Year 2 Science – Materials

Pupils should be taught to:

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

Vocabulary

- Identify/ discuss
- Everyday material
- wood, metal, plastic, glass, brick, rock, paper and cardboard rubber
- suitable/ unsuitable
- purpose
- developed/invented
- observe/ identify/classify/ record
- squashing, bending, twisting and stretching.

Snapshot overview

Identify materials and their properties in class and playground.
Use post it notes.
Spider diagram of different uses of each material.

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How can you change me?
How can you change my shape?
Have a range of materials you can and cannot manipulate into different shapes – children explore, discuss and record findings in groups/ pairs.

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Real life scenarios.
Children as designers.
This is the design specification – what materials could you use and why?

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Design:
Mrs. Corbin has these materials. She needs you to design something useful for the school.
Give them a choice of 3 everyday objects.
Justify which materials they could use.
Generate questions – what properties do the materials needs and why?

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Build
Children build their products, ensuring they link back to properties of materials and how their shapes can be changed.
Test products are fit for purpose.

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Evaluate
Did it work/ not work? What went well, what would you do differently?
What made the materials suitable/ unsuitable in relation to their properties and how their shapes could be changed?

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Medium Term Planning

Year Group: 2 **Term**: **Topic: Materials**

	Learning Objective	**Input (including key questions and vocabulary)**
Session 1	I can identify everyday materials and name their properties.	Starter: Teacher to ask children to circulate classroom and identify different materials with a partner. Gather them back together and list ideas/address misconceptions/discuss properties/introduce vocabulary. Input: Children to explore classroom and playground to identify and name everyday materials and their properties including wood, paper, metal, plastic, glass, brick, rock and cardboard using post-it notes to label e.g. bricks of school are strong/durable/waterproof. Generate discussion around suitability of materials linked to their properties. Discuss their findings together as a class. Next: On tables have sugar paper with the names of different everyday materials (as listed above) Children to add (in spider diagram) different uses of these materials linked to their suitability/properties. Are there any objects that can be made out of different materials e.g. spoon can be made of plastic/metal/wood but not glass? Why?

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Session 2	I can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	Starter: have 2 different materials (1 that you can change the shape of and 1 that you can't.) – What's the difference between them? Can you change them? How? Why? Introduce vocabulary: squashing, bending, twisting and stretching. Folding, Task: Have a range of materials on tables. How can you change me? How can you change my shape? Have a range of materials you can and cannot manipulate into different shapes – children explore, discuss and record findings in groups/ pairs on sugar paper or with post it notes.

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Session 3	I can identify and compare the suitability of a variety of everyday materials.	Starter: Introduce idea of people who have developed new materials e.g. Here is a design specification. All the roads are made of dirt and stone and unsuitable for wooden wheels and horses' hooves. We need a new material for the roads. What could we use? What properties do the material/s need? Introduce John McAdam who developed tarmac. (Can also use John Dunlop or Charles Macintosh.) Input: Children as designers! In groups/pairs children are given real-life problems/design specifications on cards that they have to resolve by identifying a suitable material/materials based on their properties. Children to discuss suitable materials fit for purpose and record their ideas in a way of their choosing (drawing/diagram/writing/labelling). Children to present their ideas and justify their choices, audience to pose questions about their design and suitability of materials.

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Session 4	I can chose and justify appropriate materials for a particular purpose. I can ask simple questions and recognise that they can be answered in different ways.	Present children with a letter/email from Mrs Corbin. Mrs. Corbin has these materials. She needs you to design something useful for the school. Children are given a choice of 3 or 4 possible everyday objects that they could design using the skills and knowledge they have acquired over previous lessons. For example a fruit bowl, a ball, a pencil holder (focus is on the properties of the material). Children to plan in groups or pairs. Generate questions about what properties the materials need and why. Then justify which materials they could use. Record questions, ideas and justifications in books – in their chosen format. Model a variety of suitable examples. .
Session 5	I can use suitable materials for a particular purpose. I can perform a simple test.	Children build their products, ensuring they link back to properties of materials and how their shapes can be changed. Children to test their products are fit for purpose (from yesterday's generated questions) in groups in front of class. Teacher models different ways to evaluate their products/choices/suitability.

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Session 6	I can use my observations and ideas to evaluate and answer questions.	Continued from last session. Children to test their products are fit for purpose (from yesterday's generated questions) in groups in front of class. Teacher models different ways to evaluate their products/choices/suitability. Children to record their findings and evaluations in books in chosen format. E.g. labelled photograph, diagram, table written. Did it work/ not work? What went well, what would you do differently? What made the materials suitable/ unsuitable in relation to their properties and how their shapes could be changed?

All children will:

- Be able to generate questions
- Know that shapes of some materials can be changed.
- Know that different materials have different properties.
- Know that different properties make them suitable for different purposes.
- Be able to test materials for suitability.
- Can identify different uses for everyday materials.