Acle Academy

Year 11 C14: The Earth's resources. Chemistry – Science Faculty

Rationale and Context of Unit:	Core curriculum content:	Tier 2 & Tier 3 vocabulary explicitly taught:
In this chapter, students will learn about the difference between finite and renewable resources. It is important that students understand that renewable resources are not an infinite supply, but are replaceable at a rate similar to the rate they are used up, whereas finite resources are used up faster than they can be replenished. Students understanding of finite and renewable resources should be applied to the need to reuse and recycle, and they will learn to describe and evaluate ways of reducing the use of finite resources, and carry out life cycle assessments on products. Students then look at specific resources that we use, including water and metals (in particular copper). Students will look at the different ways that water is treated, both to create potable water and to remove waste products so it is safe to release into the environment. Students have already met metal-ore extraction and electrolysis, and higher-tier students should have applied that knowledge to the extraction of copper, as well as understanding alternative biological methods used to extract copper.	• Finite and renewable resources • Potable water • Treating waste water • Extracting metals from ores • Life cycle assessments • Reduce, reuse and recycle	Finite Renewable Recycle Ore Phytomining Bioleaching
Challenge and Support:	**World wide learning/ links to 21st century:**	**Cultural capital/ Industry/ Enrichment:**
• Pupils need to explain the different types of water treatment and evaluate the benefits and drawbacks of each method.	• Many resources in the world are starting to run out. This unit shows some possible alternatives	• Water treatment industry • Metal extraction and purification industries

• Using half-equations to show the chemical reactions occurring during the electrolysis of copper sulphate solution (produced during phytomining).	to extracting resources from the ground that could be developed further in the future.	• Phytomining and bioleaching are technologies that are currently being developed and could be large industries in the near future.
Historical, Social, Moral, Spiritual, Cultural context:	**Cross curricular links/ literacy/numeracy:**	**Common misconceptions:**
• Pupils to consider the impact of recycling on the environment and compare this to the alternatives.	• Links to GCSE design and technology who also cover life cycle assessments.	• *Renewable resources will never run out.* • *Recycling is 'green' and does not cause any kind of pollution.*
Assessment timeline:		
• *regular EPPQs* • *end of unit test (separate science only)* • *EPPQ homework task* • *in lesson questioning and other progress checks*		
Home learning		
• *EPPQ homework booklet*		
Feedback		
• *Students self/peer mark homework booklets and set revision goals based on understanding.* • *Feedback based on the end of the unit test (separate science only).*		

Length of unit (duration indicated in lessons)

C14.1	C14.2	C14.3	C14.4	C14.5	C14.6	C14 test

Unit: C14 The Earth's resources, Chemistry