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| Subject: Science Year: Phase 1 year B –States of matter  NC/PoS:   * compare and group materials together, according to whether they are solids, liquids or gases * observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) |
| Prior Learning (what pupils already know and can do)  Recognise a material and name its properties. Know a material is used because of its properties. Know the difference between a natural and manufactured material. |
| End Goals (what pupils MUST know and remember)   * Know what a solid, liquid and a gas is. Note the difference between different liquids: water, oil, ketchup, syrup, honey, * Know that materials can be solids, liquids, or gases (the three states of matter) * Compare the effects heating and cooling has on ingredients such as melting and freezing. * Observe that some materials change state when they are heated or cooled: water, eggs, chocolate, jelly. |
| Key Vocabulary:  Solid, liquid, gas, evaporation, property, matter, states, heat, melting, melting point, evaporating, evaporation, boiling points, freezing, freezing point, temperature, |
| Session 1: review prior learning - What is a material? What is a property of a material?  Give children a group of materials and ask them to group in different ways. Tease out magnetic, transparent, opaque, malleable, stiff/rigid etc.  Introduce the concept of solid, liquid and gas. Can the children identify common solids, liquids and gases.  Suggested activity  Children to sort a number of materials. Can the children add some of their own materials? |
| Session 2: Recap: what is a solid, liquid and a gas? Teacher to show a number of materials and children to identify if they are solid liquid or a gas.  Introduce the concept of melting. Do all materials melt?  <https://www.youtube.com/watch?v=pVTZySPJh5w> melting points  L.O. I can identify the effect of heating on different materials.  Children to make predictions on what they think will happen. Class experiments looking at the effect of heat on different materials.  Vocabulary: property, matter, states, heat, melt |
| Session 3: Recap: the 3 states of matter and their properties. Recap what happens when we heat a material.  Children learn about the concept of cooling. Set up an experiment that will need a length of time. Children to discover what happens when certain materials are cooled or frozen. Children to make predictions.  Vocabulary: cooling, freezing, property |
| Session 4: Recap: what are the processes called when we heat or cool materials?  Children to investigate ethe changes of property. Chocolate melted goes from solid to liquid. Can this be repeated?  Children to repeat this for a number of materials. The children will notice that some changes can be repeated (reversible and irreversible changes, which will be introduced more in depth in phase 2) |
| Link to career scientist:  <https://pstt.org.uk/application/files/1116/2851/6355/Materials_scientist_-_Pearl_Agyakwa.pdf>  <https://pstt.org.uk/application/files/4616/2851/6691/Water_Scientist_-_Zoe_Ayres.pdf> |
| Scientists who have helped develop understanding in this field: the ancient Greeks |