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**Knowledge Rich Curriculum Plan**

SCIENCE- Weathering and Erosion



| **Lesson/Learning Sequence** | **Intended Knowledge:**  *Students will know that…* | **Prior Knowledge:**  *In order to know this, students need to already know that…* | **Working Scientifically** | **Tiered Vocabulary and Reading Activity** | **Assessment** | **Support** |
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| ***Weathering*** | *Define weathering to be the wearing away of rocks and erosion to be the movement of broken pieces away from the site of weathering by water, ice or wind. The two types of mechanical weathering are freeze-thawing and exfoliation. Freeze-thawing involves the rain entering the cracks in the rocks, the rain then freezes which pushes the rock further apart. Eventually, the rock completely breaks apart. Exfoliation involves the heating of a rock on a hot day, which causes the outer layer to expand. When the rock cools down, it contacts again, causing small pieces of rock to flake off. Biological weathering involves tree roots growing thick and strong underground which make their way into the cracks in a rock and can force it to break. Chemical weathering involves the reaction of acidic rainwater with limestone, chalk or marble.* | *Some students may be able to recall seeing weathering on buildings, without knowing why this occurs.* | *Evaluation of weathering techniques.* | *Weathering: the process of wearing or being worn by long exposure to the atmosphere.*  *Erosion: process in which materials are worn away and transported by natural forces such as wind or water.*  *Exfoliation: shed from a surface in scales or layers.*  *Biological: relating to living organisms.*    *Freeze-thaw: occurs when water continually seeps into cracks, freezes and expands, eventually breaking the rock apart.* | *Home learning quiz 2*  *End of topic test Summative Assessment 2* | *Knowledge organiser (provided on Teams and in class)*  [*https://www.bbc.co.uk/bitesize/guides/zwd2mp3/revision/3*](https://www.bbc.co.uk/bitesize/guides/zwd2mp3/revision/3) |
| ***Greenhouse Effect and Global Warming*** | *Carbon dioxide, Water vapour and methane are examples of greenhouse gases. Greenhouse gases are helpful in maintaining a temperature of Earth warm enough to support life. But there are draw backs such as, extreme weather conditions, ice caps melting and loss of habitats. The greenhouse gas effect is a natural process, the sun radiates short wave UV radiation, the surface of the Earth absorbs some radiation and rest is deflected back out into space as long wave radiation. The presence of greenhouse gases means that some of the deflected radiation gets trap inside the Earth’s atmosphere leading to a raise in global temperature (global warming).*  *Human activity is causing the increase in climate change. These include farming cattle for food- production of methane, deforestation, burning fossil fuels. The effects of climate change are; coral reefs being eradicated; species extinction and rising sea levels results in less areas to inhabit.* | *A greenhouse is used to grow plants and traps heat energy from the sun helping the plants to grow*  *Global warming is causing ice caps to melt* |  | *Thermal Energy- (Heat) Internal energy within a substance.*  *Greenhouse gases- a gas that contributes to the greenhouse effect by absorbing infrared radiation.*  *Wavelength-  the distance between a point on one wave and the same point on the next wave.*  *Fossil Fuels- coal, oil and natural gas. They were formed from the remains of living organisms millions of years ago.* | *Home learning quiz 2*  *End of topic test Summative Assessment 2* | *Knowledge organiser (provided on Teams and in class)*  [*https://www.bbc.co.uk/bitesize/guides/zxy4xfr/revision/1*](https://www.bbc.co.uk/bitesize/guides/zxy4xfr/revision/1) |
| ***Earth’s Resources and Sustainability*** | *Earth’s resources are important for survival, there is competition for warmth, shelter, food and transport. Some resources, for example fossil fuels, are finite resources which are not been formed fast enough to be considered renewable. Renewable resources are resources that are being formed faster than or at the same rate as they are being used. It is important that Earth’s resources are being preserved for future generations.* | *Know the basic needs of humans for survival are food, shelter, water, temperature, oxygen, space* | *Calculating percentages, comparing values, evaluation of resources* | *Finite: resource that cannot be replaced by natural means at a pace quick enough to keep up with the use*  *Renewable: a natural resource or source of energy that is not depleted by use.*  *Sustainable: maintained at a certain rate or level.*  *Agriculture: the science or practice of farming to provide food, wool, and other products.*  *Supplementary: completing or enhancing something.* | *Home learning quiz 2*  *End of topic test Summative Assessment 2* | *Knowledge organiser (provided on Teams and in class)*  [*https://www.bbc.co.uk/bitesize/guides/zgqhcj6/revision/1*](https://www.bbc.co.uk/bitesize/guides/zgqhcj6/revision/1) |
| ***Resources and Recycling*** | *Recycling is the process of converting waste into reusable material.* | *Earths resources are limited and need to be used in a sustainable way*  *Reuse- Use more than once*  *Reduce- Use less*  *Recycle- Use then make into something else*  *Plastics can be used more than once*  *Examples of things made from plastic*  *Plastics are polymers*  *Plastic, paper, glass, metal can all be recycled* | *Interpreting data, plotting data and drawing lines of best fit.* | *Reversible: capable of being reversed so that the previous state or situation is restored*  *Irreversible: not able to be undone or altered.*  *Recycle: convert (waste) into reusable material*  *Eradicated: Destroy completely*  *Biodegradable: capable of being decomposed by bacteria or other living organisms and thereby avoiding pollution.*  *Non biodegradable: not capable of being broken down by the action of living organisms* | *Home learning quiz 2*  *End of topic test Summative Assessment 2* | *Knowledge organiser (provided on Teams and in class)*  [*https://www.bbc.co.uk/bitesize/guides/zgqhcj6/revision/1*](https://www.bbc.co.uk/bitesize/guides/zgqhcj6/revision/1) |