Materials (ages 4-7)

Explorify planning support

Curriculum statements	Explorify activities	Suggested use / taking it further
EARLY YEARS		
Through creative play, I explore different materials and can share my reasoning for selecting materials for different purposes. *(Scotland)* **Explore a range of natural and man-made materials** (*Northern Ireland)* **I can explore the properties of materials and choose different materials for a particular use.** *(Wales)***Talk about the differences between materials and the changes they notice (***England*	**Introduction to materials** Red cracks - brick **ZIZO** Hairy preformance- cardboard **ZIZO** Brown cracks –wood **ZIZO** Tightly woven –fabric **ZIZO** Marked and bumpy – plastic **ZIZO** Scratchy and silver – metal **ZIZO** Shiny stripes –swing **ZIZO** Grey ridges –tyre **ZIZO**	Use the **Zoom In, Zoom Out** activities to start a conversation about different materials or to reinforce activities in the classroom. All the ZIZOs can be followed up with I-spy games searching for the particular materials. Make sure the children have lots of hands-on experience; feeling and exploring each material. You can then start to introduce adjectives to describe the materials. Our new Early Years activities all have lots of suggestions for activities you can have happening in your setting in the **Take it furthe**r section using the ***Play, observe and ask*** format.

	Silver sports –metal **ZIZO** Speckled and shiny – pebble **ZIZO** Black bumps – wellington boots **ZIZO** Does it float? **WGO** Bubble fun **WGO**	
	Let it snow **WJH** Snowman melting **WJH** An icy treat - lolly melting **WJH** Fairy cakes **WJH**	The new **What Just Happened** resources look at a change occurring, for example, melting or cooking. They can be used with a group, or whole class, and give children the chance to reflect on a change they are familiar with through a series of images made into a short video.
AGE 5-6		
Distinguish between an object and the material from which it is made	**Exploring materials** Cosy comforts **ZIZO**	**These 3 activities could be used when teaching how items of clothing are made from fabric.** Be aware that some children will

Through creative play, I explore different materials and can share my reasoning for selecting materials for different purposes. *Scotland*	Fuzzy friend ZIZO Point of View ZIZO A bowl full OOO	use the words material and fabric interchangeably. Fabric refers to cloth, material is what any object is made from. Use these as a starting point for a walk around school looking for different fabrics. You could also give children different fabrics/materials to sort. They could decide how to sort, or you could get them sorting by simple properties like soft, shiny, dull etc.
	Have you ever had a favourite toy that broke? HYE	The Have You Ever activity gives children the chance to talk about something that is important to them and discuss what it was made of and its properties.
Understanding how some materials are made	Spinning a yarn WGO Fantastic Fabrics WGO Plant takeaway WGO	Children see that wool comes from a sheep and that paper comes from wood. In Plant takeaway we're shown what we would be left with if everything sourced from plants was removed from our homes.
Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock **By investigating how water can change from one form to another, I can relate my findings to everyday experiences**. **I can talk about science stories to develop my understanding of science and the world around me.** *Scotland*	**Identifying everyday materials** Material world LWCYH Celebrating success ZIZO In disguise ZIZO See through ZIZO Hard crust ZIZO Bright spark ZIZO Rocky landscapes ZIZO Fascinating Forks ZIZO Mysterious material ZIZO Write away OOO Wonderful water OOO	Show the children a selection of objects: ceramic plates, metal (knives and forks?), pieces of sandpaper, wood. What are they made of? What can they find out by looking? What can they find out by touching? What can they find out by listening? -use 'Material world' to match the material to the sound. Can they make the same sound? Take the class for a walk around school and classify the different materials they see. Ask what materials can they see in the classroom then use activities. Material hunt – draw, note what is metal, wood, glass, fabric, plastic.
		With Year 1 children, these activities can be used to discuss the different materials. It is important to follow this up with hands on activities where they can feel and explore the materials. For

I can identify, follow and begin to create sequences and patterns in everyday activities	Cardboard Catastrophe - SWA	example, comparing how cool metals feel compared to wood or plastics. Lots of children get confused about plastic (it can be shiny, look like wood, flexible or rigid etc). This could be extended by looking at the properties of each material. Can the children create a piece of art from cardboard – there are lots of ideas in Cardboard Catastrophe.
Describe the simple physical properties of a variety of everyday materials **Through creative play, I explore different materials and can share my reasoning for selecting materials for different purposes.** *Scotland* **I can explore the properties of materials and chose different materials for a particular use**	**Physical properties of everyday materials** Playtime Bottle it Up WGO LWCY Through the looking glass OOO	Challenge the children to identify all the different materials in Playtime. These 2 activities can be used to teach children about **glass.** Children identify that they can hear glass. Leads onto discussion of the properties of glass. Follow up with Through the Looking Glass OOO. Where children can compare the glass in everyday objects.
	Bits and pieces OOO Celebrating success ZIZO Shiny Objects MB	**Metal** Children shown a selection of objects made of metal. Name the object and its use. Describe its properties.
	The space in between ZIZO	**Absorption** Look at the properties of a sponge and understand that some objects are absorbent. This could be followed by children investigating which objects are absorbent.
	In disguise ZIZO Synthetic selection MB Is it plastic? OOO	**Plastic** Look at different objects made of plastic. How do they know they are made of plastic? Children answer the questions based on handling the objects, drawing on previous knowledge. Give children a range of different materials and get them to sort them by different properties. You could also discuss the properties of different materials on a walk around the school, or even just in the classroom.

Compare and group together a variety of everyday materials on the basis of their simple physical properties. **Through creative play, I explore different materials and can share my reasoning for selecting materials for different purposes.** *(Scotland)*	Is it plastic? **OOO** Good at the job **OOO** Funky junky boats **PS** Have you ever put something in the recycling bin? **HYE**	The two Odd One Outs can get children sorting and grouping different materials. Children can explore which materials float by putting different materials in bowls of water. You could then develop the investigation by asking children to think of other properties a boat would need to have. For example, is it strong? Children could then discuss strength. This could be linked to the story ***Lost and Found*** by Oliver Jeffers. Children could sort different materials for recycling.
AGE 6-7		
Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses **Through exploring properties and sources of materials, I can choose appropriate materials to solve practical challenges.** **Throughout all my learning, I take appropriate action to ensure conservation of materials and resources, considering the impact of my actions on the environment.** **I have contributed to discussions of current scientific news items to help develop my awareness of science.** *Scotland*	**Material properties** Fit for purpose **OOO** Have you ever sorted your toys in different ways? **HYE** Have you ever squashed a sandwich in your bag? **HYE** Have you ever had a favourite toy that broke? **HYE** It's in the bag! **OOO** Bottle it Up **LWCYH** Fascinating Forks **OOO**	**A good introduction to the suitability of materials:** Discuss why materials have certain properties and why certain materials are suited for that purpose. Children could then design their own "useless" invention. Michael Rosen's poem ***Woolly Saucepan*** is a great stimulus. **Items that are fit for purpose but made from different materials** Children identify the material and look at the physical properties. You could also discuss why mesh and paper bags may become more common. Children could explore which bag is strongest, comparing how many books each bag can carry without breaking. Children could compare different bottles/containers made of different materials, e.g. milk containers made of plastic, glass and card. A similar activity would be to compare forks different made from different materials. Why and when would you use each one? Take it further in the classroom by tasking children compare a selection of brushes, grouping them together based on particular properties, justifying why these have been chosen.

I can explore the properties of materials and chose different materials for a particular use.	Brushing Up **OOO** Sew what **LWCYH** What if all your clothes were shiny? **WI** Dressed for the weather **MB**	**Suitability of materials for clothing and footwear** These are good for rehearsing and exploring different properties of materials and their suitability. Children could sort materials into shiny and not shiny, using a torch to begin to understand that shiny objects reflect light. You could then challenge them to design a suitable object that requires either shiny or dull materials. They could explore which materials are reflective and design coats for walking home in the dark in winter. Children could look for reflective stripes on their own clothing and shoes and think about how these help them.
	Dressed for action **OOO** Protective measures **MB** Charles Macintosh **WHO**	Children could use their knowledge of the suitability of materials to design a sports kit – it needs to be stretchy for a gymnastics kit, thick and strong for a goalie glove. In each case, they can compare different fabrics and conduct simple tests for suitability. There's a good investigation about waterproof materials linked to Charles Macintosh at this website : https://pstt.org.uk/resources/resources-available-through-tts/sotsog (look for tab *free sample unit* as it is a free sample from the book **Standing on the Shoulders of Giants**
	Design a sports kit **PS** Functional footwear **OOO** What are the best shoes for running? **TBQ** Gear Up **OOO**	Functional footwear can be used to think about the different materials used to make shoes. Children could select appropriate materials to make a particular type of shoe and draw a labelled diagram of their design. Children will have strong views about the kind of shoe they want to design!

	Scarf shooter **WGO**	Children could think about the materials of the objects being transported by the Scarf Shooter. The scarf is made from fabric which bends and twists as the air pushes it around the tubes. The scarf does not get trapped in the Scarf Shooter because it is light, smooth, thin and flexible.
	What if all the materials were transparent? **WI** What if every material was rigid? **WI** What if your school banned paper? **WI**	**How suitable and useful would it be if all materials were...?** All materials were transparent? Children could then test different fabrics that would be suitable to for curtains. This would introduce the vocabulary of translucent and opaque. They could shine torches through the fabric to reach conclusions. Look around the classroom. What objects need to be rigid? Which objects would not work if they were rigid?
	How would you make a shelter for a human? **PS** Unusual houses **OOO**	Children could brainstorm what properties the materials need to have to be suitable for a human shelter. For example, it needs to be waterproof, strong and allow in some light. Children could then perform simple tests on a range of materials like wood, cardboard, metal, plastic, paper and rock and record their results in a simple table.
	Bird Feeders **PS**	Children could look at the properties of the different materials to say why these would be good for a bird feeder. Consider whether you have squirrels in your school ground. Do you want to feed them as well? This could affect the design.

Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching **I can safely use simple tools, materials and equipment to construct and deconstruct?**	Have you ever stretched a hair band or elastic band too much? **HYE**	This Have You Ever activity will get the children talking about changing the shape of materials by applying a force.
	Which is the bendiest? **TBQ**	This can spark a discussion about which materials are bendy and why they need to be so. They could then discuss how they will find the answer to the question.
	Changing shape **MB**	This is a fun way of giving the children a selection of objects to explore.
	What if every material was stretchy? **WI** How long? **WGO**	This should be followed up with children exploring and sorting a variety of materials by whether they can be squashed, bent, twisted or stretched. A fun follow-up activity is either: (a) challenge the children to make something in playdough by stretching, bending, twisting and squashing - then explain to their partner how they did it using the vocabulary. (b) The Curly Wurly Challenge! The longest Curly Wurly stretched in three minutes is 426.2 cm and was achieved by Tracy Jane Sullivan, in Frome, Somerset, UK, on 22 November 2015 (Curly Wurly Guinness World Record - YouTube) Give children a piece of play dough and see how far they can stretch it in three minutes!
	The Big Squeeze **WGO**	
	All crushed up **LWCYH**	The shape of steel can be changed when cars are scrapped, and it can be recycled.
CELEBRATING SCIENTISTS		
	Who is Charles Macintosh? **WHO**	Charles Macintosh used the idea of a fabric sandwich to make his waterproof fabric. Once they have learnt about him, children could explore placing different materials like glue and oil between two pieces of fabric.
	Who is Milly-Hennayake? **WHO**	Milly Hennayake is an engineer who designs flood defence systems.

ABBREVIATIONS AND DESCRIPTIONS OF THE DIFFERENT EXPLORIFY ACTIVITY TYPES		
ZIZO	Zoom In, Zoom Out	Visually engaging close-up photos
OOO	Odd One Out	Find similarities and differences
WGO	What's Going On?	Short, distraction-free videos
HYE	Have You Ever?	Activities linked to everyday experiences
WI	What If?	Explore ideas in new contexts
TBQ	The Big Question	Plan an investigation
PS	Problem Solvers	Think critically and creatively
MS	Mission Survive	Fun, imaginative hands-on challenges
MB	Mystery Bag	Use senses to work out contents in a bag
LWCYH	Listen What Can You Hear?	Recordings of familiar sounds
SWA	Start With Art	Using artworks to prompt science discussion
WJH	What Just Happened?	Observing changes over time
WHO	Who Is?	Learn about a diverse range of scientists

Other recommended resources to support planning:

PLAN primary science assessment resources (planassessment.com)

Assessment (TAPS) - Curriculum Materials | Primary Science Teaching Trust (pstt.org.uk)

The Great Science Share - see videos on Scientific Enquiry under the tab "Great Science Skills".

Explorify is managed by STEM Learning and the Primary Science Teaching Trust

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