



St Peter's Catholic Primary School

Progression of skills: Design Technology

Reception

- *Develop their small motor skills so that they can use a range of tools competently, safely and confidently.*
- *Use their core muscle strength to achieve good posture when sitting at a table or sitting on the floor.*
- *Explore, use and refine a variety of artistic effects to express their ideas and feelings.*
- *Return to and build on their previous learning, refining ideas and developing their ability to represent them.*
- *Create collaboratively, sharing ideas, resources and skills.*

ELGs

- *Use a range of small tools, including scissors, paintbrushes and cutlery.*
- *Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.*
- *Share their creations, explaining the process they have used.*

Progression of Skills in Design and Technology

Key Stage 1 - Years 1/2

DESIGNING & EVALUATION

Ongoing Skills

Designing

Consider the 6 characteristics: user, purpose, functionality, design decisions, innovation, authenticity.

- Follow verbal instructions
- Explain what they are making and which materials they are using
- Name the tools they are using
- Describe what they need to do next
- Select materials from a range that will meet the design criteria
- Select and name the tools needed to work the materials
- Select appropriate technique explaining First...Next...Last
- Explore ideas by rearranging materials
- Select pictures to help develop ideas
- Use pictures and words to convey that they want to design and make
- Describe their models and drawings of ideas and intentions
- Use kits/reclaimed materials to develop an idea
- Use drawings to record ideas as they are developed
- Discuss their work as it progresses
- Add notes to drawings to help explanations.

Ongoing Skills

Evaluation

- Explore and evaluate a range of existing products.
- Evaluate their ideas and products against design criteria.

Consider the iterative design and evaluative process.

- Say what they like and do not like about items they have made and attempt to say why.
- Talk about their design and they develop and identify good and bad points.
- Talk about changes made during the making process
- Discuss how closely their finished product meets their design criteria.

Progression of Skills in Design and Technology

Lower Key Stage 2 - Years 3/4

DESIGNING AND EVALUATION	
<p><u>On-going Skills</u></p> <p>Designing</p> <p>Consider the 6 characteristics: user, purpose, functionality, design decisions, innovation, authenticity.</p> <ul style="list-style-type: none"> • Investigate similar products to the one to be made to give starting points for a design. • Draw/sketch products to help analyse and understand how products are made. • Think ahead about the order of their work and decide upon tools and materials. • Plan a sequence of actions to make a product. • Record the plan by drawing labelled sketches or writing. • Develop more than one design or adaptation of an initial design. • Propose realistic suggestions as to how they can achieve their design ideas. • Add notes to drawings to help explanations. 	<p><u>On-going skills</u></p> <p>Evaluation</p> <ul style="list-style-type: none"> • Investigate and analyse a range of existing products • Evaluate their ideas and products against their 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>Consider the iterative design and evaluative process, designers and engineers.</p> <ul style="list-style-type: none"> • Identify the strengths and weaknesses of their design ideas. • Decide which design idea to develop. • Consider and explain how the finished product could be improved. • Discuss how well the finished product meets the design criteria and how well it meets the needs of the user.

Progression of Skills in Design and Technology Upper Key Stage 2 - Years 5/6

DESIGNING AND EVALUATION

On-going Skills

Designing

Consider the 6 characteristics: user, purpose, functionality, design decisions, innovation, authenticity.

- Investigate products/images to collect ideas
- Sketch and model alternative ideas.
- Develop one idea in depth.
- Combine modelling and drawing to refine ideas.
- Plan the sequence of work using a storyboard.
- Record ideas using annotated diagrams.
- Use models, kits and drawings to help formulate design ideas.
- Make prototypes.
- Use found information to inform decisions.
- Use a computer to model ideas.
- Draw plans which can be read/followed by someone else
- Give a report using correct technical vocabulary.

On-going Skills

Evaluation

- Investigate and analyse a range of existing products
- Evaluate their ideas and products against their 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.

Consider the iterative design and evaluative process, designers and engineers.

- Use the design criteria to inform their decisions about ways to proceed.
- Justify their decisions about materials and methods of construction.
- Reflect on their work using design criteria stating how well the design fits the needs of the user.
- Identify what does and does not work in the product.
- Make suggestions as how their design could be improved.

Progression of Skills in Design and Technology - Key Stage 1 - Years 1/2

Technical Knowledge
Making/working with materials and tools

Structures/construction MONUMENT—Yr 2 MOVING PICTURES—Yr 1	Textiles School Badge—Yr 1	Mechanics/Mechanisms VEHICLES—Yr 2	Cooking and Nutrition Afternoon Tea—Yr 2 PICNIC—Yr 1	Electrical VEHICLES—Yr 2	Computing/Control VEHICLES—Yr 2
<p>Year 1</p> <ul style="list-style-type: none"> • Fold, tear fold and cut paper and card. • Cut materials safely using tools provided. • Cut along lines, straight and curved. • Curl paper • Use hole punch • Insert paper fasteners for card linkages. • Create hinges • Use simple pop ups • Investigate joining temporary, fixed and moving. <p>Year 2</p> <ul style="list-style-type: none"> • Investigate strengthening sheet materials. • Cut materials safely using tools provided. • Measure and mark out to the nearest cm. • Roll paper to create tubes • Investigate joining temporary, fixed and moving. 	<p>Year 1</p> <ul style="list-style-type: none"> • Colour fabrics using a range of techniques eg. fabric paints, printing, painting. • Cut out shapes which have been created by drawing round a template onto the fabric. • Join fabrics by using running stitch, glue, staples, over sewing, tape • Decorate fabrics with buttons, beads, sequins, braids, ribbons. 	<p>Year 2</p> <ul style="list-style-type: none"> • Make vehicles with construction kits which contain free running wheels • Use a range of materials to create models with wheels and axles eg. tubes, dowel, cotton reels. • Attach wheels to a chassis using an axle. • Join appropriately for different materials and situations eg. glue, tape. • Mark out materials to be cut using a template. • See glue gun used by an adult. 	<p>Years 1 and 2</p> <p>Know where food comes from:</p> <ul style="list-style-type: none"> • that all food comes from plants or animals. • that food has to be farmed, grown elsewhere (e.g. home) or caught . <p>Food preparation, cooking and nutrition.</p> <ul style="list-style-type: none"> • how to name and sort foods into the five groups in The Eatwell plate. • Understand the need for a variety of foods in a diet. • What constitutes a healthy diet (including understanding calories and other nutritional content). • that everyone should eat at least five portions of fruit and vegetables every day. • how to prepare (assemble) simple, healthy dishes safely and hygienically, with/without using a heat source . • how to use techniques such as cutting, chopping, peeling and grating a range of ingredients. • Develop a food vocabulary using taste, smell, texture and feel. • Group familiar food products eg: fruit and vegetables. • Work safely and hygienically. • Measure/weigh food items, non statutory measures eg. spoons, cups and scales. • The characteristics of a poor diet and risks associated with unhealthy eating (including eg obesity and tooth decay and other behaviours eg the impact of alcohol on diet or health. 	<p>Year 2</p> <ul style="list-style-type: none"> • Diagnose faults in battery operated devices (such as low/ expired battery, water damage or battery terminal damage). 	<p>Year 2</p> <p>Model designs using software.</p>

Progression of Skills in Design and Technology - Key Stage 2 - Years 3/4

Technical Knowledge
Making/ working with materials and tools

Structures/construction. BRIDGES—Yr 3 Zaha. Hahid—Architect	Textiles Money Containers - Yr3	Mechanics/Mechanisms Levers/Linkages/ Pneumatics— Yr 4	Cooking and Nutrition Healthy and varied diet. Savoury dishes, cooking techniques, seasonality and farm to factory process—Yrs 3&4.	Electrical Systems Lights on a vehicle—Yr4 (FORD Links)	Computing/Control
<p>Year 3</p> <ul style="list-style-type: none"> • Create shell or frame structures, strengthen frames with diagonal struts. • Make structures more stable by giving them a wider base. • Prototype frame and shell structures. • Measure and mark square selection, strip and dowel accordingly to 1cm/mm. • Use glue gun with close supervision (1-1). • Cut slots • Cut internal shapes or cut outs. 	<p>Year 3</p> <ul style="list-style-type: none"> • Understand seam allowance. • Join fabrics using running stitch, over sewing, back stitch. • Explore fastenings and recreate some eg: sew on buttons and make loops. • Prototype a product using J cloths. • Use appropriate decoration techniques eg: appliqué (glued or simple stitches) • Create a simple pattern • Understand the need for patterns. 	<p>Year 4</p> <ul style="list-style-type: none"> • Use lollisticks/ card to make levers and linkages. • Use linkages, winding mechanisms, pneumatics to make movement larger and more varied. • Use and explore complex pop ups. • Create nets. 	<p>Y3&Y4 (Y3, Seasonal Salads, Y4—Soup)</p> <p>Where Food Comes From:</p> <ul style="list-style-type: none"> • To know that a recipe can be adapted by adding or substituting one or more ingredients. • that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world. <p>Food Preparation and Cooking & Nutrition</p> <ul style="list-style-type: none"> • how to prepare and cook a variety of predominantly healthy, savoury dishes safely and hygienically including, where appropriate, the use of a heat source. (Snack Foods) • how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. • What constitutes a healthy diet (including understanding calories and other nutritional content) • that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell plate. • that to be active and healthy, food and drink are needed to provide energy for the body • the characteristics of a poor diet and risks associated with unhealthy eating (including eg. Obesity and tooth decay and other behaviours eg the impact of alcohol on diet and health. • Develop sensory vocabulary/knowledge using smell, taste, texture and feel. • Analyse the taste, texture, smell and appearance of a range of foods. • Follow instructions/recipes. • Work safely and hygienically. • Measure and weigh ingredients appropriately. 	<p>Year 4</p> <ul style="list-style-type: none"> • Incorporate a circuit with a bulb or buzzer into a model. • Create series and parallel circuits. 	<p>Year 4</p> <ul style="list-style-type: none"> • Control and monitor models using software designed for a purpose.

Progression of Skills in Design and Technology - Key Stage 2 - Years 5/6

Technical Knowledge
Making/ working with materials and tools

Structures/construction PICTURE FRAMES—Yr 5 Reclaimed, wood	Textiles Year 6— Upcycling Make Do and Mend Vivienne Westwood	Mechanical Systems PULLEYS AND GEARS—Year 5	Cooking and Nutrition Healthy and varied diet. Savoury dishes, cooking techniques, seasonality and farm to factory process. Yrs 5&6	Electrical Systems Circuits, buzzers, motors & switches. Yr 6	Computing/Control Eg programme, monitor and control products. Yr6
<ul style="list-style-type: none"> • Cut accurately and safely to a marked line. • Cut materials with precision with appropriate tools. • Join and combing materials with temporary, fixed or moving joining. • Use craft knife, cutting mat and safety rules under one to one supervision. • Choose an appropriate sheet material for a purpose. • Use bradawl to mark hole positions. • Use hand drill to drill tight and loose fit holes. • Cut strip wood, dowel, square section wood accurately to 1mm. • Join materials using appropriate methods. • Build frameworks using a range of materials eg. wood, card, corrugated plastic to support mechanisms. • Use glue gun with close supervision (1-4). • Develop a range of skills to create products (such as cutting, drilling, and screwing, nailing, gluing, filing and sanding). 	<p>Year 6</p> <ul style="list-style-type: none"> • Create 3D products using pattern pieces and seam allowance. • Understand pattern layout. • Decorate textiles appropriately often before joining components. • Pin and tack fabric piece together. • Join fabrics using over sewing, back stitch, blanket stitch or machine stitching (machine stitching under very close supervision). • Combine fabrics to create more useful properties. • Make quality products. 	<p>Year 5</p> <ul style="list-style-type: none"> • Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys or gears). • Use a cam to make an up and down mechanism. 	<p>Years 5 and 6 Yr5—Stir Fry, Yr 6 Simple meal.</p> <p>Where Food Comes from:</p> <ul style="list-style-type: none"> • that a recipe can be adapted by adding or substituting one or more ingredients • that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world • that seasons may affect the food available • how food is processed into ingredients that can be eaten or used in cooking . <p>Food Preparation Cooking and Nutrition</p> <ul style="list-style-type: none"> • Learn how to prepare and cook a variety of predominantly healthy, savoury dishes safely and hygienically including, where appropriate, the use of a heat source. • Learn how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking . • Join and combine food ingredients appropriately eg. beating, rubbing in. • Decorate appropriately. • Learn that recipes can be adapted to change the appearance, taste, texture and aroma. • that different food and drink contain different substances - nutrients, water and fibre - that are needed for health. • Prepare food products taking into account the properties of ingredients and sensory characteristics. • Select and prepare foods for a particular purpose. • Taste a range of ingredients, food items to develop a sensory food vocabulary for use in designing. • Weigh and measure using scales. • Work safely and hygienically. • Show awareness of a healthy diet from an understanding of a balanced diet (including understanding calories and other nutritional content) • The characteristics of a poor diet and risks associated with unhealthy eating (including eg. obesity, tooth decay and other behaviours eg impact of alcohol on diet or health). 	<p>Year 6</p> <ul style="list-style-type: none"> • Incorporate motor and a switch into a model. • Create circuits using electronics kits that employ an number of components (such as LEDs, resistors, transistors and chips.) 	<p>Year 6</p> <ul style="list-style-type: none"> • Control a model using ICT control programme. • Write code to control and monitor models or products.