



YEAR 13 Physical Geography Spring TERM

'An ambitious curriculum that meets the needs of all'

Medium Term Planning - Topic: Water & Carbon Cycles

Curriculum Intent	<p>In addition to working further on objectives from Year __, pupils will be taught, following National Curriculum guidelines, the following this term:</p>
Skills/Assessment Objective Links	<p>Water and carbon cycles as natural systems Systems in physical geography: systems concepts and their application to the water and carbon cycles inputs – outputs, energy, stores/components, flows/transfers, positive/negative feedback, dynamic equilibrium.</p>
	<p>The water cycle Global distribution and size of major stores of water – lithosphere, hydrosphere, cryosphere and atmosphere. Factors driving change in the magnitude of these stores, including flows and transfers at hill slope, drainage basin and global scales with reference to varying timescales involved. Drainage basins as open systems – inputs and outputs, to include precipitation, evapotranspiration and runoff; stores and flows, to include interception, surface, soil water, groundwater and channel storage; stemflow, infiltration overland flow, and channel flow. Concept of water balance. Runoff variation and the flood hydrograph. Changes in the water cycle over time to include natural variation (including storm events, seasonal changes) and human impact (including farming practices, land use change and water abstraction).</p>
	<p>The carbon cycle Global distribution, and size of major stores of carbon – lithosphere, hydrosphere, cryosphere biosphere, atmosphere. Factors driving change in the magnitude of these stores, including flows and transfers at plant, sere and continental scales. Photosynthesis, respiration, decomposition, combustion, burial, compaction, carbon sequestration, weathering. Changes in the carbon cycle over time, to include natural variation (including wild fires, volcanic activity) and human impact (including hydrocarbon fuel extraction and burning, farming practices, deforestation, land use changes). The carbon budget and the impact</p>
	<p>Water, carbon and climate The relationship between the water cycle and carbon cycle in the atmosphere. The role of feedbacks within and between cycles and their link to climate change. Human interventions in the carbon cycle designed to influence carbon transfers and mitigate the impacts of climate change.</p>
	<p>Case studies Case study of a tropical rainforest setting to illustrate and analyse key themes in water and carbon cycles and their relationship to environmental change and human activity. Case study of a river catchment(s) at a local scale to illustrate and analyse the key themes above, engage with field data and consider the impact of precipitation upon drainage basin stores and transfers and implications for sustainable water supply and/or flooding.</p>
Spiritual, moral, social, and cultural development	<p>SMSC: PSHE/British Values: Skills Builder:</p>
Numeracy	
Literacy	<p>Vocabulary Tier 2: Analyse, annotate, assess, calculate, critically, define, describe, discuss, evaluate, examine, explain, interpret, justify, outline, interpret, to what extent, economic, political, social, environmental, local, regional, national, international. Vocabulary Tier 3: key words are in course booklets Reading: Research case studies of Holderness and Odisha. Writing: Essay writing practice throughout the topic. Oracy: discussion and debate regarding the issues explored throughout the entire topic as outlined above,.</p>

Becoming future ready	Careers/Employability: geologist, seismologist, volcanologist, city planners, sustainability officer, worker
Adaptation	Throughout this topic, quality first teaching will provide differentiation:
QFT/SEND Provision	<p>By product: different learners are asked to present outcomes in a different way via pieces of writing, targeted questioning, models and drawings and speaking.</p> <p>By resource: Booklets are clearly presented and accessible. Instructions are clearly outlined and separate from the information so that pupils know where to begin and end.</p> <p>By Intervention: by providing different levels of supervision and support.</p> <p>By Progressive Questioning: exploring pupils' understanding through interactive dialogue.</p> <p>By Grouping: according to prior attainment, gender, social preference.</p> <p>By Task: Pupils should be involved in the identification of targets which are meaningful to them and in the selection of an appropriate task from the given range.</p> <p>By Offering Optional Activities: In class or as homework, to extend learning.</p>
Implementation Curriculum Delivery	To be able to:
Learning Outcomes (Knowledge)	<ul style="list-style-type: none"> • understand systems concepts (inputs, outputs, flows, transfers, processes etc) and their application to the water and carbon cycles • describe and explain the global distribution and size of major stores of water – lithosphere, hydrosphere, cryosphere and atmosphere • outline the different parts of the Global Water Cycle • explain the changes in the Magnitude of the Water Cycle • explain the Drainage Basin as a system • describe and explain what positive/negative feedback are and how they contribute to dynamic equilibrium • explain the Water Balance (soil) • explain and interpret the Flood Hydrograph • outline the factors affecting changes in the Water Cycle • present a case study of a River Catchment to illustrate the features of the water cycle • collect and interpret relevant fieldwork data • outline the Global Carbon Cycle • describe and explain the global distribution and size of major stores of carbon – lithosphere, hydrosphere, cryosphere and atmosphere • explain the transfers in Global Carbon Cycle • explain the changes in the Carbon Cycle caused by Physical Causes • explain the changes in the Carbon Cycle caused by Human Causes • explain what is meant by The Carbon Budget • outline the Causes of Climate Change and understand the links with the Water and Carbon cycles • outline the strategies used for mitigating the impacts of Climate Change • describe the characteristics of the Tropical Rainforest and link this to the water AND carbon cycles <p>Red denotes interleaving; aspects of knowledge covered previously.</p>
Current learning to be developed in the future within:	
Assessment	Refer to assessment maps for formative and summative assessment opportunities.
Impact	Attainment and Progress – Refer to assessment results / data review documentation.

