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| Subject: Science Year: PHASE 2 (Year A) Everyday Materials Unit 3/6  NC/PoS:   * identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses * find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. |
| Prior Learning (what pupils already know and can do)  Know the difference between an object and a material. Can name a variety of common materials. Know materials have specific properties to them. Know materials are either natural or manmade |
| End Goals (what pupils MUST know and remember)   * Know that materials are picked for a specific purpose because of their properties * Know glass is made by melting sand and other minerals together at extremely hot temperatures. It is normally transparent and can be made into different shapes. Thick glass can be strong, but thin glass breaks easily * Know different fabrics, have different properties. They can be stretchy (a pair of tights), insulating (a woollen coat) or absorbent (a towel) * Know pans made from metal are strong, hard, and shiny materials that can be hammered into different shapes without breaking. They are good conductors of heat and electricity * Know plastics are materials made from chemicals. They are strong and waterproof, can be made into any shape by applying heat, are good insulators and do not conduct heat or electricity * Know furniture made from wood comes from trees. It is strong, flexible, and long-lasting and an insulator of heat and electricity * Know fabrics are used to make clothes as they are flexible, warm and do not wear out easily * Know the same object can be made using varied materials e.g., spoons can be made from wood, metal, plastic * Know some shapes of objects can be changed by squashing, bending, twisting, or stretching |
| Key Vocabulary: uses, everyday materials, particular use, purpose, suitability, useful, properties, stretchy, insulating, absorbent, conductors, squash, bend, twist, stretch, deform, change |
| Session 1: Recap prior learning  Children revisit different materials including natural and manufactured (manmade) and their properties Children to have clear definitions about what these words mean.  Investigate plastic, metal, glass, brick, paper, fabric and foil.  Know that some materials come from plants such as rubber.  Know different types of fabrics and compare what they look like under the microscope wool, satin, silk, denim and cotton  Suggested activities: look at career scientists and scientists who have helped develop understanding in this field. |
| Session 2: Know that a material is the matter from which a thing is made.  Children learn the same object can be made using varied materials e.g., spoons can be made from wood, metal, plastic. Name and identify materials in a composite object. Tables  Chair  Spoon  Pencil  Children learn that materials are picked for a specific purpose because of their properties  When people make useful objects, such as tables and windows, they choose the best material for the job. They choose the right material based on its properties.  For example, glass is an excellent material for a windowpane because it has the properties of being transparent, waterproof, hard, and it does not rot away. Wood is an excellent material for a window frame because it is strong, rigid (does not bend) and waterproof.  Suggested activities:  Look at pictures of objects. Identify the materials that the objects are made from. Some objects are made from more than one material. List the properties of the materials that make them useful in this situation.  Suggested activities:  Walk around the local environment looking at materials used to answer the question – why was that material used for that purpose?  Identifying, classifying and grouping  Sort into groups using intersecting Venn and Carroll Diagram.  Vocabulary: suitability, useful, properties  Vocabulary: uses, everyday materials, particular use |
| Session 3: Know that materials can change under different pressures.  How can different paper change when different amounts of liquid are added?  Children to test the absorbance of different types of paper.  Suggested activity: Observe absorbency e.g. how far blue dye rises up different papers.  Fair and comparative testing.  Measure using standard units where all the numbers are marked on the scale.  Know what a fair test is. Decide what to change and what to measure or observe. Take repeat readings.  Prepare own tables to record data  Present data in bar charts, line graphs are bar charts.  Write a question/prediction; how it will be test, equipment and resources, how it will be made affair test, results and answer to the initial question.  To know that the shapes of objects can be changed by squashing, bending, twisting, or stretching, heating or cooling  Suggested activities:  Can we change the shape of different objects?  Up to 8 objects from around the classroom, such as a lump of Plasticine, a coin, a paper clip, a ruler, a tennis ball, a lump of Blu-Tak, a marble, a pencil and a paper towel.  We can change the shape of objects in lots of different ways. We can squash them, bend them, twist them and stretch them. This is called deforming the object. Can they alter the shape of some objects with using different resources e.g. a hammer.  What happens what we heat chocolate?  When happens when we freeze water?  Fair and comparative testing.  Identify their own question to investigate.  Know what a fair test is. Decide what to change and what to measure or observe. Take repeat readings.  Vocabulary: squash, bend, twist, stretch, deform, change  Vocabulary: suitability, useful, properties |
| Session 4:  Children learn to identify suitable materials for different situations.  Children know that materials have different properties; Hard, soft, stretchy, stiff, shiny, reflective, dull, rough, smooth, bendy, stiff, waterproof, absorbent, opaque.  Glass is made by melting sand and other minerals together a very high temperatures. It is normally transparent and can be made into different shapes. Thick glass can be strong, but thin glass breaks easily.  Different fabrics have different properties. They can be stretchy (a pair of tights), insulating (a woollen coat) or absorbent (a towel)  Pans made from metal are strong, hard and shiny materials that can be hammered into different shapes without breaking. They are good conductors of heat and electricity.  Plastics are materials made from chemicals. They are strong and waterproof, can be made into any shape by applying heat, are good insulators and do not conduct heat or electricity.  Furniture made from wood comes from trees. It is strong, flexible and long-lasting and an insulator of heat and electricity.  Fabrics are used to make clothes as they are flexible, warm and do not wear out easily.  Suggested activities:  Children think of different objects e.g. curtains, tables, shoes, towel, umbrella. Think about the properties needed and suitable material or materials.  Fair and comparative testing.  Identify their own question to investigate.  Know what a fair test is. Decide what to change and what to measure or observe. Take repeat readings.  Vocabulary: stretchy, insulating, absorbent, conductors Hard, soft, stretchy, stiff, shiny, reflective, dull, rough, smooth, bendy, stiff, waterproof, absorbent, opaque. |
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| Scientists who have helped develop understanding in this field:  John Dunlop <https://www.youtube.com/watch?v=T_EZ3QuYYXU>  John McAdam <https://www.youtube.com/watch?v=0j2gERdrOH4> |