

## Design & Technology Sequencing at Osballdwick Primary Academy

### Sequence of Knowledge for Design & Technology:

#### Nursery

Aims and objectives: Design and technology prepares children to take part in the development of tomorrow's changing world. Creative thinking encourages children to make positive changes to their quality of life. The subject encourages children to become autonomous and creative problem solvers, both as individuals and as part of a team. It enables them to identify needs and opportunities and to respond by developing ideas and eventually making products and systems. Through the study of Design and Technology they combine practical skills with an understanding of aesthetic, social and environmental issues, as well as functions and industrial practices. This allows them to reflect on and evaluate present and past design technology, its uses and its impacts. Design and technology helps children to become discriminating and informed consumers and potential innovators.

The aims of design and technology are:

- To develop imaginative thinking in children and to enable them to talk about what they like and dislike when designing and making;
- To enable children to talk about how things work and to draw and model their ideas; To encourage children to select appropriate tools and techniques for making a product, whilst following safe procedures;
- To explore attitudes towards the material world and how we live and work in it;
- To develop an understanding of technological processes, products and their manufacture, and their contribution to our society;
- To foster enjoyment, satisfaction and purpose in designing and making.
- Early Years are building the foundations for success in the DT National Curriculum through **Expressive Arts and Design, Physical Development, Personal, Social and Emotional Development and Communication and Language.**

#### Design and Technology Strands:

Design	Make
<ul style="list-style-type: none"> <li>• Have and discuss some ideas of things they would like to make or create. (C&amp;L, EAD)</li> </ul>	<ul style="list-style-type: none"> <li>• With some adult support, select and use resources to help them reach a goal. (PSED)</li> <li>• Explore how things work. (PHY)</li> <li>• Make shapes and structures. (EAD, MAT)</li> <li>• Make marks using large and small movements.</li> </ul>
Evaluate	Technical Knowledge
Say what they have made. (C&L)	To manipulate materials (tear, scrunch, stick) to create a piece of work.

(EAD, PHY)

### Sequence of Knowledge for Design & Technology:

#### Reception

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#### Design and Technology Strands:

##### Design

- Discuss ideas and begin to plan what they would like to make. (C&L, PSED)
- Choose and select from a range of media to help them to achieve their goals. (PSED)

##### Make

- Cut and prepare ingredients safely and hygienically. (PHY, PSED) Tear and cut paper or card. (EAD, PHY)
- Use glue or tape to join. (EAD, PHY)
- Measure dry ingredients with increasing independence using measuring cups. (MAT)
- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. (EAD)

Evaluate	Technical Knowledge
Explain what they have made and why. (C&L, PSED)	Develop fine and gross motor skills to hold pencils, paintbrushes, knives and forks and other tools. (PHY) Use a range of tools and techniques to achieve the desired effect with increasing independence. (PHY, EAD)

DT PROGRESSION			
Designing			
KS1	Across KS2		
<ul style="list-style-type: none"> <li>Work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment.</li> <li>State what products they are designing and making.</li> <li>Say whether their products are for themselves or other users.</li> <li>Describe what their products are for.</li> <li>Say how their products will work</li> <li>Day how they will make their products suitable for their intended users</li> <li>Use simple design criteria to help develop their ideas generate ideas by drawing on their own experiences</li> <li>Use knowledge of existing products to help come up with ideas</li> <li>Develop and communicate ideas by talking and drawing</li> <li>Model ideas by exploring materials, components and construction kits and by making templates and mockups</li> </ul>	<ul style="list-style-type: none"> <li>Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment.</li> <li>Describe the purpose of their products.</li> <li>Indicate the design features of their products that will appeal to intended users.</li> <li>Explain how particular parts of their products work.</li> <li>Share and clarify ideas through discussion</li> <li>Model their ideas using prototypes and pattern pieces</li> <li>Use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas</li> <li>Use computer-aided design to develop and communicate their ideas</li> </ul>		
	LKS2	UKS2	
	<ul style="list-style-type: none"> <li>Gather information about the needs and wants of particular individuals and groups</li> <li>Develop their own design criteria and use these to inform their ideas</li> <li>Generate realistic ideas, focusing on the needs of the user</li> <li>Make design decisions that take account of the availability of resources</li> </ul>	<ul style="list-style-type: none"> <li>Carry out research, using surveys, interviews, questionnaires and web-based resources</li> <li>Identify the needs, wants, preferences and values of particular individuals and groups</li> <li>Develop a simple design specification to guide their thinking</li> </ul>	



- Use information and communication technology, where appropriate, to develop and communicate their ideas

Planning		
KS1	Across KS2	
<ul style="list-style-type: none"> <li>• Plan by suggesting what to do next</li> <li>• Select from a range of tools and equipment, explaining their choices</li> <li>• Select from a range of materials and components according to their characteristics</li> </ul>	<ul style="list-style-type: none"> <li>• Select tools and equipment suitable for the task</li> <li>• Explain their choice of tools and equipment in relation to the skills and techniques they will be using</li> <li>• Select materials and components suitable for the task</li> <li>• Explain their choice of materials and components according to functional properties and aesthetic qualities</li> </ul>	
	LKS2	UKS2
	<ul style="list-style-type: none"> <li>• Order the main stages of making</li> </ul>	<ul style="list-style-type: none"> <li>• Produce appropriate lists of tools, equipment and materials that they need</li> <li>• Formulate step-by-step plans as a guide to making</li> </ul>

Practical skills & techniques		
KS1	Across KS2	
<ul style="list-style-type: none"> <li>Follow procedures for safety and hygiene</li> <li>Use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components</li> <li>Measure, mark out, cut and shape materials and components</li> <li>Assemble, join and combine materials and components</li> <li>Use finishing techniques, including those from art and design</li> <li>Develop and communicate ideas by talking and drawing</li> <li>Model ideas by exploring materials, components and construction kits and by making templates and mockups</li> <li>Use information and communication technology, where appropriate, to develop and communicate their ideas</li> </ul>	<ul style="list-style-type: none"> <li>Follow procedures for safety and hygiene</li> <li>Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components</li> </ul>	
	LKS2	UKS2
	<ul style="list-style-type: none"> <li>Measure, mark out, cut and shape materials and components with some accuracy</li> <li>Assemble, join and combine materials and component with some accuracy</li> <li>Apply a range of finishing techniques, including those from art and design, with some accuracy</li> </ul>	<ul style="list-style-type: none"> <li>Accurately measure, mark out, cut and shape materials and components</li> <li>Accurately assemble, join and combine materials and components</li> <li>Accurately apply a range of finishing techniques, including those from art and design</li> <li>Use techniques that involve a number of steps</li> <li>Demonstrate resourcefulness when tackling practical problems</li> </ul>

<b>Evaluating</b>		
<b>KS1</b>	<b>Across KS2</b>	
<ul style="list-style-type: none"> <li>• Talk about their design ideas and what they are making</li> <li>• Make simple judgements about their products and ideas against design criteria</li> <li>• Suggest how their products could be improved</li> </ul> <p>Pupils should explore:</p> <ul style="list-style-type: none"> <li>• what products are</li> <li>• who products are for</li> <li>• what products are for</li> <li>• how products work</li> <li>• how products are used</li> <li>• where products might be used</li> <li>• what materials products are made from</li> <li>• what they like and dislike about products</li> </ul>	<ul style="list-style-type: none"> <li>• Identify the strengths and areas for development in their ideas and products</li> <li>• Consider the views of others, including intended users, to improve their work</li> <li>• How well products have been designed</li> <li>• How well products have been made</li> <li>• Why materials have been chosen</li> <li>• What methods of construction have been used</li> <li>• How well products work</li> <li>• How well products achieve their purposes</li> <li>• How well products meet user needs and wants</li> <li>• Pupils should know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products</li> </ul>	
	<b>LKS2</b>	<b>UKS2</b>
	<ul style="list-style-type: none"> <li>• Refer to their design criteria as they design and make</li> <li>• Use their design criteria to evaluate their completed products</li> <li>• Who designed and made the products</li> <li>• Where products were designed and made</li> <li>• When products were designed and made</li> <li>• Whether products can be recycled or reused</li> </ul>	<ul style="list-style-type: none"> <li>• Critically evaluate the quality of the design, manufacture and fitness for purpose of their</li> <li>• Products as they design and make</li> <li>• Evaluate their ideas and products against their original design specification</li> <li>• How much products cost to make</li> <li>• How innovative products are</li> <li>• How sustainable the materials in products are</li> <li>• What impact products have beyond their intended purpose</li> </ul>

Technical Knowledge		
KS1	Across KS2	
<p>Pupils should know:</p> <ul style="list-style-type: none"> <li>• About the simple working characteristics of materials and components</li> <li>• About the movement of simple mechanisms such as levers, sliders, wheels and axles</li> <li>• How freestanding structures can be made stronger, stiffer and more stable</li> <li>• That a 3-D textiles product can be assembled from two identical fabric shapes</li> <li>• That food ingredients should be combined according to their sensory characteristics</li> <li>• The correct technical vocabulary for the projects they are undertaking</li> </ul>	<p>Pupils should know:</p> <ul style="list-style-type: none"> <li>• how to use learning from science to help design and make products that work</li> <li>• how to use learning from mathematics to help design and make products that work</li> <li>• that materials have both functional properties and aesthetic qualities</li> <li>• that materials can be combined and mixed to create more useful characteristics</li> <li>• that mechanical and electrical systems have an input, process and output</li> <li>• the correct technical vocabulary for the projects they are undertaking</li> </ul>	
	LKS2	UKS2
	<p>Pupils should know:</p> <ul style="list-style-type: none"> <li>• how mechanical systems such as levers and linkages or pneumatic systems create movement</li> <li>• how simple electrical circuits and components can be used to create functional products</li> <li>• how to program a computer to control their products</li> <li>• how to make strong, stiff shell structures</li> <li>• that a single fabric shape can be used to make a 3D textiles product</li> <li>• that food ingredients can be fresh, pre-cooked and processed</li> </ul>	<p>Pupils should know:</p> <ul style="list-style-type: none"> <li>• how mechanical systems such as cams or pulleys or gears create movement</li> <li>• how more complex electrical circuits and components can be used to create functional products</li> <li>• how to program a computer to monitor changes in the environment and control their products</li> <li>• how to reinforce and strengthen a 3D framework</li> <li>• that a 3D textiles product can be made from a combination of fabric shapes</li> <li>• that a recipe can be adapted by adding or substituting one or more ingredients</li> </ul>

Cooking & Nutrition		
KS1	Across KS2	
<p>Pupils should know:</p> <ul style="list-style-type: none"> <li>• that all food comes from plants or animals</li> <li>• that food has to be farmed, grown elsewhere (e.g. home) or caught</li> <li>• how to name and sort foods into the five groups in The eatwell plate</li> <li>• that everyone should eat at least five portions of fruit and vegetables every day</li> <li>• how to prepare simple dishes safely and hygienically, without using a heat source</li> <li>• how to use techniques such as cutting, peeling and grating</li> </ul>	<p>Pupils should know:</p> <ul style="list-style-type: none"> <li>• that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world</li> <li>• how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source</li> <li>• how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking</li> </ul>	
	LKS2	UKS2
	<p>Pupils should know that:</p> <ul style="list-style-type: none"> <li>• that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The eatwell plate</li> <li>• that to be active and healthy, food and drink are needed to provide energy for the body</li> </ul>	<p>Pupils should know:</p> <ul style="list-style-type: none"> <li>• that seasons may affect the food available</li> <li>• how food is processed into ingredients that can be eaten or used in cooking</li> <li>• that recipes can be adapted to change the appearance, taste, texture and aroma</li> <li>• that different food and drink contain different substances – nutrients, water and fibre – that are needed for health</li> </ul>





DT - Key Vocabulary					
Textiles					
KS1		LKS2		UKS2	
Cycle A	Cycle B	Cycle A	Cycle B	Cycle A	Cycle B
<b>Templates &amp; Joining:</b> <i>fabric</i> <i>template</i> <i>design</i> <i>glue</i> <i>stencil</i> <i>decorate</i>		<b>2D Shape &amp; 3D Product:</b> <i>aplique</i> <i>running stitch</i> <i>blanket stitch</i> <i>target customer</i> <i>design brief</i>		<b>Combining different fabric shapes:</b> <i>seam</i> <i>design criteria</i> <i>prototype</i> <i>functionality</i>	



Electrical Systems					
KS1		LKS2		UKS2	
Cycle A	Cycle B	Cycle A	Cycle B	Cycle A	Cycle B
		<u>Simple Circuits &amp; Switches:</u> <i>components</i> <i>switch</i> <i>battery</i> <i>bulb</i> <i>wires</i> <i>electricity</i>		<u>More complex switches &amp; circuits:</u> <i>switches</i> <i>components</i> <i>system</i> <i>design brief</i> <i>user</i> <i>purpose</i>	

Mechanisms					
KS1		LKS2		UKS2	
Cycle A	Cycle B	Cycle A	Cycle B	Cycle A	Cycle B
<u>Slider &amp; Leavers:</u> <i>slider</i> <i>lever</i> <i>slot</i> <i>join</i>	<u>Wheels &amp; Axles:</u> <i>vehicle</i> <i>wheel</i> <i>axle</i> <i>chassis</i>		<u>Pneumatic Systems:</u> <i>syringe</i> <i>pneumatic system</i> <i>input/ output movement</i> <i>inflate</i>	<u>Pulleys:</u> <i>pulley</i> <i>gear</i> <i>hand drill</i> <i>annotated drawing</i>	



<i>evaluate</i>	<i>mechanism</i>		<i>deflate</i>	<i>mechanical system</i>	
<i>purpose</i>			<i>air-tight</i>	<i>electrical system</i>	

Structures					
KS1		LKS2		UKS2	
Cycle A	Cycle B	Cycle A	Cycle B	Cycle A	Cycle B
	<u>Freestanding Structures:</u> <i>structure</i> <i>stable</i> <i>stiff</i> <i>design</i>		<u>Shell Structures (inc. Computer Aided Design):</u> <i>shell structure</i> <i>computer aided design</i> <i>tabs</i> <i>assemble</i> <i>accuracy</i> <i>font</i> <i>graphics</i> <i>appealing</i>		<u>Frame Structures:</u> <i>frame structure</i> <i>reinforce</i> <i>stability</i> <i>prototype</i> <i>purpose</i> <i>functional</i>



Food					
KS1		LKS2		UKS2	
Cycle A	Cycle B	Cycle A	Cycle B	Cycle A	Cycle B
<u>Preparing Fruit &amp; Vegetables:</u> <i>fruit and vegetable names</i> <i>names of equipment and utensils</i> <i>healthy</i> <i>balanced diet</i> <i>ingredients</i> <i>peel</i> <i>blender</i> <i>slice</i>		<u>Healthy &amp; Varied Diet:</u> <i>name of products</i> <i>names of equipment and utensils</i> <i>appearance</i> <i>grown</i> <i>reared</i> <i>caught</i> <i>seasonal</i> <i>healthy/varied diet</i>		<u>Celebrating Culture &amp; Seasonality:</u> <i>names of food groups: protein carbohydrate fats sugar</i> <i>vitamins</i> <i>nutrition</i> <i>savoury</i> <i>seasonality</i> <i>method</i>	