









Netherton C of E Primary Subject: Science - Materials



Year: 1	Big Question: What are everyday materials and what are they like?
Context and curricular links	<p>Prior units and knowledge: Use all their senses in hands-on exploration of natural materials (Nursery - Materials, including changing materials); Explore collections of materials with similar and/or different properties (Nursery - Materials, including changing materials); Talk about the differences between materials and changes they notice (Nursery - Materials, including changing materials).</p> <p>Future learning: Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses (Y2 - Uses of everyday materials); Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching (Y2 - Uses of everyday materials).</p>
School values, spirituality and school vision <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="font-size: small;">Our vision is for all children to believe</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  I am loved. </div> <div style="text-align: center;">  I am accepted. </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;">  I can grow. </div> <div style="text-align: center;">  I can do it. </div> </div> </div>	<p>Fairness: Treating all living things in the same way.</p> <p>Acceptance: Accepting that it is our duty to look after God's earth and its living things.</p> <p>Perseverance: Persevering when dealing with a pet – learning curve.</p> <p>Respect: Respect for all living creatures – looking after their environment and needs.</p> <p>Forgiveness: Forgiving animals for their eating habits – carnivores need to eat other animals – circle of life.</p> <p>Positivity: Remaining positive when animals' needs are not met – charity.</p>
Key Milestones for the unit	<p>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</p> <p>Distinguish between an object and the material from which it is made.</p> <p>Describe the simple physical properties of a variety of everyday materials.</p> <p>Compare and group together a variety of everyday materials on the basis of their simple physical properties.</p> <p>Observe closely and perform simple tests.</p> <p>Use observations and ideas to suggest answers to questions.</p>
Essential Information for Teachers	<p>Common Misconceptions:</p> <ul style="list-style-type: none"> • 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

<p>'Golden Nuggets' To be reviewed orally at the beginning of each lesson and accumulate across the unit</p>	
<p>'Golden Nugget' based on previous unit</p>	<p>What is a material? Materials are what things are made from.</p>
<p>'Golden Nugget' based on Lesson 1</p>	<p>What are everyday materials? Wood, metal, plastic, glass, fabric, water, rock.</p>
<p>'Golden Nugget' based on Lesson 2</p>	<p>What is the difference between objects and materials? An object is something that you can touch; a material is what the object is made from.</p>
<p>'Golden Nugget' based on Lesson 3</p>	<p>What properties do different materials have? Wood: hard, stiff, dull, rough, smooth, inflexible, absorbent, opaque Plastic: hard, stiff, shiny, smooth, flexible, inflexible, waterproof, opaque, transparent Metal: hard, stiff, shiny, smooth, inflexible, waterproof, opaque Glass: hard, stiff, shiny, smooth, inflexible, waterproof, transparent Fabric: soft, stretchy, rough, smooth, flexible, absorbent, opaque Rock: hard, stiff, dull, rough, smooth, inflexible, waterproof, opaque</p>
<p>'Golden Nugget' based on Lesson 4</p>	<p>Do materials always behave in the same way? No. Some objects made of plastic can be flexible; some are stiff. Some objects made from metal can be bent; others cannot. Some plastic objects are transparent; others are translucent or opaque.</p>
<p>'Golden Nugget' based on Lesson 5</p>	<p>Why do we test materials for suitability?</p>



	If materials are not tested for suitability, objects could be made from unsuitable materials and not work well.
'Golden Nugget' based on Lesson 6	<p>How can materials be sorted?</p> <p>Materials can be sorted by their properties: not absorbent or absorbent; waterproof or not waterproof; rough or smooth; hard or soft; shiny or dull; transparent, translucent or opaque; flexible or inflexible; stretchy or not stretchy.</p>

Week 1	Key Question for Lesson 1: What are everyday materials?	Key Vocabulary
	<p>Key Milestone: Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</p> <p>Useful Links:</p> <p>- https://www.bbc.co.uk/bitesize/topics/zrsgk7/articles/zvpysk7</p> <p>- https://explorify.uk/en/activities/listen-what-can-you-hear/material-world</p> <p>- Prior Unit Exit Ticket: Share the prior unit exit ticket with the children, discuss it, then allow them to complete it and stick it into their books.</p> <p> Speak clearly and confidently in a small group of known peers.</p> <p>- Exploring Materials: Explain to the children that they will be exploring some different materials and that although this is exciting, they need to follow the rules to be safe. Share read some safety points (see PPT) and discuss. Allow children to now explore the different materials (where possible, these should be raw materials e.g., a plank/piece of wood rather than a wooden chair). Ensure that children are suitably supervised when handling potentially more dangerous materials such as glass/metal. <i>Can you name these materials?</i></p> <p>- Naming Materials: Share read some of the names of the materials (see PPT) and discuss what some of the materials may be used for – only briefly as this is the main focus of the next lesson.</p> <p>- Matching: Children use differentiated 'Labelling Materials Activity Sheet' to match the words to the materials.</p> <p>- Key Words: Give each pair a different material and children must think of three adjectives to describe their material. Provide or come up with a class word bank. Record these adjectives and keep them safe for Lesson 3.</p> <p> Speak clearly and confidently in a small group of known peers.</p>	<ul style="list-style-type: none"> • material • wood • plastic • metal • glass • water • fabric • rock • soft / hard • shiny / dull • waterproof / absorbent • transparent • rough / smooth • flexible / inflexible
		Evaluation
Cross Curricular Links		
English: Shared reading		
'Exit Ticket'		
Children match the names of everyday materials to pictures, then use an adjective to describe the material.		

Match the material to its name, then use one word to describe it.

glass wood metal rock plastic

Exit Ticket

Week 2	Key Question for Lesson 2: What is the difference between objects and materials?	Key Vocabulary
<p>Key Milestone: Distinguish between an object and the material from which it is made</p> <p>Useful Links:</p> <ul style="list-style-type: none"> - https://www.bbc.co.uk/programmes/p01193vm - https://www.bbc.co.uk/bitesize/topics/zrsgk7/articles/z6jm7yc - https://explorify.uk/en/activities/odd-one-out/fascinating-forks <p>- Prior Lesson Exit Ticket: Display the prior lesson's exit ticket with the children and review their responses to it.</p> <p> Speak clearly and confidently in a small group of known peers.</p> <p>- Object Challenge: In groups, children look at the different versions of the 'Object Challenge Activity Sheet'. <i>What have all the objects got in common?</i> Ask groups to feedback and encourage children to explain their reasoning.</p> <p> Include 'because' in their contribution to justify ideas.</p> <p>- Object Challenge Answers: Review the answers (see PPT). Explain that although some of the objects are made of more than one material (e.g. the magnifying glass), they all had one material in common.</p> <p>- Material Challenge: Discuss the difference between actual objects and the materials they are made from. Ask children to identify the objects in the pictures, as well as the materials they are made from.</p>		<ul style="list-style-type: none"> • objects • materials • common • same • everyday • metal • wood • plastic • water • glass • rock
		<p>Evaluation</p>

- **Objects and Materials:** Choose from the differentiated 'Objects and Materials Activity Sheet', getting the children to identify an object and show what material(s) it is made from.

- **Odd One Out:** With a partner, children look at pictures and discuss which they think is the odd one out. Discuss ideas, encouraging children to explain their thinking.



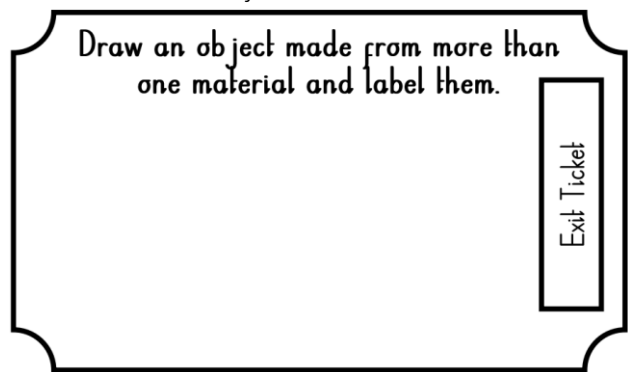
Include 'because' in their contribution to justify ideas.

Cross Curricular Links

English: Shared reading

'Exit Ticket'

Children draw an object made from more than one material, then label the materials.



Week 3	Key Question for Lesson 3: What properties do different materials have?	Key Vocabulary
	<p>Key Milestone: Describe the simple physical properties of a variety of everyday materials</p> <p>Useful Links:</p> <ul style="list-style-type: none"> - https://www.bbc.co.uk/bitesize/topics/zrsgk7/articles/zvpysk7 - https://explorify.uk/en/activities/zoom-in-zoom-out/cosy-comfort <p>- Prior Lesson Exit Ticket: Display the prior lesson's exit ticket with the children and review their responses to it.</p>	<ul style="list-style-type: none"> • properties • materials • hard • soft • stretchy • stiff • shiny • dull • rough • smooth • flexible



Speak clearly and confidently in a small group of known peers.

- **Key Words:** Share read the keyword list which was compiled at the end of Lesson 1. Go through the words and explain and discuss what they mean. Display words (see PPT) - did children think of any of these words? Explain these words are known as 'properties'.

- **Describing Materials:** Let children explore a range of materials and objects made from different materials. Encourage children to describe what materials look like and how they feel. Give each child a card from the 'Everyday Materials Vocabulary Cards' and ask them to put it next to a material or an object which has that property. Shuffle the cards and then repeat several times. Encourage children to explain their thinking.



Use non-verbal signals to indicate agreement or disagreement.

- **Description Activity:** Children use the differentiated 'Description Activity Sheet' (MA and HA) to describe the properties of the materials, using the 'Everyday Materials Word Mat' to support them. LA use a set of materials to describe the properties to one another – record around small pictures.

- **Feely Bag:** Choose a child to describe a material from a feely bag, simply by touching it. Children could use the 'Feely Bag Activity Sheet' to help them work out which material is being described. *Why do you think it's that particular material? Why can't it be [material]?*



Include 'because' in their contribution to justify ideas.

- waterproof
- absorbent
- transparent
- translucent
- opaque

Evaluation






Cross Curricular Links

English: Shared reading



'Exit Ticket'

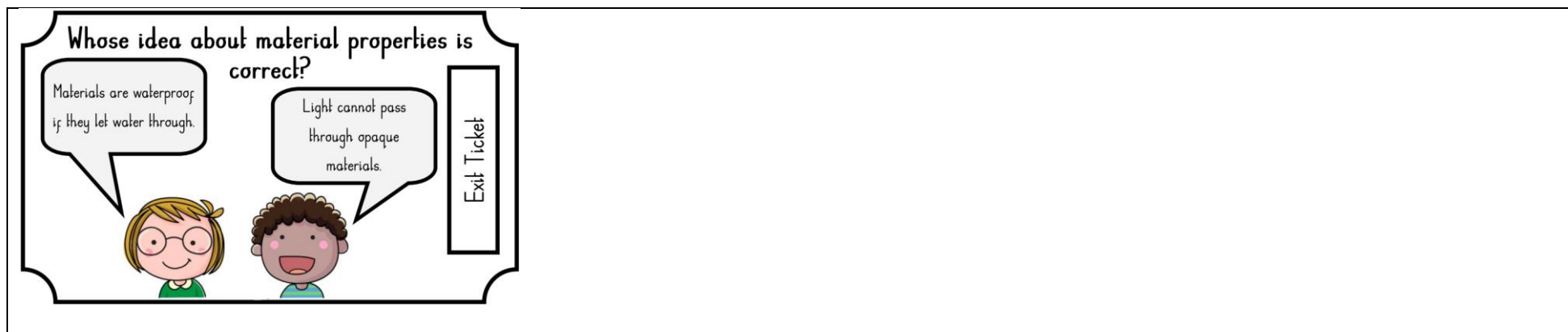
Children circle the correct properties of the different materials.




Circle the properties of each material:

rock	metal	wood	plastic	glass
				
soft	absorbent	rough	absorbent	dull
flexible	opaque	shiny	dull	transparent
absorbent	transparent	stretchy	waterproof	rough
hard	soft	flexible	soft	stretchy

Exit Ticket

Week 4	Key Question for Lesson 4: How do we test the properties of materials?	Key Vocabulary
<p>Key Milestone: Describe the simple physical properties of a variety of everyday materials</p> <p>Useful Links:</p> <ul style="list-style-type: none"> - https://www.bbc.co.uk/teach/class-clips-video/ks2-science-which-paper-towel-is-most-absorbent/zfy48hv - https://explorify.uk/en/activities/what-if/every-material-was-rigid <p>- Prior Lesson Exit Ticket: Display the prior lesson’s exit ticket with the children and review their responses to it.</p> <p> Speak clearly and confidently in a small group of known peers.</p> <p>- Properties: Challenge talk partners to list as many different property words as they can on small whiteboards or verbalise.</p> <p>- Key Words: Display and share read property words so children can tick off the ones they recorded. <i>What does [property word] mean? Can you think of a material with this property?</i></p> <p>- How Materials Behave: Share read information regarding some properties being easier to identify than others. Model how to test whether something is waterproof, transparent or opaque or absorbent.</p> <p>- Property Testing: Children use the differentiated ‘Property Testing Activity Sheet’ to test each material and record their findings. Explain that they are testing the properties of materials by looking at objects that are made from that material.</p> <p>- Property Testing Results: Discuss what children discovered. <i>Which materials were bendy / waterproof / transparent / opaque / absorbent? How did you test them?</i></p> <p> Speak clearly and confidently in a small group of known peers.</p>		<ul style="list-style-type: none"> • material • behave • test • record • waterproof • transparent • absorbent • opaque
Cross Curricular Links		Evaluation
English: Shared reading		
‘Exit Ticket’		
Children circle the opinion about testing materials that they agree with.		



Week 5	Key Question for Lesson 5: Why do we test materials for suitability?	Key Vocabulary
<p>Key Milestone: Observe closely and perform simple tests</p> <p>Secondary Milestone: Use observations and ideas to suggest answers to questions</p> <p>Useful Links:</p> <p>- https://explorify.uk/en/activities/odd-one-out/fit-for-purpose</p> <p>- Prior Lesson Exit Ticket: Display the prior lesson's exit ticket with the children and review their responses to it.</p>		<ul style="list-style-type: none"> • investigation • prediction • predict • observe • record • results
<p> Speak clearly and confidently in a small group of known peers.</p> <p>- Ted's Problem: Share read about Ted and his problem (see PPT). <i>How could we help Ted?</i> Explain that we would like to make him an umbrella, but we're not sure which material would be best to use.</p> <p>- Materials: Show children the four different materials they will be testing. (The materials need to be able to cover a small plastic pot and be able to be attached to the pot using an elastic band. One of the materials should ideally be a type of plastic like that of an umbrella. Share read questions posed (see PPT) and allow time for talk partners to discuss and answer them.</p> <p> Include 'because' in their contribution to justify ideas.</p> <p> Take turns in a conversation with a peer.</p>		<p style="text-align: center;">Evaluation</p>

- **The Investigation:** Share read the investigation information and remind children to fill in their differentiated 'Umbrella Investigation Activity Sheet' as they go (those children using the HA sheet will need to write their prediction prior to carrying out their investigation).
- **Umbrella Investigation:** Groups carry out their investigation as a group and use the tables from the differentiated 'Umbrella Investigation Activity Sheet' to record their investigation individually.
- **Results:** Discuss which material children think would be best for Ted's umbrella and why. Then discuss why it wouldn't be suitable to make an umbrella out of other materials (for example metal or glass).



Include 'because' in their contribution to justify ideas.

Cross Curricular Links


English: Shared reading


Maths: Measuring amounts of water to ensure a fair test


'Exit Ticket'


Children predict which material would be suitable for a picnic plate.

Circle the material more suitable for making picnic plates:


paper


wood


glass


plastic

Exit Ticket

Week 6

Key Question for Lesson 6: How can materials be sorted?

Key Vocabulary

Key Milestone: Compare and group together a variety of everyday materials on the basis of their simple physical properties

- sort
- group
- compare
- properties

Useful Links:

- <https://explorify.uk/en/activities/odd-one-out/brushing-up>

- **Prior Lesson Exit Ticket:** Display the prior lesson's exit ticket with the children and review their responses to it.



Speak clearly and confidently in a small group of known peers.

Evaluation

- **Sorting:** Partners sort each set of pictures (see PPT) into two groups. Work through each set and discuss how the pictures could be sorted (red and not red, farm animals/zoo/wild animals, hard and soft).

- **Sorting Circles:** Sitting in a circle, children look at different objects made of different (or a mix of) materials and pass them around. *How could we describe their properties?* Share read and use the 'Everyday Materials Vocabulary Cards' to remind children of the different properties. *How could we sort these objects?* Using the 'Everyday Materials Vocabulary Cards', the sorting hoops and the PPT, model how to label each circle e.g. rough and smooth. Ask children with a rough object to put it in the circle. Then ask children with a smooth object to put it in the other circle. Identify objects which are both rough and smooth. *Where could we put them?* Model how to overlap the circles to include any objects which have both properties.



Use non-verbal signals to indicate agreement or disagreement.

- **Property Sort:** Children complete the differentiated activities to sort the objects. Take photos of their sorted objects for their books. Then challenge them to think of absorbent and not absorbent objects. LA children go on a walk around the classroom or school (if adult support is available). Identify different objects which have different properties e.g. rough and smooth objects, hard and soft objects. MA children 4 sorting hoops and ask them to label them rough and smooth and dull and shiny. Children find objects from around the classroom to put into each hoop. HA children to be given 4 sorting hoops and ask them to label them opaque/transparent/ waterproof/not waterproof. Children sort the Waterproof Sorting Cards and Transparent or Opaque Sorting Cards into the hoops.



Take turns in a conversation with a peer.

- **Material Sort:** Children sort the 'Sorting Materials Cards' by different materials they are made from (some may fall into more than one category). Allow groups to share what they have sorted and address any misconceptions.



Speak clearly and confidently in a small group of known peers.

Cross Curricular Links

English: Shared reading

'Exit Ticket'

Children tick or cross to assess how objects made from different materials have been sorted in a Venn diagram.

Is this sorting correct? Tick or cross.

absorbent



not absorbent



Exit Ticket