

# Oak Meadow Skills Progression

## Lower Key Stage 2

### Subject Area: Design Technology



<b>National Curriculum Objectives</b>	<p><b><u>Pupils will be taught to:</u></b></p> <p><b><u>Design:</u></b></p> <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, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</li></ul> <p><b><u>Make</u></b></p> <ul style="list-style-type: none"><li>• select from and use a wider range of tools and equipment to perform practical tasks [e.g. cutting, shaping, joining and finishing], accurately</li><li>• select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</li></ul> <p><b><u>Evaluate</u></b></p> <ul style="list-style-type: none"><li>• investigate and analyse a range of existing products</li><li>• evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</li><li>• understand how key events and individuals in design and technology have helped shape the world</li></ul> <p><b><u>Technical knowledge</u></b></p> <ul style="list-style-type: none"><li>• apply their understanding of how to strengthen, stiffen and reinforce more complex structures</li><li>• understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]</li><li>• understand and use electrical systems in their products [e.g. series circuits incorporating switches, bulbs, buzzers and motors]</li><li>• apply their understanding of computing to program, monitor and control their products</li></ul> <p><b><u>Cooking and Nutrition</u></b></p> <ul style="list-style-type: none"><li>• understand and apply the principles of a healthy and varied diet</li><li>• prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques</li><li>• understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed</li></ul>
---------------------------------------	--

		• <b>Year 3</b>	• <b>Year 4</b>
<b>Skills and Techniques</b>	<b>Design</b>	<ul style="list-style-type: none"> <li>• Use knowledge of a range of products to inform plans and designs.</li> <li>• Talk about and disassemble products and describe their function.</li> <li>• Use simple prototypes, labelled sketches and detailed instructions in plans and designs.</li> <li>• Talk in depth about ideas, plans and reasons for choices.</li> <li>• Describe the purpose of their products.</li> <li>• Indicate design features of their products.</li> <li>• Gather information about the needs and wants of individuals or groups.</li> <li>• Develop their own design criteria.</li> <li>• Share and clarify ideas through discussion.</li> <li>• Model ideas using prototypes.</li> <li>• Use annotated diagrams and some computer aided design packages to develop and communicate ideas.</li> <li>• Generate realistic ideas focusing on the needs of the user.</li> <li>• Begin to take account of the availability of resources.</li> </ul>	<ul style="list-style-type: none"> <li>• Use research to develop design criteria that are fit for purpose.</li> <li>• Disassemble products and describe in detail their functions.</li> <li>• Use annotated sketches, cross-sectional, exploded diagrams and increasingly complex prototypes.</li> <li>• Support discussions about ideas, plans and designs with relevant information.</li> <li>• Describe the purpose of their products, indicate design features of their products.</li> <li>• Indicate design features of their products that will appeal to intended users.</li> <li>• Gather information about the needs and wants of individuals or groups.</li> <li>• Develop their own design criteria and use this to inform their ideas.</li> <li>• Share and clarify ideas confidently through discussion.</li> <li>• Model ideas using prototypes and pattern pieces.</li> <li>• Use annotated sketches, some cross-sectional drawings and computer aided design packages to develop and communicate 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>
	<b>Make</b>	<ul style="list-style-type: none"> <li>• Use a wide range of materials and components. E.g. textiles, mechanical, construction kits, electrical and food ingredients.</li> <li>• Select some materials and components according to known characteristics and functions.</li> <li>• Select and use an increasing range of tools suitable to the task to cut, shape and join materials and components. Explain their choices.</li> <li>• Order the main stages of making.</li> </ul>	<ul style="list-style-type: none"> <li>• Select from and use an extensive range of materials and components according to both functional and aesthetic qualities. E.g. textiles, mechanical, construction kits, electrical and food ingredients.</li> <li>• Confidently select and use tools and equipment suitable to the task to measure, mark out, cut and shape materials and components with accuracy. Explain their choices giving evidence.</li> <li>• Order the main stages of making in logical steps.</li> </ul>

	<ul style="list-style-type: none"> <li>• Use a ruler to measure and mark lines for cutting with some accuracy.</li> <li>• Make and use gluing tabs.</li> <li>• Applies some finishing techniques.</li> <li>• Select an appropriate way to improve the appearance of a product.</li> <li>• Follow procedures for safety and hygiene.</li> </ul>	<ul style="list-style-type: none"> <li>• Insert paper fasteners for card linkages.</li> <li>• Accurately assembles, joins and combines most materials.</li> <li>• Accurately applies several finishing techniques.</li> <li>• Selects the most effective finish to enhance the appearance of a product.</li> <li>• Follow procedures for safety and hygiene.</li> </ul>
<b>Evaluate</b>	<ul style="list-style-type: none"> <li>• Investigate and compare a range of similar existing products.</li> <li>• Compare and contrast the similarities and differences of products with the same function.</li> <li>• Identify the strengths and areas for development in their ideas and products.</li> <li>• Evaluate ideas and products against design criteria.</li> <li>• Investigate and analyse how well products have been designed and made; which materials and methods were used and were successful; how well the products worked; whether they achieved their purpose and the needs/wants of the users and suggest ways in which products can be improved.</li> <li>• Recognise successful inventors, designers, chefs and engineers, who have been influential in the design and technology industries.</li> </ul>	<ul style="list-style-type: none"> <li>• Investigate and begin to analyse a range of existing products.</li> <li>• Use knowledge of similarities and differences between products with the same function to support identification of most effective product.</li> <li>• Evaluate ideas and products against own design criteria, taking into account the views of others.</li> <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>• Refer to the design criteria as they design and make.</li> <li>• Use their design criteria to evaluate and improve their completed products.</li> <li>• Investigate and analyse how well products have been designed and made; why materials have been chosen, what methods of construction were used; how well the products worked; whether they achieved their purpose and the needs/wants of the users and suggest ways in which products can be improved.</li> <li>• Investigate and analyse who designed the products, where products were designed and made, when products were designed and made, whether products can be recycled or re-used.</li> <li>• Recognise several inventors, designers, chefs, manufacturers and engineers, who have been influential in the design and technology industries.</li> </ul>

Technical knowledge

- Deconstruct a range of sliders and describe how they work.
- Construct increasing complex sliders.
- Join levers to make linkages to create moving parts.
- Construct a simple pneumatic system with one moving part.
- Deconstruct and assemble the net of basic 3D shapes.
- Strengthen 2D frames by adding diagonal bracing struts.
- Make a rectangular frame from strip wood.
- Use materials to make simple joints, glue, tape and paper clips.
- Describe how a simple battery powered circuit can be controlled by different kinds of switches.
- Talk about simple electrical safety.
- Create simple circuits incorporating a battery, bulb, switch, buzzer and wires.
- Construct cubes of different sizes from a net.
- With support attach a fixed axle to a chassis and add wheels ensuring that they can move freely.
- Construct a simple pulley using rope over a horizontal bar to raise an object off the ground.
- Use construction kits with gears to construct a line of gears that turn.

- Deconstruct and reconstruct a range of sliders and levers.
- Vary the position of the pivot point to lift a load using a lever.
- Construct a pneumatic with two moving parts.
- Identify the cam within a simple mechanism and explain how movement is changed.
- Deconstruct and assemble the net of a range of basic 3D shapes.
- Join 2D frames to create 3D structures.
- Make rectangular frames of different sizes using strip wood, reinforcing with cross braces.
- Use a range of materials to make joints.
- Give reasons for the selection of fabrics and techniques based on knowledge of characteristics.
- Make and use a simple paper pattern.
- Join fabrics in a range of different ways using zips, tie clasp, toggles, press-studs and buttons.
- Use a wide range of simple finishing techniques.
- Explore and describe how an electric motor can be used in a circuit.
- Identify key features of electrical safety.
- Use a remote-controlled device to switch lights on and off.(including computer control packages)
- Construct cuboids of different sizes from a net.
- Attach a fixed axle to a chassis and add wheels ensuring that they can move freely.
- Construct a pulley that allows a load to travel horizontally along a rope. Use construction kits with gears to mesh gears at right angles.

Cooking and Nutrition

- Know that food is farmed, reared, grown, imported or caught locally, regionally and internationally.
- Sort and classify an increasing range of food according to specific food groups, **e.g. proteins, carbohydrates, fats etc.**
- Recognise that a healthy diet is made up of a variety and balance of different foods and drinks as depicted on 'The Eatwell Plate'.
- Know that to be active and healthy, food is needed to provide energy for the body.
- Talk about what needs to be done in order to work safely and hygienically.
- Measure and weigh using standard units and scales.
- Discuss about the way in which food processing can affect the taste, appearance, texture and colour of food.
- Know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.

- Know that food is farmed, reared, grown (home allotments), exported, imported or caught locally, regionally and internationally.
- Gain an understanding of the ways in which specific food groups apply to the principles of a health and varied diet.
- Know that a healthy diet is made up of a variety and balance of different foods and drinks as depicted on 'The Eatwell Plate.'
- Know that to be active and healthy, food is needed to provide energy for the body.
- Identify what needs to be done in order to work safely and hygienically when working on a range of tasks.
- Convert measure and weigh using standard and imperial units.
- Give reasons for the way in which food processing can affect the taste, appearance, texture and colour of food.
- Know how to prepare and cook a variety of savoury and some sweet dishes safely and hygienically, including the use of a heat source.
- Know how to use a wide range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.