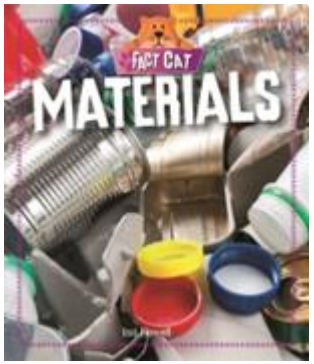
BILSTON CHURCH OF ENGLAND PRIMARY

MEDIUM TERM PLANNING

Subject	Topic/Key Question	Year Group	Term	Time Allocation
Science	Materials – Shaping Up	2	Autumn 2	12 hours
 Library service	 Library service	 Library service	 Library service	 Library service
End of Key Stage 1 Outcomes	Asking simple questions and recognising that they can be answered in different ways. Observing closely, using simple equipment. Performing simple tests. Identifying and classifying Using their observations and ideas to suggest answers to questions. Gathering and recording data to help in answering questions.			

End of Unit Outcomes	I can show squashing, stretching, bending and twisting. I can create a movement sequence using squashing, stretching, bending and twisting. I can say whether I am pushing or pulling when I am doing those actions. I can test objects to see whether their shapes can be changed. I can sort objects according to the way that their shapes can be changed. I can record my sorting using a table or a Venn diagram. I can give examples of objects that are made from the same materials but that have different properties. I can use action words to describe how I change the shape of a material. I can use scientific words to describe a property and the opposite of this property. I can use actions to test the properties of materials. I can use my chart to remind me which materials are flexible, rigid, stretchy, squashy, elastic or stiff. I can choose materials that have the properties that are needed for making particular things. I can explain which is the most suitable material and suggest reasons why. I can test the different sorts of elastics to see how stretchy they are. I can measure how much it stretches and record how much it stretches. I can choose appropriate materials for a catapult frame. I can say what properties make the material suitable. I can suggest reasons why some materials are better than others for using as catapult elastic.
Vocabulary	twist, squash, bend, stretch, squashing, bending, twisting, stretching, push, pull, pushing, pulling, roll, pinch, press, smooth, flexible, rigid, stretchy, squashy, elastic, stiff, properties, suitable, stretchiness, weight, catapult, frame, missile, strong, table, column, Venn diagram, set, sort, label, measure, record, bar chart

Lesson Sequence	Time Allocation	Key Question/WALT	Teaching Activities (Possible Computing Activities)	Resources
Lesson 1 How can I change the shape of an object?	2 hours	WALT: understand how the shape of objects can be changed. WILF: I can test objects to see whether their shapes can be changed. I can sort objects according to the way that their shapes can be changed. I can record my sorting using a table or a Venn diagram.	**Working Scientifically:** Gathering and recording data to help in answering questions. In pairs, children think about how the shape of objects made from some materials can be changed, using the questions on Lesson Presentation as prompts. Talk through the questions and share examples of changing the shape of objects, for example squashing a cardboard box. Go through the different ways in which materials can be manipulated. Encourage children to do each action with their hands. Are children able to demonstrate each of the actions? Play a game and ask a child from each table to choose an object, ask them to squash it, twist it, bend it, stretch it. Discuss if they could or not then discuss why? Repeat. Go through the different ways in which materials can be manipulated. Encourage children to do each action with their hands. Are children able to demonstrate each of the actions? Explain how to try and change the shape of the objects on the tables and record what you find on the activity sheets. (You may want to demonstrate the drinks can yourself as a class as it would be safer and also cans are a bit tricky to un-squash!) Ask children to elaborate further. What materials are the objects made from? What do you notice about your findings?	Twinkl lesson 4 Collins lesson 2 play dough, pipe cleaner tea towels, socks, drink can, elastic bands, straws

		I can give examples of objects that are made from the same materials but that have different properties.		
Lesson 2 What property allows a material to be changed?	2 hours	WALT: understand the properties of materials WILF: I can use action words to describe how I change the shape of a material. I can use the scientific words to describe a property and the opposite	**Working Scientifically:** Performing simple tests and recording data. *Remind children that in the previous lessons they investigated actions that change the shapes of objects. Explain that in this lesson they are going to investigate how the different properties of materials allow them to be changed in different ways. Provide each pair or group of three children with a piece of Lycra-containing fabric, a piece of rubber and some modelling clay. Ask them to try to change the materials by squashing and stretching, and to discuss how they are the same, how they are different and what words they could use to describe their properties. Share ideas, note key words with their opposites on the board and confirm that:* *The fabric and modelling clay can both be stretched but only the Lycra springs back to how it was before. They are both stretchy.* *The rubber and the modelling clay can both be squashed but only the rubber springs back to its original shape. They are both squashy. Materials that can be stretched or squashed but then spring back, such as Lycra and rubber, are said to be 'elastic'.* *Materials that cannot be squashed or stretched are stiff; this is the opposite of squashy and stretchy.*	Collins Lesson 3 Complete resource sheet 4

		of this property. I can use actions to test the properties of materials	Explain to children that their challenge is to test and record the properties of a variety of materials. The challenges are differentiated by the method of data recording. The challenges are presented on the Challenge slides to be displayed on the board, or printed out and placed in the centre of the table.	
Lesson 3 Which material should I choose?	2 hours	WALT: compare the suitability of materials. WILF: I can use my chart to remind me which materials are flexible, rigid, stretchy, squashy, elastic or stiff. I can choose materials that have the properties that are	**Working Scientifically:** Using observations and ideas to suggest answers to questions. Explain to children that they are going to use the information that they recorded about properties in the previous lesson to decide which materials are suitable for which uses. Children work in the same pairs or groups as they did previously. Share a range of materials that are suitable for the work linked on the sheet. Allow children to feel, test and label using correct vocabulary. Discuss properties. https://www.bbc.co.uk/bitesize/topics/z4339j6/articles/zx8hhv4 Give them sheet: What properties does it need? Introduce task: (Resource sheet 3; this can be enlarged to A3 size). Ask the children to use ticks in the appropriate column to match properties to uses. Then, using their tables from the previous Lesson and ask them to write the names of all materials with those properties in the final column and to circle the one they think is most suitable. While the children are working, prompt their thinking. Ask: What properties are important for making a swimsuit/climbing frame, etc.? Which column will you tick? Which materials have these	Collins lesson 4 Materials to handle: Leather Lycra Wood Metal Rubber Plastic

		needed for making particular things. I can explain which is the most suitable material and suggest reasons why.	properties? How does your table show this? Why do you think this is the most suitable? Why would you not choose this one? EXT: select an object of your own, what materials would you need based on their properties?	
Lesson 4	2 hours	WALT: select the best materials for a purpose	**Working Scientifically:** Carrying out simple comparative and fair tests. Remind children that: Natural materials, such as wool and wood, come from living things or the ground. Synthetic materials, like plastic, are made from chemicals. Explain that today we are going to make a desktop catapult https://www.instructables.com/id/Craft-Stick-Catapult/ Model, make and test. Ask the children why these materials were suitable and is they think they could change any? Make modifications using other material available and ask children to evaluate the effectiveness discussing the properties of the materials. Could we change the elastic for wool? Could we change the sticks for straws etc? Could we change the paper for playdough?	Materials: 6 rubber bands 7 craft sticks catapult basket (bottle cap, plastic egg, etc) pom-poms or other projectiles Collins lesson 5/6

				
Lesson 5	2 hours	WALT: understand the process of recycling materials.	**Working Scientifically:** Using observations and ideas to suggest answers to questions. With a partner, children discuss what recycling means to them. Use the questions on the Lesson Presentation as prompts. Then briefly discuss why it is important to recycle materials. Go through which materials can be recycled and look at examples that are easily found at home and school. Can children tell you which materials can be recycled? Discuss your local area's recycling arrangements, for example 'Do you use coloured wheelie bins/bags/boxes? How do you dispose of garden materials/food?' Explain different areas in the country (local authorities) have a slightly different system but the goal is the same. Also discuss what your school does to recycle - do you have recycling bins? Do you have recycling monitors or eco monitors? Does recycling get discussed at your school council meetings? Are children able to explain how to recycle? Children use the Recycling Sorting Activity Sheet to quickly sort the cards into the appropriate place. Discuss which items groups had put where, were there any which groups disagreed on? Children use the differentiated Recycling Sequencing Activity Sheets to show and explain the	Lesson Pack Pencils Scissors Glue Twinkl lesson 5

			recycling process. Can the children explain how plastic materials are sorted and then changed into new products?	
Lesson 6	2 hours	WALT: understand we can heat materials to change their shape?	**Working Scientifically:** Testing, predicting and Evaluating. Explain that everyone will get a go at melting wax crayons and everyone will have the chance to do a challenge (extended writing) in the classroom. Challenge the chn to design a machine that heats up old wax crayons and remoulds them into usable shapes. The machine will need to be safe enough to stand in a corner of the school so chn can just pop their old wax crayons in whenever they break. Then ask the chn to write a letter to the dragons on Dragons' Den to persuade them to accept the designs, explaining firstly the usefulness of wax crayons (not just for drawing but also for waterproofing materials and wax resist painting) and secondly why the machine needs to heat them up (so their particles can move around and settle into a new shape). Before setting the chn off on their designing and writing challenge, split the class into groups so they know when it is their turn to heat up the crayons. Ask an adult to take small groups out to the microwave with some wax crayons. They will need to follow the instructions in the resource sheet, starting by peeling all the paper off the wax crayon and cutting it into centimetre long sections with a pair of scissors (or knife under supervision). You may want to experiment with different shaped crayons by pouring the wax into an array of mould shapes and sizes. Put the filled moulds in the fridge to accelerate the cooling process but make sure the whole crayon is cold before you, and the chn, pop them out of the moulds. Point out we have also recycled our old wax crayons.	Hamilton Trust Wax crayons Microwave Scissors Variety of moulds

			Ask the children to use the crayons now are they as useful as before what has happened? Could we heat up fabric to change the shape? Metal? Glass? – Share video's of these processes.	