Fernhill Primary Academy

# Design & Technology Progression of skills and knowledge

| EYFS | Design | Make | Technical Knowledge | Evaluate | Cooking and Nutrition |
|---|---|---|---|---|---|
| Skills | - Explain what they are making and which materials they are using.<br>- Select materials from a limited range that will meet a simple design criteria e.g. shiny.<br>- Select and name the tools needed to work the materials e.g. scissors for paper.<br>- Explore ideas by rearranging materials.<br>- Describe simple models or drawings of ideas and intentions.<br>- Discuss their work as it progresses. | - Begin to create their design using basic techniques.<br>- Start to build structures, joining components together.<br>- Look at simple hinges, wheels and axles.<br>- Begin to use scissors to cut straight and curved edges and hole punchers to punch holes.<br>- Explore using/ holding basic tools such as a saw or hammer.<br>- Fold, tear and cut paper and card<br>- Roll paper to create tubes<br>- Cut along straight and curved lines.<br>- Insert paper fasteners and linkages.<br>- Use technical vocabulary when appropriate.<br>Use adhesives to join material. | - Use technical vocabulary when appropriate.<br>- Use adhesives to join material. | - Say what they like and do not like about items they have made and attempt to say why. | - Develop a food vocabulary using taste, smell, texture and touch.<br>- Group familiar food products, eg. Fruit and vegetables<br>- Stir, spread, knead and shape a range of food and ingredients.<br>- Begin to work safely and hygienically.<br>- Start to think about the need for a variety of foods in a diet.<br>- Measure and weigh food items, non-statutory measures e.g. spoons, cup |
| Vocabulary | ●make ●material ●model | card ●cut ●decoration ●fold ●mould ●paper ●pattern ●pencils ●pens ●ruler ●scissors ●sellotape ●shape ●wheel ●wood ●wool ●plastic ●hole Puncher ●(add names of additional equipment/material) | ●join ●stick, | change ●success | ●bake ●bowl ●cook ●fork ●healthy ●knife ●recipe ●rolling pin ●spoon ●stir ●whisk ●(add names of additional equipment/material) |

| Year 1 | Design | Make | Technical Knowledge | Evaluate | Cooking and Nutrition |
|---|---|---|---|---|---|
| Skills | - **Design purposeful, functional, appealing products for themselves and other users based on design criteria**<br>- **Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication.**<br>- **Ideas**: Design products from a range of areas, including: ● ● hand puppets ● paper bags ● celebration cards ● vehicles with wheels ● ice-lollies ● fridge magnets. vegetable and fruit salads<br>- **Model and communicate their ideas through**: ● discussion and surveys ● drawings, labelled diagrams and photographs ● making models ● planning and drafting ● using computers to design. | - **Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing)**<br>- **Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.**<br>**Use a range of tools** across each area of design technology including: ● utensils to cut and prepare food ingredients ● sewing and embroidery equipment ● scissors and glue ● hole-punch ● printing equipment and stencils ● ICT design software .<br>- **Use a range of materials** to make their products, including: ● fruit, vegetables and fruit juices ● fabric materials and threads ● decorative materials (paint, beads, buttons, ribbons, glitter, felt pens) ● paper, card and cardboard ● wood and dowelling ● plastic wheels and cotton reels. | - **Build structures, exploring how they can be made stronger, stiffer and more stable**<br>- **Explore and use mechanisms (for example, levers, sliders, wheels and axles), in their products**<br>- Acquire technical knowledge in the following areas: ● exploring and using mechanisms including levers, slides, wheels and axles. | - **Explore and evaluate a range of existing products**<br>- **Evaluate their ideas and products against design criteria.**<br>- **Explore and evaluate a range of products** including: ● fruit, vegetables and fruit juices ● party bags and paper bags ● celebration cards ● toy vehicles with wheels ● fridge magnets. | - **Use the basic principles of a healthy and varied diet to prepare dishes.**<br>- **Understand where food comes from.**<br>**Children acquire knowledge and understanding of healthy eating** by: ● designing and making salads that encourage a '5-a-day' habit (see up to date National guidelines)● designing and making vegetable puppets to promote a '5-a-day' habit ● designing and making ice -ollies from fruit juice and real fruit pieces. ● designing and making fridge magnets to remind them to 'eat healthily' |
| Vocabulary | ● appearance ●design ●drawing ● function ● investigation ●plan ●purpose ●template | ●cutting ●equipment ●glue ●hole puncher ●join ●layering ●machine ●modelling ●running stitch ●scissors ●stencils ●tools ●weaving ●(add names of additional equipment/material) | ●axle ●balanced ●chassis ●flexible ●hinge ●lever ●malleable ●opaque ●rigid ●slider ●stable ●stiffer ●stronger ●structure ●technology ●textile ●transparent ●wheels | ●design criteria ●evaluate ●existing | ●bowl ●diet ●healthy ●ingredient ●knead ●varied ●(add names of additional equipment/material) |

| Year 2 | Design | Make | Technical Knowledge | Evaluate | Cooking and Nutrition |
|---|---|---|---|---|---|
| Skills | - **Design purposeful, functional, appealing products for themselves and other users based on design criteria**<br>- **Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication**.<br>- **Ideas:** Design products from a range of areas, including: ● pulley systems and winding mechanisms ● wall hangings and embroidery ● sandwiches ● breakfast cereals ● toy clothes.<br>**Model and communicate their ideas through**: ● discussion and taste testing surveys ● drawings and labelled diagrams ● instructions and recipes ● lists ● letter writing ● action plans. | - **Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing)**<br>- **Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.**<br>- **Use a range of tools** across each area of design technology including: ● utensils to cut and prepare food ingredients ● sewing equipment ● scissors ● PVA glue.<br>**Use a range of materials** to make their products, including: ● range of breads, spreads and sandwich fillings ● sheet materials, paper, cards and cardboard ● recycled boxes, cylinders and other junk materials ● construction kits with wheels and pulleys ● wooden strips and 10mm lengths ● decorative materials (paint, beads, buttons, ribbons, glitter, felt pens) ● fabrics, calico and felt ● embroidery threads ● fabric paints and pens. | - **Build structures, exploring how they can be made stronger, stiffer and more stable**<br>- **Explore and use mechanisms (for example, levers, sliders, wheels and axles), in their products**<br>Acquire technical knowledge in the following areas: ● explore and use mechanisms including wheels and axles ● build structures and make them stronger, stiffer and more stable. | - **Explore and evaluate a range of existing products**<br>- **Evaluate their ideas and products against design criteria.**<br>**Explore and evaluate a range of products** including: ● sandwiches ● breads and spreads ● porridge products ● waistcoats. | - **Use the basic principles of a healthy and varied diet to prepare dishes.**<br>- **Understand where food comes from.**<br>- **Children acquire knowledge and understanding of healthy eating** by: ● designing different sandwich fillings and choosing the types of bread and spread to use ● designing a new topping for the three bears' porridge using fruit, nuts or honey. |
| Vocabulary | ● appearance ●design ●drawing ● function ● investigation ●plan ●purpose ●template | ●cutting ●equipment ●glue ●hole puncher ●join ●layering ●machine ●modelling ●running stitch ●scissors ●stencils ●tools ●weaving ●(add names of additional equipment/material) | ●axle ●balanced ●chassis ●flexible ●hinge ●lever ●malleable ●opaque ●rigid ●slider ●stable ●stiffer ●stronger ●structure ●technology ●textile ●transparent ●wheels | ●design criteria ●evaluate ●existing | ●bowl ●diet ●healthy ●ingredient ●knead ●varied ●(add names of additional equipment/material) |

| Year 3 | Design | Make | Technical Knowledge | Evaluate | Cooking and Nutrition |
|---|---|---|---|---|---|
| Skills | - **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**<br>- **Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.**<br>- Ideas: Research a range of areas to inform their designing and making process, including: ● characters from children's books by Roald Dahl ● different types of bread ● photo frames ● pop-up books and other paper mechanisms ● Ancient Egyptian jewellery and Cleopatra. Model and communicate their ideas through: ● drawings, illustrations and photographs ● using a standardised design sheet to convey ideas ● labelled diagrams ● action plans ● role play ● presenting their finished product to a group of friends. | - **Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing) accurately –**<br>- **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.**<br>- **Use a range of tools across design and technology areas** including: ● utensils to cut and prepare food ingredients ● food processing equipment ● scissors, card snips, sticky tape and a stapler ● craft knife and glue gun ● hole punch and paper drill ● sewing equipment. Use a range of materials to make their products, including ● paper, card and cardboard ● decorative materials (paint, feathers, glitter, sequins, acrylic jewels, etc.) ● sheet materials, including clear acetate ● fabric materials. | - **Apply their understanding of how to strengthen, stiffen and reinforce more complex structures**<br>- **Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages)**<br>- **Apply their understanding of computing to program, monitor and control their products.**<br>- **Develop and consolidate technical knowledge in the following areas:** ● joining sheet materials together using a range of different methods ● cutting sheet materials accurately using a craft knife.<br><br>Summer 2 | - **Investigate and analyse a range of existing products**<br>- **Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work**<br>- **Understand how key events and individuals in design and technology have helped shape the world**<br>- **Investigate and evaluate a range of products including**: ● soups and smoothies ● types of bread and rolls ● photo frames ● pop-up and mechanical books. Gain a better understanding of how design and technology have shaped the world in which we live through: ● learning about designers and design companies and how household furnishings changed in the late 20th century. | - **Understand and apply the principles of a healthy and varied diet**<br>- **Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques**<br>- **Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.**<br>- **Develop and consolidate their knowledge and understanding of healthy eating and nutrition** by: ● designing and making soups and smoothies that use plenty of fruit and vegetables ● developing good practice in preparing food safely and hygienically ● understanding how to make bread and the role of yeast in bread-making. |
| Vocabulary | ●annotated ●appealing ●computer-aided ●cross-section ●develop ●diagram ●framework ●functional ●innovative ●net ●preparation ●process ●product ●prototype ●questionnaire ●research ●style ●survey | ●accurately ●adhesive ●applique ●back stitch ●brittle glaze ●components ●construction● finishing ●joining ●laminate ●linear ●parallel ●shaping ●textile ● (add names of additional equipment/material) | ●bolt ●circuits ●components ●control ●dowel ●gears ●lever ●mechanism ●motion ●motor ●pivot ●pulleys ●reinforce ●three-dimensional ●timber ●translucent ●two-dimensional ●winch ● (add names of additional equipment/material) | ●analyse ●dismantle ●key events ●product ●questionnaire ●survey | ●hygienic ● processed ●reared ●savoury ● seasonality ● sweet ● (add names of additional equipment/material) |

| Year 4 | Design | Make | Technical Knowledge | Evaluate | Cooking and Nutrition |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Skills | - **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**<br>- **Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.**<br>- Ideas: Research a range of areas to inform their designing and making process, including: ● yoghurt and pizzas ● modern abstract art ● wallets and purses ● analogue clocks. ● lamps and lights<br>- Model and communicate their ideas through: ● drawings, illustrations and photographs ● using a standardised design sheet to convey their ideas ● labelled diagrams and diagrams with annotations ● illustrated action plans and flow charts ● formal letters. | - **Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing) accurately –**<br>- **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.**<br>- **Use a range of tools across design and technology areas** including: ● utensils to cut and prepare food ingredients ● sewing equipment ● scissors and card snips ● saw ● PVA glue.<br>- Use a range of materials to make their products, including: ● paper, card and cardboard ● fabric materials ● sheet materials ● simple electrical components ● wood strips.<br><br>ANGLO-SAXONS – WEAVING, MAKE A PURSE<br>VIKINGS – MAKE A BOAT, SHIELD, BROACH<br>VOLCANO – SCULPT A VOLCANO | - **Apply their understanding of how to strengthen, stiffen and reinforce more complex structures**<br>- **Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages)**<br>- **Understand and use electrical systems in their products (for example, series circuits incorporating switches, bulbs, buzzers and motors)**<br>- **Apply their understanding of computing to program, monitor and control their products.**<br>- **Develop and consolidate technical knowledge in the following areas**: ● creating wooden frames that are strengthened using triangular struts ● making simple circuits to make a bulb light using a switch.<br>ANCIENT EGYPT – MAKE A SHADUF<br>CIRCUITS – MAKE A GAME | - **Investigate and analyse a range of existing products**<br>- **Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work**<br>- **Understand how key events and individuals in design and technology have helped shape the world.**<br>- **Investigate and evaluate a range of products including**: ● yoghurts and pizzas ● nightlights ● food packaging ● a magical box. ● Roman-style purses<br>- Gain an understanding of how design and technology have shaped the world in which we live through: ● Understanding what is meant by the term 'convenience food' and researching where food dishes originate from. | - **Understand and apply the principles of a healthy and varied diet** PSHE<br>- **Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques**<br>- **Understand seasonality, and know where/how a variety of ingredients are grown, reared, caught and processed.**<br>- **Develop and consolidate their knowledge and understanding of healthy eating and nutrition** by: ● making a batch of yoghurt from milk and live yoghurt ● preparing and adding ingredients to yoghurt ● making pizza bases, tomato sauce and a range of pizza toppings |
| Vocabulary | ●annotated ●appealing ●computer-aided ●cross-section ●develop ●diagram ●framework ●functional ●innovative ●net ●preparation ●process ●product ●prototype ●questionnaire ●research ●style ●survey | ●accurately ●adhesive ●applique ●back stitch ●brittle glaze ●components ●construction● finishing ●joining ●laminate ●linear ●parallel ●shaping ●textile ● (add names of additional equipment/material) | ●bolt ●circuits ●components ●control ●dowel ●gears ●lever ●mechanism ●motion ●motor ●pivot ●pulleys ●reinforce ●three-dimensional ●timber ●translucent ●two-dimensional ●winch ● (add names of additional equipment/material) | ●analyse ●dismantle ●key events ●product ●questionnaire ●survey | ●hygienic ● processed ●reared ●savoury ● seasonality ● sweet ● (add names of additional equipment/material) |

| Year 5 | Design | Make | Technical Knowledge | Evaluate | Cooking and Nutrition |
|---|---|---|---|---|---|
| Skills | - 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<br>- Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.<br>Summer 2<br>-<br>- Ideas: Research to inform their designing and making, including: airline meals, flip-flops, cam-based movement toys, Victorian hats, controllable emergency vehicle toy and a working model of a traffic light. Model and communicate their ideas through: ● drawings, illustrations and photographs ● using a standardised design sheet to convey their ideas, developing more than one idea before deciding on a final design ● constructing a prototype design ● presenting their ideas to a group of people ● creating production method flow diagrams. | - Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing) accurately –<br>Summer 2<br>-<br>- 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.<br>- Use a range of tools across design and technology areas including: ● ICT design software ● scissors and card snips ● saws, hand drills and sandpaper. Use a range of materials to make their products, including: ● paper, card and cardboard ● wood strips ● acrylic paints and varnish ● fabric materials ● simple electrical components ● sheet materials including bubble wrap and neoprene. | - Apply their understanding of how to strengthen, stiffen and reinforce more complex structures<br>Summer 2<br>-<br>- Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages)<br>- Understand and use electrical systems in their products (for example, series circuits incorporating switches, bulbs, buzzers and motors)<br>- Apply their understanding of computing to program, monitor and control their products.<br>- Develop and consolidate technical knowledge in the following areas: ● creating wooden frames that are strengthened through corner struts ● understanding different cam mechanisms ● creating and using simple circuits that incorporate light, sound and movement. ● using IT software and a control box to control electrical systems from a computer. | - Investigate and analyse a range of existing products<br>- evaluate their ideas and products against their own design criteria and consider the views of others to improve their work<br>- Understand how key events and individuals in design and technology have helped shape the world.<br>- Investigate and evaluate a range of products including: ● commercially produced flip-flops ● mechanical wooden toys ● hats designed in the 21st century ● radio controlled cars. Gain a better understanding of how design and technology have shaped the world through: ● global food production and its effect on consumers and the environment ● famous hat designers and milliners ● the contribution of traffic lights to road safety. | - Understand and apply the principles of a healthy and varied diet<br>- Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques<br>- Understand seasonality, and know where/how a variety of ingredients are grown, reared, caught and processed.<br>- Develop and consolidate their knowledge and understanding of healthy eating and nutrition by: ● designing a healthy balanced meal ● understanding that foods are now available all year in the UK due to global food production and improved transportation. |
| Vocabulary | ●brands ●cross-section ●entrepreneur ●ergonomics ●exploded diagram ●focus group ●logo ●market research ●mock-up ●primary source ●prototype ●secondary source ●specification ●storyboard | ●abrasive ●aesthetics ●applique ●blanket stitch ●ICT design software ●scoring ●(add names of additional equipment/material) | ●cam ●cog ●compression ●crank ●engineering ●hydraulics ●insulation ●linkage ●oscillate ●proportion ●pulley ●spacer system ●tension ●triangulation ● (add names of additional equipment/material) | ●commercial ●consumer ●disassembly ●global ●local ●modify ●national ●performance | ●nutrition ● (add names of additional equipment/material) |

| Year 6 | Design | Make | Technical Knowledge | Evaluate | Cooking and Nutrition |
|---|---|---|---|---|---|
| Skills | - **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**<br>- **Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.**<br>- Ideas: Research a range of areas to inform their designing and making process, including: ● famous entrepreneurs, food products from crops, garden bird tables, fairground rides, puppets, theatrical masks and headdresses, logos and branding. Model and communicate their ideas through: ● drawings, illustrations, photographs and annotated diagrams ● using a standardised design sheet to convey their ideas ● mindmaps, spreadsheets and computer aided design ● using online design software and illustrated instructions | - **Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing) accurately –**<br>- **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.**<br>- **Use a range of tools across design and technology areas**, including: ● utensils to cut and prepare food ingredients ● food processing equipment ● ICT design software ● scissors and card snips ● sewing equipment ● saw and PVA glue. Use a range of materials to make their products, including: ● paper, card, cardboard and tissue paper ● wood strips and 10mm square wood ● newspaper, art straws and masking tape ● acrylic paints and varnish ● plain white t-shirts ● fabric materials and decorations ● simple electrical components including motors ● pulleys and gears. | - **Apply their understanding of how to strengthen, stiffen and reinforce more complex structures**<br>- **Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages)**<br>- **Understand and use electrical systems in their products (for example, series circuits incorporating switches, bulbs, buzzers and motors)**<br>- **Apply their understanding of computing to program, monitor and control their products.**<br>- **Develop and consolidate technical knowledge in the following areas**: ● mechanical systems involving gears and pulleys. ● strengthening and reinforcing complex structures. ● using electrical systems in products (switches, bulbs and motors). ● using computing to control their products. | - **Investigate and analyse a range of existing products**<br>- **Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work**<br>- **Understand how key events and individuals in design and technology have helped shape the world.**<br>- **Investigate and evaluate a range of products** including: bird tables, products made from strawberries and tomatoes, fairground rides, puppets, theatre masks and headdresses, logos and commercial brands. Gain a better understanding of how design and technology have shaped the world through: ● researching entrepreneurs and writing business plans ● understanding how companies develop their brand | - **Understand and apply the principles of a healthy and varied diet**<br>- **Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques**<br>- **Understand seasonality, and know where and how ingredients are grown, reared, caught and processed.**<br>- **Develop and consolidate their knowledge and understanding of healthy eating and nutrition** by: ● preparing and cooking a range of foods that they have grown themselves ● understanding seasonality and how it affects ingredients that are grown. |
| Vocabulary | ●brands ●cross-section ●entrepreneur ●ergonomics ●exploded diagram ●focus group ●logo ●market research ●mock-up ●primary source ●prototype ●secondary source ●specification ●storyboard | ●abrasive ●aesthetics ●applique ●blanket stitch ●ICT design software ●scoring ●(add names of additional equipment/material) | ●cam ●cog ●compression ●crank ●engineering ●hydraulics ●insulation ●linkage ●oscillate ●proportion ●pulley ●spacer system ●tension ●triangulation ● (add names of additional equipment/material) | ●commercial ●consumer ●disassembly ●global ●local ●modify ●national ●performance | ●nutrition ● (add names of additional equipment/material) |