

Principles of Science:

- We ask questions
- We explore and investigate
- We use scientific vocabulary
- We make links with other subjects
- We have fun!

Focus scientists:

John Dunlop- Rubber tyres
Charles Macintosh

Writing opportunities:

Key vocabulary:

materials shape
suitability solid changes
properties heat
insulators conductors
forces squashing
bending twisting
stretching reflective
similarities differences
wood metal plastic
glass brick rock
paper cardboard uses
absorbent waterproof

Topic Overview: Uses of Everyday Materials

Pupils should identify and discuss the uses of different everyday materials so that they become familiar with how some materials are used for more than one thing (metal can be used for coins, cans, cars and table legs; wood can be used for matches, floors, and telegraph poles) or different materials are used for the same thing (spoons can be made from plastic, wood, metal, but not normally from glass). They should think about the properties of materials that make them suitable or unsuitable for particular purposes and they should be encouraged to think about unusual and creative uses for everyday materials.

SCIENCE

Year 2



Autumn 1

Objectives:

- 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
- To find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.
Work scientifically by:
- Comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs)
- Observing closely, identifying and classifying the uses of different materials, and recording their observations.

Learning Outcomes/ Assessment

Emerging	Secure	Exceeding
<ul style="list-style-type: none"> • <i>Observe object/living things/event and comment on it</i> • <i>Notice similarities and differences in order to group and compare objects, living things and events</i> • <i>Link cause and effect; recognise patterns and relationships</i> 	<ul style="list-style-type: none"> • <i>Show understanding of a concept by using scientific vocabulary correctly</i> • <i>Apply knowledge in familiar related contexts</i> 	<ul style="list-style-type: none"> • <i>Create links to other curriculum areas</i> • <i>Apply knowledge in unfamiliar context</i>

**Write names of chn in appropriate column.*

WALT	Key Vocabulary	Organisation	Notes for future
<p>WALT: Review our knowledge and think of questions</p> <p>Describe a range of materials</p> <p>Working Scientifically area:</p> <p>Explore</p>	<p>Materials</p> <p>Wood/metal etc</p> <p>Strong/hard/rough/</p> <p>Smooth etc</p>	<p>Teacher input (key questions)</p> <p>Intro topic. Discuss what we will be learning link to London topic. Short vid?</p> <p>What do you know?</p> <p>In pairs discuss what a material is....</p> <p>Ch to complete title pag</p> <p>Back to carpet: show materials and key words and explain sorting task. Model on iwb.</p> <p>Activities (differentiation, self/peer assessment) – Mixed ability</p> <p>Material describing words.</p> <p>Feely bag game</p> <p>Writing links: Chn develop questions for Carole – complete topic start page</p>	<p>Chn not secure:</p> <p>Faizah</p> <p>Amir</p>
<p>Success Criteria</p>			
<p>Share knowledge of materials based on own experience</p>			
WALT	Key Vocabulary	Organisation	Notes for future
<p>Knowledge:</p> <p>Discuss Materials and what job they are used for and why</p> <p>Group and sort a range of materials</p> <p>Working Scientifically area:</p> <p>Explore</p> <p>Identify and classify</p>	<p>Materials</p> <p>Wood/metal etc</p> <p>Strong/hard/rough/</p> <p>Smooth etc</p>	<p>Teacher input (key questions)</p> <p>Intro today's I.o. Re-cap on last week.</p> <p>Begin with materials game, put hand in and describe feel, texture etc and guess. (shiny paper, corrugated card, tissue paper, stone, cork, silver foil, mirror, string, plastic bag, metal, coloured paper/card, cotton wool)</p> <p>Explain how every material is useful for certain jobs. Tell chn I have a dress at home made from metal – good or bad idea? Why?</p> <p>Discuss other materials and what they are useful for and why – why are bricks used to build houses? Etc</p> <p>Move on to Giant venn diagram activity. Use hula hoops. Rough and smooth sorting</p> <p>Activities (differentiation, self/peer assessment)</p> <p>Big bens: more hula hopp sorting on carpet with TA</p> <p>G: Hoops at table with new criteria- flexible or hard</p>	<p>Chn not secure:</p>
<p>Success Criteria</p>			

Explain why a material is or isn't useful for a certain job I can group materials		M: Paper venn diagrams with Heather. Cut out large one together P small paper venn diagrams with an outside category S: same but choose own criteria for recording Writing links:	
WALT	Key Vocabulary	Organisation	Notes for future
Knowledge: Identify a range of materials and their uses Working Scientifically area: identify	Materials Wood/metal etc Strong/hard/rough/ Smooth etc	Teacher input (key questions) Play true or false, sit down and stand up. Bbc science clip and intro treasure hunt Activities (differentiation, self/peer assessment) Treasure hunt.Choose 1 materil and describe its job Writing links: explain materials and their jobs	Chn not secure:
Success Criteria			
Find 4 materials Explain its job			
WALT	Key Vocabulary	Organisation	Notes for future
Knowledge: Walt: compare different materials Investigate which is the best material to stay dry Find out about Charles mcintosh Working Scientifically area: Research	Materials Waterproof absorbant	Introduce the chn to Charles Macintosh and – explain that he was an inventor – what do we think he invented – look at his name. Give them some background information - <i>Charles Macintosh is another Scottish inventor (1766-1843) that children may have heard of. What did he invent that is named after him? Mackintoshes (usually spelt that way) raincoats. His invention used rubber dissolved in a chemical called naptha, which was used to stick two layers of cloth together, which was a really good waterproof fabric. He did invent several other very useful things, but he is best known for his waterproof fabric.</i> Explain that a friend has had the same problem – doesn't like getting wet – play incy wincy spider song. Incy wants a raincoat to keep him dry. Lets be Charles Macintosh and find the best material. How are we going to do this? Discuss ideas as a class. Put materials on tray – drop certain amount of water on them. How will we measure the results?	Chn not secure: Copy and paste: most chn needed support
Success Criteria			

<p>Oberve closely</p> <p>Record results carefully</p>		<p>Teacher input (key questions)</p> <p>HA – pour into measuring jug to measure exactly how much water.</p> <p>Activities (differentiation, self/peer assessment)</p> <p>Chn plan experiment and then carry it out.</p> <p>Writing links: Write conclusion – advert for best waterproof jacket for any unhappy spiders</p>	
<p>WALT</p>	<p>Key Vocabulary</p>	<p>Organisation</p>	<p>Notes for future</p>
<p>Knowledge:</p> <p>Research Charles macintosh and his work</p> <p>Working Scientifically area:</p> <p>Explore</p>	<p>Force</p> <p>Push</p> <p>Pull</p> <p>Pinch</p> <p>Twist etc</p>	<p>Teacher input (key questions) <u>Computing/SCIENCE</u></p> <p>Recap Charles Macintosh – what he did and what we investigated. Show the children how to research him using questions in Google. Remind them how to copy and paste and how to type.</p> <p>Activities (differentiation, self/peer assessment) mixed ability pairs</p> <p>Research Charles Macintosh using internet – create a fact poster using word and copy and paste</p>	<p>Chn not secure:</p>
<p>Success Criteria</p>		<p>Writing ops:</p> <p>Fact file</p>	

WALT	Key Vocabulary	Organisation	Notes for future planning
Write a letter	Material waterproof Macintosh plastic	Discuss our learning about chalres. Go back to Incy wincy spoider. Ask ch what we might say tyop him now we have investigated? Model letter from Charles to Incy and ch write independently	
WALT	Key Vocab	Organisation	Notes

<p>Knowledge:</p> <p>I can test materials to see how useful they are</p> <p>Working Scientifically area:</p> <p>Fair testing</p>	<p>Materials</p> <p>Wood/metal etc</p> <p>Strong/hard/rough/</p> <p>Smooth etc</p>	<p>Teacher input (key questions)</p> <p><i>Have science badges in carpet spaces when coming in. ask ch to put on. Intro being science detectives and ask what their badge might mean. Explain we will need later.</i></p> <p>Science learning journey... Where are we at? Link to main topic and all other work.</p> <p>Explain that today we will discover more about materilas and be scientists again. But first what have we already learnt about materials. Share with T.P, lolly stick feedback</p> <p>Explain that I have had a letter from someone who has heard how much we helped INCY. Show humpty letter and read aloud.</p> <p>Sing rhyme to reminj what happened and pose problem. What material will make the best crashmat for Humpty so he doesn't btreak again?</p> <p>Elicit what we aready know about materials</p> <p>How could we help Humpty with this? Share with person next to you</p> <p>Explain that to help plan our exp a bit more I'm going to give clues of extra things we could use that will make it even more scientific. (Slowly reveal: sand, cotton wool, stones, feathers)</p> <p>Activities (differentiation, self/peer assessment)</p> <p>Chn tp go and write method and predicitons. Come back together to investigate as a class.</p> <p>Go back to seats and write conclusion if time and then rhyme- linked to enmglsh work on poetry</p> <p>Writing links: Write a new Humpty rhyme</p>	<p>Chn not secure:</p>
<p>WALT</p>	<p>Key Vocab</p>	<p>Organisation</p>	<p>Notes</p>

<p>Knowledge: (LAB_13 with Carole)</p> <p>WALT: understand that materials can be changed</p> <p>Investigate how a fire starts and stops</p>	<p>Fire</p> <p>Wind</p> <p>Burning</p> <p>Material</p> <p>Change</p> <p>Ash</p> <p>particle</p>	<p>Look at science learning journey. Explain that this afternoon we will discover more about how and why the great fire of London raged. What was the science behind it and what materials were involved.</p> <p>Link to Pepys diary work. Visit the website http://www.pepys.info/ and look again at the diary extracts about the Great Fire. Discuss how the fire started. Why did it spread so fast? Is there any info in the diary extracts about the fire spreading? "A strong easterly wind." The wind caused the fire to take hold and the buildings were mostly made of wood.</p> <p>Look at pics and remind of material differences. Brick vs wood.</p> <p>Explain that wood burns easily and that fire needs air to stay alight. The wind fanned the flames.</p> <p>Activities:</p> <p><i>Outside:</i> Investigate what happens if fire is deprived of air and how fire can spread. Have prepared on a metal tray covered in sand two piles of used matches, the piles should be 3/4 cm away from each other. Light one pile of matches and watch it burn. Does the second pile catch fire? No. Fan flames by blowing gently with a bellows/fan/breath, making the wind blow the flames from the first pile to the second. Explain that this is how the Great Fire spread.</p> <p>Demo with jam jar and discuss air needed.</p> <p>In groups chn discuss ways in which a fire could be put out to prevent it from spreading. Make science posters</p> <p>Writing: Making a fire safety poster</p>	
<p>Understand that materials can be changed</p>		<p>Link to maths:</p> <p>Make model houses and burn in playground...</p>	

<p>Knowledge:</p> <p>Understand that some materials can be changed by stretching them</p> <p>Success Criteria</p>	<p>Force</p> <p>Push</p> <p>Pull</p> <p>Pinch</p> <p>Twist etc</p>	<p>Teacher input (key questions)</p> <p>Re-cap on last week and explain this week's investigations.</p> <p>Discuss year 2 superheroes and show pictures of superheroes in tights!</p> <p>Explain that our superhero needs a really stretchy pair of tights to fly properly. Begin by discussing with the whole class how to go about the task of finding out which pair of tights is most stretchy. What experiment could be carried out and how would the results be measured?</p> <p>Activities (differentiation, self/peer assessment)</p> <p>Conduct experiment</p> <p><u>Writing links:</u></p> <p>Write up conclusions. Poster for best pair of tights</p>	<p>Chn not secure:</p>
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