CHJS Curriculum Progression for Design Technology

Let your light shine (Matthew 5:16) In Design and Technology, children are encouraged to let their light shine by taking delight in developing their God-given creativity and imagination of his wonderful world. By appreciating the wonder of God's creation, children know how to make positive changes to the global community and understand how key events and individuals have helped shape the world. They are also encouraged to make beneficial changes within their classroom by sharing their knowledge with their peers and supporting each other with their learning. Pupils design and make products that solve real and relevant problems that reflect God's creativity within a variety of contexts, considering their own and others' needs, wants and values. Pupils learn how to take risks, becoming resourceful, innovative and enterprising. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world that God created.

Substantive Knowledge	Year 3/4 Cycle A	Year 3/4 Cycle B	Year 5	Year 6
Design, make and evaluate.	Know that a design must meet a purpose and a user's needs. Know a design brief includes different criteria. Know measuring, cutting, joining and assembling accurately improves a products quality. Know safety rules when using tools, equipment and materials. Know materials have different qualities and properties.		Know that a design brief must identify purpose, user, function and constraints (e.g. time, material, cost) Know accuracy in measuring, cutting, joining and finishing is essential for function and quality. Know safety rules when using tools, equipment and materials. Know products are evaluated against design criteria, success of function, durability, aesthetics and user satisfaction.	
Food	Know a healthy diet is based on the Eatwell Guide. Know that heat changes food such as browning bread and melts fillings. Know that food products should be appealing in taste, smell and appearance.	Know a healthy diet is based on the Eatwell Guide. Know that basic ingredients form a base and optional ingredients add flavour/nutrition. Know that mixing dry and wet ingredients if forms a dough or batter.	Know a healthy diet is based on the Eatwell Guide. Know that pizza bases provide carbohydrates and toppings can add protein, vegetables, dairy and fat. Know that yeast is a microorganism that helps dough rise.	Know a healthy diet is based on the Eatwell Guide. Know that soup can be a balanced meal depending on ingredients used. Know that heat causes a physical and chemical change.

	Know about different foods from around the world. Know that food products are designed for specific users and preferences (e.g. vegetarian, low fat and child friendly.)	Know that cooking transforms the raw mixture into an edible product. Know that oatcakes are a traditional staple food containing oats and are a source of carbohydrates and fibre.	Know that heat changes dough texture from soft to crisp. Know pizza originates in Italy and there is a link to the Mediterranean diet.	Know that there are different types of soup: broth (clear), blended (smooth) and hearty (chunky). Know that ingredients combine differently depending on cooking method e.g. chunky or blended.
Textiles		Know that belts need strength and flexibility. Know pockets can use flaps, zips or buttons for closure. Know material choices affect strength, flexibility and comfort. Know what buckles and clasps are and that they act as simple mechanisms to open/close. Know that utility belts are designed with a clear purpose e.g. carrying explorer's tools.	Know that pillows need suitable materials and filling which gives shape and softness. Know that seam allowances prevent fraying and strengthen joins. Know different stitches serve different purposes. (running stitch = simple join, backstitch = strong, embroidery stitches = decoration) Know that annotated sketches and patterns help plan accurately. Know and use applique.	
Structures	Know and understand that different materials have different properties and some materials are better suited for specific reasons.			Know that wood has a range of properties including strong and durable.

	Know the terms: fulcrum, load and effort. Know that structures need to be stable to function well. Understand what a lever is and that it moves around a fixed point. Know how a catapult uses a lever mechanism to launch an object.			Know that decorations need a balance between strength and delicacy. Know decorations are designed for a user and occasion. Know templates and nets help ensure accuracy and consistency. Know precision is crucial and small inaccuracies can affect the final product.
Mechanisms		Know that pneumatics uses air pressure to create movement. Know that pneumatic systems can lift, open or move objects. Know that components must fit together securely to work reliably. Know joints, tabs and folds strengthen card structures.	Know what is a cam, axle and follower. Know that a cam is a mechanical component, often shaped like a rotating disk, that converts rotary motion (circular movement) into linear motion (straight-line movement). Know that different cam profiles create varied movement patterns. Know that frames must be rigid to support multiple parts. Know that precision is essential as misalignment causes friction or jamming.	

			Know that cams are used in engines, toys and machinery.	
Electrical and System Control	Know that a simple circuit needs a battery, wire and a bulb. Know how a simple switch works. Know torches have a specific purpose and user (e.g. camping, reading, emergency) Understand that components must be securely fitted and a torch casing must be strong enough to protect the circuit.			Know a circuit needs a power source, conductors and components to work. Know switches open/close circuits, controlling the flow of electricity. Know burglar alarms are designed for a function and for protecting property by warning of intrusion. Know safety rules when working with batteries and components.
Disciplinary Knowledge	**Year 3/4 Cycle A**	**Year 3/4 Cycle B**	**Year 5**	**Year 6**
Design, make and evaluate.	Be able to design, make and evaluate a range of products with increasing accuracy. Use annotated sketches to evaluate and design a product. With support, justify design choices (materials, size and function). Select and use appropriate materials and tools with some supervision. Join and assemble with increasing accuracy. Test and evaluate own and other's product and simply identify strengths and areas for improvement. Follow recipes with simple steps and measurements.		Be able to design, make and evaluate a range of products with accuracy. Use detailed plans and sketches to evaluate and design a product. Justify design choices (materials, size and function). Independently select and use appropriate materials and tools. Join and assemble accuracy. Test and evaluate own and other's product and identifying strengths and areas for improvement. Follow recipes with a number steps and accurate measurements.	
Food	Design, make and evaluate a toasted sandwich.	Design, make and evaluate oatcakes.	Design, make and evaluate pizzas.	Design, make and evaluate soup.

	Understand and follow hygiene rules: wash hands, clean surfaces and store ingredients safely. Use hot equipment safely to toast their food under supervision. Prepare ingredients including washing, chopping (soft ingredients), spreading and grating.	Understand and follow hygiene rules: wash hands, clean surfaces and store ingredients safely. Measure ingredients with increasing accuracy using scales and spoon sizes. Cook oatcakes using a heat source safely. Follow recipe instructions with some guidance. Mix, knead or stir ingredients.	Understand and follow hygiene rules: wash hands, clean surfaces and store ingredients safely. Select toppings to achieve nutritional balance and justify choices based on nutrition and user preferences. Measure and mix dough ingredients accurately. Knead and prove dough correctly. Prepare ingredients including washing, chopping, grating and slicing. Follow step by step recipe instructions accurately.	Understand and follow hygiene rules: wash hands, clean surfaces and store ingredients safely. Plan a soup recipe that meets the nutritional balance. Prepare ingredients including washing, chopping, slicing and dicing. Follow recipe instruction accurately. Taste test soup against criteria. Use scales accurately.
Textiles		Design, make and evaluate a utility belt. Select suitable fabrics and fastenings for durability and comfort. Measure and cut with increasing accuracy. Join fabrics and fastenings using PVA glue and a simple running stitch.	Design, make and evaluate a robot cushion. Select suitable fabrics for durability and comfort. Thread a needle and use a range of stitches. Join fabrics using a variety of stitches.	

		Use tools (scissors, fabric needles) safely.	Make a pattern and include a seam allowance.	
Structures	Design, make and evaluate a structure. Create a shell or frame structure from wood. With guidance, strengthen frames using diagonal struts and card. Measure and mark materials accurately to 2 cm. Join materials using a range of resources including PVA glue and tape.			Design, make and evaluate a Christmas decoration. Create a shell or frame structure from wood making sure structure is stable. Strengthen frames using diagonal struts and card. Measure and mark materials accurately to ½ cm. Use a junior hacksaw to cut wood accurately and sanding to smooth edges. Join materials using a range of resources including using a glue gun.
Mechanisms		Design, make and evaluate a moving mummy toy using pneumatics. Build a simple pneumatic system with syringes, tubing and a balloon. Experiment with how air movement changes motion. Combine a pneumatic system with a decorative shell.	Design, make and evaluate a moving space toy using a cam. Select cam shapes purposefully to achieve intended motion. Align cams, axles and followers precisely for a reliable performance.	

		Apply finishing techniques such as paint and decoration. Use tools (scissors, PVA glue) safely.	Measure, mark and cut wood accurately using tools. Use hand tools (junior hacksaw, bench hook) safely. Assemble mechanism and frame in a logical order. Test toys smoothness and reliability and modify if needed.	
Electrical and System Control	Design, make and evaluate a torch. Be able to assemble and test a simple circuit for a torch. Consider the position of the different components for example the position of the switch. Select appropriate materials for a torch casing. Use appropriate joining materials to fix the circuit into their casing including PVA glue and tape.			Design, make and evaluate a Burglar alarm. Build and test circuits with buzzer, switch and battery. Connect components with accuracy and troubleshoot faults. Modify circuits to improve reliability. Measure, mark and cut materials accurately to create a casing. Use tools safely (wires, wire strippers, wire cutters and scissors)
Vocabulary	Design, purpose, user, design brief, product, design, make and evaluate.	Design, purpose, user, design brief, product, design, make and evaluate.	Design, purpose, user, design brief, product, design, make, evaluate, function.	Design, purpose, user, design brief, product, design, make, evaluate, function.

	Carbohydrate, dairy, protein, vegetables, toasting, vegetarian, low fat, ingredients. Structure, mechanism, stability, frame, lever, fulcrum, load, effort. Circuit, bulb, wires, battery, switch, casing, components.	Nutrition, ingredients, base, dough, batter, raw, edible, heat source, bake, recipe, mixture, knead and stir. Fabric, material, thread, needle, fastening, stitches, running stitch, buckle, clasp, pocket, flap, zips, buttons, joining, flexible and comfort. Mechanism, pneumatics system, syringe, tubing, components and air pressure.	Mediterranean diet, recipe, dough, prove, seasoning, yeast, microorganism, fermentation. Back stitch, embroidery stitch, pattern, seam allowance, padding, filling, applique. Cam, axle, follower, rotary motion, linear motion, mechanism, junior hacksaw, bench hook.	Blended, chunky, hearty, broth, simmer, seasoning, dicing Durable, junior hacksaw, sanding, sand paper, precision. Circuit, components, switches, casing, intrusion.
Cross-curricular reading	DK The way things work (David Macauly) Extreme engineering (STEM Activity) Inventors (Robert Winston) DK The building boy (Ross Montgomery) Fantastic forces and incredible machines (STEM QUEST)		The Design Thinking Toolbox (Michael Leewick) Design is storytelling (Ellen Lupton) Inventors (Robert Winston) DK Adventures in architecture for kids (Vicky Chan) Thing explainer (Randall Munroe) Fantastic forces and incredible machines (STEM QUEST) How to be an engineer (Carol Vorderman) Outside the box (Molly Potter)	
Cross-curricular links	**Romans**-Catapults, levers and pulleys **English –** Torches **Geography –** Toasties **Science –** Forces and Electricity	**Stone Age to Iron age**- Oat cakes **Geography/Science –** Explorers belt/Rainforests/Habitats **History –** Moving Mummy/Shaduf	**Science -** mechanical moving toys, pizza	**History –** Soup **RE –** Christmas decoration **Science –** Electricity
Christian Values	**Courage –**Pupils learn how to take risks, becoming resourceful, innovative and enterprising. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. **Koinonia:** Through their use of Design and technology, children can demonstrate understanding and respect of other cultures and beliefs. Children's experiences help them to develop their understanding of the diverse roles and functions of design and technology in the local			

	and wider community. Pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. **Responsibility:** Children develop the discipline for seeking wisdom. They know that they are caretakers of the planet and how design and technology can make a difference. Design will inspire and give our children a valuable glimpse to the wider world. know how Design and technology both reflect and shape our history, and contribute to the culture, creativity and wealth of our community and the world around us. They will develop a respect for the materials and resources that they use in their work and learn to evaluate critically their own and others' use of these; value the natural environment, including the distinctiveness of their locality, and learn to evaluate critically the role and function of design and technology within it. Value the natural environment and how materials might be recycled, and learn to evaluate critically the role and function of Design and Technology within it. **Thankfulness:** Children show thankfulness for the natural world and the wonder of creation. They develop a growing appreciation for the positive impact design and technology can have when learning about and influencing global issues. They Develop a respect for the tools, materials and resources that they use in their work and learn to evaluate critically their own and others' use of these. **Truthfulness:** Children will consider their own attitudes and values in relation to image and function and to challenge assumptions, stereotypes and prejudice in visual and other forms. **Kindness:** Children are able to compare their own lives with others and show compassion for those in need. Consider the need of the user when designing a product. **Fairness:** Children Consider their own attitudes and values in relation to image and learning to value different strengths and interests. develop respect for their own and others' work and learn how to offer and receive constructive feedback and praise; work with others, listening to and respecting each other's' ideas and learning to value different strengths and interests.
Spiritual Development	We promote a sense of wonder and fascination with the beauty and diversity of the world around us.