

## How is the design and technology curriculum organised?

The design and technology curriculum is organised around the key concepts: mechanisms, structures, textiles and systems (electrical or mechanical). Our units of work will address these concepts so the children's cumulative knowledge, built over time, will give them a greater breadth and depth of technological knowledge and thinking. Design and technology is an important part of the STEM curriculum. It is a structured and practical subject, encouraging children to use their creativity and imagination to design, create, make and evaluate products to solve real and relevant problems within a variety of contexts. Understanding the purpose of what they are creating is vital to meeting the needs and wants of the consumers.

**Cooking and nutrition is to be taught separately**

## How are key strands of learning used?

The key strands within the design and technology curriculum deliver the disciplinary knowledge and understanding that the children need to become successful designers and innovators. This knowledge is hierarchical and so our curriculum has been designed in such a way to ensure that the children's knowledge is built upon in a progressive way, allowing the knowledge to grow over time. Disciplinary concepts include design, make, evaluate and technical knowledge which are studied to learn more across the year groups.

<b>Design and Technology</b>			
	<b>Autumn Term</b>	<b>Spring Term</b>	<b>Summer Term</b>
<b>KS1 Cycle A</b>	Mechanisms - Wheels and Axles	Food- Dip and Dippers	Textiles- Glove Puppet Joining
<b>KS1 Cycle B</b>	Structures- Freestanding- slide or a swing	Mechanisms - Sliders and Levers	Food
<b>LKS2 Cycle A</b>	Textiles- 2D to 3D	Food- Bread	Electrical systems
<b>LKS2 Cycle B</b>	Food	Structures- Shell (computing)	Mechanical systems (pneumatics)

KS1.CB.T1	<p>Area of study: Structures (Freestanding, slide or swing)</p> <p>Unit aims / outcome:</p> <ul style="list-style-type: none"> <li>To build 3D structures using junk modelling and the skill of joining the materials together to make it strong and stable.</li> </ul> <p><b>Design</b> design purposeful, functional, appealing products for themselves and other users based on design criteria</p> <p>generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</p> <p><b>Make</b> select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</p> <p>select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</p> <p><b>Evaluate</b> explore and evaluate a range of existing products</p> <p>evaluate their ideas and products against design criteria</p> <p><b>Technical knowledge</b> build structures, exploring how they can be made stronger, stiffer and more stable</p> <p>explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</p>
<p>Design and Technology concepts to organise knowledge: Structures: refers to the arrangement of parts.</p>	
<p>Key concepts of learning:</p>	
<p><b>Disciplinary knowledge:</b></p> <p>Design–</p> <ul style="list-style-type: none"> <li>• draw ideas as drawings</li> <li>• Say how the product works</li> </ul> <p>Make–</p> <ul style="list-style-type: none"> <li>• Assemble, join and combine materials</li> <li>• Use tools safely</li> </ul> <p>Evaluate–</p> <ul style="list-style-type: none"> <li>• Talk about the design</li> </ul>	

- Explore swings and slides that exist in local parks to where they live—likes and dislikes

Technical knowledge-

- Know which joining materials would best work to ensure the structure is strong and stable
- Thinking about planning for how to strengthen the materials they are working with.

<p>Reception Knowledge Learning in Reception:</p> <ul style="list-style-type: none"> <li>• I know how to join materials using glue or masking tape.</li> <li>• I know how to handle some tools safely and with increasing control.</li> <li>• I know wheels are used on lots of everyday things.</li> <li>• I know wheels allow things to move.</li> </ul> <p>By the end of Reception, we will have learnt how to:</p> <ul style="list-style-type: none"> <li>• Begin to explore and use the language of designing and making, e.g. join, build, shape.</li> <li>• Select tools and techniques needed to shape, assemble and join a variety of different materials.</li> <li>• Use a range of tools, e.g. scissors, hole punches, staplers, woodworking tools, rolling pins, pastry cutters competently, safely and confidently.</li> </ul>			<p>Tier 2</p> <p><b><u>New</u></b></p> <p>Materials Structure Design criteria</p> <p><b><u>Review - Reception</u></b></p> <p>Strong Weak</p>	<p>Tier 3</p> <p><b><u>New</u></b></p> <p>Durable sturdy</p> <p><b><u>Review</u></b></p>
NC objective:	Vocabulary and crucial knowledge:			

<p><b>Design</b> design purposeful, functional, appealing products for themselves and other users based on design criteria</p> <p>generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</p> <p><b>Make</b> select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</p> <p>select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</p> <p><b>Evaluate</b> explore and evaluate a range of existing products</p> <p>evaluate their ideas and products against design criteria</p> <p><b>Technical knowledge</b> build structures, exploring how they can</p>	<p><u>Context of study:</u></p> <p>This topic will built on what the children have already learnt in Reception. They will know some language and tools needed to build and create. Children will also know a range of materials they can use which links with Science (KS1CAT2). They will further build on this by designing products for a target audience using a range of materials and tools competently, safely and confidently. The children will evaluate products for a target audience by reflecting on their choice and making amendments where necessary. Throughout Cycle A children will have followed the structure of DT lessons, understanding you design, make and evaluate. They will have knowledge around joining materials from their topic on mechanisms (KS1.CA.T1).</p> <p>Children will learn that structures are something that are made up or formed using different parts. Children will understand that structures are made to be stable and durable.</p> <p><u>Crucial Knowledge:</u></p> <p><u>Design Brief:</u></p> <p>Explain to the children what the dilemma is. The park near your school is due to be updated with some new play equipment. We need some ideas for new swings and a new slide. We would like to create play equipment which is:</p> <ul style="list-style-type: none"> <li>• Either swings or a slide.</li> <li>• Strong and stable.</li> <li>• Bright and colourful.</li> <li>• Aimed at 5-8 year olds.</li> </ul> <p><u>Research</u></p> <p>To know that a structure is something that has been formed or made from parts, for example a large building, a bridge or a chair. Children need to have the opportunity to explore a range of structures (walk around local area to include local park) so they can investigate and evaluate what they like, what they think works well and the functions of each structure. What are the structures called and what is their purpose? Who might use them? What materials have been used? Why have they been chosen? How have the parts been joined together? How have the structures been made strong enough? How have they been made stable? Recap the dilemma and design criteria. Explain that each child will design and make a piece of playground equipment (swings or slide).</p>
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be made stronger, stiffer and more stable

explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.

(Use construction kits to model building and exploring freestanding structures).

#### Technical knowledge:

Children need to know how to make a structure stronger and more durable.

Children need to understand how to join materials together to make them stiffer and sturdier.

Children understand stable means something is firmly fixed or not likely to move.

Children understand strong means something that is not easily broken.

#### Design:

Recap the council's dilemma and design criteria.

To know that the concept of design is a plan or drawing produced to show the look and function or workings of a building, garment, or other object before it is made.

Model the design process for children.

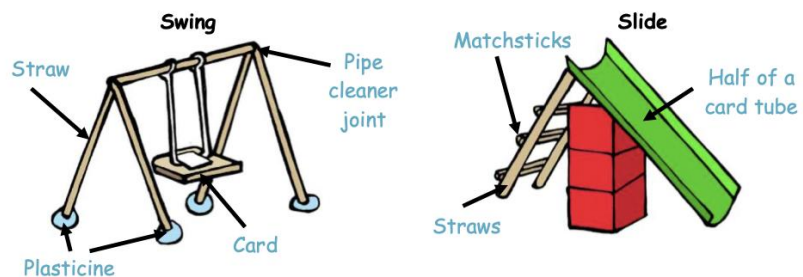
Discuss and create non-negotiables together as a class i.e. what the design must have and the materials and equipment that we will need to make them. Model using knowledge from the exploration stage to create their playground structure using card and paper.

Children need to know and understand the design criteria and the purpose.

Children need to find existing examples of how structures are used in everyday life and how they are made to be stronger, stable and fit for purpose. e.g. chairs, benches, swings, slides and decide strengths and weaknesses.

Children need to see examples and think about methods of fixing the structures together.

Children need to design and draw an example of a swing or slide structure for the park identifying the user, purpose and labelling the main parts e.g. card, matchsticks, straws.



#### Make:

Children to use their design to make their product.

	<p>Model following their design to ensure the product made looks like the one that they designed. Throughout the making process children should be encouraged to evaluate their product as they are developing it and identify strengths and possible changes they might make. Model how to use simple finishing techniques to improve the appearance of a product.</p> <p>Children need to measure using a ruler and cut the junk modelling that they need for their structure.</p> <p>Children need to use glue, tape, plasticine to connect the parts of their structure.</p> <p>Children create their final swing or slide structure for the park.</p> <p><u>Evaluate:</u></p> <p>Children need to know that evaluating means looking at the strengths and weakness of the structure they have created.</p> <p>Children need to explain what they did and how they made their final structure.</p> <p>Children need to compare their structure to their original design plan and the design criteria. Have they met the objective that was originally set out?</p> <p>Explain that through discussion children have just evaluated the freestanding structures and that this is something they will be doing throughout their learning around structures.</p> <p>Children can ask and answer questions about the structures they have made.</p>
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