

3.1.2 The living world Year 4

3.1.2.1 Ecosystems

Key idea	Specification content	Case studies Homework	Learning activity and resources
Ecosystems exist at a range of scales and involve the interaction between biotic and abiotic components.	<p>One example of a small-scale UK ecosystem, to illustrate the concept of inter-relationships within a natural system, an understanding of producers, consumers, decomposers, food chain, food web and nutrient cycle.</p> <p>The balance between components. The impact on the ecosystem of changing one component.</p> <p>Overview of the distribution and characteristics of large scale, natural, global ecosystems.</p>	Any small-scale ecosystem – hedgerow, woodland, sand dune, pond etc.	<p>Read P 20 Revision Guide</p> <p>Teacher led initially, with information or clear short task re components. Change then modeled with scenarios</p> <p>Draw flow diagrams to show changes in an ecosystem</p> <p>Overview: map key biomes: TRF, desert, savannah, tundra, taiga/boreal.</p> <p>Characteristics of each to be drawn out using pictures provided, with hints sheet if needed.</p> <p>Describe the distribution of each global ecosystem</p>

3.1.2.2 Tropical rainforests

Key idea	Specification content	Case	Learning activity and resources
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		studies/examples	
Tropical rainforest ecosystems have a range of distinctive characteristics.	<p>The physical characteristics of a tropical rainforest.</p> <p>The interdependence of climate, water, soils, plants, animals and people.</p> <p>How plants and animals adapt to the physical environment.</p> <p>Issues related to biodiversity.</p>	<p>Make notes on how the different parts of the rainforest are dependent on each other</p>	<ul style="list-style-type: none"> • Draw a climate graph (skill), • map of location, reasoning behind it • soil description and horizon • plant adaptations • animal adaptations. <p>Leads to the importance of nutrient recycling in the TRF. Draw a diagram to show nutrient cycling in a rainforest</p> <p>Homework/Flipped Learning. Students design a plant to exist in TRF - not the content that is important but the thinking skill.</p> <p>Apply to real world examples from TRF - to annotation, diagrams, photos (skills).</p>

<p>Deforestation has economic and environmental impacts.</p>	<p>Changing rates of deforestation.</p> <p>A case study of a tropical rainforest to illustrate:</p> <p>causes of deforestation – subsistence and commercial farming, logging, road building, mineral extraction, energy development, settlement, population growth</p> <p>impact of deforestation - economic development, soil erosion, loss of biodiversity, contribution to climate change.</p>	<p>Amazonia</p> <p>Past GCSE questions</p>	<p>Read P 25 Revision Guide</p> <p>Brief is to create a presentation of a case study to cover the areas in specification. Give students resources, textbooks, journals, web references. Clear instructions and good resources will guide students.</p>
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<p>Tropical rainforests need to be managed to be sustainable.</p>	<p>Value of tropical rainforests to people and the environment.</p> <p>Strategies used to manage the rainforest sustainably:</p> <p>selective logging and replanting</p> <p>conservation and education</p> <p>ecotourism and international agreements about the use of tropical hardwoods</p> <p>debt reduction.</p>	<p>Malaysia/Sarawak</p>	<p>Taught case study. Show students a good video/documentary base. Students make notes from textbook. Teacher to draw out relevant content.</p> <p>Teacher to draw out relevant content with use of ketch map and/or annotated images with keywords deployed and highlighted.</p>
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3.1.2.3 Hot deserts

Key idea	Specification content	Case studies Homework	Learning activity and resources
Hot desert ecosystems have a range of distinctive characteristics.	<p>The physical characteristics of a hot desert.</p> <p>The interdependence of climate, water, soils, plants, animals and people.</p> <p>How plants and animals adapt to the physical conditions.</p> <p>Issues related to biodiversity.</p>		<p>Teach this after the TRF section has been completed.</p> <p>Then having looked at the characteristics of a TRF, use climate detectives activity. Students are given hot desert plants and animals and have to reverse engineer/deduce what the ecosystems' characteristics must be like. Give students categories of climate, soil, water etc. and blank climate graph, map etc., What would the ecosystem be like based on the adaptations of the animals and plants?</p> <p>Alternative activity. Aliens land on planet Earth in a hot desert. They find this plant and this animal. What do they think Planet Earth is like?</p>
Development of hot desert environments creates opportunities and challenges.	<p>A case study of a hot desert to illustrate:</p> <p>development opportunities in hot desert environments: mineral extraction, energy, farming, tourism</p> <p>challenges of developing hot desert environments: extreme temperatures, water supply, inaccessibility.</p>	Sahara or Nevada/Arizona	

<p>Areas on the fringe of hot deserts are at risk of desertification.</p>	<p>Causes of desertification:</p> <ul style="list-style-type: none"> • climate change • population growth • removal of fuel wood • overgrazing • over-cultivation and soil erosion. <p>Strategies used to reduce the risk of desertification:</p> <ul style="list-style-type: none"> • water and soil management, • tree planting and use of appropriate technology. 	<p>Past GCSE questions</p>	<p>Give students a range of examples, causes and strategies as cards/images/small pieces of text.</p> <p>Sort/classify into causes and strategies.</p> <p>Write up into a flow diagram</p> <p>Problem → Cause → Solution</p> <p>Illustrated with examples.</p> <p>Complete the worksheet on different management strategies employed to reduce desertification</p>
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