

Oak Meadow Skills Progression

Lower Key Stage 2

Subject Area: Design Technology



National Curriculum Objectives	<p><u>Pupils will be taught to:</u></p> <p><u>Design:</u></p> <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, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design <p><u>Make</u></p> <ul style="list-style-type: none">• select from and use a wider range of tools and equipment to perform practical tasks [e.g. cutting, shaping, joining and finishing], accurately• 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 <p><u>Evaluate</u></p> <ul style="list-style-type: none">• 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 <p><u>Technical knowledge</u></p> <ul style="list-style-type: none">• apply their understanding of how to strengthen, stiffen and reinforce more complex structures• understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]• understand and use electrical systems in their products [e.g. series circuits incorporating switches, bulbs, buzzers and motors]• apply their understanding of computing to program, monitor and control their products <p><u>Cooking and Nutrition</u></p> <ul style="list-style-type: none">• understand and apply the principles of a healthy and varied diet• prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques• understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed
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		• Year 3	• Year 4
Skills and Techniques	Design	<ul style="list-style-type: none"> • Use knowledge of a range of products to inform plans and designs. • Talk about and disassemble products and describe their function. • Use simple prototypes, labelled sketches and detailed instructions in plans and designs. • Talk in depth about ideas, plans and reasons for choices. • Describe the purpose of their products. • Indicate design features of their products. • Gather information about the needs and wants of individuals or groups. • Develop their own design criteria. • Share and clarify ideas through discussion. • Model ideas using prototypes. • Use annotated diagrams and some computer aided design packages to develop and communicate ideas. • Generate realistic ideas focusing on the needs of the user. • Begin to take account of the availability of resources. 	<ul style="list-style-type: none"> • Use research to develop design criteria that are fit for purpose. • Disassemble products and describe in detail their functions. • Use annotated sketches, cross-sectional, exploded diagrams and increasingly complex prototypes. • Support discussions about ideas, plans and designs with relevant information. • Describe the purpose of their products, indicate design features of their products. • Indicate design features of their products that will appeal to intended users. • Gather information about the needs and wants of individuals or groups. • Develop their own design criteria and use this to inform their ideas. • Share and clarify ideas confidently through discussion. • Model ideas using prototypes and pattern pieces. • Use annotated sketches, some cross-sectional drawings and computer aided design packages to develop and communicate ideas. • Generate realistic ideas focusing on the needs of the user. • Make design decisions that take account of the availability of resources.
	Make	<ul style="list-style-type: none"> • Use a wide range of materials and components. E.g. textiles, mechanical, construction kits, electrical and food ingredients. • Select some materials and components according to known characteristics and functions. • Select and use an increasing range of tools suitable to the task to cut, shape and join materials and components. Explain their choices. • Order the main stages of making. 	<ul style="list-style-type: none"> • 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. • 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. • Order the main stages of making in logical steps.

	<ul style="list-style-type: none"> • Use a ruler to measure and mark lines for cutting with some accuracy. • Make and use gluing tabs. • Applies some finishing techniques. • Select an appropriate way to improve the appearance of a product. • Follow procedures for safety and hygiene. 	<ul style="list-style-type: none"> • Insert paper fasteners for card linkages. • Accurately assembles, joins and combines most materials. • Accurately applies several finishing techniques. • Selects the most effective finish to enhance the appearance of a product. • Follow procedures for safety and hygiene.
Evaluate	<ul style="list-style-type: none"> • Investigate and compare a range of similar existing products. • Compare and contrast the similarities and differences of products with the same function. • Identify the strengths and areas for development in their ideas and products. • Evaluate ideas and products against design criteria. • 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. • Recognise successful inventors, designers, chefs and engineers, who have been influential in the design and technology industries. 	<ul style="list-style-type: none"> • Investigate and begin to analyse a range of existing products. • Use knowledge of similarities and differences between products with the same function to support identification of most effective product. • Evaluate ideas and products against own design criteria, taking into account the views of others. • Identify the strengths and areas for development in their ideas and products. • Consider the views of others, including intended users, to improve their work. • Refer to the design criteria as they design and make. • Use their design criteria to evaluate and improve their completed products. • 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. • 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. • Recognise several inventors, designers, chefs, manufacturers and engineers, who have been influential in the design and technology industries.

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.