St Bede's Catholic Academy - Design Technology Progression of Skills and Objectives

	EYFS	Key Stage 1	Lower Key Stage 2	Upper Key Stage 2	Key Stage 3

Design Process	- Discuss what a product does or needs to do
	- Explore the qualities of a range of materials
	- Make to create an outcome.
	- Explain why they chose their materials.
	- Explain what they have made.
		- Work from a basic brief to generate ideas and design a simple product fit for purpose and audience.
		- Explore suitability of common materials before making a choice.
		- Show awareness of some products similar to their design.
		- Develop ideas, communicating and recording them in a suitable way (e.g. design book, design page, IT, mind map)
		- Make a simple mock-up.
		- Make a final product.
		- Evaluate their final product – what went well? Did they follow the brief?
			- Work from a brief to design an appealing, functional product fit for purpose and audience.
			- Explore some possible materials, conducting a simple test to ensure suitability before making a choice.
			- Show awareness of products similar to their own.
			- Develop an idea, communicating and recording it in a suitable way (e.g. annotated design page, diagrams, IT)
			- Perform basic tests, make simple prototypes/pattern pieces as appropriate.
			- Create a final idea and translate this into a final product which fits the brief.
			- Evaluate their final product – what went well? Did they follow the brief? How could they improve their design?
				- Work from a brief with a simple constraint (e.g. audience / purpose) to design an appealing, functional product.
				- Research a range of materials, conducting tests as appropriate before selecting the best choice.
				- Research products similar and different to their own to inform their own design.
				- Develop a design idea, communicating and recording it via a plan and a labelled diagram.
				- Test ideas using prototypes/creating pattern pieces and where relevant computer aided design.
				- Develop and make a final product, based on testing, which meets the brief criteria.
				- Evaluate their final product, including discussion amongst peers to assess their product against the brief and consider improvements.
					- Create own brief from a given situation.
					- Produce a detailed design specification, identifying function, target audience, aesthetics, style, material, cost and size considerations.
					- Carry out detailed research looking at material properties for a range of materials (e.g. fabrics, wood, metal, polymer & paper)
					- Identify a range of materials and suitability to a given purpose, based on the material properties.
					- Research and critically analyse areas necessary for design ideas / product development e.g.
					  o Analyse similar products for; function, target audience, aesthetics, style, material, cost and size considerations / ingredient's and methods used.
					  o The work of past and present designers,
					  o Design influences themes -design movements / biomimicry.
					  o Size considerations etc
					- Create a range of design proposals which meet given criteria (e.g. specification / target audience needs / cultures/ themes / dietary requirements etc).
					- Design ideas drawn 3D, rendered and with detailed annotation, discussing materials and construction / ingredients and method.
					- Review design ideas for suitability (against specification, target audience needs, environmental issues, dietary requirements etc).
					- Use design idea testing to inform design development to create a suitable final design proposal.
					- Create mock up models, templates, test dishes -using CAD as appropriate.
					- Create a production plan (plan of making), identifying tools, equipment, ingredients, method as appropriate.
					- Create a detailed final evaluation, reviewing tools and equipment used and skills developed, user testing of final product / dish, identify potential improvements.

Resistant materials *Electronics linked to science objectives	- Begin to cut and tear materials. - Stick and glue materials together. - Use junk objects to create their own designs. - Begin to consider how they join materials together.	- Follow basic procedures for safety. - Cut materials safely using scissors. - Tear, fold and curl materials. - Join using gluing and taping. - Begin to use a simple hinge. - Select materials and tools based on their properties. - Create products based on a design. - Explore and use simple mechanisms [e.g. levers, sliders, wheels and axles], in their products. - Build structures, exploring how they can be made stronger, stiffer and more stable.	- Follow procedures for safety. - Cut, tear and shape materials with increasing accuracy. - Use a wider range of joining methods (e.g. fasteners, tabs, flange) - Choose appropriate materials and tools for a product based on their functional properties and aesthetics. - Strengthen, stiffen and reinforce a product using suitable materials. - Make mechanical /moving elements (e.g. pulleys, levers and linkages) - Choose appropriate materials by testing their properties using a prototype. - Incorporate a simple electrical system into their product.*	- Follow procedures for safety with a wider range of tools and processes. - Cut and shape materials based on their design with increasing accuracy. - Choose appropriate tools and methods to cut and form a wider range of materials. - Choose appropriate materials by testing their properties using prototypes, justifying their choices. - Make mechanical /moving elements (e.g. gears, cams and pneumatics) - Use a wider range of joining methods (e.g. inserts, wrap, gusset, notch) - Incorporate a more complex electrical system into their designs (e.g. more than one component / adding a switch). - Use computing to program, monitor and control their products.*	- Be competent in workshop health and safety, to be able to identify potential hazards and understand how to avoid them in the workshop - Use specialist tools and equipment with accuracy and independence. - Understand how to correct manufacture errors as they arise. - Understand the difference between similar tools and be able to correctly chose the appropriate tool (e.g. Hegner Saw, Coping Saw, Tenon Saw) - Be competent using tools and equipment for timber, metal & polymers. - Have a knowledge of the use of motion and mechanical systems (e.g the use of CAM's) - To have knowledge of a range of resistant materials and their environmental impact (Timbers; hardwood, softwood and manufactured boards, Metals; ferrous and non-ferrous, Polymers; thermoplastic and thermosetting plastics) - Accurately dimension and mark out materials following given dimensions /plans. Using the correct tools and equipment (e.g. steel rule, try square, engineers square, marking gauge etc) - To have knowledge of permanent and temporary joining methods for a range of materials (e.g. Timbers; traditional wood joints, components; screws. Metals; rivets, Plastics; solvent glue) - To have knowledge of finishing methods and finishes for a range of materials (e.g. Sanding, Timbers; Oil, Wax, Varnish, Wood Stain, Metal; Filing/abrasives, Polish, Paint etc) - Be able to incorporate the use of CAD /CAM into products where possible - To understand the use of electronics and electronic components *links to science - To understand the considerations of products are created in industry (considerations of accuracy, efficiency, cost, quantity, quality, jigs, templates etc)

Textiles	- Stick and decorate textiles with support. - Thread beads onto a string. - Begin to cut fabric using scissors.	- Cut textiles using scissors and a template. - Decorate textiles using crayons, paint or sticking. - Join textiles using glue. - Use a running stitch to join textiles using pre-prepared holes. - Create simple weaving using paper or large strips of fabric.	- Cut textiles with scissors safely. - Thread a needle and tie a knot. (e.g. wool/embroidery needle) - Use a running stitch to join textiles. - Decorate textiles using stamping, printing and simple embellishment. - Weave using a cardboard loom.	- Use seam allowance and back stitch to join textiles to create a simple product (e.g. A cushion or soft toy). - Use a pattern/template to mark and cut fabric into a specific shape - Use cross stitch, running stitch or filling stitch. - Use applique - Thread a needle and tie a knot, including finishing a thread and starting a new one within a project. - Choose appropriate materials for a textile product based on its use. - Weave using a variety of materials. - Sew a button or bead onto a project.	- Use different fastenings to create a functional product. - Create own pattern pieces to cut fabric into shapes for their own design. - Use back stitch and/or running stitch to construct a basic product (eg toy or cushion). - Use a range of decorative techniques to add designs to fabric. - Understand how to use a range of dye techniques (tie dye, marbling) to add colour and pattern to plain fabric. - To understand the difference between decorative and constructive techniques. - Understand how to use a sewing machine for decorative (machine embroidery) and constructive purposes. - Be able to identify appropriate market level for different techniques. - Develop understanding of roles within the textiles industry. - To understand the differences and properties of a range of natural and manmade fabrics - To understand the impact of the textiles / fashion industry on the environment.
Food and Nutrition *** statements link to science**	- Mix pre-prepared ingredients with the support of an adult, safely and hygienically - Use a blunt knife to spread butter or jam (or alternative) on a cracker or bread. - Understand that fruit and vegetables grow, and which ones are grown in the UK.	- Cut soft foods safely and hygienically using an appropriate tool. - Measure using measuring cups and spoons. - Assemble ingredients to make a simple recipe. - Discuss what a healthy and varied diet should look like, naming and sorting using the five main groups. * - Know where a range of fruits and vegetables come from. *	- Cut a range of foods safely and hygienically with an appropriate tool. - Measure ingredients using scales or jugs. - Follow recipes, starting to use techniques such as peeling, chopping, slicing, mixing, spreading, baking or kneading. - Cook using a pan or oven safely (with supervision and support). - Know where a wider range of foods come from. - Discuss the importance of a range of varied and nutritious foods. * - Discuss the importance of a balanced diet to provide energy for a healthy active lifestyle. *	- Discuss why we need to store and handle food hygienically (micro-organisms).* - Measure ingredients with a degree of accuracy using an appropriate measuring device. - Scale recipes up or down accordingly. - Design their own simple savoury recipes and test them. - Use a range of baking and cooking techniques with increasing confidence (e.g. boiling, frying, baking, grilling, steaming, roasting, microwaving) - Begin to explain why a recipe or meal is healthy or not, giving reasons based on their understanding.*	– Understand and apply their knowledge and understanding of food and nutrition; – Be 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 sensory analysis to adapt and create recipes. – Apply their knowledge to make informed choices around seasonality and characteristics of ingredients; – Develop the creative, technical and practical expertise needed to perform everyday tasks confidently; – Build and apply a repertoire of knowledge, understanding and skills in order to design and make high quality products for a wide range of users; – Evaluate and test their ideas and products and the work of others.
Products & Designers **(Evaluation & Analysis)**	- Enjoy looking at different products and designs. - Can say whether they like a product/design or not. - Identify materials used to make a product (e.g. plastic, metal, wood)	- Enjoy looking at different products and designs. - Can say whether they like a product/design or not. - Make a link between their work and a product. - Start to ask their own questions about a product or design.	- Continue to develop their knowledge of key designers and products. - Can express an opinion about a product, giving simple reasons why. - Make simple comparisons between designers and products. - Make links between their work and the work of a designer/maker. - Discuss when and where a product or design was created - Begin to make links between key events and individuals in design and technology that have helped shape the world. - Discuss: what products are; who they are for; how they are made and what materials are used.	- Can discuss a range of key designers and products. - Express an opinion about a product, justifying reasons. - Make links between their work and the work of others, noting specific influences and techniques. - Explore: how well products have been designed and made; why materials have been chosen; what methods of construction have been used; how well products achieve their purpose.	Development of Upper KS2 criteria plus in-depth study of the following: - Analyse similar products for; function, target audience, aesthetics, style, material, cost and size considerations / ingredients and methods used. - The work of past and present designers, - Design influences themes -design movements / biomimicry.