Grindon Infant Science Medium Term Planning – Year 2 Uses of Everyday Materials

End of Unit Goals

Pupils will be able to:

- Identify and compare the uses of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard.
- Describe the properties of a range of materials.
- Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.
- There are three states of matter.

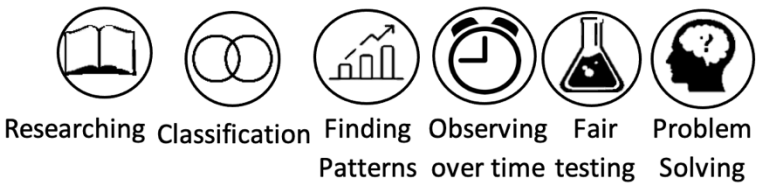
Prior Knowledge

Can link object to its material (Materials Yr1)
Can link materials to their properties (Materials Yr1; Light Yr1)
Can classify materials based upon properties (Materials Yr1)
Materials can have multiple properties (Materials Yr1)
Can begin to test materials for a property (materials Yr1)
Can begin to choose materials for a task based upon properties. Can give reasons for their choices (materials Yr1)

Skill Objectives

Classification			Designing Experiments		
I group by difference or similarity	I group by difference similarity or change	I create groups for sorting	I use some equipment correctly	I use a range of equipment correctly	I use I select suitable equipment for the task
I link properties of materials to an application (help)	I link properties of materials to an application	I combine properties required for an application	I begin to identify the cause variable in an investigation	I identify the cause variable correctly	I suggest a suitable data range for a cause variable
			I follow short demo, spoken & picture instructions	I follow short spoken & written instructions in order	I follow written instructions & write a simple method

Enquiry Types



Key Vocabulary

Object, material, wood, metal, plastic, wool, cotton, paper, cork, rock, glass, fabric, ceramic, rope, concrete, brick, rubber, sponge, elastic, foil, ice, water, water vapour, property, rigid, bendy (flexible), hard, soft, waterproof, absorbent, warm, cold, rough, smooth, dull, shiny, opaque, transparent, application, solid, liquid, gas, squash, bend, twist, stretch, force, sort, group, classify, criteria, equipment, variable, variable label, cause, effect, investigation, range, method.

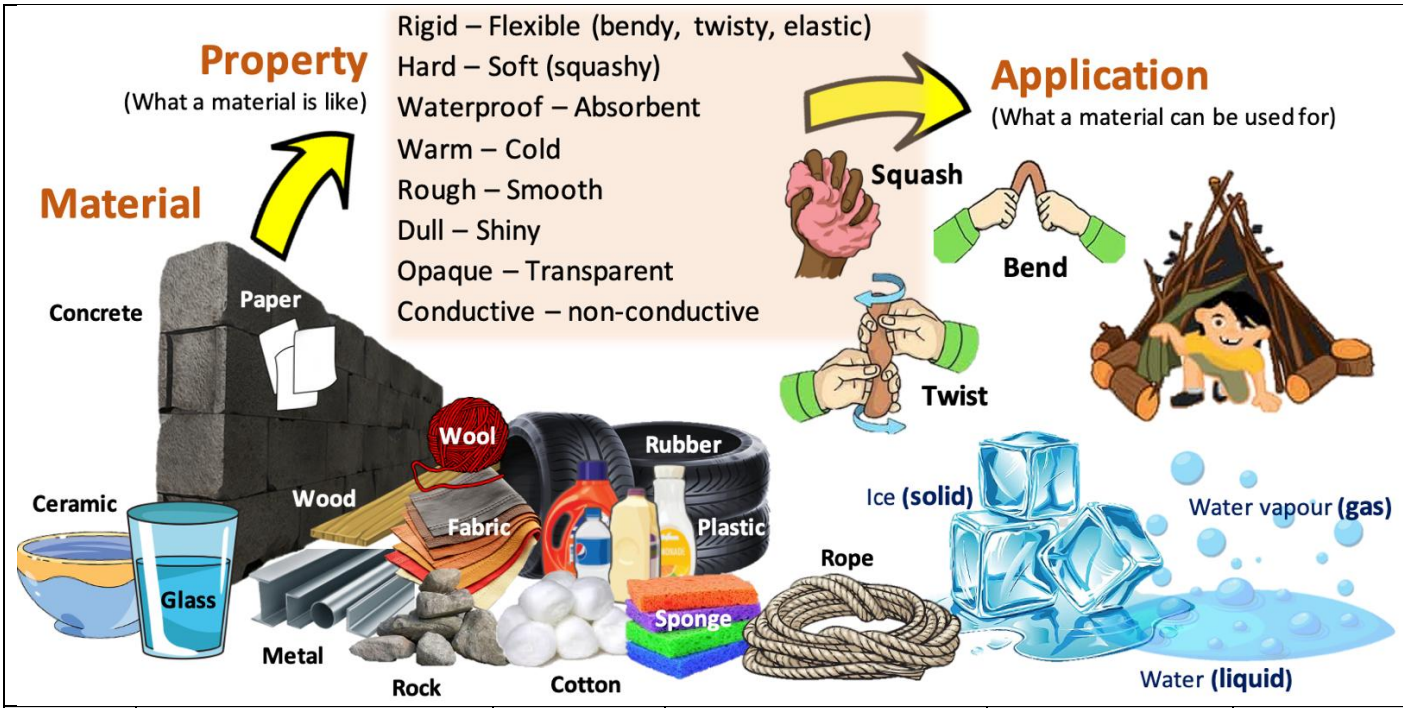
Important Scientists

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.

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.



Session	Knowledge Objective	Skill Objective	Enquiry Opportunities	Extension Opportunities	SEND
1			Ouix from prvious year Explore and discuss skills and knowledge that will be covered in unit.		Preteach vocab using widgit.
2	**What properties do materials show?**	I can use and remember some science facts and words. I can sort objects into groups.	**Recap** What did you learn about materials in year 1? Discuss **Main** Provide groups of chn with different objects made out of different materials. Provide with hoops and chn sort out own headings and groupings for the different characteristics. Put toys into correct areas. Add post-it notes to objects to describe what it is like (hard, soft, bendy, stretchy). Feedback to whole class and add words onto post it notes. Stick picture of sorted objects. **Plenary** What have we been learning today? Recap knowledge and skills used in session. **Key Vocabulary** Solid, bending, squashing, twisting, stretching, property, hard/soft, shiny/dull, bendy/not bendy, stretchy/stiff, transparent/opaque, rough/smooth, waterproof/not waterproof,	Encourage to give reasons why they have sorted the objects the way they have focusing upon the properties.	Mixed groupings

			metal, plastic, glass, brick, paper, fabric, foil, elastic, wood sort, group, classify, criteria		
3	**Can you test a material for a property?**	I can predict. I can use equipment.	**Recap** **Main** **Objects** are things. **Materials** are the different stuff that objects are made from. For example, **coins** are objects and the material that they are made from is **metal**. Materials can have **properties**. Properties are ways of describing what a material **can** or **cannot do**. For example, the metal that a coin is made from **cannot be stretched in a person's hands**. Children predict (placing ticks in table) and find out the properties of different materials.(is it attracted to a magnet?, is it transparent?, Can you stretch it with your hands? Can you squash it with your hands? Does it float? Chn in small groups test out ideas and complete table. **Plenary** How accurate were your predictions? Do they agree with your measurements? Did any of the results surprise you? Did you notice any patterns? What are the main reasons for choosing materials for different parts of the school? **Key Vocabulary** bending, squashing, twisting, stretching, similarity, difference, property, hard/soft, shiny/dull, bendy/not bendy, stretchy/stiff,.transparent/opaque, rough/smooth, waterproof/not waterproof, absorbent/not absorbent, metal, plastic, glass, brick, paper, fabric, foil, elastic, wood equipment, investigation,	Chn explain how objects have different properties. Objects have different properties because_____. Some objects can be _____ and ___ so _____.	Mixed groups Buddy to support with completing table. Verbally explain. Put onto post-its.

4	**Which property would be best?**	I can add science words and labels to diagrams.	**Recap** **Main** As a class think of as many properties that can describe a material. (hard, transparent, opaque, soft, warm, smooth , rough) write up as a bank of words. Take a walk around school to look at different objects e.g. classroom door/large pan from kitchen/chair/. What is it made out of? What properties does it have? Do some have more than 1? Why? Provide chn with pictures of objects looked at. Write the materials it is made out of and its properties. **Plenary** Play guess the object using properties. Chn say properties to describe and others say what the object might be and why. **Key Vocabulary** bending, squashing, twisting, stretching, similarity, difference, property, hard/soft, shiny/dull, bendy/not bendy, stretchy/stiff, transparent/opaque, rough/smooth, waterproof/not waterproof, absorbent/not absorbent, metal, plastic, glass, brick, paper, fabric, foil, elastic, wood	Explain why a ____ is made out of _____. A ____ is made out of _____ so ____.	Preteach vocab using widget cards.
5	Which property would be best?	I can plan a fair test. I can predict. I can use equipment. I can record.	**Recap** **Main** Mrs Keighly has lots of juice to mop up. Can you find the best cloth to mop it up? As a whole class plan a fair test based on absorbency. All chn complete a plan & carry out experiment. Provide groups of chn with different planning boards: What equipment will we need? What will we keep the same? What will we change? How will we carry out the experiment? What are our predictions? I predict the ____ paper will mop up the most because ____.		Preteach the words soak, absorb using widgit and real life example. Mixed groups Teacher scribe predictions and desribe results.

			Provide groups with equipment and resources to investigate. Record results using different types of paper to show the order in which they absorbed. **Plenary** Chn explain results: The _____ paper was the best because it _____. The _____ paper wast the worst because it _____. **Key Vocabulary** Predict, record, plan, absorbent, most, least		
6	**What are solids, liquids and gases?**	I can sort materials.	**Recap** **Main** Introduce solid, liquid, gas using video clip https://www.bbc.co.uk/bitesize/topics/z6p6qp3/articles/zsgwwxs Look at a solid- e.g. lego brick, metal tin. Discuss why it is a solid. Can we see any other solids around us? Share ideas. Place some items into a hoop labelled solid. Look at a liquid – e.g. chocolate, water, soup. Discuss why it is a liquid. Can we see any other liquids around us? Have we had a liquid today? Share ideas. Place some items into a hoop labelled liquid. Look at a gas – blow up a balloon/put balloon over lemonade bottle. Discuss what comes out of the balloon and blows the balloon up (gas). What makes it a gas? Look at steam from hot water and how this is a gas. Add some items to a hoop labelled gases. Are all materials just a liquid/solid? Discuss how some materials can	Add some own materials to the groups. Explain a material that belongs to both groups. ____ can be put into ____ and ____ group because ____.	Preteach vocab: solid, liquid, gas with widgit. Prepared table in book. Adult to support with reading of headings/vocab.

			change with a reversible change and others are irreversible. Chn draw up own sorting table with headings solids, liquids, gases. Provide chn with a selection of pictures to sort (based on discussions within whole class) Learn solid, liquid, gas song **https://www.youtube.com/watch?v=EdQhTXRAs3g** **Plenary** What other materials could we add? Can we explain why matyerials belong in a certain group? Do any belong in more than one group? Why? **Key Vocabulary** Solid, liquid, gas, sort, group, classify, criteria		

Useful Texts, Website & Resources

https://www.youtube.com/watch?v=EdQhTXRAs3g
A Super Sticky Mistake
Alison Donald & Rea Zha (Plastic)
The Great Paper Caper – Oliver Jeffers (Paper)
Solid, liquid or Gas – Jane Lacey & Sernur Isik
Everyday Materials – Ruth Owen