

Oak Meadow Primary School

Ryan Avenue, Ashmore Park, Wolverhampton, WV11 2QQ, 01902 558517, oakmeadowprimaryschool@wolverhampton.gov.uk



Policy: Design and Technology

From tiny acorns mighty oaks grow.

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Signature:	
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Policy Author: S.Dean

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Curriculum Statement – Design and Technology

Intent

At Oak Meadow, we believe that the teaching and learning of Design and Technology is essential to prepare our pupils for the modern world. Children are encouraged to develop a greater understanding and knowledge of design and technology, as well as their safe use of tools and equipment. The Design and Technology curriculum at Oak Meadow enables children to develop their creativity and imagination as pupils design, make and evaluate products in a variety of contexts that complement, where appropriate, our bespoke curriculum. They will also acquire subject knowledge and skills that draw upon other areas of their learning such as mathematics, science, engineering, computing and art. Children at Oak Meadow will be encouraged to take risks and become resourceful, innovative, enterprising and capable pupils. Through the teaching of Design and Technology, we will show children the best inventions both past and present, and encourage them to develop a critical understanding of the impact of such inventions.

Implementation

Design and Technology at Oak Meadow is taught throughout the year as part of termly topics through a variety of creative and practical activities. Key skills and knowledge are mapped across each Year Group to ensure appropriate skills progression. Our children are taught to design, make, evaluate and develop their technical knowledge. Cross-curricular outcomes in Design and Technology are specifically planned for and strong links are made with Maths, Science and the Computing curriculum in order to contextualise the learning for children to achieve a deep understanding. Outcomes of pupils' work are evidenced within year group folders on our CloudW site and in each year group's floor book; the progress and attainment of all children is updated at the end of each unit of work via a foundation subject assessment tracker.

Impact

At Oak Meadow, our children will:

- Be able to test, critique and evaluate their products and ideas as well as those of others.
- Understand and apply the principles of nutrition and learn how to cook.
- Develop a good knowledge, understanding and appreciation of a range of materials and how they have multi-purpose uses.
- Build and apply a repertoire of knowledge, understanding and skills in order to design and make products for a wide range of users.
- Have a clear enjoyment and confidence in Design and Technology that they will then apply to other areas of the curriculum.

Skills Progression

The curriculum is intended to focus on essential core subject knowledge and skills. As a school, we have worked hard to ensure there is a detailed progression of skills for each subject from Early Years to Upper Key Stage 2. Our Skills Progression documents show the Year Group expectations in every subject and set out what will be taught in each Year Group based on the 2014 National Curriculum. Please refer to Appendix 1 for the skills progression for Design and Technology.

Assessment

Assessment for learning is continuous throughout the planning, teaching and learning cycle. Key technical knowledge is taught to enable and promote the development of children's Design and Technology skills. Assessment is supported by use of the following strategies:

- Observing children at work, individually, in pairs, in a group and in class during whole class teaching.
- Using differentiated, open-ended questions that require children to explain and unpick their understanding.
- Providing effective feedback both written and verbal.
- Moderation and monitoring of outcomes of work, to evaluate the range and balance of work and to ensure that tasks meet the needs of different learners, with the acquisition of the skills for each topic being clearly evidenced.

At the end of each topic, the acquisition of skills are evidenced by the class teacher on a foundation subject tracker. Each child's attainment and progress is formally reported to parents annually in the child's end of year report.

Early Years

In the Early Years Foundation Stage, Design and Technology is taught through the areas of learning referred to as Physical Development (PD), Understanding the World (UTW) and Expressive Arts and Design (EAD). We follow the Development Matters Early Years Curriculum which supports children in acquiring a succession of stepping stones that will enable them to achieve their Early Learning Goals.

Cross – Curricular Links

Design and Technology is a subject that touches on many other areas taught in schools, from Mathematics to Art. For example, a link may be made to compliment both Design and Technology and maths lessons to teach measurement/ quantities etc. Cross-curricular outcomes are identified prior to teaching.

SMSC Development

Spiritual Development is nurtured through the process of creative thinking and innovation which inspires our pupils to bring out undiscovered talents; this builds self-confidence and a belief in their unique abilities. We also seek to develop a sense of 'moral conscience', through thinking about the moral dilemmas raised in designing and making new products and the wider impact this may have on the environment as a result of the materials used. Design and Technology supports social development by providing opportunities for our children to work as a team, recognising others' strengths and sharing equipment safely when designing and making new products in order to maintain a safe, secure, learning environment. Design and Technology supports cultural development by encouraging children to research and reflect on ingenious products and inventions. Children look at the

diversity of materials and ways in which design technology has improved our quality of life in the past and present, and how it will most certainly benefit us in the future.

Diversity

Design and Technology investigates how different cultures have contributed to technology. It reflects on products and inventions, the diversity of materials and ways in which design can improve the quality of our lives. Design and Technology promotes equality of opportunity and provides an awareness of areas that have gender issues e.g. encouraging girls to use equipment that has been traditionally male dominated.

Planning and Resources

Design and Technology resources are stored centrally in the Design and Technology Resource Area. Our school library contains Design and Technology topic books to support children's individual research. In addition to this, each class has a 'floor book' to evidence some of the work created in lessons. Planning is achieved collaboratively with parallel-class teachers and plans are saved electronically for ease of access. Teachers identify the key knowledge and vocabulary that is to be taught, as well as the skills that are to be developed across each topic. These are detailed on each topic medium term plan, which makes explicit links to the National Curriculum 2014.

Subject Essentials

Each term children will have completed all Design and Technology objectives set out in their medium term plan. Work will be differentiated to ensure support and challenge for all pupils. Lessons will be evidenced in 'floor books' which may include a variety of recording methods such as written work, photographs, QR codes etc. Children will be expected to spell key Design and Technology vocabulary accurately and produce work in Design and Technology to the same quality as that presented in core curriculum lessons.

Role of the Subject Leader

The subject leader's responsibilities are:

- To ensure a high profile of the subject.
- To ensure a full range of relevant and effective resources are available to enhance and support learning.
- To ensure the progression of key knowledge and skills at the end of each age phase.
- To monitor Design and Technology across the school and ensure that key knowledge and skills are evidenced in learning outcomes.
- To monitor planning and oversee the teaching of Design and Technology, supporting teachers where necessary.
- To lead INSET to ensure further improvement and development of the subject.
- To ensure that the Design and Technology curriculum has a positive effect on all pupils, including those who are disadvantaged or have low attainment.
- To ensure that approaches are in line with current identified good practice and pedagogy.

Equal Opportunities

At Oak Meadow, we are committed to providing a teaching environment which ensures all children are provided with the same learning opportunities regardless of social class, gender, culture, race, special educational need or disability. Support for specific individuals is well considered and planned for, with consideration also given to how greater depth and further challenge can be implemented.

Inclusion

All pupils are entitled to access the Design and Technology curriculum at a level appropriate to their needs. Independent tasks, as well as teaching, are carefully adapted to ensure full accessibility, as well as to provide appropriate support and challenge for different groups of learners. The school manages peer relationships and makes full use of additional adults who are deployed effectively to ensure that identified children are able to make progress and achieve their full potential. Teaching takes account of children's own interests to ensure topic relevance. Opportunities for enrichment are also considered, to ensure a fully inclusive and engaging Design and Technology curriculum.

Role of the Governors

Governors are responsible for ensuring the effective delivery of Design and Technology. The subject leader will ensure that the Governing Body is kept up to date with initiatives that are relevant to the subject; action plans are shared with governors and the governors meet with subject leads and provide link governor reports to the governing body annually.

Health and Safety

The curriculum will be delivered in a safe and healthy manner and every effort will be taken to identify risks associated with a curriculum subject/activity (such as harmful equipment and materials) and the appropriate control measures will be implemented. Pupils will be educated about health and safety issues as and when the opportunity arises throughout the course of normal teaching.

EYFS Skills Progression

Design and Technology

30-50 months	Physical Development	Moving & Handling	<ul style="list-style-type: none"> To use one-handed tools and equipment, e.g. makes snips in paper with child scissors.
		Health & Self-Care	<ul style="list-style-type: none"> To understand that equipment and tools have to be used safely.
	Understanding the World	Technology	<ul style="list-style-type: none"> To show an interest in technological toys with knobs or pulleys, or real objects. To show skill in making toys work by pressing parts or lifting flaps to achieve effects, such as sound, movements or new images.
	Expressive Arts & Design	Exploring & Using Media & Materials	<ul style="list-style-type: none"> To enjoy joining in with dancing and ring games. To begin to move rhythmically. To imitate movement in response to music. To tap out simple repeated rhythms.
		Being Imaginative	<ul style="list-style-type: none"> To develop preferences for forms of expression. To use movement to express feelings. To create movement in response to music. To capture experiences and responses with a range of media, such as music, dance and paint and other materials or words.
40-60 months	Physical Development	Moving & Handling	<ul style="list-style-type: none"> To use simple tools to effect changes to materials. To handle tools, objects, construction and malleable materials safely and with increasing control.
		Health & Self-Care	<ul style="list-style-type: none"> To show understanding of the need for safety when tackling new challenges and consider and manage some risks. To show understanding of how to transport and store equipment safely. To practise some appropriate safety measures without direct supervision.

	Expressive Arts & Design	Exploring & Using Media & Materials	<ul style="list-style-type: none"> • To explore what happens when they mix colours. • To experiment to create different textures. • To understand that different media can be combined to create new effects. • To manipulate materials to achieve a planned effect. • To construct with a purpose in mind, using a variety of resources. • To use simple tools and techniques competently and appropriately. • To select appropriate resources and adapt work where necessary. • To select tools and techniques needed to shape, assemble and join materials they are using.
		Being Imaginative	<ul style="list-style-type: none"> • To create simple representations of events, people and objects. • To choose particular colours to use for a purpose.
ELG	Physical Development	Moving & Handling	<ul style="list-style-type: none"> • To handle equipment and tools effectively, including pencils for writing.
	Expressive Arts & Design	Exploring & Using Media & Materials	<ul style="list-style-type: none"> • To safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
		Being Imaginative	<ul style="list-style-type: none"> • To use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories.

Oak Meadow Skills Progression

Key Stage 1

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"> • design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology <p><u>Make</u></p> <ul style="list-style-type: none"> • select from and use a range of tools and equipment to perform practical tasks [e.g. cutting, shaping, joining and finishing] • select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristic <p><u>Evaluate</u></p> <ul style="list-style-type: none"> • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria <p><u>Technical knowledge</u></p> <ul style="list-style-type: none"> • build structures, exploring how they can be made stronger, stiffer and more stable • explore and use mechanisms [e.g. levers, sliders, wheels and axles], in their products <p><u>Cooking and Nutrition</u></p> <ul style="list-style-type: none"> • use the basic principles of a healthy and varied diet to prepare dishes • understand where food comes from 				
	<table border="1"> <thead> <tr> <th>Year 1</th><th>Year 2</th></tr> </thead> <tbody> <tr> <td> <p>Link to toys and fairytales topic. E.g. bridge for Billy Goats Gruff, furniture for three little bears, shoe for the elves and the shoemaker</p> <ul style="list-style-type: none"> • Use senses to explore a wide range of familiar products. • Take simple products apart and talk about how their parts work. • Talk about and/or use construction materials, drawings and words to plan their own original designs. • State what products they are designing and making. </td><td> <p>Link to Lighthouse Keeper's Lunch – make a lighthouse, a healthy lunch box, a slider Christmas card.</p> <ul style="list-style-type: none"> • State what products they are designing and making. • Describe what their products are to be used for. • Say how their products will work and how they're suitable for intended users. • Use simple design criteria to help develop their ideas. • Use knowledge of existing products to support plans for a similar product. </td></tr> </tbody> </table>	Year 1	Year 2	<p>Link to toys and fairytales topic. E.g. bridge for Billy Goats Gruff, furniture for three little bears, shoe for the elves and the shoemaker</p> <ul style="list-style-type: none"> • Use senses to explore a wide range of familiar products. • Take simple products apart and talk about how their parts work. • Talk about and/or use construction materials, drawings and words to plan their own original designs. • State what products they are designing and making. 	<p>Link to Lighthouse Keeper's Lunch – make a lighthouse, a healthy lunch box, a slider Christmas card.</p> <ul style="list-style-type: none"> • State what products they are designing and making. • Describe what their products are to be used for. • Say how their products will work and how they're suitable for intended users. • Use simple design criteria to help develop their ideas. • Use knowledge of existing products to support plans for a similar product.
Year 1	Year 2				
<p>Link to toys and fairytales topic. E.g. bridge for Billy Goats Gruff, furniture for three little bears, shoe for the elves and the shoemaker</p> <ul style="list-style-type: none"> • Use senses to explore a wide range of familiar products. • Take simple products apart and talk about how their parts work. • Talk about and/or use construction materials, drawings and words to plan their own original designs. • State what products they are designing and making. 	<p>Link to Lighthouse Keeper's Lunch – make a lighthouse, a healthy lunch box, a slider Christmas card.</p> <ul style="list-style-type: none"> • State what products they are designing and making. • Describe what their products are to be used for. • Say how their products will work and how they're suitable for intended users. • Use simple design criteria to help develop their ideas. • Use knowledge of existing products to support plans for a similar product. 				

Skills and Techniques

Design

		<ul style="list-style-type: none"> Describe what their products are to be used for. 	<ul style="list-style-type: none"> Develop and communicate ideas by talking and drawing. Describe, explore and investigate products that have been disassembled. Use construction kits, pictures, templates, mock ups and captions to plan and design. Talk about and describe the tools and materials needed in order complete the key tasks within a plan.
	Make	<ul style="list-style-type: none"> Plan by suggesting what to do next Select from a range of tools, materials and components. Follow procedures for safety and hygiene. Cut paper/ card using scissors. Join with tape or glue. Apply simple finishes. E.g., paint, PVA, glue glaze. Use a range of materials, including food ingredients. Measure, mark out and cut a range of materials. Cut and stick fabrics together. Apply simple finishing techniques. E.g., fabric crayons, gluing on feathers. 	<ul style="list-style-type: none"> Explore and talk about the characteristics of an increasing range of materials. Select and use simple tools to cut and join a range of materials. Use a straight edge to mark lines for cutting. Join edge-to-edge using glue. Curl paper. Use a hole punch and stapler. Select from a range of finishes to improve the appearance of a product. Follow procedures for safety and hygiene.
	Evaluate	<ul style="list-style-type: none"> Talk about their design ideas and what they are making Talk about the steps taken to achieve the outcome. Talk about how to make their products better. Explore what their products are, what they are made from, who they are for, how they are used. Talk about likes and dislikes of existing product. 	<ul style="list-style-type: none"> Talk about and describe key features of a range of products. Explore and evaluate a range of existing products. Begin to evaluate the success of the product in terms of function and aesthetic criteria. Make simple judgements about their products and ideas against design criteria. Talk and write about how to make their products better. Talk about likes and dislikes of existing product. Give reasons.
	Technical knowledge	<ul style="list-style-type: none"> Pupils show an interest in toys with buttons, flaps and simple mechanisms and operate them successfully. Pupils know about the movement of simple mechanisms such as levers, sliders, wheels and axles Use simple construction materials to make a vehicle. Explore and talk about books containing flaps and moving pictures. Construct a simple lever with support. Explore building bridges and towers using large and 	<ul style="list-style-type: none"> Attach wheels to a chassis using an axle, e.g. cotton reels and dowel. Deconstruct a simple slider and describe how it works. Construct a simple slider independently. Make a lever by joining card strips with paper fasteners. Construct a range of simple structures. Make a structure more stable by widening the base. Talk about and begin to select textiles based on characteristics of an increasing range of materials.

		<p>small-scale construction materials. E.g. Duplo, cardboard boxes.</p> <ul style="list-style-type: none"> • Make simple 2D structures using straws. 	<ul style="list-style-type: none"> • Use a simple template. • Join fabrics using glue, staples and thread. • Apply an increasing range of finishing techniques, e.g. painting and printing.
	Cooking and Nutrition	<ul style="list-style-type: none"> • Recognise that food comes from plants or animals. • Know that food is farmed, grown or caught. • Sort fruit and vegetables by taste, shape, size, colour, texture and simple food groups, e.g. meat, vegetables etc. • Begin to recognise that everyone should eat at least five portions of fruit and vegetables a day. • Use basic tools e.g. cutters and whisks. • Use techniques – cutting, peeling and grating. 	<ul style="list-style-type: none"> • Sort and classify food into food groups, e.g. vegetables, pulses, cereals, dairy etc. • Talk about what happens when food is heated and cooled • Know how to prepare simple dishes safely and hygienically without using a heat source. • Measure and weigh accurately using cups and spoons. • Use techniques – cutting, chopping, peeling and grating.

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	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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.
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	Cooking and Nutrition	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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.
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Oak Meadow Skills Progression

Upper 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 5	Year 6
Skills and Techniques	Design	<ul style="list-style-type: none"> Describe in detail the purpose 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. Carry out research. E.g. surveys and interviews to identify users' needs, wants and preferences. Develop a simple design specification to guide their thinking. Share and clarify ideas confidently through discussion Link discussions about ideas, plans and designs to the investigation, disassembly and evaluation of a range of products describing in detail their parts and their function. Produce detailed designs and plans using prototypes, commentary and diagrams that include accurate measurements. Use annotated sketches, cross-sectional drawings, exploded diagrams to develop and communicate ideas. Generate plans and designs based on research and ideas that take account of the users' views and the intended purpose. Make design decisions that take account of the availability of resources. Generate innovative ideas from prior research. Make design decisions based on time, cost and resource constraints. 	<ul style="list-style-type: none"> Describe in detail the purpose 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. Carry out research. E.g. surveys, interviews, questionnaires to identify users' needs, wants and preferences. Develop detailed design specifications to guide their thinking and planning. Share and clarify ideas confidently through discussion Clarify and justify plans, designs and ideas by drawing upon and using a range of relevant sources of information. Produce detailed designs and plans drawn to scale from a range of viewpoints. Use annotated sketches, cross-sectional drawings, exploded diagrams to develop and communicate ideas. Discuss ways in which ideas, plans and designs are formed and modify to ensure that the design criteria are met effectively. Generate realistic ideas focusing on the needs of the user. Make design decisions that take account of the availability of resources. Generate innovative ideas drawing on research. Make informed decisions based on time, cost and resource constraints.
	Make	<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. Select materials and components suitable to the task. Confidently select tools and equipment suitable to the task. Explain their choices. 	<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. Select materials and components suitable to the task. Confidently select tools and equipment suitable to the task. Explain their choices, giving evidence.

		<ul style="list-style-type: none"> • Produce appropriate list of tools, equipment and materials that they will need. • Order the stages of the making process in logical steps. • Formulate step-by-step plans as a guide to making. • Measures, marks out, cuts and shapes materials and components with accuracy. • Accurately assembles, joins and combines most materials. • Accurately applies the most effective finish to enhance the appearance of a product using a range of finishing techniques, including those from art and design sessions. • Use techniques that involve a number of steps. • Use resourcefulness when tackling practical problems. • Follow procedures for safety and hygiene. 	<ul style="list-style-type: none"> • Produce appropriate list of tools, equipment and materials that they will need. • Order the stages of the making process in logical steps. • Formulate step-by-step plans as a guide to making. • Measures, marks out, cuts and shapes materials and components with accuracy and precision. • Accurately assembles, joins and combines a range of materials and components using the most effective permanent and temporary way. • Accurately applies the most effective finish to to ensure a high quality end product using a range of finishing techniques, including those from art and design sessions. • Use techniques that involve a number of steps. • Use resourcefulness, resilience and innovation when tackling practical problems. • Explains next steps in learning drawing from prior experience. • Follow procedures for safety and hygiene.
	Evaluate	<ul style="list-style-type: none"> • Investigate and use analysis of existing products to inform own work. • Identify from a range the key features and functions needed to create an effective and efficient working product. • Identify the strengths and areas for development in their ideas and products. • Consider the views of others, including intended users, to improve their work. • Use their design criteria to evaluate and improve their completed products. • Critically evaluate the quality of the design, manufacture and fitness for purpose of their products. • Evaluate their ideas and products against their original design specification giving reasons, supported by factual evidence for the success of aspects of a product. • Investigate and analyse how well products have been designed and made; why materials have been chosen and 	<ul style="list-style-type: none"> • Use analysis of existing products supported by accurate factual information to inform own work. • Test and evaluate products to identify the variants which may affect the function of a product. • Identify the strengths and areas for development in their ideas and products. • Consider the views of others, including intended users, to improve their work. • Use their design criteria to evaluate and improve their completed products. • Critically evaluate the quality of the design, manufacture and fitness for purpose of their products. • Evaluate their ideas and products against their original design specification giving reasons, supported by factual evidence for the success of aspects of a product and provide considered solutions to resolve those parts that could be improved. • Investigate and analyse how well products have been designed and made; why materials have been chosen and what methods

		<p>what methods of construction were used; how well the products worked; whether they achieved their purpose and the needs/ wants of the users.</p> <ul style="list-style-type: none"> • 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. • Consider cost and sustainability. • Consider the impact and innovative qualities of their products. • Recognise several inventors, designers, chefs, manufacturers and engineers, who have been influential in the design and technology industries. 	<p>of construction were used; how well the products worked; whether they achieved their purpose and the needs/ wants of the users.</p> <ul style="list-style-type: none"> • 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. • Investigate and analyse how much products cost to make, how innovative products are, how sustainable the materials in the products are, what impact products have beyond their intended purpose. • Recognise several inventors, designers, chefs, manufacturers and engineers, who have been influential in the design and technology industries.
	Technical knowledge	<ul style="list-style-type: none"> • Describe in detail the way in which an axle and chassis help a vehicle to move. • Use a range of different ways to attach an axle to a chassis, e.g. card triangles, drilled holes, cable clips and clothes pegs. • Identify, describe and evaluate products that contain pulleys and drive belts. • Create pulleys and drive systems. • Explore and describe how electrical circuits can be created and controlled. • Discuss in depth the hazards and safety issues associated with electricity. • Explore and explain how the direction and speed of an electrical motor can be controlled. • Explore and program a simple control device. • Create a range of sliders and levers to produce horizontal and vertical movement. • Combine sliders and levers to produce a range of movements. • Generate questions to investigate and compare the efficiency of pneumatic systems. 	<ul style="list-style-type: none"> • Design and build a working model where the direction of movement can be controlled, e.g. with a chassis with a pivoting axle. • Explain how a belt and pulley system can be used to reverse the direction of rotation, and alter the plane of rotation by 90 degrees. • Explain how the number of teeth of a gear affects the speed of rotation. • Explore and describe how switches can be used in a range of circuits to control components, e.g. lights in a lighthouse, a movement sensor in a burglar alarm. • Apply appropriate safety measures when constructing circuits. • Explore and discuss ways in which electricity can be used to control movement. • Explore and use an increasing range of complex control system, e.g., a light sensor. • Use a range of technical vocabulary to describe the properties and functions of mechanisms. • Choose and use a range of sliders and levers accurately to create a range of effects. • Analyse and evaluate the efficiency of pneumatic systems.

		<ul style="list-style-type: none"> Describe the way in which a cam changes rotary motion into linear motion. Create nets of increasingly complex 3D shapes which include the addition of gluing tabs. Reinforce and strengthen 3D framework using the concept of 'triangulation'. Explain in detail why some structures fail. Use a range of materials to make joints e.g., card strips, elastic bands, thread and ties, and plastic tubing. 	<ul style="list-style-type: none"> Discuss the relationship between a cam and follower, an off-centre cam, a peg cam, a pear-shaped cam and a snail cam. Create nets and templates accurately in a range of sizes. Use a range of increasing methods to strengthen 3D structures and frames. Investigate measure and record the load tolerance of different structures and find ways of improving a structures load-bearing capacity. Build a range of structures using a wide range of effective materials.
Cooking and Nutrition		<ul style="list-style-type: none"> Know that food is farmed, reared, grown, imported or caught locally, regionally and internationally. Begin to know that seasons and weather affect food availability. Begin to know how food is processed into ingredients that can be eaten or used in cooking. Know how to prepare and cook a variety of savoury and some sweet dishes safely and hygienically, including the use of a heat source. Talk in scientific terms about the physical and chemical changes that take place when food is cooked, e.g. heated and cooled Know how to use a wide range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. 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. Talk about the impact of changing proportions within a recipe and use knowledge of food and cooking to generate own recipes. Know that recipes can be adjusted to change the taste, texture, aroma and appearance. 	<ul style="list-style-type: none"> Know that food is farmed, reared, grown, imported or caught locally, regionally and internationally. Begin to know that seasons and weather affect food availability. Begin to know how food is processed into ingredients that can be eaten or used in cooking. Know how to prepare and cook a variety of savoury and some sweet dishes safely and hygienically, including the use of a heat source. Talk in scientific terms about the physical and chemical changes that take place when food is cooked, e.g. heated and cooled Know how to use a wide range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. Select the appropriate methods and equipment for measuring, e.g. time, dry goods, liquids etc. Compare commercial and domestic processes for producing food, e.g. bread. 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.

		<ul style="list-style-type: none"> • Know that different foods contain substances that are needed for health. E.g. water, fibre, vitamins and nutrients. • Talk about and give reasons for the need to work safely and hygienically. 	<ul style="list-style-type: none"> • Talk about the impact of changing proportions within a recipe and use knowledge of food and cooking to generate own recipes. • Know that recipes can be adjusted to change the taste, texture, aroma and appearance. • Know that different foods contain substances that are needed for health. E.g. water, fibre, vitamins and nutrients. • Know and understand the practice needed in terms of food hygiene and kitchen safety.
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