Stoborough CE Primary School

Design Technology Progression

Overview:
Children are given the opportunity to design and develop, make and evaluate by providing inspiring real-life scenarios and reasons to make purposeful products. Through exploration and guidance, we aim to develop pupils' skills and knowledge of how products are designed, built and improved for their intended purpose. We want pupils to draw on their cross-curricular skills in a variety of contexts and understand how design technology has influenced the world we live in today.

Aims for the National Curriculum design and technology curriculum:

- Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- Build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- Critique, evaluate and test their ideas and products and the work of others
- Understand and apply the principles of nutrition and learn how to cook

Pupils will be taught the following knowledge and skills:

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Design	**To explore different materials freely in order to develop ideas about how to use them and what to make.** To say which materials to use to achieve my ideas. To explain how they will join the materials of their choice. To select and name the tools they need. **To use the language of designing and making,** e.g. join, build, shape, mix, weave, longer, shorter, heavier etc.	**To explain what I am making.** **To explain what my product is for and how it will work.** **To know that there is a reason behind why we design and make something.** To explore materials and components from existing products. To begin to draw on my own experience to help generate ideas. **To use talking and drawing to plan my design.** To design a product for myself using a simple design criterion.	**To explain what they want to design and how they will do it.** **To explain how the product is suitable for the user.** **To identify a target group for what I intend to design.** **To use knowledge of existing products to help come up with ideas.** To use models, templates, mock-ups and ICT to plan my design. **To label my designs.** To design a product for myself and others using design criteria. To explore how products have been created. To understand why we need a design criterion to identify the need that a product should meet.	To begin to research others' needs. **To explore how a product is made by deconstructing and reconstructing.** **To develop my own design criteria through discussion, including both function and appearance.** **To create a plan which shows the order of making, equipment and tools, fit for purpose.** **To describe the design using accurately labelled sketches.** **To consider the best way of fixing and joining, e.g. tabs.** To make a prototype, with support. **To know that more than one design should be created to decide which one best meets the design criteria.** To understand that design criteria can be met in different ways. To understand that some products can be recycled or reused. To understand that prototypes can give an indication of how successful a design will be.	To research different design ideas to collect examples. **To develop a clear idea, planning how to use materials, equipment and processes.** **To make drawings from different views, labelling specific features.** **To design a template, given examples.** To use computers to show design. **To understand that alternative methods may be needed, if the first attempts fail.** **To consider the views of others and use them to adapt my plan.** To explain choices in relation to required outcomes. **To understand that the user of a product will affect the design choices.** To explain design decisions, considering the availability of resources. To understand that the availability of resources, time available and skill level should be taken into account when designing.	**To use internet research to develop design criteria.** **To take a user's view in to account when designing a product that is fit for purpose.** **To explain how a product will appeal to the user.** **To record designs using an annotated sketch.** To use ICT to increase quality or clarity of design. **To create a step-by-step plan.** To explain design decisions, considering cost, sustainability, footprint (and seasonality/health in cooking). To create own templates or patterns (using computer drawing packages or by hand). To identify the strengths and areas of development in a design, using these to inform and refine future designs. To understand that some parts of a design criteria are higher priority than others. **To understand that the longevity of some materials/mechanisms can be increased through reinforcing, stiffening and strengthening techniques.**	**To incorporate market research in to a design, e.g. through a questionnaire.** **To identify features of a design that will appeal to the intended user.** **To design innovative products that improve upon existing products.** To design more complex structures. **To use cross-sectional drawings and exploded diagrams to show specific parts of a design and how they are fit for purpose.** To refine design ideas by independently making prototypes. To demonstrate an understanding of how developments in design and technology, or specific inventions, have had an impact on the wider world. To understand that some products have impact beyond their intended purpose. To understand that market research can be conducted to gain a better understanding of the factors that influence the needs of a specific user. To understand that cross-sectional drawings and exploded diagrams are a way of demonstrating how part of a product will work.

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	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Make	To construct with a purpose, using a variety of resources. To select tools and techniques to shape, assemble and join. To join materials e.g. using glue, staple, cellotape, masking tape, paperclip, split pin. To use a template to draw around. To use scissors to cut along a straight and curved lines. To use hole punches to create holes. To build structures joining components together. To understand that materials can be joined together in different ways. To mix, stir, cut, pour, shape and spread. To explain what they are making and which materials they are using. To discuss how to make an activity safe.	**To select tools/equipment to cut, shape and join, and explain choices.** **To understand that simple *tools*** *(e.g. scissors, knives, peelers, needles)* **need to be handled safely, and that there are safety rules associated with using each tool.** **To handle tools safely.** **To accurately cut around templates and shapes.** To choose suitable materials and explain simple choices. To assemble, join and combine materials and components. **To understand that, when joining, some methods create a more permanent joins than others** *(e.g. temporary: paperclips, tape; permanent: glue, staples, running stitch).* To make simple moving mechanisms with support, *e.g. sliders on a boat (rudder)*	**To join materials/components together in different ways.** To measure and mark materials/components, in order to cut out. **To build simple 3D structures.** To choose suitable materials and explain choices depending on characteristics. To use simple finishing techniques to make products look good. To sieve, slice, squeeze, grate and peel. **To understand that there are some techniques that can reinforce materials** (how to make materials stronger, stiffer and more stable). **To reinforce and stiffen materials** *e.g. using folding and layering.* To make simple moving mechanisms, *e.g. wheels (moving vehicles)*	**To measure, mark out, cut and shape materials/components with accuracy.** To measure and mark in cm and mm, using a ruler. **To use a variety of tools to cut and shape,** *e.g. different scissors, knives and cooking implements - such as cutters.* **To understand that tools and equipment** (e.g. cookers, pins and different material scissors) **need to be handled safely**, and that there are safety rules associated when using each of them. To fold on a line, create valley folds and hill folds. **To adapt a template to create a pattern and cut this out.** To explore how materials can be joined together in different ways, *e.g. when allowing for tabs to assist with joins on the net of a 3D shape.* **To apply simple finishing techniques with some accuracy.**	To work through a plan in order. **To understand that focus needles need to be handled safely, and that there are safety rules associated with the tool.** **To thread a needle.** **To use overstitch to start and end sewing.** To use a variety of stitches, e.g. overstitch, running stitch, blanket stitch. To use one type of stitch to join two pieces of material. To choose the most appropriate stitch. To create seams on fabric edges. To explore how materials can be joined together in different ways, *e.g. through cutting slots* **To measure ingredients using standard** (e.g. weight and ml) **and non-standard measurements** (cups, spoons etc.). **To develop different techniques for adding decorative details.**	To produce a suitable lists of tools, equipment/materials needed. **To follow a detailed step-by- step plan.** **To understand that plyers and wire cutters (to cut and mould wire) need to be handled safely, and that there are safety rules associated with using each tool.** **To use the technique of scoring when folding thicker materials.** **To understand that there are some techniques that can reinforce materials, such as using reinforcing strips and triangles.** To add reinforcements to joins to create a stronger structure, *e.g. cardboard corner triangles for frames.* **To accurately apply a range of finishing techniques.**	To select appropriate materials, fit for purpose, and explain choices, considering the function and aesthetics. To be resourceful with practical problems. **To use a wider variety of tools to cut and shape different materials,** *e.g. adhesives, craft knives, with increasing accuracy.* **To understand that tools, such as, strong adhesives, fabric glue, craft knives / craft scissors, need to be handled safely, and that there are safety rules associated with using each tool.** **To understand that, for some materials, some adhesives are more effective than others.** **To join materials using different adhesives,** *e.g. wood / fabric glue.* To make something move using cams, axles and / or electric circuits*, e.g. using motors.*

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	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Evaluate	To recognise problems that arise. To dismantle, examine and talk about structures and objects. To look at similarities and differences between structures, objects and materials. To describe textures. To take part in a class discussion to evaluate a product. To understand that ideas don't always work.	**To say what is good and what is weaker in a product.** To describe work, linking it to what I was asked to do. **To explain likes and dislikes about a product, and why.** **To explain what I would do next.** To make a labelled drawing of my final product, to show my evaluation. To understand that plans can be adjusted if part of a product doesn't work.	**To evaluate my product by saying how well it works in relation to the purpose.** **To discuss reasons for any changes to initial design,** including why they were needed. **To identify strengths and possible changes that could be made.** To explain what I have learnt from the designing and making process. **To understand that how effective a product is depends on how well it meets the brief.**	**To identify flaws in the design of existing products.** **To evaluate the product by saying how well it works in relation to the design criteria, and using this to identify strengths and suggest improvements.** To evaluate a product, considering: how well it has been made, materials used, whether it works, the making process used, if it is fit for purpose. To begin to understand by whom, when and where products were designed. **To understand that existing products have good and bad points (flaws), and that they meet some parts of the design brief better than others.**	**To consider different options when attempting to solve a problem in manufacture.** **To suggest improvements and identify which solution will work best and why.** **To suggest how to adapt a recipe with consideration to nutrition, taste and presentation.** To identify the impact of any changes to the design on the finished product's functionality and appearance. To listen to the views of others and use this to suggest ways to improve my work. To identify whether products can be recycled or reused.	To evaluate the quality of the design whilst in the process of designing and making. **To test and evaluate the final product.** To consider the impact of my product, beyond the intended purpose. To evaluate the sustainability of materials used in product design. To collect and respond to the views of others. **To evaluate the product against the design, as part of a planned evaluation (mid-project review) and use this to make adjustments to the manufacture, as required.** **To evaluate the products for overall appeal: functionality, appearance, cost, footprint, sustainability.**	**To explain what to improve and the effect that different resources chosen may have on the final product.** To identify an impact that a product's designer can have. **To evaluate the finish of a product.** **To evaluate how much products cost to make.** **To evaluate how innovative a product is.** To engage in constant review of the design criteria during the manufacturing process. To give balanced feedback to others about their product, including strengths in meeting the design criteria and the improvements that could be made. To evaluate their products for overall appeal: longevity, whether is addressed previously identified design flaws, impact.

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	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Technical knowledge **Cooking and nutrition**	To understand that hands can carry germs and should be washed before handling food. To understand that ingredients can be measured using non-standard measurements, e.g. cups, spoons etc. To know that fruit and vegetables are healthy. To know that too much sugar is not healthy. To know that eating well contributes to good health.	**To understand that there are basic hygiene rules that should be followed when preparing food,** *e.g. hands washed, hair up, apron on, sleeves rolled up.* **To know that healthy food and drink are important for active healthy bodies.** **To understand that ingredients have properties**, *e.g. sweet, sour, soft, hard, runny.* **To know that care must be taken when cutting ingredients.**	**To understand that there are different types of food**, *e.g. carbohydrate, fruit/veg, protein (refer to Eat Well plate).* **To know the original sources of some common foods,** *e.g. milk from a cow, egg from a chicken, chips from potatoes, which come from the ground, ketchup from tomatoes, cheese from milk/cow, beef from a cow.* **To know that ingredients can be measured accurately using given tools**, *e.g. scales, spoons, cups.* To understand that surfaces need to be prepared and kept clean when working with food.	**To understand that food can be cooked in a variety of ways, but a heat source is always required**, *e.g. bake, boil, sauté, fry, steam.* **To Know that some foods are seasonal** e.g. fruit and vegetables are seasonal To know the difference between a savoury and a sweet dish. **To understand that some people have food allergies,** *e.g. nuts, gluten.*	**To know that a recipe can be adapted to improve nutrition or appeal.** **To understand that ingredients now can be fresh, pre-cooked or processed.** **To understand that in the past food was usually fresh, as only some food could be stored,** *e.g. honey.* To understand food preservation now, *e.g. no more than 3 days in fridge for fresh or cooked food.* **To understand that raising agents**, such as baking powder/yeast/self-raising flour, **are used to help bread and cakes rise.**	**To know that a recipe can be developed to improve nutrition or appeal, and to change the appearance, texture or balance the taste**, *e.g. sweet, salty, bitter, and spicy.* **To understand that raw food sometimes has additional hygiene rules linked to food preparation,** *e.g. raw meat. (NB: raw meat does now have to be included in recipes to teach this).* **To understand the need for correct storage of different types of food.** **To know that most fruit and vegetables are at their best at the time of year it is harvested** (seasonality of foods).	**To know how to dice ingredients accurately.** **To know when to use different knife grips**, *e.g. hammer grip, pointed finger grip, pinch grip.* To use ratios to adjust quantities of recipes. To understand that different raising agents provide different textures. To know that gluten free foods contain wheat flour substitutions, *e.g. maize or rice flour.* To know that garnishes can make food more attractive.
Textiles		**To know that two pieces of material can be joined together**, e.g. by using glue.	**To understand that backstitch is stronger than running stitch.** **To understand that different materials have different properties.**	**To understand that chain stitch is useful for embroidery because it is easy to see.** To understand that textiles can be shaped using templates.	**To know that there are different types of stitches, and that each technique has advantages and disadvantages that should be taken into account when choosing which to use,** *e.g. overstitch, running stitch, blanket stitch.* To understand that there are different types of textiles fastenings and that these achieve different purposes.	**To understand that fastenings have advantages and disadvantages,** *e.g. zip closes fully but can snag; buttons, hook and eye.* To know that the qualities of materials should be used to create suitable visual and tactile elements in the decoration of textiles.	**To know that textiles can be joined with a range of stitching techniques.** **To understand that a seam allowance is needed on a template to make sure material doesn't tear**. **To know that different stitches can be used to add decoration.**

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Mechanisms/Product design		**To know that freestanding structures can be made stronger,** *e.g. making thicker, propping up, gluing or using stronger material.* **To know that a slider moves along a bar or strip.** To know that paper can be rolled to make tubes.	**To know that both levers and sliders help us move things.** **To know that a lever is a handle or bar or strip that turns around a pivot.** **To understand that wheels are fixed to axles.** **To know that axles cannot be fixed to their holders.**	**To know that a pivot is the central point on which a mechanism turns.** **To know that a pulley is a rope looped over one or more wheels.** **To understand that pneumatics use energy made from the controlled release of compressed air and turn it into movement.**	**To understand why and when different mechanisms work and should be used,** *e.g. hinges.* **To know that hinges are used to join two parts together while allowing them to rotate relative to each other.** **To know that pushing a lever further from the pivot needs less force.**	**To understand that materials can be joined/combined using temporary, fixed or moving joints.** **To know that a CAM is a shape that turns and pushes a follower** (like a rod) **up and down**. **To know that different CAM shapes change the movement of the follower.**	**To Explain simply what is meant by 'form' (the shape of a product) and 'function' (how a product works).** To Identify the components of a steady hand game. To create a secure base for their game, with neat edges, that relates to their design. **Make and test a functioning circuit and assemble it within a case.**
						Please note the following NC statements are covered through the Y5&6 computing curriculum, but should also be considered here: To understand and use electrical systems in their products, *e.g. series circuits incorporating switches, bulbs, buzzers and motors.* To apply their understanding of computing to program, monitor and control their products.	

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	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Vocabulary	Mix, stir, cut, pour, shape, spread Change, idea Ideas, thoughts, uses, materials, design, technology, join, tools, split pin, paperclip, staple, Fruit Vegetable Hole punch Cloth Cardboard	sieve, slice, squeeze grate and peel planning, investigating design, evaluate, make cut, fold, join, fix decorate design, fabric, glue, model hand puppet, safety pin staple, stencil, template equipment, utensils sensory vocabulary e.g. soft,juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard structure, framework, weak, strong, base, top axle, base, centre, equal evaluate, middle, rotate rotor blades, sails, same, stable strong, structure	target audience, appealing, properties, criteria, Pulley, twine, mechanism user, purpose, ideas, design criteria, product, function slicing, peeling, cutting, squeezing, healthy diet, ingredients, flesh, skin, seed, pip, core Yoghurt, dough Lever, pivot, slider, axle Felt, running stitch, back stitch,. needles, thread	rolling, measure, weigh, overstitch, running stitch, blanket stitch, Designer, flaws, suitability, annotate, design drawing, user, wider world, model, annotated Prototype shell structure, width, breadth, capacity, marking out, assemble texture, taste, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, reared, caught, frozen names of fabrics, chain stitch, seam, drawstring, loop, asymmetrical, appliqué, cotton cross-stitch, embellish, fabric, patch, pinking, polyester, running stitch, silk, symmetrical, template thread	Investigate, manufacture, extent user, design brief , prototype, sensory evaluations template edible, processed, seasonal, harvested, , tinned, healthy/varied diet seam allowance pins, wadding, right side, wrong side internal circuit 2D, 3D, castle Design, key features, net, scoring, shape, stable, stiff, strong, structure, tab	glue gun, craft knife, adhesive, dice, boiling, sauté, fry, steam, reinforcing, stiffening and strengthening techniques, sustainability, footprint, allergy, organic, fair trade, farmed, wild, reared caged/uncaged, organic, processed / unprocessed, fastenings design specification, research, reinforce, triangulation, stability, beam bridge, arch bridge, truss bridge, strength, technique, corrugation, lamination, stiffness, rigid, factors, stability, visual appeal, joints vitamins, nutrients, nutrition, healthy, varied, seasonality source Vitamin C	market research, seasonal, consumption, resources, portion, cross section, exploded diagram reinforce, hem, pattern pieces, name of textiles and fastenings used, pinking shears yeast, dough, bran, flour, wholemeal, unleavened, baking soda, carbohydrate, gluten, dairy, allergy, intolerance, savoury Cam, follower, cells, assemble, battery pack, benefit, bulb bulb holder, buzzer, circuit, circuit, symbol, component, conductor, copper

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	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Projects Using Kapow	Child-led projects	Smoothies Puppets Windmill Paper Cups	Balanced Diet Pouches Moving Monsters	Eating Seasonally Cross stich and applique Cushion Pneumatic Toys	Adapting a recipe Fastenings Constructing a Castle (Year 3 Kapow unit)	Developing a Recipe Stuffed Toys Bridges	Come Dine with Me Waistcoats Steady Hand Game
Designers		**Jim Henson**- Created the Muppets e.g. Kermit the frog. Most puppets his time were made of wood. But Henson searched for material that would be easier to move and could let characters show more personality. He chose foam rubber and plastic covered with fabric. **Julie Taymor-** She is an American stage and film director, playwright, and costume designer known for her inventive use of Asian-inspired masks and puppets. In 1998 she became the first woman to win a Tony Award for best director of a musical, for her Broadway production of *The Lion King*, derived from the Disney animated film	Ole Kirk Christiansen (7 April 1891 – 11 March 1958) He was a Danish carpenter. In 1932, he founded the construction toy company Lego. He transformed his small woodworking shop, which initially sold household products, into a manufacturer of wooden toys.	Jamie Oliver: -Campaigned in 2005 for more healthy school dinners. At that time it was provided very cheaply and was often just things like nuggets and chips. -Got politicians to promise extra money and had an impact on improving exam results!	Paul Hollywood: -Presents and judges The Great British Bake Off -Trained as a sculptor before becoming a baker -Experiments with changing recipes, especially bread and cakes -Created the 'most expensive bread in Britain' in 2008- almond and Roquefort sourdough.	Brunel: -Born in Portsmouth in 1806 -Engineer who built railways, ships, tunnels and bridges -Clifton suspension bridge – used chains to support a longer span than was possible on pillars. -Designed propellor-driven steamships for transatlantic travel.	**Dame Vivienne Isabel Westwood** (April 1941 – 29 December 2022) She was an English fashion designer and businesswoman, largely responsible for bringing modern punk and new wave fashions into the mainstream. William Morris (24 March 1834 – 3 October 1896) He was an English textile designer, poet, artist,[1] writer, and socialist activist associated with the British Arts and Crafts movement.