ST.HUGH'S CATHOLIC PRIMARY – SCIENCE MEDIUM TERM PLANNING - KEYSTAGE 1

Materials

Everyday Materials - Year 1	Uses of Everyday Materials - Year 2
Pupils should be taught to: ♣ *Distinguish between an object and the material from which it is made.* ♣ *Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.* ♣ *Describe the simple physical properties of a variety of everyday materials.* ♣ *Compare and group together a variety of everyday materials on the basis of their simple physical properties.*	*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.*
Prior Learning : Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes. (Early Learning Goal	**Future Learning :** • Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. (Y3 - Rocks) • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. (Y3 - Forces and magnets) • Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. (Y5 - Properties and changes of materials) • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. (Y5 - Properties and changes of materials)

Key Vocabulary Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, transparent, translucent and opaque.	**Key Vocabulary** Names of materials – wood, metal, plastic, glass, brick, rock, paper, cardboard Properties of materials – as for Year 1 + reflective, non-reflective, flexible, rigid Shape, push/pushing, pull/puling, twist/twisting, squash/squashing, bend/bending, stretch/stretching
Common Misconceptions Some children may think: • only fabrics are materials • only building materials are materials • only writing materials are materials • the word 'rock' describes an object rather than a material • 'solid' is another word for hard.	
What is a material? Children will learn what materials are, identify some common materials, and begin to describe some of their uses. Through discussion, children will be introduced to the term "material". Possible activity: Observe closely Give each child one object that can be made of different materials (for example spoons or cup) and ask them to talk about the objects with a partner. At the end of the session, children are asked to choose an object to talk about. Begin a list of common materials. **See TAPS Focused Assessment Plans – Describing Materials +** **Plan Assess Examples of Work - Tahmeed** **Key Learning:** The word material refers to the matter from which an object is made. (Children may think of a material being just cloth). All objects are made of one or more materials. Some objects can be made from different materials e.g. plastic, metal or wooden spoons.	**What are some of the materials used in our classroom?** In Year 1 children would have spent some time distinguishing between an object and the material from which it is made. Recap this with the children by identifying and naming a variety of everyday materials in the classroom, e.g. wood, plastic, glass, metal, and rock. Consider how to classify objects which are made from more than one material e.g. record most important part, or make a 'mixed materials' row on recording table. Possible Starter Activity to assess prior knowledge: Children to pick out an object from a feely bag. Name the material it is made from and describe some of its properties. Observing Children can then independently identify objects around the classroom and describe the materials they are made from. **https://explorify.uk/en/activities/odd-one-out/brushing-up**

What are some of the materials everyday objects are made of? Children will look at a variety of objects and identify some of the materials they are made of. They will identify a variety of everyday materials including wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool and clay. Activity: Identifying and classifying Provide children with a variety of objects and ask them to choose how to sort the objects into groups. Include objects made from 1 or more materials. Encourage them to name the objects and talk about the materials they are made from as they carry out the sorting. Add to the class list of materials. They could go on to use a Venn Diagram to record results. **https://explorify.uk/en/activities/odd-one-out/fascinating-forks**	**What materials can you find around school?** Gather and record data to help in answering questions Ask groups of children to go on a materials hunt around school, collecting their findings on a pre-prepared table and/or using a camera. Record: Object, Material and Why it is made of this material. Collate class results, noting with the children different ways to record data clearly. **See TAPS Plan – Materials Hunt**
What are the properties of some everyday materials? Children will be able to describe a variety of properties including hard, soft, stretchy, stiff, shiny, dull, rough, smooth bendy, floppy, breaks/tears, rough, smooth, shiny, dull, waterproof, not waterproof, absorbent, not absorbent, see through, not see through. NB some of these properties are studied in more detail later on. Possible activities: Carry out a hot seating activity, where the class teacher (and then the children) pretend to be a material and the children have to ask questions about its properties in order to identify and name the material. **See TAPS Focused Assessment Examples – Sorting Materials** Children describe a material of their choice using the scientific vocabulary they have been introduced to. **https://explorify.uk/en/activities/zoom-in-zoom-out/hooks-and-loops**	**Are some materials better than others?** Choose a selection of the materials spotted in the last activity and encourage the children to think more explicitly about the properties of the materials used for different objects. Name the property using the correct scientific vocabulary? Explain why the material is suitable? Name another material that would also be suitable alternative. Name a material that would be unsuitable for the object. Explain why it would be unsuitable. **See Plan Assess Examples of Work** **https://explorify.uk/en/activities/odd-one-out/fit-for-purpose** **Key Learning**: All objects are made of one or more materials that are chosen specifically because they have suitable properties for the task. For example, a water bottle is made of plastic because it is transparent allowing you to see the drink inside and waterproof so that it holds the water. When

Key Learning Materials can be described by their properties e.g. shiny, stretchy, rough etc. Some materials e.g. plastic can be in different forms with very different properties.	choosing what to make an object from, the properties needed are compared with the properties of the possible materials, identified through simple tests and classifying activities. A material can be suitable for different purposes and an object can be made of different materials.
Which materials will float? **See TAPS Y1 Plans – Float and Sink** Perform simple tests to compare and group: Children to predict then test which objects will float and sink.	**How can we change the shape of materials?** **https://explorify.uk/en/activities/mystery-bag/changing-shape** Children investigate how to change the shape of a piece of playdough/plasticine. Encourage the children to use the correct scientific vocabulary to describe their actions. *e.g. I changed it by bending. Playdough is flexible.* Find objects in the classroom, identify the material they are made from, and then test to see if they can change their shape by bending, squashing, stretching or twisting. Why can you change the shape of some of the objects but not others? **See Plan Assess Examples of Work** **https://explorify.uk/en/activities/the-big-question/which-is-the-bendiest** **Key Learning**: Objects made of some materials can be changed in shape by bending, stretching, squashing and twisting. For example, clay can be shaped by squashing, stretching, rolling, pressing etc. This can be a property of the material or depend on how the material has been processed e.g. thickness.

Which materials are opaque and which are transparent? **See TAPS Plans – Ways to test transparency** Recognise that sorting questions can be answered in different ways. Children to test a variety of materials to find out which are transparent and opaque. Challenge: which are translucent? When discussing properties, it is important to discuss why the properties of materials make them suitable for certain uses. **https://explorify.uk/en/activities/what-if/all-materials-were-transparent**	**Which material shall I use?** Children to suggest suitable materials that could be used for a particular object, with a focus on stretchiness/stiffness and flexibility/rigidity. Objects chosen could link with class theme. e.g. Link to castles – What materials could be used for the draw bridge, swords etc.? **See Plan Assess Examples of Work** **https://explorify.uk/en/activities/what-if/every-material-was-rigid** **https://explorify.uk/en/activities/what-if/every-material-was-stretchy**
Which material would be suitable to make a coat for teddy? **https://explorify.uk/en/activities/odd-one-out/dressed-for-action** Recognise that questions can be answered in different ways. Perform simple tests Provide children with the problem of identifying the best material for Teddy's coat. Give them a range of materials to explore and discuss in small groups. As a class, discuss the properties that would make a material suitable for a raincoat and introduce them to the term 'waterproof'. Make predictions before carrying out a simple experiment to test how waterproof a variety of materials are. Explain that additional properties need to be taken into account when identifying the most suitable material for the coat. *Enhancement: As an extension, children could explore the reflectiveness of different materials to add "safety strips" to the coat.* **https://explorify.uk/en/activities/what-if/all-your-clothes-were-shiny**	**Can the same material be used to make different objects?** Give the children an object. What material is it made from? Can they think of a new use for the material it is made from? **Key Learning** The same material can be used for different purposes, but a material used in one form for an object may not behave in the same way when it is used in a different form for another object. **See Plan Assess Examples of Work** **https://explorify.uk/en/activities/odd-one-out/through-the-looking-glass** **https://explorify.uk/en/activities/whats-going-on/fantastic-fibres**

	Which material would make the best tent cover? Ask the children to decide on the 3 most important properties. They then test these properties and decide which would be the best. In Year 1 the children tested how waterproof materials were. How to carry out a simple test to investigate this property could be modelled by the teacher and then the other properties tested by the children with a higher degree of independence. Carry out simple tests, record data in a prepared table, use results to answer a question. **See Plan Assess Examples of Work**
Throughout this unit, it is important to revisit the language of both materials and properties. For example, as a starter, children could be given a variety of property cards which they match to given materials/objects.	Enhancement Activity - Which would be the best material to make a boat? Ask simple questions and recognise that they can be answered in different ways **See TAPS Plans + Examples – Y2 Boat Materials**
Assessment: show understanding of a concept using scientific vocabulary correctly **Possible evidence:**	
• Can label a picture or diagram of an object made from different materials • Can describe the properties of different materials	• Can name an object, say what material it is made from, identify its properties and make a link between the properties and a particular use • Can label a picture or diagram of an object made from different materials • For a given object can identify what properties a suitable material needs to have • Whilst changing the shape of an object can describe the action used • Can use the words flexible and/or stretchy to describe materials that can be changed in shape and stiff and/or rigid for those that cannot • Can recognise that a material may come in different forms which have different properties

Assessment: apply knowledge in familiar related contexts, including a range of enquiries **Possible evidence:**	
• Can sort objects and materials using a range of properties • Can choose an appropriate method for testing an object for a particular property • Can use their test evidence to answer the questions about properties e.g. “Which cloth is the most absorbent?”	• Can sort materials using a range of properties • Can explain using the key properties why a material is suitable or not suitable for a purpose • Can begin to choose an appropriate method for testing a material for a particular property • Can use their test evidence to select appropriate material for a purpose