Design Technology Progression of Knowledge and Skills

DT Curriculum Intent Statement

Design and Technology is a practical subject that encourages children to learn to creatively to solve problems, both as individuals and as members of a team. At Sacred Heart, we encourage children to use their creativity and imagination, to design and make products that solve real and relevant problems within a variety of contexts.

Implementation

DT Curriculum Implementation Statement

At Sacred Heart we realise the importance of real, purposeful designs, either to solve a problem or fulfil a need. We aim to, wherever possible, link work to other disciplines such as mathematics, science, computing and art. To create more relevance and meaning, when planning the DT curriculum, we aim to choose projects closely linked to the Humanities being taught.

Through a variety of creative and practical activities, we teach the knowledge, understanding and skills needed to engage in an interactive process of designing and making. When designing and making, the school uses a standardised planning format to ensure the pupils are familiar with the design cycle:

Design – use research and develop design criteria to design for a purpose and communicate their ideas through a range of mediums.
Make – use a wider range of tools and equipment with accuracy and use a wider range of materials and components according to their qualities.
Evaluate – evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

Impact

Through this process, the aim is to develop the pupils' technical knowledge and vocabulary in relation to structural design, mechanical and electrical systems, the integration of technology and food production and nutrition. Links are clearly made to the Catholic mission of providing for the family and of the importance of work and innovation in society.

	Early Years	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Talk about and connect ideas. Explain what is happening and anticipate what might happen next when planning to build. Link statements to the theme and stick to a main theme or intention when planning to build or make. Use language of designing and making (join, build, make, longer, shorter). Select appropriate materials in continuous provision area (Making area, construction area, playdough area).	Draw on experiences to help generate ideas. Research similar models. Suggest ideas and explain what they are going to do. Identify a target group for what they intend to design and make. Use pictures and words to plan ideas. Begin to model ideas. Develop design ideas applying findings from earlier research.	Generate ideas by drawing on own and other people's experiences. Use knowledge of existing products from research to influence ideas. Develop design ideas through discussion, observation, drawing and modelling. Identify a purpose for what they intend to design and make. Explain how the product will work and how it will be suitable for the user. Identify simple design criteria. Make simple drawings and label parts. Model diagrams and	With growing confidence, generate ideas for an item, considering its purpose and the user/s. Begin to research others needs and use this in planning. Identify a purpose and establish criteria for a successful product. Being able to explain how it will work. Plan the order of work before starting. Explore, develop and communicate design proposals by modelling ideas. Make more detailed drawings with labels when designing. Begin to use computers for design.	Generate ideas, suited to the purposes of the design. Link with mathematics and science. Use research for design ideas. Make labelled drawings from different views showing aspects of specific features. Develop a clear idea of what has to be done, planning how to use materials, equipment and processes. Evaluate similar products and identify criteria that can be used for designs.	Generate, develop, model and communicate my ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes and pattern pieces. Use research of user's individual needs, wants, requirements for design. Use results of investigations, information sources, including ICT when developing design ideas. Draw up a specification for my design – link with mathematics and science. Develop a clear idea of what has to be done, planning how to	Generate, develop, model and communicate my ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes and pattern pieces. Use research of user's individual needs, wants, requirements for design and identify features of design that will appeal to the intended user. Develop a design specification – link with mathematics and science. Explore, develop and communicate aspects of my design

			begin to use ICT to show ideas. Choose the correct tools to use and explain why they have made these choices.	Explain, when planning, the choice of materials and components, including function and aesthetics.	Begin to use computers for design.	use materials, equipment and processes, and suggest alternative methods of making if the first attempts fail. Use computer-aided designs	proposals by modelling my ideas in a variety of ways. Plan the order of my work, choosing appropriate materials, tools and techniques Use results of investigations, information sources, including ICT when developing design ideas
Make	Select simple tools and techniques to assemble and join materials. Understand that different media can be combined to create new effects. Use simple tools and techniques competently and appropriately. Construct with a purpose in mind while using a variety of resources.	Make their design using appropriate techniques. With help, measure, mark out, cut and shape a range of materials. Use tools (e.g. scissors and a hole punch) safely. Assemble, join and combine materials and components together using a variety of temporary methods (e.g. glues or masking tape).	Begin to select tools and materials. Measure, cut and score with some accuracy. Use hand tools safely and appropriately. Assemble, join and combine materials in order to make a Product. Cut, shape and join fabric to make a simple garment/article. Use basic sewing techniques.	Select tools and techniques for making their product; use vocab' to name and describe them. Measure, mark out, cut, score and assemble components with more accuracy. Work safely and accurately with a wider range of simple tools. Think about own ideas as they make progress and be willing to change things if this helps to improve their work.	Confidently select appropriate tools and techniques for making their product; use vocab' to name and describe them. Measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques. Sew using a range of different stitches. Measure, tape or pin, cut and join fabric with some accuracy	Confidently select appropriate materials, tools and techniques; use vocab' to name and describe them. Measure and mark out accurately using appropriate tools, equipment and techniques. Demonstrate skills using different tools and equipment safely and accurately. Pin, sew and stitch materials together create a product.	Confidently select appropriate tools, materials, components and techniques; use vocab' to name and describe them. Assemble components to make working models. Demonstrate skills using different tools and equipment safely and accurately. Pin, sew and stitch materials together create a product.

		Use simple finishing techniques to improve the appearance of their product. Begin to select and use appropriate fruit and vegetables, processes and tools. Use basic food handling, hygienic practices and personal hygiene.	Choose and use appropriate finishing techniques. Select and use appropriate fruit and vegetables, processes and tools. Understand and discuss safe procedures for food safety and hygiene.	Measure, tape or pin, cut and join fabric with some accuracy. Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT. Confidently select and use appropriate fruit and vegetables, processes and tools. Demonstrate hygienic food preparation and storage.	Join and combine materials and components accurately in temporary and permanent ways. Confidently select and use appropriate fruit and vegetables, processes and tools. Demonstrate hygienic food preparation and storage. Begin to weigh and measure more accurately (time, dry ingredients, liquids)	Cut and join with accuracy to ensure a good-quality finish to the product. Confidently select and use appropriate fruit and vegetables, processes and tools. Apply the rules for basic food hygiene and other safe practices e.g. hazards relating to the use of ovens Weigh and measure accurately (time, dry ingredients, liquids).	Achieve a good-quality product Construct products using permanent joining techniques. Make modifications and necessary changes. Confidently select and use appropriate fruit and vegetables, processes and tools. Apply the rules for basic food hygiene and other safe practices e.g. hazards relating to the use of ovens Weigh and measure accurately (time, dry ingredients, liquids). Suggest alternative ingredients and slightly modify recipes to alter results

Evaluate	Use talk to organise, sequence and clarify thinking when explaining what I have built. Write simple labels and captions to describe their work.	Evaluate my product by discussing how well it works in relation to the purpose. With support, evaluate their products as they are developed, identifying strengths and possible changes they might make. Evaluate products by asking questions about what they have made and describe how they have gone about it.	Evaluate their product by discussing how well it works against their design criteria. Evaluate their products as they are developed, identifying strengths and possible changes they might make. Evaluate products by asking questions about what they have made and describe how they have gone about it. Talk about their ideas, saying what they like and dislike about them.	Evaluate their product against original design criteria and discuss how well it meets its intended purpose. Suggest solutions following evaluation for purpose. Evaluate existing products, considering: how well they have been made, materials, whether they work, how they have been made, fit for purpose. Evaluate products by asking questions about what they have made and describe how they have gone about it.	Evaluate their product both during and at the end of the assignment and identify how well it meets its intended purpose. Suggest solutions following evaluation for purpose. Evaluate existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose. Evaluate their products by carrying out appropriate tests to see if it works.	Evaluate their design and finished product against specification, considering purpose and appearance. Suggest solutions following evaluation for purpose. Evaluate and discuss existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose. Evaluate it personally and seek evaluation from others, considering their findings and suggestions	Evaluate their design and finished products, identifying strengths and areas for development, and carrying out appropriate tests. Suggest solutions following evaluation for purpose. Complete thorough evaluations of existing products considering: how well they've been made, materials, whether they work, how they've been made, fit for purpose. Record their evaluations using drawings with labels. Evaluate it against their original criteria and suggest ways that their product could be improved.

Technical Knowledge – Materials/structures	Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	Know how to build structures, and explore how they can be made stronger, stiffer and more stable. Suggest ways to make structures stronger.	Know how to build structures, and explore how they can be made stronger, stiffer and more stable. Use joining, rolling and folding to make their structure stronger.	Know how to apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Attempt to make product strong when building it.	Know how to apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Make sure product is strong when building it.	Know how to apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Begin to strengthen and reinforce a 3D frame.	Know how to apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Reinforce and strengthen a 3D frame.
Technical Knowledge - Mechanisms		Explore and use mechanisms (for example: levers, sliders, wheels and axles) in their products.	Explore and use mechanisms (for example: levers, sliders, wheels and axles) in their products.	Understand and use mechanical systems in their products (for example: gears pulleys, cams, levers and linkages) Use simple lever and linkages to create movement.	Understand and use mechanical systems in their products (for example: gears pulleys, cams, levers and linkages) Use levers and linkages to create movement.	Understand and use mechanical systems in their products (for example: gears pulleys, cams, levers and linkages) Begin to use cams, pulleys or gears to create movement.	Understand and use mechanical systems in their products (for example: gears pulleys, cams, levers and linkages) Use cams, pulleys and gears to create movement.

Technical Knowledge Textiles		Measure, cut and join textiles to make a product, with some support. Choose suitable textiles	Measure and Join textiles together to make a product, and explain how I did it. Carefully cut textiles to produce accurate pieces. Explain choices of textiles.	Measure and join different textiles in different ways. Choose textiles considering appearance and functionality.	Think about user when choosing textiles Think about how to make product strong Explain how to join things in a different way.	think about user and aesthetics when choosing textiles Think about how to make product strong and look better Think of a range of ways to join things	Think about user's wants/needs and aesthetics when choosing textiles Make product attractive and strong Use a range of joining techniques
Technical Knowledge – Food and nutrition	Understand the need for variety in foods. Begin to understand some food preparation tools, techniques and processes. Know that food comes from different places. Practise stirring, mixing, pouring, blending	Know how to begin to apply the principles of a healthy and varied diet. Know how to begin to prepare and cook a variety of simple, predominantly savoury, dishes using a range of cooking techniques. Know about seasonality, and begin to understand where and how a variety of ingredients are grown, reared, caught and processed.	Know how to begin to apply the principles of a healthy and varied diet. Know how to begin to prepare and cook a variety of simple, predominantly savoury, dishes using a range of cooking techniques. Know about seasonality, and begin to understand where and how a variety of ingredients are grown, reared, caught and processed.	Understand and apply the principles of a healthy and varied diet. Know how to prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. Grow in confidence using some of the	Understand and apply the principles of a healthy and varied diet. Know how to prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. Grow in confidence using some of the	Understand and apply the principles of a healthy and varied diet. Know how to prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. Use a range of the following techniques:	Understand and apply the principles of a healthy and varied diet. Know how to prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

		Cut, peel and grate safely, with support	Cut, peel and grate with increasing confidence	following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.	following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.	peeling, chopping, slicing, grating, mixing, spreading, kneading and baking	Confidently use a range of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking
Technical Knowledge – Electrical systems				Understand and use electrical systems in their products (for example: series circuits incorporating switches, bulbs, buzzers and motors). Use a simple circuit in the product. Know how to apply their understanding of computing to program, monitor and control their products.	Understand and use electrical systems in their products (for example: series circuits incorporating switches, bulbs, buzzers and motors). Use a number of components of a circuit in their product. Know how to apply their understanding of computing to program, monitor and control their products.	Understand and use electrical systems in their products (for example: series circuits incorporating switches, bulbs, buzzers and motors). Incorporate switch into product and confidently use number of components in circuit. Know how to apply their understanding of computing to program, monitor and control their products.	Understand and use electrical systems in their products (for example: series circuits incorporating switches, bulbs, buzzers and motors). Use different types of circuit in product and think of ways in which adding a circuit would improve product Know how to apply their understanding of computing to program, monitor

							and control their products.