

Topic: Building structures	Year group	Term
Shelters	Year 6	Spring 1 6 sessions

Background knowledge

This unit explores different kinds of shelters, their materials, uses and components, and gives children the opportunity to develop their skills in a variety of areas. Children will explore how to use different materials to create stable free-standing objects, looking specifically at how to reinforce structures. They will undertake an investigation to study which materials would be most suitable for a shelter, and finally give children the chance to put their skills to the test as they design, make and evaluate their own shelters.

What should I already know?

How to construct a 3D structure (greenhouse project)
 Different ways to join wood to allow for a strong structure (picture frame project)
 How to strengthen materials and structures (Bridge project)
 Different materials require different tools to shape and finish them.
 Materials have different qualities, strengths and weaknesses.

National Curriculum Objectives / Key Skills	The Journey
<ul style="list-style-type: none"> 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 Generate, develop, model and communicate their ideas through discussion, cross-sectional and exploded diagrams. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures Select from and use a wider range of tools and equipment to perform practical tasks, such as cutting, shaping, joining and finishing, accurately Select from and use a wider range of materials and components, including construction materials according to their functional properties and aesthetic qualities Investigate and analyse a range of existing products Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work Understand how key events and individuals in design and technology have helped shape the world I can use market research/ research into industry with the target audience to inform my plans, and design criteria evaluating and justifying choices. 	<ol style="list-style-type: none"> Children will explore, discuss and investigate a range of shelters, thinking about what they are made from and their purpose. They will sketch, label and compare different shelters. Children will be carrying out some experiments to find out how best to join materials together to form a structure and think about how to reinforce the structures to make them stronger. Children will be testing various fabrics to see if they would be suitable for making a shelter. They will need to consider if they are water resistant,

<ul style="list-style-type: none"> • I can make a detailed plan, including an exploding diagram and details of the materials, tools and techniques I will use. • I can plan to work within a budget • I can follow and refine my plans • I can justify my choices for materials, tools and techniques to others. • I can work safely, accurately and independently with a wide range of tools and materials. • I can test and evaluate my products • I can receive and give peer feedback to help suggest improvements to the product. 	<p>strong enough and easy to attach to other materials.</p> <ol style="list-style-type: none"> 4. Children to use the skills they have acquired over the last few lessons to design their own shelter. They should have a particular purpose in mind when thinking about their design. 5. Children to look through their designs carefully thinking about what materials they need before constructing their shelter. 6. Children will show each other their finished shelters, then evaluate both their process and their finished product, either individually or with a partner.
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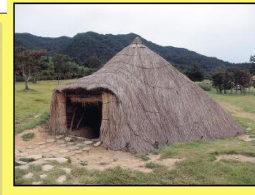
Outcomes
<p>An overview of what children will know / can do</p> <p>Working Towards: Children know some techniques for joining and combining materials. Children carry out tests to examine a fabric's suitability for a purpose. Children describe who they are designing their shelter for and what purpose it will have. Children follow their design to create their shelter. Children evaluate their own work fairly.</p> <p>Expected: Children identify how materials and components have been used. Children know some techniques for strengthening and reinforcing materials. Children explore different ways of joining materials. Children include detailed lists of the materials and processes they plan to use. Children work appropriately with a range of materials and techniques. Children evaluate the work of others fairly.</p> <p>Exceeding: Children identify which parts support and strengthen structures. Children experiment with different techniques to gather ideas for use in their own work. Children explain which fabrics would be suitable for a purpose and why. Children use precise measurements and appropriate vocabulary in their designs. Children use finishing techniques to ensure that their finished product is as good as it can be. Children explain how they could improve their product if they were to make it again.</p>

Key Vocabulary	Timeline / Diagrams

Market Research- Finding out what is needed for the product by asking the target audience.

Budget- The set amount of money that can be spent on making the product.

Exploded Diagram- picture or technical drawing of an object, that shows the relationship or order of assembly of various parts. It shows the components of an object slightly separated by distance, or suspended in surrounding space in the case of a three-dimensional



Key people / places

Assessment questions / outcomes

Lesson1: • Do children understand that there are many different types of shelters built for different purposes? • Can children identify how materials and components have been used? • Can children identify which parts support and strengthen structures?

Lesson 2: Do children know some techniques for joining and combining materials? • Do children know some techniques for strengthening and reinforcing materials? • Can children experiment with different techniques to gather ideas for use in their own work?

Lesson 3: Can children carry out tests to examine a fabric's suitability for a purpose? • Can children explore different ways of joining materials? • Can children explain which fabrics would be suitable for a purpose and why?

Lesson 4: Can children describe who they are designing their shelter for and what purpose it will have? • Can children include detailed lists of the materials and processes they plan to use? • Can children use precise measurements and appropriate vocabulary in their designs?

Lesson 5: • Can children follow their design to create their shelter? • Can children work appropriately with a range of materials and techniques? • Can children use finishing techniques to ensure that their finished product is as good as it can be?

Lesson 6: Can children evaluate their own work fairly? • Can children evaluate the work of others fairly? • Can children explain how they could improve their product if they were to make it again?