Bruche Primary School

Design and Technology

Intended Curriculum Progression Document

CORE VALUES: **CHILDREN FIRST** **RESILIENCE** **PIONEERING**

Penketh Primary School – Design and Technology progression through EYFS
EAD: Creating with Materials & Being Imaginative and Expressive

Playing & Exploring - Engagement	Active Learning - Motivation	Creating & Thinking Critically - Thinking
• Finding out & exploring • Playing with what they know • Being willing to 'have a go'	• Being involved & concentrating • Keep on trying • Enjoying achieving what they set out to do	• Having their own ideas (creative thinking) • Making links (building theories) • Working with ideas (critical thinking)

ELG
- 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
- Make use of props and materials when role-playing characters in narratives and stories

Focus	Designing	Making	Evaluating	Technical Skills	Food Technology	Vocabulary- To be used daily.
Reception Skills	• Develop own ideas through experimentation with diverse materials to express & communicate their discoveries & understanding. • Create collaboratively sharing ideas, resources & skills.	• Use increasing knowledge & understanding of tools & materials to explore their interests & enquiries & develop their thinking. • Create representations both imaginary & real-life ideas, events, people & objects.	• Express & communicates working theories, feelings & understandings. • Responds imaginatively to art works & objects. • Return to & build on previous learning, refining ideas & developing their ability to represent them. • Discuss problems & how they might be solved.	• Use different techniques for joining materials. • Use tools independently, with care & precision.	• Look closely at similarities, differences, patterns & change. • Know & talk about the different factors that support their overall health & well-being.	Cutting, measure, folding, joining, gluing, tearing, decorate, printing, tools, strong, shape, materials, textiles, wheels, equipment, like, dislike, improve, better, cutting, plants, animals, farming, foods.

Reception Knowledge	**Autumn 1** Me and My Family	**Autumn 2** Seasons and Celebrations	**Spring 1** The Ocean	**Spring 2** Transport	**Summer 1** Growth and Change	**Summer 2** Castles and Dragons
	• Can work together to make structures e.g. building a house/home/school. • Can use colour and materials to express how they are feeling through own creations using a variety of textures.	• Can use an increasing range of tools such as; building tools and gardening tools with accuracy. • Begins to talk about the effect of exercise and food on their health.	• Can create own representations in relation to space and sea; explain how they work and what they have used and why. • Can use an increasing range of small construction such as mobilo, Lego, stickle bricks and octagons to make representations including some moving parts.	• Can brush own teeth and talk about the importance of good oral health. • Can use different materials to design and make their own modes of transport.	• Can draw designs for the things that they build and label each element. • Can verbally evaluate their work and explain what is good and one thing that could make it better. • 'From food to fork'. Understand where food comes from and experience growing their own vegetables, harvesting, preparing, and eating.	• To use a range of materials and split pins to connect and join materials to make a moving puppet.
	Food		Mechanisms		Structures	

Children to be exposed to key vocabulary daily in provision. High quality resources will be provided for daily accessibility. Playdough/Malleable/Art/building/small world and outdoor provisions will provide a wealth of opportunity. Resources will be enhanced and developed as children develop their skill set.

Year 1: Design and Technology skills progression

KS1: POS

- Use the basic principles of a healthy and varied diet to prepare dishes.
- To understand where food comes from.
- Design purposeful, functional, appealing products for themselves and other users based on design criteria.
- Select from and use a range of tools and equipment to perform practical tasks [for example 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 characteristics.
- Explore and evaluate a range of existing products.
- Explore and use mechanisms [for example levers, sliders, wheels and axles], in their products.
- 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 and prototypes.
- Select from tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] accurately.
- Investigate and analyse a range of existing products.
- Evaluate their ideas and products against their own design criteria.

Design

- Design appealing products for a particular user based on simple design criteria.
- Communicate these ideas through talk and drawings.
- Generate ideas based on simple design criteria and their own experiences, explaining what they could make.
- Develop, model and communicate their ideas through drawings and mock-ups with card and paper.

Make

- Use simple utensils and equipment to peel, cut and squeeze safely.
- Select from a range of fruit and vegetables according to their characteristics
- e.g. colour, texture and taste to create a chosen product.
- Plan by suggesting what to do next.
- Select and use tools, explaining their choices, to cut, shape and join paper and card.
- Use simple finishing techniques suitable for the product they are creating.
- Select and use tools, skills and techniques, explaining their choices.
- Select new and reclaimed materials and construction kits to build their structures.

Evaluate

- Taste and evaluate a range of fruit and vegetables to determine the intended users' preference.
- Explore a range of existing books and everyday products that use simple sliders and levers.
- Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria.
- Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings.

Technical Knowledge

- 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.
- Explore and use sliders and levers.
- Understand that different mechanisms produce different types of movement.
- Know how to make freestanding structures stronger, stiffer and more stable.

Year 1 – End points	
Food – Preparing fruit and vegetables	• **Children can design a healthy snack and can explain the user and purpose. For example: a fruit kebab.** • Children can draw an annotated sketch of their fruit kebab and can label it with ingredients. • Children can select from a variety of ingredients to create their kebab, considering the taste, colour and general appeal of the fruits.

	• **Children can select from knifes, graters, peelers and juices to prepare common fruits and vegetables (peppers, oranges, mango, kiwi, strawberries) discussing why some preparation methods may not be suitable for some of the fruits/vegetables - e.g. you wouldn't grate a strawberry as it just turns mushy.** • **Children can discuss different, existing fruit kebabs and evaluate their appeal, potential purpose and user.** • **Children can evaluate their own fruit kebab considering the intended user, purpose and its overall appeal as well as considering its effectiveness of being a healthy snack.** • Children have an understanding that food comes from different countries and can be grown.
Mechanisms – Sliders and Levers	• **Children can design a product with a slider or lever and can explain the user and purpose. For example: a Christmas card with a moving character** • Children can draw an annotated sketch of their slider or lever product and can label it with materials and key parts (slider/lever, slit, split pin) • **Children can make prototypes of both sliders and levers.** • **Children can select from PVA glue, glue sticks and scissors to cut and join materials (card and paper).** • Children can name a variety of real-life items that use sliders and levers such as books, games (hungry hippos), seesaws at a park, brakes on a bike etc and can explain how the slider or lever creates movement. • They understand the difference between sliders and levers. • **Children can state if their card is suitable for the intended user and purpose. They can offer a way to improve their card with some guidance.**
Structures – Freestanding structures	• **Children can design a structure and can explain the user and purpose. For example: an animal enclosure for people to visit.** • **Children can draw an annotated sketch of their free-standing structure and can label it with materials.** • Children can select from PVA glue, glue sticks and scissors to cut and join materials (card and cardboard). • Children can name free-standing structures: Eiffel tower (European. More familiar example) and The Burj Khalifa in Dubai (tallest example) • **Children can discuss the different types of animal enclosures – penguins have to have water to swim in and land, lions need high fences so they don't jump out, giraffes need trees to eat from.** • **Children can state if their structure is suitable for the intended user and purpose. They can offer a way to improve their structure with some guidance.** • **Children can strengthen a structure using stronger materials, like card instead of paper or lolly pop sticks instead of cardboard.**

Year 2: Design and Technology skills progression	
KS1: POS • Use the basic principles of a healthy and varied diet to prepare dishes. • To understand where food comes from. • Design purposeful, functional, appealing products for themselves and other users based on design criteria. • Select from and use a range of tools and equipment to perform practical tasks [for example 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 characteristics. • Explore and evaluate a range of existing products. • Explore and use mechanisms [for example levers, sliders, wheels and axles], in their products. • 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 and prototypes. • Select from tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] accurately. • Investigate and analyse a range of existing products. • Evaluate their ideas and products against their own design criteria.	**Design** • 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. • 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. • Generate initial ideas and simple design criteria through talking and using own experiences. • Develop and communicate ideas through talk, drawings and mock-ups.
Make • 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. • 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. • 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.	**Evaluate** • 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. • 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. • Explore and evaluate a range of products with wheels and axles.
Technical Knowledge • 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. • Explore and use wheels, axles and axle holders. • Distinguish between fixed and freely moving axles.	• 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.

Year 2 – End points	
Food – Preparing fruit and vegetables	• **Children can design a healthy snack and can explain the user and purpose. For example: a vegetable soup. (leek and potato or sweet potato and carrot)** • Children can draw an annotated sketch of their soup and can label it with ingredients. • **Children can select from a variety of ingredients to create the soup, considering the taste, colour and general appeal of the soup.** • **Children can select from knifes, graters and peelers to prepare common vegetables (leeks, potatoes, carrots, sweet potatoes, onions, celery, cucumber) discussing why some preparation methods may not be suitable for some of the fruits/vegetables - e.g. you wouldn't grate an onion, you wouldn't peel a leek.** • Children can discuss different, existing vegetable soups and evaluate their appeal, potential purpose and user. • **Children can evaluate their own soup considering the intended user, purpose and its overall appeal as well as considering its effectiveness of being a healthy dish.** • **Children have an understanding that food comes from different countries and can be grown.**

Textiles- Templates and Joining Techniques	• **Children can design a product which requires them to use templates and joining techniques and can explain the user and purpose. For example: a puppet for themselves.** • **Children can draw an annotated sketch of their puppet and can label it with materials and key parts (joining techniques, gap for hand to go, appealing qualities).** • Children can create templates that were used to create the final product • Children can select from PVA glue, glue sticks, staples, pins, stitching techniques and scissors to cut and join materials (fabric) • **Children have explored a variety of real-life items that use a variety of joining techniques such as books, clothes etc and can explain why the joining technique is effective.** • **Children can state if their puppet is suitable for the intended user and purpose. They can discuss if it is appealing and functional. They can offer a way to improve their card with some guidance where required.**
Mechanisms- Wheels and Axels	• **Children can design a product with wheels and axles and can explain the user and purpose. For example: a car for a small teddy, an ice cream van etc** • **Children can draw an annotated sketch of their wheels and axles product and can label it with materials and key parts (wheel, axle, chassis)** • **Children can select from PVA glue, glue sticks and scissors to cut and join materials (card and paper).** • **Children can name a variety of real-life items that use wheels and axles such as cars, vans, lorries, bicycles, Ferris wheels, electric fans etc and can explain is the axle is fixed or moving.** • They understand the difference between fixed and moving axles. • Children can state if their vehicle is suitable for the intended user and purpose. They can offer a way to improve their vehicle with some guidance.

Year 3: Design and Technology skills progression	
KS2- POS • To 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 • To understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. • To 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. • To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. • Select from and use a wider range of tools and equipment to perform practical tasks [for example, 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. • 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. • To understand how key events and individuals in design and technology have helped shape the world • apply their understanding of how to strengthen, stiffen and reinforce more complex structures • To understand and use mechanical systems in their products. • To understand and use electrical systems in their products. • Apply their understanding of computing to program, monitor and control their products.	**Design** • Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user. • Use annotated sketches and prototypes to develop, model and communicate ideas. • 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. • Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas.
Make • Order the main stages of making. • Select from and use finishing techniques suitable for the product they are creating. • 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. • 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.	**Evaluate** • Investigate and analyse books and, where available, other products with lever and linkage mechanisms. • Evaluate their own products and ideas against criteria and user needs, as they design and make. • 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. • 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.
Technical Knowledge • Understand and use lever and linkage mechanisms. • Distinguish between fixed and loose pivots. • 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.	• 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. • Know and use relevant technical and sensory vocabulary appropriately.

Year 3 – End points	
Levers and Linkages (Mechanical Systems)	• **Children can design a mechanical system using more than one lever or linkage that is appealing and can explain the user and purpose. For example: a book** • **Children can draw an annotated sketch of a mechanical system and can label it with materials and equipment.** • **Children can make a prototype of levers and linkages using paper/card and can identify the input, output, fixed and moving parts.** • Children can select from PVA glue, glue sticks, paper clips, split pins and scissors to cut and join materials (card and cardboard). • Children can name real items that use levers or linkages: windshield wiper, the bicycle suspension and hydraulic actuators for heavy equipment • Children can state if their moving product is appealing and suitable for the intended user and purpose. They can listen to other' views and can offer a way to improve their product. • **Children can use levers and/or linkages in their product**.

Cooking and Nutrition (Healthy and Varied Diet)	• **Children can research and design a healthy snack/dish that is innovative, functional and appealing** • Children can generate, develop, model and communicate their ideas through discussion and annotated sketches • Children can select from and use a wider range of utensils to perform practical tasks accurately • Children can select from and use a wider range of ingredients, according to their functional properties and aesthetic qualities. • **Children can investigate and analyse a range of existing food products** • **Children can evaluate their ideas and products against their own design criteria and consider the views of others to improve their work** • **Children can understand and apply the principles of a healthy and varied diet** • Children can cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet • **Children become competent in a range of cooking** techniques [for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes] • **Children understand the source, seasonality and characteristics of a broad range of ingredients**
Shell Structures	• **Children can design a structure using a cube or cuboid shaped shell and can explain the user and purpose. For example: a gift box for a friend, a lunch box for them self.** • **Children can draw an annotated sketch of a shell structure and can label it with materials and strengthening solutions. Children can use a computer to design their net.** • **Children can make a prototype of a shell structure using paper to practise joining techniques and strengthening solutions (laminating, ribbing, corrugating)** • **Children can select from PVA glue, glue sticks and scissors to cut and join materials (card and cardboard). They can use card or paper straws to strengthen their structure.** • Children can name a real shell structure – The Shard, the O2 building. • **Children can state if their structure is suitable for the intended user and purpose. They can offer a way to improve their structure.** • Children can strengthen a structure using ribbing, corrugating or laminating and explain what this means.

Year 4: Design and Technology skills progression

KS2- POS

- To 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
- To understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.
- To 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.
- To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
- Select from and use a wider range of tools and equipment to perform practical tasks [for example, 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.
- 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.
- To understand how key events and individuals in design and technology have helped shape the world
- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- To understand and use mechanical systems in their products.
- To understand and use electrical systems in their products.
- Apply their understanding of computing to program, monitor and control their products.

Design

- Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular ind
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- ividuals or groups.
- Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.
- 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

Make

- Order the main stages of making.
- Select from and use appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons.
- Select from and use finishing techniques suitable for the product they are creating.
- Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities.
- 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.

Evaluate

- Investigate and analyse books, videos and products with pneumatic mechanisms.
- Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work.
- Investigate a range of 3-D textile products relevant to the project.
- Take into account others' views.
- Understand how a key event/individual has influenced the development of the chosen product and/or fabric.

Technical Knowledge

- Understand and use pneumatic mechanisms.
- Know and use technical vocabulary relevant to the project.
- 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 how to strengthen, stiffen and reinforce existing fabrics.
- Understand how to securely join two pieces of fabric together.
- Understand the need for patterns and seam allowances.

Year 4 – End points	
Pneumatics	• **Children can design a product using pneumatics or hydraulics** • **Children can draw an annotated sketch of a pneumatics system.** • Children can use scissors to cut cardboard and rulers to measure out the sizes they require. • Children can choose from and use cardboard, syringes and plastic tubing to make a functional 'bust' of a chosen creature and ensure it is aesthetically pleasing. • **Children know real life products that use hydraulic systems to create movement.**
Electrical Systems- Circuits and Switches	• **Children can design an electrical circuit for a product. For example: a torch** • **Children can draw an annotated sketch of an electrical circuit and can label it with materials and components.** • Children can select from batteries, switches, foil, paper clips, buzzers, bulbs to create their product. • **Children can name products that use electrical circuits – lights, torches, children's toys.** • **Children can state if their electrical circuit and final product is suitable for the intended user and purpose. They can offer a way to improve their product.** • **Children can understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.**
Textiles- 2D shapes to a 3D product	• **Children can design a 3D textiles product using a 2D shapes and can explain the user and purpose. For example: pencil for themselves when they go to a fair** • **Children can draw an annotated sketch of a pencil case using 2D shapes as a basis and can label it with materials and strengthening solutions.** • Children can make a pattern-pieces for their pencil case using paper. • **Children can select from PVA glue, glue sticks and scissors to cut and join materials (card and cardboard). They can use card or paper straws to strengthen their structure.** • **Children can state if their pencil case is suitable for the intended user and purpose. They can offer a way to improve their pencil case.**

Year 5: Design and Technology skills progression

KS2- POS

- To 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
- To understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.
- To 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.
- To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
- Select from and use a wider range of tools and equipment to perform practical tasks [for example, 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.
- 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.
- To understand how key events and individuals in design and technology have helped shape the world
- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- To understand and use mechanical systems in their products.
- To understand and use electrical systems in their products.

Design

- 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, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computeraided design.
- Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification.
- 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.

Make

- 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.
- 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.

Evaluate

- 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.
- Investigate famous manufacturing and engineering companies relevant to the project.
- 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.
- Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements.

Technical Knowledge

- Understand that mechanical and electrical systems have an input, process and an output.
- Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement.
- Know and use technical vocabulary relevant to the project

- 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.
- 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.

Year 5 – End points	
Mechanical Systems (Pulleys and Gears)	• **Children can design a mechanical system using pulleys and gears and can explain the user and purpose. For example: a fairground ride for a child.** • **Children can draw annotated sketches and exploded diagrams of pulleys and gears and can show it from different angles.** • **Children can make a prototype of a pulley and a gear to show how they make different movements.** • Children can select from PVA glue, glue sticks, glue guns and scissors to cut and join materials (wood, card and cardboard). • **Children can name where gears and pulleys are used in real life – gears: non-digital clocks, vehicles, drills, manual can openers and bicycles. Pulleys: wells, elevators, construction vehicles.** • **Children can state if their mechanical system is suitable for the intended user and purpose. They can offer a way to improve their mechanical system.** • Children can use pulleys and gears and understand the differences in direction, speed and rotation.
Textiles (Combining different fabrics)	• Children can design a textiles product and can explain the user and purpose. • **Children can draw an annotated sketch and can label it with materials and strengthening solutions.** • **Children can make a pattern-pieces using paper.** • **Children can select from a range of stitches to join fabrics.** • Children can select from a range of fabrics to complete their product. • Children can evaluate existing products and analyse their appeal and function and offer suggestions for improvements. • **Children can state if their product is suitable for the intended user and purpose. They can offer a way to improve their product.**
Food and Nutrition (Celebrating Culture and Seasonality)	• **Children know that a healthy and varied diet is made up of fruits, vegetables, carbohydrates, meats/fish, dairy, fats and sugar.** • **Children can make a savoury dish - bread** • Children can make bread using kneading techniques, know the importance of the use of yeast in bread and how know how the heat effects the dough and turns it to bread. • **Children know that different fruits and vegetables are best in terms of flavour or harvest in different seasons and can name some: Cherries—July, Strawberries— June, July, August and September, New potatoes—April, May, June and July, Turnips—January, February, October, November and December.** • Children can create a design criterion, design and write a recipe for an appealing bread dish aimed at a specific user and purpose. • **Children know that climate conditions affect when food is produced in the UK so food may be grown elsewhere and sent to the UK.** • Children know to use yeast's functional properties to make bread. • **Children know the difference between a variety of breads, dairy free bread and gluten free bread and can discuss the difference in taste and flavours.** • **Children can state if their bread is suitable for the intended user and purpose. They can offer a way to improve their bread.**

Year 6: Design and Technology skills progression

KS2- POS

- To 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
- To understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.
- To 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.
- To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
- Select from and use a wider range of tools and equipment to perform practical tasks [for example, 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.
- 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.
- To understand how key events and individuals in design and technology have helped shape the world
- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- To understand and use mechanical systems in their products.
- To understand and use electrical systems in their products.
- Apply their understanding of computing to program, monitor and control their products.

Design

- Use research to develop a design specification for a functional product that responds automatically to changes in the environment. Take account of constraints including time, resources and cost.
- Generate and develop innovative ideas and share and clarify these through discussion.
- Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams.
- Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources.
- Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost.
- Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches.

Make

- Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components.
- Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product.
- Create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment.
- Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks.
- Use finishing and decorative techniques suitable for the product they are designing and making.

Evaluate

- Continually evaluate and modify the working features of the product to match the initial design specification.
- Test the system to demonstrate its effectiveness for the intended user and purpose.
- Investigate famous inventors who developed ground-breaking electrical systems and components.
- Investigate and evaluate a range of existing frame structures.
- Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests.
- Research key events and individuals relevant to frame structures.

Technical Knowledge

- Understand and use electrical systems in their products.
- Apply their understanding of computing to program, monitor and control their products.
- Know and use technical vocabulary relevant to the project.
- Understand how to strengthen, stiffen and reinforce 3-D frameworks. Know and use technical vocabulary relevant to the project.

Year 6 – End points	
Electrical Systems (More Complex Switches and Circuits)	• Children can design an electrical circuit for a product. • **Children can draw an annotated sketch of an electrical circuit and can label it with materials and components. They should also consider time restraints and the resources required.** • **Children can select from batteries, switches, foil, paper clips, buzzers, bulbs to create their product.** • Children can name products that use electrical circuits – lights, torches, children's toys. • **Children can state if their electrical circuit and final product is suitable for the intended user and purpose. They can offer a way to improve their product.** • Children can use a crumble to control their electrical system. • **Children can understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.**
Textiles (Framed Structures)	• **Children can use research and develop design criteria to inform the design of innovative, functional, appealing children's toys** • **Children can generate, develop, model and communicate their ideas through discussion, annotated sketches and exploded diagrams.** • Children can select from and use a wider range of tools and equipment to perform practical tasks accurately – wood, glue, glue gun, cardboard, scissors, • **Children can select from and use a wider range of materials and components, including construction materials, according to their functional properties and aesthetic qualities** • **Investigate and analyse a range of existing products** • **Children can evaluate their ideas and products against their own design criteria and consider the views of others to improve their work** • **Children can apply their understanding of how to strengthen, stiffen and reinforce more complex structures** • **Children can understand and use mechanical systems in their products.**