWUWI">https://www.youtube.com/watch?v=v8unGCTWUWI</a> again and pause at relevant places to discuss examples of climate change and how global warming is happening and it's effects. (<i>30 minutes</i>)</p> <p>Pupils to record on whiteboards what fuel/s they think would improve air quality, slow down climate change and slow down global warming.</p> <p>Hold up whiteboards so teacher can see the results to use in next lesson. (<i>10 minutes</i>)</p>	<p><b>Key Words &amp; Phrases</b></p> <p>Air Quality          Atmosphere          Climate Change          Fossil Fuels          Global Warming          Greenhouse Gases          Pollution</p>		<p><b>Geography</b>  <i>Pupils describe and understand key aspects of the distribution of natural energy resources.</i>  <b>National Curriculum Level Descriptions</b>  <b>Level 3</b> Pupils recognise that people seek to improve and sustain environments.  <b>Level 4</b> Pupils understand that people can both improve and damage the environment. They offer reasons for their own views about environmental change and recognise that other people might hold different views.  <b>Level 5</b> Pupils understand some ways that human activities cause environments to change. Pupils demonstrate an awareness of sustainable development and recognise the range of views help about environmental interaction and change.</p> <p><b>Science</b>  <i>Pupils describe and understand key aspects of sustainability and the use of fossil fuels.</i>  <b>National Curriculum Level Descriptions</b>  <b>Level 3</b> – Pupils recognise and explain the purpose of a variety of scientific and technological developments in everyday lives.  <b>Level 4</b> – Pupils recognise that reversible and irreversible changes affect sustainability in their everyday lives.  <b>Level 5</b> – Pupils describe the benefits and drawbacks of using fossil fuels.</p>
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## **Medium Term Plan**

### **Week / Lesson 5 What are Green Technologies?**

	Expected Learning Outcome <i>To develop understanding of:</i>	Method/activity <i>Assume 1 hour per lesson</i>	Suggested Resources <i>See Week 5 Attachment</i>	Differentiation <i>Throughout this module teacher encouragement for pupils to make increasingly independent contributions.</i>	Assessment Opportunities
Week / Lesson 5	<p>The benefits of using Renewable Energy Sources when addressing Global warming and Climate change.</p> <p>How we can produce clean energy for use in everyday life.</p> <p>The advantages and disadvantages renewable energy types.</p>	<p>Recap previous lessons where pupils have examined fossil fuels as non-renewable resources and their effects on the earth and human health. Recap where fossil fuels come from and that this cannot be sustainable. Recap that the climate change and global warming issues have come about due to human activity, particularly over the last 200 years. <i>(10 minutes)</i></p> <p>Pupils to do Speed Activity found at <a href="https://www.twinkl.co.uk/resource/t3-sc-527-renewable-energy-speed-dating">https://www.twinkl.co.uk/resource/t3-sc-527-renewable-energy-speed-dating</a> plus GSHPA sheet to represent heat pumps– all found in Week 5 folder.</p> <p>Each pupil to complete the sheet of advantages and disadvantages of: Biomass, Geothermal, Heat Pumps, Hydroelectric, Solar, Tidal and Wind Power. Also look at GSHPA Heat Pump Doodly short video on Week 5 attachment.</p> <p>Pupils to record which type of renewable is the one they would be most likely to use to replace a fossil fuel at home, and their reasons why. Could be more than one if pupil can provide a reason for their answers – example a heat pump with solar. <i>(40 minutes)</i></p>	<p><a href="https://www.twinkl.co.uk/resource/t3-sc-527-renewable-energy-speed-dating">https://www.twinkl.co.uk/resource/t3-sc-527-renewable-energy-speed-dating</a></p> <p>GSHPA Heat Pump Doodly short video in Week 5 folder.</p> <p style="text-align: center;"><b>Homework Opportunities</b></p> <p>Which renewable/s do pupils think would work on their homes and what would they replace – example gas or oil for a heat pump and solar panels?</p>	<p><b>Core</b> As in method/activity.</p> <p><b>Support</b> Select a reduced number of energy types. Help with recording information and conclusions.</p> <p><b>Extension</b> Pupils to consider whether different geographical areas would be more likely to use certain renewables? Example solar in a sunny climate, tidal near the coast etc.</p>	<p>Can pupils provide appropriate and valid reasons for selecting a renewable energy to replace a fossil fuel in their home.</p>

		<p>Discussions about what pupils have found out and concluded. (10 minutes)</p>	<p><b>Key Words &amp; Phrases</b>                  Air Source                  Air Quality                  Atmosphere                  Biomass                  Climate Change                  Fossil Fuels                  Geothermal                  Global Warming                  Greenhouse Gases                  Ground Source                  Heat Pumps                  Hydroelectric                  Pollution                  Solar                  Tidal                  Wind Power.</p>	<p><b>Geography</b>  <i>Pupils describe and understand key aspects of the distribution of natural energy resources.</i>  <b>National Curriculum Level Descriptions</b>  <b>Level 3</b> Pupils recognise that people seek to improve and sustain environments.  <b>Level 4</b> Pupils understand that people can both improve and damage the environment. They offer reasons for their own views about environmental change and recognise that other people might hold different views.  <b>Level 5</b> Pupils understand some ways that human activities cause environments to change. Pupils demonstrate an awareness of sustainable development and recognise the range of views help about environmental interaction and change.</p> <p><b>Science</b>  <i>Pupils describe and understand key aspects of sustainability and the use of fossil fuels.</i>  <b>National Curriculum Level Descriptions</b>  <b>Level 3</b> – Pupils recognise and explain the purpose of a variety of scientific and technological developments in everyday lives.  <b>Level 4</b> – Pupils recognise that reversible and irreversible changes affect sustainability in their everyday lives.  <b>Level 5 – Pupils describe the benefits and drawbacks of using fossil fuels.</b>                  Pupils describe processes and phenomena relating to the properties of rocks and sediment in the earth.</p>
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**Medium Term Plan**

**Week / Lesson 6 Are Renewable Energies one of the Solutions to Climate Change and Global Warming?**

	<p>Expected Learning Outcome <i>To develop understanding of:</i></p>	<p>Method/activity <i>Assume 1 hour per lesson</i></p>	<p>Suggested Resources <i>See Week 5 Attachment</i> <b>NEED GSHPA HEAT PUMP SHEETS</b></p>	<p>Differentiation <i>Throughout this module teacher encouragement for pupils to make increasingly independent contributions.</i></p>	<p>Assessment Opportunities</p>
<p>Week / Lesson 6</p>	<p>The benefits of using Renewable Energy Sources when addressing Global warming and Climate change.</p> <p>Consider the advantages and disadvantages within all energy types.</p> <p>How to gather information to present a point of view.</p>	<p>Recap previous lesson and discuss what pupils decided within their homework. Explain how the government are now having to include renewables in their building programmes.</p> <p>Ask pupils to consider whether they think different geographical areas would be more likely to use certain renewables? Example solar in a sunny climate, tidal near the coast etc. Associate with where pupils live and whether world-wide considerations could be made. Would solar work in most places including the Arctic? <i>(Yes as it's sun and not temperature).</i> Would heat pumps work in all areas? <i>(Yes as they need ground, air or water and at least 2 are available everywhere).</i> <b>(15 minutes)</b></p> <p>Pupils to work individually, in pairs or groups to use their learning of the last 5 lessons to write a letter which can be sent to parents, governors, local education office, national officials &amp; Ministers etc providing an argument for replacing fossil fuels used in heating systems in schools for renewable energy.</p> <p>Pupils need to include why fossil fuels and non-renewable energy should be replaced and include what has happened over the last 200 years in their argument.</p> <p>They must include the advantages of fossil fuels in as many terms as they can to include air quality, greenhouse gas emissions, climate change and health. They could also include that it would be cheaper to use free resources such as the</p>	<p><b>Work of past 5 weeks including display</b></p> <p><b>Prompt cards in Week 6 Folder plus previous ones in weekly folders.</b></p> <p><b>GSHPA or HPF Produced sheet on heat pumps</b></p> <p><b>Who wants to be a Millionaire PowerPoint in Week 6</b></p> <p><b>(Certificates in Week 6 folder or teacher can make their own).</b></p> <p><b>Homework Opportunities</b></p> <p>Pupils could make a poster which reflects the content of their letter.</p>	<p><b>Core</b> As in method/activity.</p> <p><b>Support</b> <b>Grouping of pupils.</b></p> <p><b>Encouragement to offer answers in Millionaire Quiz.</b></p> <p><b>Extension</b> Pupils to include what types of employment opportunities they think working in the renewable industry could bring such as the manufacturers of the equipment, installers of the equipment, the drillers and ground workers for heat pumps etc.</p>	<p>Content of letter.</p> <p>Are pupils able to provide correct answers to the <b>Who wants to be a Millionaire Quiz?</b></p> <p>Can pupils provide evidence which allows the teacher to level them against the Level Descriptors shown below?</p>



		<p>ground, air, water and sun than buy oil, coal and gas.                  Teacher should encourage the use of the display, weekly folder prompt cards and put any missing important key words and phrases on the board as prompts and aide-memoires.  <b>(30 minutes)</b></p> <p>Play PowerPoint ‘Who Wants to Be a Millionaire Quiz’ as a whole class and issue certificates to each member of the class.  <b>(15 minutes)</b></p>			<p><b>Geography</b>  <i>Pupils describe and understand key aspects of the distribution of natural energy resources.</i>  <b>National Curriculum Level Descriptions</b>  <b>Level 3</b> Pupils recognise that people seek to improve and sustain environments.  <b>Level 4</b> Pupils understand that people can both improve and damage the environment. They offer reasons for their own views about environmental change and recognise that other people might hold different views.  <b>Level 5</b> Pupils understand some ways that human activities cause environments to change. Pupils demonstrate an awareness of sustainable development and recognise the range of views help about environmental interaction and change.</p> <p><b>Science</b>  <i>Pupils describe and understand key aspects of sustainability and the use of fossil fuels.</i>  <b>National Curriculum Level Descriptions</b>  <b>Level 3</b> – Pupils recognise and explain the purpose of a variety of scientific and technological developments in everyday lives.  <b>Level 4</b> – Pupils recognise that reversible and irreversible changes affect sustainability in their everyday lives.  <b>Level 5</b> – Pupils describe the benefits and drawbacks of using fossil fuels.                  Pupils describe processes and phenomena relating to the properties of rocks and sediment in the earth.</p>
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