



Subject: Science Topic: Champions of change. Year group: 2 Term: Spring 1 Uses of everyday materials

National Curriculum Objectives

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 In EYFS:

Can link object to its material (Materials Y1)

Can link materials to their properties (Materials Y1)

Can classify materials based upon properties (Materials Y1)

Materials can have multiple properties (Materials Y1)

Can begin to test materials for a property (Materials Y1)

Can begin to choose materials for a task based upon properties. Can give reasons for their choices (Materials Y1)

Future Learning In KS1 – Rocks :

Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties

Describe in simple terms how fossils are formed when things that have lived are trapped within rock

Recognise that soils are made from rocks and organic matter

Key Questions

What properties do materials show?

Can you test a material for a property?

Which property is best?

How are solids, liquids and gasses different?

How can we change the shape of a solid?

Substantive Knowledge (key facts and concepts)

-Things are not just made of one material, some can be made from multiple such as a knife with a plastic handle. A paper birthday big with rope handles.

-Classify means to arrange (a group of people or things) in classes or categories according to shared qualities or characteristics.

-Property is how the material is described. For example glass- transparent, brittle, waterproof

-Solid, liquid and gas Solid – rigid (holds shape/volume), not easily squashed. Liquid – Flows, holds volume, not easily squashed. Gas – Expands, volume changes, easily squashed.

To know that some materials are not suitable for certain tasks.

To know that some materials are designed for certain tasks.

To know that some objects can be made from different materials

Disciplinary Knowledge (Working scientifically)

asking simple questions and recognising that they can be answered in different ways

observing closely, using simple equipment

performing simple tests

identifying and classifying

using their observations and ideas to suggest answers to questions

gathering and recording data to help in answering questions

Sequence of lessons

1. What properties do materials show?

Sticky Knowledge

Name that parts of a plant. (y1) Flower, stem, leaf, roots.

What clothes do we wear in the winter?

What is a habitat? A home that provides all the things needed for survival

Intent

Can identify properties of different materials
Can identify and compare the properties of different materials

Can link a material to its purpose

Know that materials can be made from different objects.

Sorting hoops/Rank materials by what is best for the use/Think about same objects different material eg plastic and metal spoons/

2. Can you test a material for a property?

Sticky Knowledge

Show a material (from previous lesson) pupils to identify properties.

What are the four seasons? (y1)

What is a microhabitat? a small, specific area within a larger habitat that possesses its own unique environmental conditions

Intent

Investigate different materials and describe their properties. For example look at brick. Is it hard? Bendy? Waterproof? Transparent?

Physically hold or touch materials to investigate.

3. Which property would be best?

Sticky Knowledge

Name 3 materials.

What is a herbivore? An animals that eats plants.

What does Mrs Gren stand for? Movement, respiration, sensitivity, growth, reproduction, excretion and nutrition

Intent

Test materials based on what would be best for a use. Eg- what would be best for a window? Cutlery, drinks bottle.

Can describe the property clearly to judge performance against. – can be linked to a topic (beegu and waterproof coat, super- hero cape, tower, castle wall, bridge, bird scarer, etc..)

Investigation, test a range of objects/materials.

<u>4. How can we change the shape of a solid?</u> <u>4. Which property would be best?</u> Sticky Knowledge What season is it now? Name an object that is made from two materials? Why is wood a good material for a table? Intent Continue experiment from last lesson. Record results. Which material would be best for its intended purpose? Why? Begin to think about combining materials if that would suit the purpose better.	
Sort materials (objects) into those that can/can't be changed by squashing, bending, twisting & stretching (link to property, e.g. rigid/flexible). Ice. Material properties can be changed (e.g. wood is rigid but wood shavings are flexible).	

5. How are solids, liquids and gasses different?

Sticky Knowledge

What does waterproof mean?

What are the properties of wood?

What is a carnivore? An animal that eats other animals

Intent

Describe properties of solids, liquids & gases:
Solid – rigid (holds shape/volume), not easily squashed.

Liquid – Flows, holds volume, not easily squashed.

Gas – Expands, volume changes, easily squashed.

Can group substances into solid or liquid based upon characteristics.

Make and play with Oobleck (cornflour/water) feel properties of a solid/ liquid. Explore water

Knowledge organiser

Common everyday materials and their properties

Material is the 'thing' the property is how you would describe it.

Wood: Hard, strong, stiff, and opaque. It comes from trees and is used for furniture, flooring, and pencils.

Metal (e.g., steel, aluminum, copper): Hard, strong, shiny, malleable, and often conductive. Used for cars, coins, cans, and cutlery.

Glass: Transparent, waterproof, and brittle (can break), but can be rigid. Used for windows, bottles, and eyeglasses.

Plastic: Highly versatile, lightweight, and waterproof. It can be rigid or flexible (bendable), such as PVC, polythene, or bottles.

Fabric/Textiles (e.g., cotton, wool): Flexible, soft, and often absorbent (towel) or insulating (wool).

Paper/Cardboard: Absorbent, lightweight, and easy to tear or fold. Made from wood pulp.

Rubber: Flexible, stretchy, waterproof, and non-slip (e.g., elastic bands, tires).

Rock/Stone: Rigid, hard, and durable. Often used in building construction

Common misconceptions

Solids, liquids and gases behave the same. Solid is another word for hard. All solids are hard. Focus on the object, not the material, when describing properties. Absorbent ('soaks water up') is the same as waterproof. Properties are exclusive to each material. Water is not a material. Colour is a property. A material is only used for one job.

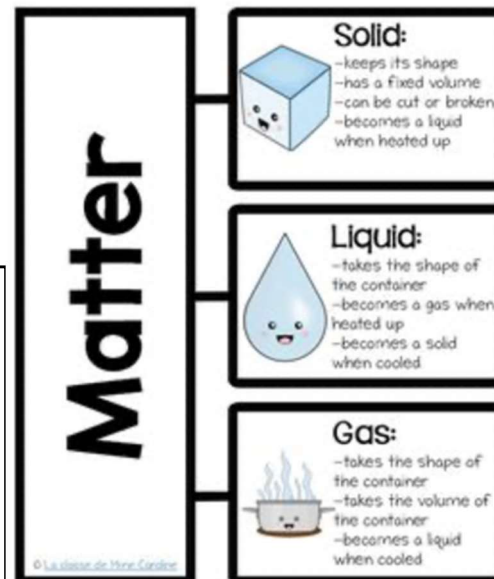
Important Scientists



John Dunlop (1840-1921) Scottish inventor and vet. Developed the first rubber inflatable tyres for use on bicycles in 1890 which revolutionised comfort and speed. He founded Dunlop Tyres Co that allowed cars and motorbikes to later develop.



John McAdam (1756-1836) Scottish engineer and road builder. Invented a new process, 'macadamisation', that stuck stone chippings together with tar to form tarmac. This was the greatest step forward in road building since Roman times. His roads were stronger, lasted longer and were less susceptible to weather.



Key vocabulary and explanations

Waterproof: Keeps water out (e.g., plastic, metal).

Absorbent: Soaks up water (e.g., paper towels, cotton).

Transparent: See-through (e.g., glass).

Opaque: Light cannot pass through (e.g., wood).

Malleable: Can be shaped without breaking (e.g., metal).

Flexible/Bendy: Easy to bend (e.g., rubber, some plastics).

Rigid/Stiff: Difficult to bend (e.g., wood, metal).