Year 5&6: Energy and the Environment

Essential Learning:

Enquiry Drivers: What gives us energy?

By the end of this topic, you will have learned:

- About different energy sources and where they come from
- What energy sources are used both at home and in school
- Where gas comes from and its most common uses
- Where oil comes from and its most common uses
- The terms 'fossil fuels', 'non-renewable energy' and renewable energy'
- The advantages and disadvantages of non-renewable energy versus renewable energy sources.
- Where our food comes from
- How to save energy and understand the effect this will have on the environment (local/ national/global level)

Process & Changes

Understand the reasons for different processes and resulting changes in a range of locations.

Human Geography

Recognise, understand and explain patterns in human geography.

Physical Geography

Understand how the physical geography of a place influences the lives of its inhabitants.

Geographical Vocabulary

Know and understand more technical vocabulary E.G. biome, climate zone.

Locations and Environments

Compare and contrast diverse locations and environments.

Similarities and Differences

Understand why different places employ different strategies for solving similar problems.

Prior Learning:
Children will have studied climate change in Y3/4

Curriculum enrichment:
Trip to Heysham Nuclear Power Station

Key Vocabulary: fossil fuels, non-renewable energy, renewable energy, solar power, geothermal, hydroelectric power, wind turbine, trade, tourism, sustainability

Unit Focus: Geography

NC: As pupils progress, their growing knowledge about the world should help them to deepen their understanding of the interaction between physical and human processes, and of the formation and use of landscapes and environments.
Pupils should be taught to describe and understand key aspects of human geography, including: types of settlement and land use, economic activity including trade links, and the distribution of natural resources including energy, food, minerals and water

Children should:

- Ask questions, explore, describe and explain geographical patterns, similarities, differences and physical and human processes
- Collect and record evidence independently
- Investigate ways in which environments can be managed sustainably and why this is important now, and in the future
- Identify and explain different views that people, including themselves, hold about topical geographical issues
- Observe and explain how human patterns are influenced by both human and physical features
- Use and select primary and secondary sources of information and evidence, suggest conclusions and present findings in a variety of ways

Key Questions:

Where does our energy come from? What types of energy are there? How does electricity get to our homes/school etc?
What does the term fossil fuels mean? Which countries in the world have the most natural resources to trade?
What is non-renewable energy? What is renewable energy? What are some of the pros and cons for the different energy sources?
Which is the most sustainable? Which will have the least negative impact on our world?
Where does our food come from? Which foods give us energy?
If we save/conserve energy how will this impact on our environment locally/nationally/globally?

Sources of evidence: What different sources of evidence and resources can you use to answer these questions?
Carry out energy audits in school – lighting, gas and electric usage & costings

Resources:

https://www.bbc.co.uk/bitesize/topics/zshp34j/articles/zntxgwx
https://www.nationalgeographic.com/environment/article/renewable-energy
https://www.edfenergy.com/sites/default/files/energy_pick_n_mix_activity_ks2.pdf

Science	PSHE
NC Electricity Pupils should be taught to: - associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit - compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches - use recognised symbols when representing a simple circuit in a diagram.	
Children should: - Select and plan the most appropriate type of scientific enquiry to answer specific questions - Make predictions based on scientific knowledge and understanding - Carry out a range of scientific investigations - Recognise and control variables where appropriate during investigations - Take measurements using a range of scientific equipment with accuracy and precision - Record data and results of increasing complexity, using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models, making appropriate use of ICT - Reporting findings from investigations, including written explanations of results, explanation involving causal relationships, and conclusions - Present reports of findings in written form, displays and presentations - Use test results to make predictions and set up further comparative and fair tests Prior Knowledge: LKS2 Electricity unit Revise what things need electricity in our homes? How does electricity get to our home? **Useful links and resources:-** https://www.twinkl.co.uk/resource/tp2-s-226-planit-science-year-6-electricity-unit-pack?sign_in=1 https://www.bbc.co.uk/bitesize/articles/zw7q96f	Settling In – 7 Lessons Value – Respect English Links (Y5/6 National Curriculum) *Draft and write by using further organisational and presentational devices to structure text and to guide the reader [for example, headings, bullet points, underlining];* How are they feeling? (Y5) LO: Use a range of words and phrases to describe the intensity of different feelings; Distinguish between good and not so good feelings, using appropriate vocabulary to describe these; Explain strategies they can use to build resilience. (Statutory) Collaboration Challenge! (Y5) LO: Explain what collaboration means; Give examples of how they have worked collaboratively; Describe the attributes needed to work collaboratively. Our emotional needs (Y5) LO: Recognise basic emotional needs, understand that they change according to circumstance; Identify risk factors in a given situation (involving smoking or other scenarios) and consider outcomes of risk taking in this situation, including emotional risks. (Statutory) Dear Ash (Y5) LO: Explain the difference between a safe and an unsafe secret; Identify situations where someone might need to break a confidence in order to keep someone safe. (Statutory)

https://www.twinkl.co.uk/resource/tp2-s-220-planit-science-year-6-electricity-lesson-2-circuits-and-symbols-lesson-pack https://www.stem.org.uk/resources/community/collection/12390/year-6-electricity https://www.outstandingscience.co.uk/index.php?action=view_page&page=view_unit&unit=6e PLAN primary science assessment resources (planassessment.com) **Download this from Shared Drive for your unit**	Acting appropriately (Y6) LO: recognise that some types of physical contact can produce strong negative feelings; Know that some inappropriate touch is also illegal. (Statutory) Respecting differences (Y6) (Value Link) LO: Demonstrate ways of showing respect to others, using verbal and non-verbal communication. (Statutory) This will be your life! (Y6) LO: Identify aspirational goals; Describe the actions needed to set and achieve these.
Computing/ICT	**Music**
Self-image and identity/Health, wellbeing & lifestyle ▪ **NC:** Be discerning in evaluating digital content. ▪ Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Understand the opportunities computer networks offer for communication and collaboration. **Pupils should be taught to: -** ▪ Locate and respond appropriately to the terms and conditions on websites. ▪ Identify unsuitable posts (e.g. on blogs, a forum …) pertaining to content and conduct. ▪ Identify inappropriate and unacceptable behaviour when analysing resources such as videos, text-based scenarios and electronic communications. ▪ Continue to develop the skills to identify risks involved with contact, content and their own conduct whilst online. Use electronic communication and collaboration tools safely.	LINKED TO TOPIC: **NC:** - improvise and compose music for a range of purposes using the inter-related dimensions of music - use and understand staff and other musical notations Soundscape composition from Nuclear Power Station trip Introduce stave and notation

For full resources and lesson plans, use the following link:-
https://projectevolve.co.uk/about/?gclid=EAIaIQobChMI69ex3q3c-AIVE-vtCh2nGAYjEAAYASAAEgLjcfD_BwE

Purpose of programming

- **NC:** Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.
- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.
- Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web.

Appreciate how results are selected and ranked.

Using Scratch pupils should be taught to: -

- Use repetition* and selection* in programs.
- Use variables* in programs.
- Design and create programs using decomposition.
- Design programs to accomplish specific tasks or goals.
- Use logical reasoning to develop systematic strategies that can be used to debug algorithms and programs.
- Use procedures in programs.
- Design, test and refine programs to control robots or floor turtles taking account of purpose and needs.

Use programming software to create simulations.

DT	Art

RE

Christianity

(Church)

How do Christians mark the 'turning points' on the journey of life?

Coverage:

- Christian rites of passage

Denominational differences

Printing and Collage

- Pupils should be taught to develop their techniques, including their control and their use of materials, with creativity, experimentation and an increasing awareness of different kinds of art, craft and design.

Pupils should be taught:

- to create sketch books to record their observations and use them to review and revisit ideas
- to improve their mastery of art and design techniques, including drawing, painting and sculpture with a range of materials [for example, pencil, charcoal, paint, clay]
- about great artists, architects and designers in history

Art with a message – propaganda art

Children use printing and Collage techniques to create propaganda posters inspired by Shepard Fairey.

https://www.accessart.org.uk/teenagers-make-propaganda-art-inspired-by-shepard-fairey/

https://www.accessart.org.uk/an-exploration-of-artwork-by-shepard-fairey/?print=print

https://www.streetartbio.com/artists/shepard-fairey/

English Focus 1 **Class Novel: Wonder**	English Focus 2
Wonder by Robert Palacio **Reading Phase:** Discuss the themes of the novel inference and deduction Create own 'precept' **Gathering Content:** Role on the Wall and vocabulary gathering to describe Auggie. Hot seating and thought tracking drama techniques to infer how Auggie is feeling and what he is thinking at certain points of the story. **Short writing opportunities:** Character descriptions of Auggie from two different points of view – one whose opinion changes over time. **Writing Phase model & scaffolded:** First person narrative retelling a scene from Auggie's point of view **Independent write:** First person narrative from another character's point of view EG Julian **Grammar:** Synonyms and antonyms, direct speech in narrative https://www.literacyshedplus.com/en-gb/resource/wonder-by-rj-palacio-9-11-en-gb **Guided reading:** Stage 6 Electricity – Building a generator (link to Science – build the generator!) **Cross-curricular writing:** Fact file/ Non-chronological report 'Where does our food come from?'	**Discussion/Balanced Argument (3 weeks)** **Reading Phase:** Read a range of balanced arguments. Summarise key points for both sides of the argument and answer questions on texts read. Identify and highlight key features of discussion/balanced argument genre. Begin to create a word bank on working wall. **Gathering Content:** Pick out the formal vocabulary used, casual conjunctions, adverbials and sentence starters from arguments read. Orally rehearse sentences, using formal vocabulary, key sentence and paragraph starters. Organise a short debate in groups where one group put forward arguments for fossil fuels and the other against. **Writing Phase:** Plan for and against arguments on to a template. Model/scaffold introduction, one for and one against argument and conclusion. Argument for using fossil fuels v argument against – children adding an additional for and against paragraph. Model editing process. **Independent write:** Argument for using renewable energy v arguments against **Grammar:** Adverbials for cohesion (time and manner), commas to avoid ambiguity, modal verbs **Guided reading:** Stage 5 Natural Resources **Cross-curricular writing/Independent write:** Discussion/balanced argument - After visit to Heysham Nuclear Power Station: Should we have Nuclear Power? **Cross curricular writing:** Information text about how to save energy and the impact on local, national and global environment.
Global links: Effects of fossil fuel on the global stage	**Local links:** Heysham Power Station Local walk – evidence of wind and solar power?