

Changing Shape

Year 1/2 Key Skills to be covered, taken from Lancashire Key Learning Document - pitching at the correct year group and differentiation within plan for different groups

Be specific in the key skills, and make them more understandable for children. Consider what it is YOU feel the children should learn as well as the National Curriculum:

Pupils will be taught to:

- Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

Possible Cross-curricular links, especially opportunities for English, Mathematics and Computing within teaching:

English links	•
Mathematics links	<ul style="list-style-type: none"> • Venn diagrams / sorting diagrams • Bar Charts
Computing links	•
Other links	Art <ul style="list-style-type: none"> • 3D Sculptures

Possible Experiences including visits/visitors/other:

Consider what could augment your planning to really enthuse the children in your class:

Display/Resources ideas:

Consider what resources could be brought into the classroom and what display work could be completed either before/during or after topic is taught:



- Investigation table. Give children hoops with the words stretch, twist, bend, squash in. Children need to look around the classroom and find objects to put in the correct hoops and photograph.

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Session	Key Objective from skills listed above (What is it that you want the children to learn?)	Possible Activities including use of Computing and other technologies, and showing at least 3 differentiations	Outcomes/Evidence of what they have learnt (Where will this be found? Will it be in a book? Topic book? Display? Photographic evidence?)	Possible extension into homework if appropriate to enhance and deepen learning
1	<p>Children will have shared what they know about changing the shape of solid objects.</p> <p>Children will have been introduced to the Quest question.</p> <p>Children will have sorted materials according to whether their shape can or cannot be changed.</p> <p><u>National Curriculum Objective Knowledge</u></p> <ul style="list-style-type: none"> Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. <p><u>Working Scientifically</u></p> <ul style="list-style-type: none"> Identifying and classifying 	<p>Activity: Thinking of materials that change shape</p> <ul style="list-style-type: none"> In pairs, children think of examples to complete the following sentence: 'You can change the shape of ... by ...'. They can use words or pictures to fill the gaps. Collect children's initial ideas and record them for future reference. You should not address misconceptions at this stage as the activity is designed to capture what children currently know. Introduce the Quest question: How can we make art by changing the shape of materials? Display Changes to materials (Y2 CS ITR 1) and watch the video. Explain that the following lessons are designed to help children discover new and different ways to change the shape of materials. At the end of the unit, children will be asked to create a piece of artwork that applies the skills and knowledge they have developed. <p>Activity: Changing the shape of different materials</p> <ul style="list-style-type: none"> Organise children into groups of no more than four. Give each group the materials listed below. Elastic bands; paper; pipe cleaners; modelling clay; plastic bags; plastic cubes; metal forks; wooden spoons; bath sponges; string; stones; tinfoil. Allow children time to explore the different materials and think about how to change the shape of each one. Hold up one of the objects, e.g. an elastic band. Can you think of a word that describes how to change the object's shape? On the count of three, children simultaneously shout out their answers. Listen carefully to the class and pick 	<ul style="list-style-type: none"> Children's initial ideas recorded Photographs of the children changing the shape of the materials. Class print out of Will it change Shape? Photographs of sorting diagrams. 	<p>ALSO TO BE STUCK INTO THE BIG BOOK AT THE END OF THE UNIT</p> <p>Homework to be given out at the start of the unit for the children to explore at home with their parents / guardians / siblings etc.</p> <p>Can the children find any other things which will squash, twist or bend and return to their original shape?</p> <p>https://www.greatschools.org/library/cms/99/25599.pdf</p>  <p>The worksheet includes the following text:</p> <p>Observations: Some things you can squash, some things you can bend, some things you can stretch, and some things you can tear. When you let them go, some things go back to their original shape.</p> <p>Science activity: Color in all things that you can bend. Place a check mark (✓) by things you can squash. Place an (X) by things that you can stretch, but will then go back to the shape they were before.</p> <p>Materials list: sponge, plastic comb, paper ball, rubber ball, tomato, plastic ruler, rubber band, newspaper, wooden spoon.</p> <p>Science explanation: Take extra care - ask an adult to supervise you. Describe all the properties of a rubber band.</p>

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out the most audible words. Use the suggestions to demonstrate how the shape can be changed.

- Select one word from the children's suggestions, e.g. 'stretch'. Ask randomly selected children to identify another material with the same property. Repeat this, and the previous step, to identify materials that are bendy, twisty or squashy.
- Display Will it change shape? (Y2 CS ITR 2) and ask randomly selected children to drag and drop the images to categorise them into 'Can change shape', 'Can't change shape' or 'Not sure'. Ask other groups how they classified the same material and why.
- Using the materials in the 'Can change shape' category, children explore how bendy/flexible, squashy, twisty and/or stretchy each material is.
- Following their exploration, children select their own criteria to create a Venn diagram to sort the materials.

Differentiation

Support

- Display key vocabulary (bend, twist, squash, stretch) to remind children of the different ways they can change the shape of a material.

Extend

- Children rank the materials from least bendy to most bendy, least squashy to most squashy and so on.

Watch out for

Children may think that you cannot change the shape of hard materials like metal. Provide opportunities for children to compare similar materials that behave in different ways, e.g. a metal fork/spoon and tinfoil. Discuss how the thickness/amount of a material can influence our ability to change it.

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2	<p>Children will have performed a simple test to identify how some materials change over time.</p> <p><u>National Curriculum Objective Knowledge</u></p> <ul style="list-style-type: none"> • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. <p><u>Working Scientifically</u></p> <ul style="list-style-type: none"> • Asking simple questions and recognising that they can be answered in different ways • Observing closely, using simple equipment • Performing simple tests • Gathering and recording data to help in answering questions. 	<p>Activity: Making stretchy putty</p> <ul style="list-style-type: none"> • Remind children of the materials that they have discussed so far. <i>Can you remember the different ways that we can change their shape?</i> Read pages 18-19 of the pupil book (Rubber) about rubber, drawing out the idea that you can twist, bend, squash and stretch it into different shapes. • Explain that the children are going to make another flexible material that can also be bent, twisted, stretched and squashed into shape like rubber. • In small groups, children create their own putty using the materials listed below. They follow the instructions on Make your own putty (Y2 CS PCM 2). <p>Activity: Experimenting with putty</p> <ul style="list-style-type: none"> • Organise children into groups of no more than four and use the putty they just made. <i>How far can you stretch the putty before it breaks? Can you stretch it to the same length as the table? Can you stretch it from your hand to the floor?</i> • Children divide the putty into two smaller balls (one big- and one small-sized ball). Explain that they are going to race the lumps of putty to find out which lump will stretch the most. They will be comparing how far different-sized balls of putty stretch. • Children place the putty balls at the top of the tray or whiteboard. Using a whiteboard marker, they record the starting point before resting the board vertically against a wall or another appropriate supporting object. • After 10 minutes, the largest lump of putty should have stretched approximately 2-5 cm. Ask the children to make a mark on the tray/board to record the lowest point of the stretched putty. Repeat this process every 10 minutes. 	<ul style="list-style-type: none"> • Photographs of the children make putty • Photos of investigation. • Bar Charts
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		<ul style="list-style-type: none"> • After 1-2 hours, children record their results by measuring how far each ball of putty has stretched. • Children could create a bar chart to show the length of the putty every 30min. <p>Differentiation</p> <p>Support</p> <ul style="list-style-type: none"> • Children could use strips of paper instead of standardised units to compare the length of the putty. <p>Extend</p> <ul style="list-style-type: none"> • Children could record the length of the putty after each time interval. • Children could investigate whether the putty stretches more at night than during the day and record their results over a number of days. <p>Watch out for</p> <ul style="list-style-type: none"> • Ensure children who have sensitive skin wear protective gloves when handling the putty. 		
3	<p>Children will have recognised that some materials are more bendy than others.</p> <p><u>National Curriculum Objective Knowledge</u></p> <ul style="list-style-type: none"> • <i>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</i> 	<ul style="list-style-type: none"> • Remind children of their Quest question: <i>How can we make art by changing the shape of materials?</i> Explain that artists often create artwork by changing the shape of everyday objects such as knives, forks and spoons. Display Art (Y2 CS ITR 6) and discuss examples. • Allow children to explore some unbent cutlery. Children rate how bendy/flexible the material is by giving it a score out of ten, using fingers to display their rating to the rest of the class (zero is rigid/not bendy and ten is very bendy/flexible). • Explain that artists sometimes need to heat up their materials to make them more bendy/flexible. Provide each child with a lump of cold modelling clay. <i>How bendy/flexible is it?</i> They give it a score out of ten, as before. • Allow children time to play with the modelling clay; this will heat it up and make it more bendy. <i>How</i> 	<ul style="list-style-type: none"> • Photographs of children trying to bend cutlery and modelling clay. • Children's Score Boards 	

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	<p><u>Working Scientifically</u></p> <ul style="list-style-type: none"> • Identifying and classifying • Gathering and recording data to help in answering questions. 	<p><i>bendy/flexible is it now? Children give it a new score out of ten. Has the modelling clay become more bendy? Why?</i></p> <p>Activity: Comparing bendy materials</p> <ul style="list-style-type: none"> • Remind children of the scores that they gave the modelling clay for its bendiness/flexibility in the previous activity. • In groups of no more than four, children create a score board for bendiness numbered from one to ten. They collect examples of materials for each number on the board. As before, zero is rigid/not at all bendy and ten is very bendy/flexible. You may wish to scatter some materials around the classroom to support the collection process. Alternatively, children could collect materials from in and around the school. <p>Differentiation</p> <p>Support</p> <ul style="list-style-type: none"> • Reduce the scale on the score board so it is numbered from one to five. <p>Extend</p> <ul style="list-style-type: none"> • Children identify instances where folding is used to enable objects to bend. • Children could create a collage of bendy objects using pictures from magazines, images downloaded from the internet or hand-drawn illustrations, e.g. the concertina folds in bendable drinking straws, foldable panels on an umbrella or pleats/gathering on clothes. 		
4	<p>Children will have carried out a simple test to observe the effect of twisting on different materials.</p> <p><u>National Curriculum Objective Knowledge</u></p>	<p>Activity: Investigating the strength of different threads</p> <ul style="list-style-type: none"> • Provide children with a selection of threads, e.g. sewing thread, embroidery thread, wool, gardening string and parcel string. Children investigate the number of individual strands used to make up each type of thread. • Allow children time to share their observations and findings. • As preparation for the next investigation, children will need to untwist single strands from 	<ul style="list-style-type: none"> • Record of children's findings after observations on the threads. • Photographs of investigation • Children's recording of the investigation. 	<ul style="list-style-type: none"> •

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	<ul style="list-style-type: none"> Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. <p><u>Working Scientifically</u></p> <ul style="list-style-type: none"> Performing simple tests Gathering and recording data to help in answering questions. 	<p>a thread of wool or embroidery thread approximately 30 cm in length. Explain that children will be finding out how much stronger twisted thread is compared to a single strand of untwisted thread.</p> <ul style="list-style-type: none"> Show children how to make a handle at either end of the single strand of thread using a pencil. Wrap one end of the strand around a pencil and secure it in place with sticky-tack. Repeat with the opposite end of the strand. The strand should be held in such a way that it remains taut but is not over-stretched. Refer to Thread strength (Y2 CS PCM 3) for full instructions. Using an extra strong paperclip for a hook and a strong plastic bag as the receptacle, hang the bag from the strand. Add weights or marbles to the bag and record how much weight the strand will hold before snapping. Children use Thread strength (Y2 CS PCM 3) to record their results. Repeat this investigation using a length of corresponding thread in its manufactured (twisted) state. Children record how many more weights or marbles the twisted thread will hold than a single strand. <p>Differentiation Support</p> <ul style="list-style-type: none"> Untwisting single strands from thread can be a little fiddly; some groups may need support. 		
5	<p>Children will have identified that some materials can be squashed and some cannot.</p> <p><u>National Curriculum Objective Knowledge</u></p>	<p>Activity: Investigating whether objects can be squashed</p> <ul style="list-style-type: none"> Organise children into pairs and give each pair an inflated medium-sized round balloon to explore. <i>How can you change the shape of the balloon?</i> Encourage children to squash the balloon against different surfaces or objects and observe how it changes shape, e.g. when pressed against a flat surface the surface of the balloon looks flat. 	<ul style="list-style-type: none"> Photographs of changing the shape of a balloon by squashing. Class print out of Is It Squashy? Photographs of squashing. 	

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	<ul style="list-style-type: none"> Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. <p><u>Working Scientifically</u></p> <ul style="list-style-type: none"> Observing closely, using simple equipment Identifying and classifying 	<ul style="list-style-type: none"> Allow children time to share their observations with the rest of the class. What would happen if you squashed the balloon too much? Display Is it squashy? (Y2 CS ITR 9) and randomly select children to drag and drop the images into the correct categories. In groups of no more than four, children look at the selection of materials listed below. Wool; string; rope; springs; twisted sweet wrappers; spiral bound books; pipe cleaners; digital microscope/hand lenses; paper straws; tightly woven (e.g. cotton t-shirts and shirts, school trousers, waterproof coat, etc.) and loosely woven (e.g. knitted jumpers, dishcloths, socks, tights, etc.) fabrics. They discuss what will happen to the objects if they are squashed. <i>Will they squash or not?</i> Groups place each material/item, one at a time, into a bowl or onto a tray to carry out the squash test. Children observe what happens to the object when they push down on it with a flat hand. Children record how the objects looked before, during and after squashing. They could take photographs and annotate them to support their observations. Each group shares their observations with the rest of the class. <i>Which materials were the squashest? Which materials changed the most through squashing? Which materials changed the least?</i> <p>Differentiation</p> <p>Extend</p> <ul style="list-style-type: none"> Children could explore how the material/item changes if you squash it with a single finger. <p>Watch out for</p> <ul style="list-style-type: none"> Be aware that some materials may burst when they are squashed, e.g. tomatoes, bananas. Place 	<ul style="list-style-type: none"> Children observations / findings 	
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		these objects in a large bowl before attempting to squash them.		
6	<p>Children will have recognised how to change the shape of some materials to create an artwork.</p> <p><u>National Curriculum Objective</u></p> <p><u>Knowledge</u></p> <ul style="list-style-type: none"> Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. <p><u>Working Scientifically</u></p> <ul style="list-style-type: none"> Observing closely, using simple equipment 	<p>Activity: Making art by changing the shape of materials</p> <ul style="list-style-type: none"> Display Graphic organiser (Y2 CS ITR 10). Children think about the different ways in which the shape of some materials can be changed before sharing their ideas with a partner. Write the groups 'Fish', 'Amphibians', 'Reptiles', 'Birds' and 'Mammals' as headings on IWB. Can you suggest some animals for each group? Note some examples. Explain that the children are going to use modelling dough to make a model of an animal. Select one animal from the list, e.g. a snake. How would you change the shape of the modelling dough so that it resembled the animal? (E.g. stretching to form a long, thin shape.) Discuss the common characteristics of the different classifications, e.g. fish have fins, reptiles often have dry, scaly skin, and birds have feathers, wings and a beak. How could you change the shape of the modelling dough to make it look like fins or a beak? Randomly allocate a classification to each pair. Children decide on which animal from that classification they are going to make. In their pairs, children discuss the skills they are most likely to use when making their artwork and completing their Quest: How can we make art by changing the shape of materials? Skills should include squashing, bending, stretching and twisting. Children plan their artwork using My artwork plan (Y2 CS PCM 5). What will your model look like? How will you change the shape of the dough to make each part of the model? (E.g. by twisting the tail, squashing the feet, bending the neck or stretching the body.) Children create their model animal using modelling dough. Children review how their model was made, thinking about how they changed the shape of the dough. 	<ul style="list-style-type: none"> Artwork Plans Photographs of the children making their model animals. 	

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		<ul style="list-style-type: none">• Encourage them to review their plan on My artwork plan (Y2 CS PCM 5) and to add additional information about how they changed the shape of the dough.• Recap the children's original lists of ways to change the shape of materials from Lesson 1. What other ways have we learnt to change the shape of materials?• Add suggestions to the list. <p>Differentiation</p> <p>Support</p> <ul style="list-style-type: none">• Children may need support completing the planning sheet. Mixed ability pairs would assist with this process. <p>Extend</p> <ul style="list-style-type: none">• Children can research the characteristics of their chosen animal and produce a display card for their model. <p>Watch out for Remind children that it is not safe to eat the dough.</p>		
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