



Design and Technology Annual Overview

Whitehouse Primary School

EYFS ELG -Physical Development ELG – Expressive Arts and Design	Moving and Handling	<ul style="list-style-type: none"> To handle equipment and tools effectively, including pencils for writing.
	Exploring and Using Media and 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.

Autumn					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Cooking and Nutrition: Preparing fruit and vegetables			Mechanical systems: Pulleys, gears or cams	Textiles Combining different fabric shapes (including computer aided design)
Spring					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Mechanisms: Wheels and axles (moving vehicle)		Textiles: 2-D shape to 3-D product (Cushion)	Electrical Systems: Simple circuits and switches (including programming and control)	Structures: strengthening and joining (Bridges)	
Summer					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Textiles: Templates and joining techniques (carnival headdress)	Structures: Strengthening and joining (Beach hut)	Cooking and Nutrition: Healthy and varied diet (bread products)	Structures : Shell and Frame structures (Castles)		Food Celebrating culture and seasonality (including cooking and nutrition requirements for KS2)

Design Technology Progression Overview

Year 1 Spring term: Taxi!	Year 1 Summer Term: Rio Carnival
<p>In this unit the children will explore and evaluate a range of wheeled toys considering how the wheels move, how they are fixed on, etc. They will draw examples of wheeled products and label the main parts. The children will go on to use construction kits with wheels and axles learning how they are assembled as free or fixed axles. They will look at how to make axle holders and practise their skills of marking out, holding, cutting and joining. They will go on to design and make their own moving vehicle.</p>	<p>In this unit the children will design and create their Rio Carnival headdress. They will look at how they are made, including the fabric used, joining techniques, fastening and decoration. They will investigate the properties of different fabrics and materials for the purpose of making a headdress and practise making templates. They will try out different joining techniques and different design techniques before going on to design their own headdress which they then make and evaluate.</p>
<p>Aspect: Mechanisms Focus: Wheels and axles Outcome: Make a moving vehicle</p>	<p>Aspect: Textiles Focus: Templates and design and joining techniques Outcome: Make a Carnival headdress</p>
Main Focus for Skills Development	Main Focus for Skills Development
<p>Prior learning</p> <ul style="list-style-type: none"> • Assembled vehicles with moving wheels using construction kits. • Explored moving vehicles through play. • Gained some experience of designing, making and evaluating products for a specified user and purpose. • Developed some cutting, joining and finishing skills with card. <p>Designing</p> <ul style="list-style-type: none"> • Generate initial ideas and simple design criteria through talking and using own experiences. • Develop and communicate ideas through drawings and mock-ups. <p>Making</p> <ul style="list-style-type: none"> • Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing. • Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics. <p>Evaluating</p> <ul style="list-style-type: none"> • Explore and evaluate a range of products with wheels and axles. • Evaluate their ideas throughout and their products against original criteria. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Explore and use wheels, axles and axle holders. • Distinguish between fixed and freely moving axles. • Know and use technical vocabulary relevant to the project. 	<p>Prior learning</p> <ul style="list-style-type: none"> • Explored and used different fabrics and materials • Cut and joined fabrics and materials with simple techniques. <p>Designing</p> <ul style="list-style-type: none"> • Design a functional and appealing product for a chosen user and purpose based on simple design criteria. • Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and information and communication technology. <p>Making</p> <ul style="list-style-type: none"> • Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing. • Select from and use textiles according to their characteristics. <p>Evaluating</p> <ul style="list-style-type: none"> • Explore and evaluate a range of existing textile products relevant to the project being undertaken. • Evaluate their ideas throughout and their final products against original design criteria. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Understand how simple 3-D textile products are made, using a template to create two identical shapes. • Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. • Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons. • Know and use technical vocabulary relevant to the project

Year 2 Autumn Term: Cooking and Nutrition - Healthy Eating	Year 2 Summer Term: Structures -Beach Hut
<p>In this unit the children will examine a range of fruits and vegetables thinking about the appearance, texture, smell and taste. They will evaluate a range of food products to help inform their design ideas. The children will use focused practical tasks to practise using simple utensils to wash, grate, peel, slice, squeeze. They will discuss healthy eating and the need to eat fruits and vegetables as part of a balance diet. The children will design and make their own healthy snack for their partner class to evaluate using agreed design criteria.</p>	<p>This project teaches children about making and strengthening structures, including different ways of joining materials. The children will design and make a model beach hut, using the basic 3D wooden box frame. The children will learn different joining techniques and strengthening techniques such as reinforcing corners to strengthen the structure. Children will design their beach huts according to given criteria. They will measure, saw, sand and join pieces of wood together to create a strong frame for their beach huts. They will discuss their design ideas, any successes or problems they encountered and how they fulfilled the essential design criteria.</p>
<p>Aspect: Food and nutrition Focus: Preparing fruit and vegetables Outcome: Design and make a healthy snack</p>	<p>Aspect: Structures Focus: Frame structures Outcome: Design and make a model of a beach hut</p>
Main Focus for Skills Development	Main Focus for Skills Development
<p>Prior learning</p> <ul style="list-style-type: none"> • Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell. • Experience of cutting soft fruit and vegetables using appropriate utensils. <p>Designing</p> <ul style="list-style-type: none"> • Design appealing products for a particular user based on simple design criteria. • Generate initial ideas and design criteria through investigating a variety of fruit and vegetables. • Communicate these ideas through talk and drawings. <p>Making</p> <ul style="list-style-type: none"> • Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. • Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. <p>Evaluating</p> <ul style="list-style-type: none"> • Taste and evaluate a range of fruit and vegetables to determine the intended user’s preferences • Evaluate ideas and finished products against design criteria, including intended user and purpose. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Understand where a range of fruit and vegetables come from e.g. farmed or grown at home. • Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The Eatwell plate. • Know and use technical and sensory vocabulary relevant to the project. 	<p>Prior learning</p> <ul style="list-style-type: none"> • Experience of using construction kits to build walls, towers and frameworks. • Experience of using of basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card. • Experience of different methods of joining card and paper. <p>Designing</p> <ul style="list-style-type: none"> • Generate ideas based on simple design criteria and their own experiences, explaining what they could make. • Develop, model and communicate their ideas through talking, mock-ups and drawings. <p>Making</p> <ul style="list-style-type: none"> • Plan by suggesting what to do next. • Select and use tools, skills and techniques, to measure, cut and join materials to make a frame. • Select materials to build their structures. • Consider how to join materials and strengthen them • Reinforcing corners to strengthen a structure • Use simple finishing techniques suitable for the structure they are creating. <p>Evaluating</p> <ul style="list-style-type: none"> • Explore a range of existing beach hut structures • Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Know how to make freestanding structures stronger, stiffer and more stable. • Know and use technical vocabulary relevant to the project

Year 3 Spring Term Textiles: Design and Make cushion	Year 3 Summer Term Cooking and Nutrition: Bread products
<p>Children will investigate a range of textile products (cushions) that have a selection of stitches, joins, fabrics and finishing techniques. They will disassemble products to gain an understanding of 3D shape, pattern and seam allowances. Through focused practical tasks they will practise different stitching techniques and will explore the appropriateness of different fabrics to create a cushion. They will use products they have disassembled to make 2D paper pattern templates. The children will go on to design and make their own cushion, producing mock ups and prototypes of their chosen product. The children should refine ideas based on continual evaluation against agreed design criteria.</p>	<p>Children will investigate a range of foods and food dishes. They will build on their understanding of the 'Eatwell' plate to discuss the ingredients used. They will try different foods evaluating them for taste, texture, appearance, smell. They will invest the origins of different ingredients. The children will use focused practical tasks to further develop their food preparation techniques e.g. mixing, rubbing, kneading, stretching. The children will go onto innovate a bread based product liked to their topic and study of Italy. The children could visit a local Pizza restaurant to learn how dough is made.</p>
<p>Aspect: Textiles Focus: 2D shape to 3D product Outcome: Design and make a cushion</p>	<p>Aspect: Food and nutrition Focus: Healthy and varied diet Outcome: Create a bread-based food product</p>
Main Focus for Skills Development	Main Focus for Skills Development
<p>Prior learning</p> <ul style="list-style-type: none"> • Have joined fabric in simple ways by gluing and stitching. • Have used simple patterns and templates for marking out. • Have evaluated a range of textile products. <p>Designing</p> <ul style="list-style-type: none"> • Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s. • Produce annotated sketches, prototypes, final product sketches and pattern pieces. <p>Making</p> <ul style="list-style-type: none"> • Plan the main stages of making. • Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing. • Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern <p>Evaluating</p> <ul style="list-style-type: none"> • Investigate a range of 3-D textile products relevant to the project. • Test their product against the original design criteria and with the intended user. • Take into account others' views. • Understand how a key event/individual has influenced the development of the chosen product and/or fabric. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Know how to strengthen, stiffen and reinforce existing fabrics. • Understand how to securely join two pieces of fabric together. <ul style="list-style-type: none"> • Understand the need for patterns and seam allowances. • Know and use technical vocabulary relevant to the project. 	<p>Prior learning</p> <ul style="list-style-type: none"> • Know some ways to prepare ingredients safely and hygienically. • Have some basic knowledge and understanding about healthy eating and The Eatwell plate. • Have used some equipment and utensils and prepared and combined ingredients to make a product. <p>Designing</p> <ul style="list-style-type: none"> • Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose. • Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. <p>Making</p> <ul style="list-style-type: none"> • Plan the main stages of a recipe, listing ingredients, utensils and equipment. • Select and use appropriate utensils and equipment to prepare and combine ingredients. • Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. <p>Evaluating</p> <ul style="list-style-type: none"> • Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. • Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Know how to use appropriate equipment and utensils to prepare and combine food. • Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. • Know and use relevant technical and sensory vocabulary appropriately.

Year 4 Electrical Systems -circuits	Year 4 Structures: Castles
<p>Children will explore different examples of battery powered products. They will consider where they are used, what the key features and components are, and how they work. They will investigate examples of switches which work in different ways. They will investigate these in simple circuits. The children will carry out focused practical tasks to explore how to make different circuits which make things light up or make a sound using their science knowledge. The children will design a product that has an electrical component. They will then make and evaluate their product against agreed design criteria.</p>	<p>Children will look at different examples of shell structures, including the design of homes in the past. They will disassemble different types of packaging to construct nets. They will then practise making nets out of card. The children will practise their skills of scoring, cutting out and assembling using pre-drawn nets to create a simple box. The children will explore different ways of strengthening and stiffening structures e.g. corrugating, ribbing, laminating. The children will go on to design a shell structure for a given purpose. They will create sketch plans and decide what materials they will need and the steps they will take. They will make their structure using the practised skills.</p>
<p>Aspect: Electrical Systems Focus: Simple circuits and switches Outcome: Design and make a product that lights up or makes a noise</p>	<p>Aspect: Structures Focus: Shell structures Outcome: Design and make shell structure castles</p>
Main Focus for Skills Development	Main Focus for Skills Development
<p>Prior learning</p> <ul style="list-style-type: none"> • Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers. • Cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue. <p>Designing</p> <ul style="list-style-type: none"> • Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. • Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams. <p>Making</p> <ul style="list-style-type: none"> • Order the main stages of making. • Select from and use tools and equipment to cut, shape, join and finish with some accuracy. • Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities. <p>Evaluating</p> <ul style="list-style-type: none"> • Investigate and analyse a range of existing battery-powered products. • Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers. • Apply their understanding of computing to program and control their products. • Know and use technical vocabulary relevant to the project. 	<p>Prior learning</p> <ul style="list-style-type: none"> • Experience of using different joining, cutting and finishing techniques with paper and card. • A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses of materials in science. <p>Designing</p> <ul style="list-style-type: none"> • Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product. • Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas. <p>Making</p> <ul style="list-style-type: none"> • Order the main stages of making. • Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy. • Explain their choice of materials according to functional properties and aesthetic qualities. • Use finishing techniques suitable for the product they are creating. <p>Evaluating</p> <ul style="list-style-type: none"> • Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used. • Test and evaluate their own products against design criteria and the intended user and purpose. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Develop and use knowledge of how to construct strong, stiff shell structures. • Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes. • Know and use technical vocabulary relevant to the project.

Year 5 Autumn Term Structures: Bridges	Year 5 Summer Term Mechanisms: Cams
<p>In this unit the children will look at different types of bridges, including truss, arch, beam, suspension cable-stayed. They will look at architectural features and link to their knowledge of forces and absorption of load. The children will identify stronger and weaker structures and find different ways to reinforce structures or materials to make them stronger. They will look at strengthening techniques such as how triangles can be used. They will create accurate neat and secure joints using joining techniques. The children will explore different ways of strengthening and stiffening structures e.g. corrugating, ribbing, laminating. The children will go on to design a truss bridge that will support a given load They will create sketch plans and decide what materials they will need and the steps they will take. They will make their structure using the practised skills and test and evaluate their product.</p>	<p>In this unit the children investigate different types of movement: rotary, oscillating and reciprocating. They explore different products and toys that use Cam mechanisms and explore how they are used in the other products/industries. The children go on to use pre-cut cams to observe movement and use a range of tools accurately and safely. They develop the skills of marking, cutting, shaping and joining. The children go on to design and make their own model with a cam mechanism, considering how it will move and also the finishing techniques they will use to create the finished product.</p>
<p>Aspect: Structures Focus: Bridges Outcome: Design and create a bridge to hold a given load.</p>	<p>Aspect: Mechanisms Focus: Cams Outcome: Design and make a moving model</p>
Main Focus for Skills Development	Main Focus for Skills Development
<p>Prior learning</p> <ul style="list-style-type: none"> • Experience of using different strengthening techniques • Experience of building a strong and stiff structure by folding paper and learning that there are different ways paper can be folded to improve it. <p>Designing</p> <ul style="list-style-type: none"> • Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product. • Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas. • Designing a stable structure that is able to support weight • Creating frame structure with focus on triangulation <p>Making</p> <ul style="list-style-type: none"> • Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy. • Making a range of different shaped beam bridges • Using triangles to create truss bridges that span a given distance and supports a load • Explain their choice of materials according to functional properties and aesthetic qualities. • Use finishing techniques suitable for the product they are creating. <p>Evaluating</p> <ul style="list-style-type: none"> • Investigate and evaluate a range of existing bridge structures including the materials, components and techniques that have been used. • Test and evaluate their own products against design criteria and the intended user and purpose. • Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary • Suggesting points for improvements for own bridges and those designed by others <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Develop and use knowledge of how to construct strong, stiff bridge structures. • Know and use technical vocabulary relevant to the project. • Identifying arch and beam bridges and understanding the terms: compression and tension • Identifying stronger and weaker structures • Understanding how triangles can be used to reinforce structures 	<p>Prior learning</p> <ul style="list-style-type: none"> • Experience of axles, axle holders and wheels that are fixed or free moving. • Basic understanding of different types of movement. • Experience of cutting and joining techniques with a range of materials including card, plastic and wood. • An understanding of how to strengthen and stiffen structures. <p>Designing</p> <ul style="list-style-type: none"> • Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources. • Develop a simple design specification to guide their thinking. • Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. <p>Making</p> <ul style="list-style-type: none"> • Produce detailed lists of tools, equipment and materials. • Formulate step-by-step plans and, if appropriate, allocate tasks within a team. • Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. • Work within the constraints of time, resources and cost. <p>Evaluating</p> <ul style="list-style-type: none"> • Compare the final product to the original design specification. • Test products with the intended user, where safe and practical, and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. • Investigate famous manufacturing and engineering companies relevant to the project. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Understand that mechanical systems have an input, process and an output. • Understand how cams can be used to produce different types of movement and change the direction of movement. • Know and use technical vocabulary relevant to the project.

Year 6 Autumn Term Textiles: Make, Do and Mend	Year 6 Summer Term Cooking and Nutrition: Come Dine with Me
<p>Children learn about ‘make do and mend’ initiatives in WWII. They will investigate and evaluate a range of products which have been produced by combining fabric shapes and patterns. They will look at how existing products have been constructed, disassembling products to look at the shapes, how they have been joined, strengthened or stiffened. They will look at fastenings that have been used. The children will undertake focused practical tasks to develop skills if sewing using a range of stitches. They will make seams, tacking fabrics together. They will practise making 2D patterns using grid or tracing paper to create a mock up before they go on to design and make a product using recycled fabric.</p>	<p>Children will complete research into existing products that have cultural preferences. They will investigate the ingredients used and the origins of these ingredients. They will evaluate a range of dishes and food products. The children will use focused practical tasks to measure out, cut, shape, combine products. They investigate what ingredients could be changed or added to recipes and how this would affect the taste, smell, texture and appearance. The children go on to create innovations of known dishes. They will design, prepare, cook and serve the dishes they create.</p>
<p>Aspect: Textiles Focus: Combining different fabric shapes Outcome: Recycling - Make do and mend project</p>	<p>Aspect: Food and nutrition Focus: Celebrating culture and seasonality Outcome: Create meals linked to class topic</p>
Main Focus for Skills Development	Main Focus for Skills Development
<p>Prior learning</p> <ul style="list-style-type: none"> • Experience of basic stitching, joining textiles and finishing techniques. • Experience of making and using simple pattern pieces. <p>Designing</p> <ul style="list-style-type: none"> • Generate innovative ideas by carrying out research including surveys, interviews and questionnaires. • Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design. • Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. <p>Making</p> <ul style="list-style-type: none"> • Produce detailed lists of equipment and fabrics relevant to their tasks. • Formulate step-by-step plans and, if appropriate, allocate tasks within a team. • Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. • Work within the constraints of time, resources and cost. <p>Evaluating</p> <ul style="list-style-type: none"> • Investigate and analyse textile products linked to their final product. • Compare the final product to the original design specification. • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics. • Fabrics can be strengthened, stiffened and reinforced where appropriate. 	<p>Prior learning</p> <ul style="list-style-type: none"> • Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet. • Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients. <p>Designing</p> <ul style="list-style-type: none"> • Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification. • Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose. • Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas. <p>Making</p> <ul style="list-style-type: none"> • Write a step-by-step recipe, including a list of ingredients, equipment and utensils • Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients. • Make, decorate and present the food product appropriately for the intended user and purpose. <p>Evaluating</p> <ul style="list-style-type: none"> • Carry out sensory evaluations of a range of relevant products and ingredients. • Record the evaluations using e.g. tables/graphs/charts such as star diagrams. • Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. • Understand how key chefs have influenced eating habits to promote varied and healthy diets. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Know how to use utensils and equipment including heat sources to prepare and cook food. • Understand about seasonality in relation to food products and the source of different food products. • Know and use relevant technical and sensory vocabulary.