

# Brough Primary School – Curriculum Intention Plan 2024 - 2025



<b>Subject:</b> Design and Technology		<b>Area of learning:</b> Shell Structures (Cycle A)	
<b>Year Group:</b> Year 3/4			
Links to previous work/Remember when	<p>In Year 1 or Year 2 the Year 3/4 children will have had experience of creating structures when designing and making a throne for King Charle’s coronation. They will have used simple strengthening techniques to strengthen the basic chair structure.</p> <p>The children will have had experience of following a design criteria in all of their Year 1 and 2 design activities.</p> <p>The children will have had experience of using finishing techniques to create a quality finished product and making their product attractive to the user when making their throne structure, their moving vehicles (Y3) and their moving monster (Y4)</p> <p>Children will have experience of:</p> <ul style="list-style-type: none"> <li>: Following a given design criteria.</li> <li>: Evaluating existing products.</li> <li>: Selecting tools and materials with support.</li> <li>: Applying a range of finishing techniques with some accuracy.</li> </ul>		
<b>Term</b>	<b>Key Skills to be taught</b>		
<b>Autumn 2024</b>  What the children should know at the end of this series of lessons	<ul style="list-style-type: none"> <li>● use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups</li> <li>● generate, develop, model and communicate their ideas through discussion, annotated sketches and prototypes</li> <li>● select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</li> <li>● investigate and analyse a range of existing products</li> <li>● apply their understanding of how to strengthen, stiffen and reinforce more complex structures</li> </ul>		

## **Vocabulary**

*Shell structure, 2D shape, 3D shape, Net, Tab, cuboid, prism, pyramid, scoring, d’ecoupage, design criteria, evaluation, reinforce, stable, strengthen, stiffen.*

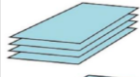
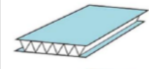
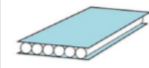
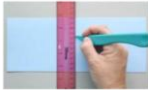
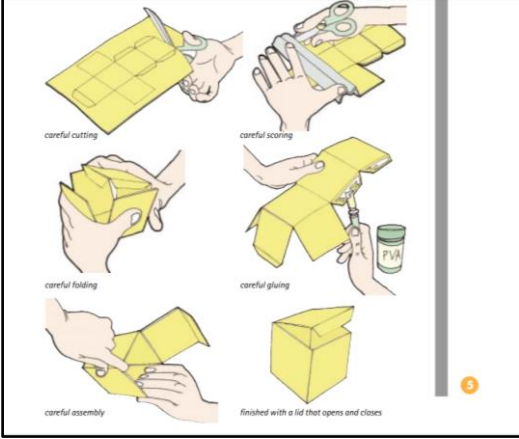
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Sequence of learning	Learning Objectives/Outcomes	suggested Lesson Outline		
1	<p><b>Learning Objective:</b> To evaluate existing treasure boxes and collect design ideas.</p> <p><b>Key Knowledge:</b> Many children have particular small favourite items or treasures. These are precious but not necessarily valuable in monetary terms – an attractive pebble or shell, a small toy figure, a tiny doll, an old coin, an unusual button, a buckle from an old shoe. Usually these items are associated with a fond memory.</p> <p>These items can easily get lost. We will be making a ‘treasure box’ to hold the precious object safely.</p>	<p><b>Recap</b> – Remind children of the work they completed in Year 1/2 to make thrones for King Charles Coronation. These were structures that we made stronger by using extra card, card struts, and reinforcing the card.</p> <p><b>Teacher input</b> Tell the class that they are going to discuss treasures and to begin with you are going to describe a piece of treasure that belongs to you: one of your special possessions – an old coin that you found as a child, an unusual button you bought at a jumble sale. Explain why it is so precious, perhaps because it reminds you of an enjoyable time or a special friendship. It is important that the item you talk about is small and inexpensive. Now ask the children to think about small possessions they have that are precious in this way.</p> <p><b>Pupil activity</b> Divide the class into groups of four and tell the class that each group should discuss what each of them might have that is a treasure and to write a short list of possibilities.</p> <p>At the end of 10 minutes ask each group to report back to the whole class. Build up a table on the board using the following headings:</p> <p style="text-align: center;"><b>Our treasures</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; text-align: center;"><b>The treasure</b></td> <td style="width: 50%; text-align: center;"><b>Why is it precious?</b></td> </tr> </table> <p>When each group has reported back, ask the class what can be done to keep these treasures safe and to prevent them from getting lost. If necessary introduce the idea of a special container in which to keep them.</p> <p><b><u>Children record</u></b> <i>Give the children some example pictures of simple treasure boxes. Children to choose 2/3 that they like and cut them out and stick into their book. Children to write down what they like about the ideas, e.g. I like the decoration and the fact that the lid is secure which will keep my treasure safe.</i></p>	<b>The treasure</b>	<b>Why is it precious?</b>
<b>The treasure</b>	<b>Why is it precious?</b>			

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<p>2</p> <p><b>Learning Objective:</b> To make 3D shapes from 2D sheets using nets.</p> <p><b>Key Knowledge:</b></p> <p><b>Reinforcements can be used to make the card structures stronger - reinforcements for the joins, card triangles over the corners, reinforced sides/lid.</b></p> <p><b><u>Stiffening and strengthening techniques</u></b></p> <p><b>Laminating - glue together several layers of card</b></p>  <p><b>Corrugating - Zig-zag a piece of card or paper and glue in between two layers of card.</b></p>  <p><b>Ribbing - Glue layers of straws between two layers of card.</b></p>  <p><b>Scoring - Press a line into your paper or card to make it easier to fold accurately.</b></p> 	<p><b>Recap</b> – Recap on the idea of making a treasure box to hold our most precious objects.</p> <p>How can we make a box using a 2D piece of card?</p> <p>Introduce the idea of nets.</p> <ul style="list-style-type: none"> <li>- First use polydron if available to make solid shapes and then open out and flatten to see the net.</li> <li>- Show the children how to make a cuboid/cube using standard sized card squares and rectangles joined with masking tape.</li> <li>- Lastly give a range of pre-drawn nets to the children to cut out, score (using an old biro and a ruler) and assemble. Tell the class that there are three different nets to try – a cube, like you have shown them, a pyramid and a prism.</li> </ul>  <p>They should evaluate their boxes by answering these questions.</p> <ul style="list-style-type: none"> <li>Is the box well made?</li> <li>Will the box open and close easily?</li> <li>Can the box stand repeated use?</li> <li>Will the box be large enough to hold the treasure?</li> <li>Will the box be stiff enough to hold the treasure?</li> </ul> <p>Talk together with the children about how to make the boxes stronger - thinking about reinforcements for joins, corners, lid and sides.</p> <p><b>Children record</b> <i>These nets can be used as the children's prototypes. If possible, photograph for evidence of the process. If possible, put the boxes on display. Provide labels for some of the boxes such as "Will this be strong enough?" or "What can you do to make this stiffer?"</i></p>
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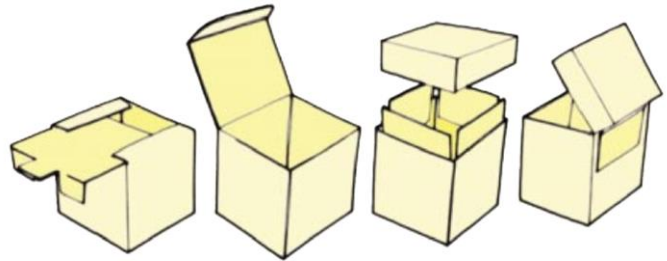
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**Learning Objective:**  
To investigate and evaluate ideas for the lid of the box.

**Key Knowledge:**

**Recap –**

Show the class the four different sorts of lids that you they are going to explore:



lids that slide      lids with integral hinges      push-on lids,      and lids with added hinges

Explain that they should look at each of these in detail so that they can choose which will be the best one for the treasure box that they will design and make.

**Pupil activity**

Divide the class into groups of four and tell the class that each group should examine the lids and discuss these five questions.

- How does each lid work?
- How could each lid be made?
- How easy is each lid to make?
- How easy is each lid to use?
- How well would each lid last?

**Children record**

Tell them to record their answers to these questions by making a quick sketch of each lid and adding explaining notes.

Towards the end of the session ask each group to report back to the whole class. Build up a table like this on the board to help the class discuss the pros and cons of each type of lid.

Was it ...	push-on lid	with integral hinge	with added hinge	sliding lid
easy to make?				
easy to use?				
long lasting?				

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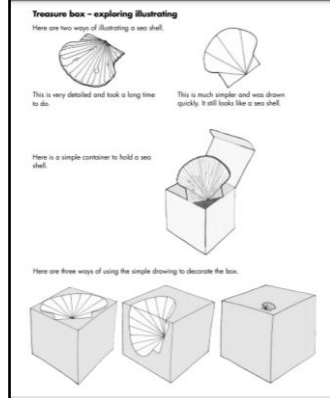
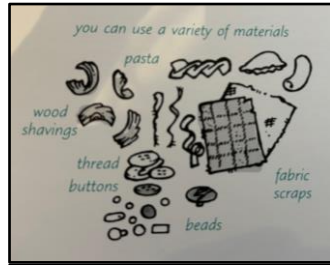
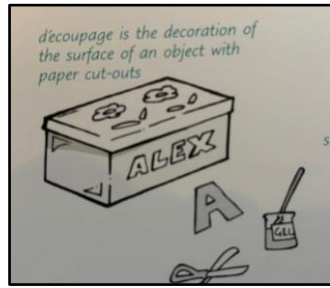
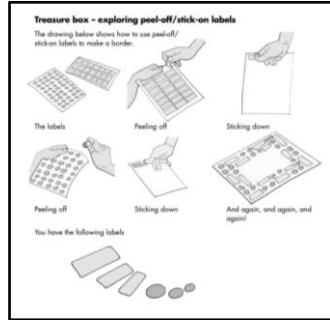


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**Learning Objective:**

To explore surface decoration and finishing techniques

**Key Knowledge:**



**Recap –**

Tell the class that during this session they will find out about the following ways of decorating their containers: block printing; illustrating; found items; peel-off/stick-on labels.

Organise four “exploration” stations in the room and divide the class into groups of eight.

Each group will visit each of the stations to explore that particular method of surface decoration.

Each group will then discuss the advantages and disadvantages of each method.

Each member of the group will be able to make a decision as to which decoration technique to use on their own design.

There are ready-to-copy instruction sheets for each form of decoration. See the Key Knowledge section.

Put the explorations on display to act as a class reference collection for making design decisions about the decoration to use for their treasure boxes.

**Children record**

Children’s exploration record to be put into their DT book as evidence of the process.

*(With the ‘exploring illustration’ idea - get a range of real life objects, e.g. buttons, shells, marbles, gems, crystals, etc. Children can try to make a simple drawing from the real object like in the example. This could then be used on the side of their box).*

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5	<p><b>Learning Objective:</b> To design a treasure box using a net structure.</p> <p><b>Key Knowledge:</b></p>	<p><b>Recap - Teacher input</b> Through class discussion confirm each child's choice of treasure and ensure that he/she has thought about the following: the size of the treasure; the size of the container for the treasure; how the treasure might be organised and protected in the container; how the container is opened and closed; how the container's appearance reflects the nature of the treasure.</p> <p>Talk about design criteria - it is important that children understand that their product can only be successful if it addresses these criteria.</p> <p>Each child's treasure chest should meet the following general specification. <b><i>My treasure chest will ...</i></b> <b><i>keep my treasure safe;</i></b> <b><i>be easy to open and close;</i></b> <b><i>be carefully constructed;</i></b> <b><i>last well;</i></b> <b><i>look attractive;</i></b> <b><i>reflect the nature of the contents.</i></b></p> <p><b>Children record</b> <i>Every child should then record their design decisions to meet the specification by means of quick thumbnail sketches plus notes. There is a ready-to-copy sheet: 'My treasure box specification'.</i></p> <p><i>You will need to remind the class about the importance of doing things in the correct order. It is probably best to apply some surface decoration techniques before the net is assembled into the container. Others are best applied once the container is assembled.</i></p> <p><i>It is important to ensure that children who want a container that has a main colour use card of that colour to start with. There is little virtue and even less learning in painting white card a different colour.</i></p> <p><i>Remind the class also about the rigidity of the box. Encourage the children to consider how they might reinforce using straws or thin strips of wood carefully glued onto the internal edges.</i></p> <ul style="list-style-type: none"> <li>- Reinforce corners or joins with card or straws.</li> <li>- use corrugation or ribbing to reinforce the lid or sides.</li> <li>- Use laminating to reinforce sides.</li> </ul>
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6	<p><b>Learning Objective:</b> To follow the design criteria to make a quality finished treasure box.</p>	<p><b>Children record</b> Each child can now use their designs from the last lesson to produce the net and other parts for the treasure box from thin card, reinforce and decorate the container appropriately to produce his/ her very own treasure box.</p>
7	<p><b>Learning Objective:</b> To evaluate the finished product against the given design criteria.</p>	<p><b>Recap</b> <b>Teacher input</b> Put the class's treasure boxes on display with each holding its own "treasure".</p> <p>Use the following questions to stimulate discussion. Are there any that look particularly attractive? Can we explain why? Are there any that stand out from the others? Can we explain why? Are there any that look particularly well made? Can we explain why? Are there any that look as if they will last well? Can we explain why?</p> <p><b>Children Record</b> Now each child should consider whether the container meets the specification by considering the following questions. Does it keep my treasure safe? Is it easy to open and close? Is it carefully constructed? Will it last well? Does it look attractive? Does the decoration reflect the nature of the contents?</p> <p>Each child should write a sentence in response to each of the questions above. There is a ready-to-copy sheet 'Evaluating my treasure box'.</p>

<b>Learning Outcome/product</b>
To use nets to create a strong shell structure treasure box to hold a precious object.

<b>Assessment records</b>	<b>List only those children who have not achieved the expected outcomes.</b>