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**Knowledge Rich Curriculum Plan**

SCIENCE- Exothermic and Endothermic Reactions



| **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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| ***01***  ***Exothermic and Endothermic Reactions*** | *Students will know that an exothermic reaction is when energy is released into the surroundings. Examples of exothermic reactions are; hand warmer, combustion, respiration. Students will recognise that energy is conserved during exothermic reactions. Students will able to describe how the temperature of chemicals will increase in exothermic reactions. Students will know that an endothermic reaction is when energy enters a substance from the surroundings. Examples of endothermic reaction are; photosynthesis, ice packs and thermal decomposition. Students will able to describe how the temperature of chemicals will decrease in endothermic reactions.* | *Students will know that temperatures change are a way of observing if a chemical reaction has happened.* | *Analyse: draw conclusions from data.* | ***Exothermic***  *Exothermic reactions are chemical reactions which release energy from the chemicals into the surroundings.*  ***Endothermic***  *These are reactions that take in energy from the surroundings*  ***Activation energy***  *The minimum****energy****required for a reaction to occur.* | *Retrieval questions*  *Simple exam questions*  *End of topic test*  *Summative assessment 1*  *Cold call questions:*   1. *How might we distinguish between an endothermic and exothermic reaction?*   *“Exothermic reactions feel hotter, endothermic reactions will feel colder”*   1. *Photosynthesis is and endothermic reaction, how might you explain this?*   *“Photosynthesis absorbs light energy from the sun, endothermic reactions absorb energy”* | *Knowledge organiser (provided on Teams and in class)*  [*https://www.youtube.com/watch?v=eJXL0IrbtqE*](https://www.youtube.com/watch?v=eJXL0IrbtqE)  [*https://www.bbc.co.uk/bitesize/topics/zypsgk7/articles/zb7wwnb*](https://www.bbc.co.uk/bitesize/topics/zypsgk7/articles/zb7wwnb) |
| ***02 Rearranging Atoms*** | *Students will know that there are energy changes when bonds are broken and made. Energy is absorbed to break bonds.****Bond-breaking****is an****endothermic****process. Energy is released when new bonds form.****Bond-making****is an****exothermic****process.* | *Students will already know that a chemical change is the making of new substances and most reactions are irreversible. Students will know the definitions and examples of exothermic and endothermic reactions* |  | ***Reactants***  *A substance that takes part in and undergoes change during a reaction.*  ***Products***  *A substance that is formed as the result of a chemical reaction.*  ***Precipitation reaction***  *Is one in which dissolved substances react to form one (or more) solid products.* | *Retrieval questions*  *Simple exam questions*  *End of topic test*  *Summative assessment*  *Cold call questions:*   1. *How might this diagram link to an endothermic process? (students see diagram of breaking wood)*   *“Energy is needed to break the wood, just like energy is needed to break bonds”* | *Knowledge organiser (provided on Teams and in class)*  [*https://www.youtube.com/watch?v=0l8x1lDbbRU*](https://www.youtube.com/watch?v=0l8x1lDbbRU) |