Grindon Infant Science Medium Term Planning - **Year 1 Everyday Materials**

End of Unit Goals

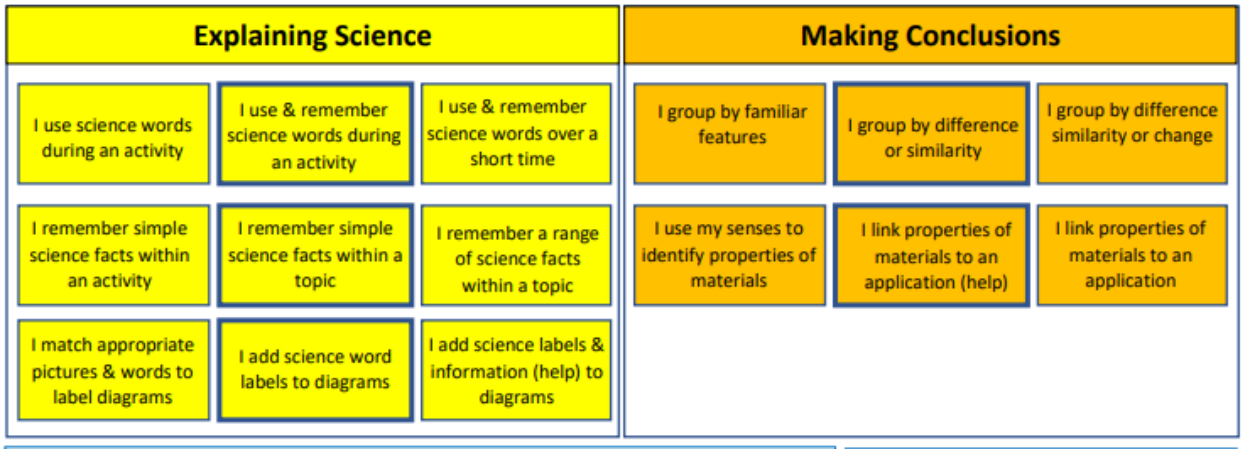
Pupils will be able to:

- Know the materials which objects are made from.
- Know and describe the properties of a range of materials.
- Can compare and sort a range of materials by their properties.

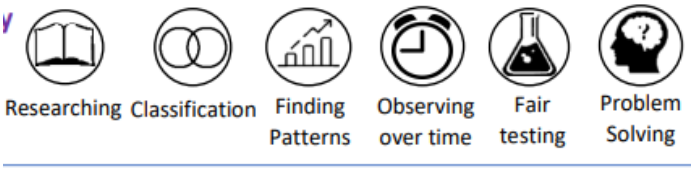
Prior Knowledge

Looks closely at similarities, differences, patterns and change in nature. Talks about why things happen and how things work. Uses everyday (& natural) materials. Explores the natural world around them by making observations. Understand processes and changes, including states of matter. Makes objects from different materials. Observes, measures and record how materials change over time and in different conditions. (EYFS)

Skill Objectives



Enquiry Types



Key Vocabulary

Object, material, wood, metal, plastic, wool, cotton, nylon, paper, cork, glass, rock, fabric, ceramic, rope, concrete, brick, rubber, sponge, elastic, foil, ice, property, rigid, flexible, hard, soft, waterproof, absorbent, warm, cold, rough, smooth, dull, shiny, opaque, transparent, sort, group, classify, criteria.

Important Scientists

Wallace Carothers (1896-1937)

American scientist that invented synthetic rubber, neoprene, in 1930 and nylon in 1935 when working for

Common Misconceptions

Only fabrics are materials. 'Rock' describes an object not a material. Only building materials are materials. Describes the object (focus) not the material. If you break an object up, it loses its properties. Materials that are different shapes & colours cannot be the same. Objects with different uses must be made from different materials.

DuPont. Nylon is used in toothbrush bristles to clothes because it is strong and easily coloured.

Stephanie Kwolek (1923-2014)

Polish-American scientist who invented Lycra in 1958 and Kevlar in 1966 whilst also working at DuPont. Kevlar is 5 times stronger than steel and is used in tennis rackets, parachute lines and bullet-proof vests.

Big Picture model

Session	Knowledge Objective	Skill Objective	Enquiry Opportunities	Extension Opportunities	SEN
1	**What are objects made from?** • I can link an		Complete KWL Grid (Materials). Explore and discuss skills and knowledge that will be covered in unit. Explore a wide range of objects. What are	Discuss why objects are made from a specific material	Children to be grouped in mixed ability groups to

	object to the material(s) it is (mostly) made from. • I can classify objects by their materials. • I know a range of everyday materials. • I can identify objects that contain a mixture of materials.		they called? What are they used for? What do the children think the objects are made out of? Sort the objects into the materials they are made out of. Why do you think this object is made out of this material? What if it was made out of another material, e.g. a toy boat made out of paper. Show children a pair of scissors. Which materials are they made out? Where will we put these if they are made out of two materials? Children to work in mixed ability groups to sort the objects into different materials. Can children decide upon titles for each group?	(property).	support each other. T/TA to observe and support with Scientific vocabulary where necessary.
2	**Can you name everyday materials?** • I know a wider range of everyday & less familiar materials (e.g. cotton/nylon/Kevlar; brick/concrete/ceramic) • I can describe how materials are similar and differen		Play a team game as a warm up. Who can find an object which is made out of a particular material. Children to go on a materials walk around the school to see what materials items are made from. Record on clipboards in groups and display on science working wall after the lesson to refer to in later lessons. Come back together as a class and discuss what materials the children found throughout the school and outside. What object was made out of that material? Challenge: are any of these materials natural or man-made? **Plenary:** Why do you think certain objects are made out of specific materials? Hold a discussion and record ideas on paper. Discuss what would happen if a window was made out of material or if a bouncy ball was made out of glass.	Include difficult materials (cork, ice/ water, glass/rock, Perspex/plastic).	Support children with SEND to recognise materials that items around school are made from. Support with recording with use of Widgit symbols.

	t from one another.				
3	**What are the properties of materials?** • I can describe a range of properties in comparative language (e.g. hard/soft, opaque/transparent) • I can link materials to their properties. • I can begin to choose materials to use for a task by their properties.		Introduce a 'feely bag'. (Sensory exploration. Begin to build comparative language (e.g. rough/smooth). How are the materials different to each other? How are the materials the same? Children to look at a range of scientific words and match these to a range of materials to make their own group 'feely board'. Take photographs of the feely boards for books to assess children's understanding of scientific vocabulary and properties of objects.  	Explore properties of Oobleck (corn flour/water). Can we describe the property of this?	Challenge more able children to add their own labels to the boards to describe the properties of the materials. SEND children to explore properties of Oobleck (corn flour/water). Can we describe the property of this?

4	Can you compare properties of materials? • I can classify materials by their properties. • I can begin to test materials to show their properties (can begin to design ways to show the property)		Can children remember any scientific words we used last week to describe materials? Record these as a spider diagram on IWB. Discuss the word 'bendy'. What does this mean? Show children a range of materials and discuss how we know whether they are bendy or not. Another word for bendy is 'flexible'. What is the word that means they are not bendy? Discuss the term 'rigid'. How could we test whether materials are bendy or not? Children to complete an activity to test which materials are bendy. Children to complete the test sheet to record which materials are bendy and which are rigid. Extension: Why would we need some materials to be bendy? What could they be used for? Repeat with rigid materials. Notes: • Rubber: Rubber's an extremely elastic material, making it a very flexible and highly adaptable resource that's used in a lot of different ways. • Metal: While most metals aren't very elastic, they can be very plastic under the right circumstances, such as when hammered very thin. This allows for them to be used in even more situations. From metal wiring that we need to conduct electricity to massive steel girders used in building construction! Plastics: Plastics vary a great deal, even more so than metals do, based on their structure, but generally, they're like metals and have high plasticity but relatively low elasticity. Cling-film is a good example of this: it can be bent and reshaped into almost any shape, but it won't go back to its initial shape independently, and even if you attempt to do it manually, it's unlikely to work.	Watch BBC 'Inside the Factory'	Support for SEND children with using Scientific vocabulary and carrying out their test.
5	**Which material would be best?** • I can identify the property (ies) required		Discuss scientific words to describe materials. Look at the IWB slide from last lesson. Can we add any new words? What about flexible and rigid? Discuss The Three Little Pigs (English link) and explain they would like to make a new house but it has to be waterproof. What does	Tests materials using equipment.	Support children to carry out the investigation and record findings as speech

	for an application / task. • I can say why the property is needed. • I can select materials by property. • I can say which materials are better/worse. • I can to collect a range of materials need for an application / task. • I can give reasons behind choices.		the word 'waterproof' mean? Look at a range of materials. Which of these do we think will be waterproof and why? Children to make predictions on their sheet about whether they feel their material will be waterproof or not. Encourage children to explain their answers. Carry out an investigation to test which materials are waterproof or not. Explain in the 'results' column on their sheets. How can we tell whether or not a material is waterproof? Which would be the best material to make the pigs waterproof house and why. Although tin foil is waterproof, would this be the best material for the house? Why not? Are there other factors we need to consider? (Strength.)		bubbles.
6	**Which material would be best?** I can show improvement in identifying the property(ies) required for an application / task. • I can securely describe why the property is required. • I can select materials by		Build a den: Describe requirements (e.g. must be able to walk in; must be waterproof, etc). Test. Complete KWL grid.	Use a sustainability project or supports biodiversity (e.g. bug hotel, bird feeder, etc).	Children grouped in mixed abillity.

	property. • I can modify choices based upon experience. Reasons using science.				

Useful Texts, Website & Resources

- Year 1 Science: Everyday Materials - Let's Build | Hamilton Brookes
- Year 1: Everyday Materials | STEM
- Everyday materials - KS1 Science - BBC Bitesize