All Saints Primary School- *Inspired to Learn*
Progression and Curriculum Milestones: Design Technology

Curriculum Intent- At All Saints we develop design technologists who:

- Are inspired to be innovative and creative thinkers.
- Use their creativity and imagination to design and make products that solve real problems.
- Have the confidence to take risks through drafting design concepts, modelling and testing.
- Are reflective learners who can evaluate their work and the work of others.
- Are resourceful, resilient and show perseverance.
- Are aware of the impact of design and technology on their lives and the world around them.

	EYFS	KS1	LKS2	UKS2
National Curriculum	Safely use and explore a variety of materials, tools (including paint brushes and scissors) and techniques, experimenting with colour, design, texture, form and function; Share their creations, explaining the process they have used.	Design • design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology Make • select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] • select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics Evaluate • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria. Technical knowledge	Design • 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 • generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Make • select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately • 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 Evaluate • investigate and analyse a range of existing products • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work • understand how key events and individuals in design and technology have helped shape the world Technical knowledge • apply their understanding of how to strengthen, stiffen and reinforce more complex structures • understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] • understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] • apply their understanding of computing to program, monitor and control their products.	

		• build structures, exploring how they can be made stronger, stiffer and more stable • explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.		
Vocabulary	Design, product, template, tools, joining, material, texture, wheels, axles, movement, stronger, stiffer, stable, levers, sliders, healthy, fruit, vegetable, smoothie, blender.	Design, product, evaluate, design criteria, cutting, joining, glueing, stapling, pinning, decorate, materials, textiles, ingredients, healthy, fruit, vegetables, seeds, smoothie, blender, structure, stiffer, stronger, stable, mechanisms, levers, sliders, wheels, axles, puppet, windmill, net, pivot, turbine, rotate, template, cylinder, chassis, blender, input, output.	Design, product, design criteria, design brief, success criteria, pavilion, lighthouse, frame structure, pneumatic, features, healthy, nutritious, recipe, seasonal, ingredients, taste, texture, smell, appearance, problem solving, Micro:bit, template, computer-aided, reinforce, instructions, syringe, motion, appealing, aesthetic, electrical, circuit, insulators, conductors, compression, algorithm, climate, imported, exported, free-standing, modify, contamination, hygiene, nutrition, vitamin, minerals, energy, growth, thread, needle, stitch, applique, textiles, seam, exploded-diagrams.	Design, product, research, develop, design criteria, innovative, functional, appealing, model, communicate, annotate, sketch, cross-sectional, exploded-diagrams, pattern pieces, prototype, computer-aided, shape, join, finishing, construction, textiles, ingredients, function, aesthetics, properties, qualities, investigate, analyse, strengthen, reinforce, complex, structures, mechanical, systems, gears, pulleys, cams, levers, linkages, series circuit, switches, bulbs, buzzers, motors, program, monitor, control, playground, effective, ineffective, pop-up, storyboarding, annotate, traditional, substitute, packaging, recipe, client, functions, navigation, CAD, waistcoat, measure, slider, pivot, spacer, cross-contamination, hygiene, nutrition, template, sewing, stitch, fabric, applique, fastenings, decorative, sustainable, recyclable, cardinal compass, feedback, footprint plan.
Design	• Making verbal plans and material choices. • Discussing what a good design needs	• Learning the importance of a clear design criteria. • Learning about different types of structures, found in the natural world and in everyday objects. • Designing a moving monster for a specific audience in accordance with a design criteria. • Designing a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move. • Designing smoothie carton packaging.	• Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. • Building frame structures designed to support weight. • Designing a toy which uses a pneumatic system. • Developing design criteria from a design brief. • Learning that different types of drawings are used in design to explain ideas clearly.	• Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs. • Designing a pop-up book which uses a mixture of structures and mechanisms. • Storyboarding ideas for a book. • Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product.

		• Using a template to create a design for a puppet.	• Designing a lighthouse, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. • Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish. • Problem solving by suggesting potential features on a Micro: bit and justifying my ideas • Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge. • Designing and making a template from an existing cushion and applying individual design criteria.	• Developing design criteria based on findings from investigating existing products. • Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Designing appealing packaging to reflect a recipe. • Writing a design brief from information submitted by a client. • Considering and suggesting additional functions for my navigation tool. • Developing a product idea through annotated sketches to explain decisions. • Placing and manoeuvring or changing the properties of 3D objects, using CAD. • Designing a waistcoat in accordance to a specification linked to a set of design criteria.
Milestones	**I can verbally describe my design.**	**I can design a product according to design criteria.** **I can generate and communicate my design ideas in a variety of ways e.g. drawings.**	**I can design a product to meet design criteria.** **I can make a template from an existing product and use it to design my own.**	**I can design products with a number of features and consider it's effectiveness.** **I can develop design criteria from investigating existing products.** **I can write a design brief and develop a product idea explaining decisions.**
Make	• Improving fine motor/scissor skills with a variety of materials. • Joining materials in a variety of ways (temporary and permanent). • Joining different materials together. • Describing what they are making, and how	• Making stable structures from card, tape and glue. • Learning how to turn 2D nets into 3D structures. • Following instructions to cut and assemble the supporting structure of a windmill. • Making functioning turbines and axles which are assembled into a main supporting structure. • Making a structure according to design criteria.	• Creating a range of different shaped and sized free standing frame structures. • Selecting appropriate materials to build a strong structure and create different textural effects. • Reinforcing corners to strengthen a structure. • Creating a pneumatic system, using balloons and syringes, to create a desired motion and an appealing toy • Building secure housing for a pneumatic system.	• Building a range of play apparatus structures drawing upon new and prior knowledge of structures. • Measuring, marking and cutting wood to create a range of structures. • Using a range of materials to reinforce and add decoration to structures. • Following a design brief to make a pop up book, neatly and with focus on accuracy.

	they intend to put it together. • Developing fine motor/cutting skills with scissors.	• Creating joints and structures from paper/card and tape. • Building a strong and stiff structure by folding paper. • Making linkages using card for levers and split pins for pivots. • Experimenting with linkages adjusting the widths, lengths and thicknesses of card used. • Cutting and assembling components neatly and adapting mechanisms where necessary. • Chopping fruit and vegetables safely to make a smoothie. • Identifying if a food is a fruit or a vegetable. • Learning where and how fruits and vegetables grow • Cutting fabric neatly with scissors. • Using joining methods to decorate a puppet. • Sequencing the steps taken during construction.	• Selecting materials due to their functional and aesthetic characteristics. • Manipulating materials to create different effects by cutting, creasing, folding and weaving • Making a lighthouse with a working electrical circuit and switch. • Assembling a lighthouse according to the design and success criteria. • Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. • Following the instructions within a recipe. • Following design criteria to create a cushion or Egyptian collar. • Selecting and cutting fabrics with ease using fabric scissors. • Threading needles and tying knots with greater independence. • Sewing cross stitch to join fabric. • Decorating fabric using appliqué. • Using a template when cutting and assembling a product. • Following a list of design requirements • Selecting and using the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch • Applying functional features such as using foam to create soft buttons	• Making mechanisms and/or structures using sliders, pivots and folds to produce movement. • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result. • Making a functional series circuit, incorporating a motor. • Constructing a product with consideration for the design criteria. • Cutting and preparing vegetables safely. • Using equipment safely, including knives, hot pans and hobs. • Knowing how to avoid cross-contamination. • Following a step by step method carefully to make a recipe. • Using a template when cutting fabric to ensure they achieve the correct shape. • Using pins effectively to secure a template to fabric without creases or bulges. • Marking and cutting fabric accurately, in accordance with their design. • Sewing a strong running stitch, making small, neat stitches and following the edge. • Tying strong knots. • Decorating a waistcoat, attaching features (such as appliqué) using thread. • Finishing the waistcoat with a secure fastening (such as buttons). • Learning different decorative stitches. • Considering materials and their functional properties, especially those

				that are sustainable and recyclable (for example, cork and bamboo) • Explaining material choices and why they were chosen as part of a product concept • Programming an N,E, S,W cardinal compass
Milestones	**I can use simple tools and techniques to make my design.**	**I can choose and use appropriate tools, materials and techniques to make a product.** **I can use a template to make a product.**	**I can use a range of tools, equipment, materials and components to make an aesthetic and functioning product according to design criteria.**	**I can use a wider range of tools, equipment, materials and components to make an aesthetic and functioning product.** **I can follow a client's design brief to make a product.**
Evaluate	•Giving a verbal evaluation of their own and others' product with adult support. • Checking to see if their product matches their plan. • Considering what they would do differently if they were to do it again. • Describing their favourite and least favourite part of their product.	• Evaluating own design against the design criteria, testing whether the structure is strong and stable and altering it if it isn't • Suggest points for improvements • Exploring the features of structures. • Comparing the stability of different shapes. • Testing the strength of own structures. • Identifying the weakest part of a structure. • Evaluating the strength, stiffness and stability of own structure. • Using peer feedback to modify a final design. • Testing wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move. • Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging. • Reflecting on a finished product, explaining likes and dislikes.	•Evaluating structures made considering effective and ineffective designs. • Describing what characteristics of a design and construction made it the most effective. • Using the views of others to improve designs. • Testing and modifying the outcome, suggesting improvements. • Understanding the purpose of exploded-diagrams through the eyes of a designer and their client • Evaluating electrical products. • Testing and evaluating the success of a final product. • Describing the benefits of seasonal fruits and vegetables and the impact on the environment. • Suggesting points for improvement when making a seasonal tart. • Evaluating an end product and thinking of other ways in which to create similar items. • Analysing and evaluating an existing product • Identifying the key features of a pouch	• Improving a design plan based on peer evaluation. • Testing and adapting a design to improve it as it is developed. • Identifying what makes a successful structure. • Evaluating the work of others and receiving feedback on own work. • Suggesting points for improvement. • Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. • Determining which parts of a product affect its function and which parts affect its form. • Peer evaluating a set of instructions to build a product. • Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups. • Reflecting on their work continually throughout the design, make and evaluate process. • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool

				• Developing an awareness of sustainable design • Identifying key industries that utilise 3D CAD modelling and explain why • Explaining the key functions in my program, including any additions • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool • Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch • Demonstrating a functional program as part of a product concept
Milestones	**I can say what went well with my design and what could be better.**	**I can evaluate my design and completed product against design criteria and how I feel about it.**	**I can evaluate my finished product against design criteria.** **I can consider the effectiveness of a product and suggest modification and improvements.**	**I can test and adapt a product as it is being developed so that it fits design brief or criteria.** **I can reflect on my design and take on board feedback.**
Technical knowledge Structures	•To know there are a range of different materials that can be used to make a product. • Making simple suggestions to fix their product.	**Windmill and Baby bear's chair** • To understand that the shape of materials can be changed to improve the strength and stiffness of structures. • To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses). • To understand that axles are used in structures and mechanisms to make parts turn in a circle. • To begin to understand that different structures are used for different purposes. • To know that a structure is something that has been made and put together. • To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move.	**Pavilions** • To understand that wide and flat based objects are more stable. • To understand the importance of strength and stiffness in structures. • To know that a design specification is a list of success criteria for a product. • To understand what a frame structure is. • To know that a 'free-standing' structure is one which can stand on its own.	**Playgrounds** • To know that structures can be strengthened by manipulating materials and shapes. • To understand what a 'footprint plan' is. • To know that a prototype is a cheap model to test a design idea.

		• To know that a 'strong' structure is one which does not break easily. • To know that a 'stiff' structure or material is one which does not bend easily.		
Milestones	**I can choose appropriate material to make my product.** **I can make suggestions to improve my product.**	**I can change the shape of materials to improve strength and stiffness of a structure.** **I can make a stable structure.**	**I can make a free standing stable structure.** **I can describe what a frame structure is.**	**I can manipulate materials and shapes to strengthen a structure.** **I can describe what a footprint plan is.**
Technical knowledge Mechanisms	•To know there are a range of different materials that can be used to make a product. • Making simple suggestions to fix their product.	**Moving Monsters and Wheels and Axles** • To know that mechanisms are a collection of moving parts that work together as a machine to produce movement. • To know that there is always an input and output in a mechanism. • To know that an input is the energy that is used to start something working. • To know that an output is the movement that happens as a result of the input. • To know that a lever is something that turns on a pivot. • To know that a linkage mechanism is made up of a series of levers. • To know that wheels need to be round to rotate and move. • To understand that for a wheel to move it must be attached to a rotating axle. • To know that an axle moves within an axle holder which is fixed to the vehicle or toy. • To know that the frame of a vehicle (chassis) needs to be balanced.	**Sling Shot Car/Pneumatic System Toy** • To understand how pneumatic systems work. • To understand that pneumatic systems can be used as part of a mechanism. • To know that pneumatic systems operate by drawing in, releasing and compressing air.	**Pop Up Book** • To know that mechanisms control movement. • To understand that mechanisms can be used to change one kind of motion into another. • To understand how to use sliders, pivots and folds to create paper-based mechanisms. • To know that designers often want to hide mechanisms to make a product more aesthetically pleasing.
Milestones	**I can begin to make simple mechanisms that allow movement.**	**I can make a mechanism that allows movement of a product.**	**I can describe and make a pneumatic system.**	**I can make an aesthetically pleasing product that uses a number of mechanisms to produce movement.**

	I can explain the process I used to make my product move.	**I can describe the input and output of a mechanism**		
Technical knowledge Electrical systems			**Lighthouse (Torches)** • To understand that electrical conductors are materials which electricity can pass through. • To understand that electrical insulators are materials which electricity cannot pass through. • To know that a battery contains stored electricity that can be used to power products. • To know that an electrical circuit must be complete for electricity to flow. • To know that a switch can be used to complete and break an electrical circuit.	**Doodlers/Greeting Cards** • To know that series circuits only have one direction for the electricity to flow. • To know when there is a break in a series circuit, all components turn off. • To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin. • To know a motorised product is one which uses a motor to function
Milestones			**I can construct an electrical circuit to produce light in a product.**	**I can construct an electrical circuit, using a motor to produce movement in a product.**
Technical knowledge Digital World			**Electronic Charm** • To understand that in programming a 'loop' is code that repeats something again and again until stopped • To know that a Micro:bit is a pocket-sized, codeable computer • Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm.	**Navigating the world** • To know that accelerometers can detect movement • To understand that sensors can be useful in products as they mean the product can function without human input.
Milestones			**I can use computing to program and control a product.**	**I can use computing to program, moitor and control a product.**
Cooking and nutrition	•To identify some fruit and vegetables and describe them. • Making suggestions as to what fruit and vegetables they would like to use in their smoothie.	**Fruit and Veg Smoothies** • Understanding the difference between fruits and vegetables. • To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber).	**Eating Seasonally** • To know that not all fruits and vegetables can be grown in the UK. • To know that climate affects food growth. • To know that vegetables and fruit grow in certain seasons.	**What could be healthier?** • To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues. • To know that I can adapt a recipe to make it healthier by substituting ingredients.

		• To know that a blender is a machine which mixes ingredients together into a smooth liquid. • To know that a fruit has seeds and a vegetable does not. • To know that fruits grow on trees or vines. • To know that vegetables can grow either above or below ground. • To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).	• To know that cooking instructions are known as a 'recipe'. • To know that imported food is food which has been brought into the country. • To know that exported food is food which has been sent to another country. • To understand that imported foods travel from far away and this can negatively impact the environment. • To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre. • To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health. • To know safety rules for using, storing and cleaning a knife safely. • To know that similar coloured fruits and vegetables often have similar nutritional benefits.	• To know that I can use a nutritional calculator to see how healthy a food option is. • To understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects.
Milestones	**I can identify some fruit and vegetables and blend them together(with adult support) to make a healthy smoothie.**	**I can describe the difference between fruit and vegetables.** **I can make a healthy smoothie.**	**I can follow a recipe using seasonal food, explain the nutritional value and the environmental benefits.**	**I can safely prepare food.** **I can adapt recipes to make them healthier, more environmentally friendly and consider animal welfare.**
Textiles	•Explore different ways of joining fabrics together. • Making simple suggestions of what they would use to decorate their puppet.	**Puppets** • To know that 'joining technique' means connecting two pieces of material together. • To know that there are various temporary methods of joining fabric by using staples. glue or pins. • To understand that different techniques for joining materials can be used for different purposes.	**Cushions** •To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces. •To know that when two edges of fabric have been joined together it is called a seam. •To know that it is important to leave space on the fabric for the seam.	**Waistcoats** • To understand that it is important to design clothing with the client/ target customer in mind. • To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric. • To understand the importance of consistently sized stitches.

		• To understand that a template (or fabric pattern) is used to cut out the same shape multiple times. • To know that drawing a design idea is useful to see how an idea will look.	•To understand that some products are turned inside out after sewing so the stitching is hidden.	
Milestones	**I can design and make a puppet by joining fabrics together.**	**I can describe different ways to join fabric. I can draw a design and use a template.**	**I can form a seam and use applique to decorate my product.**	**I can design a clothing product taking into account the client. I can make a functioning fastening.**

Areas in red are not on Kapow mixed Art/DT scheme but are stated on our 2 year cycle!!
Y5/6 Greeting cards have been replaced by Doodlers so have changed to Doodlers as greeting card lessons no longer available.
KS1 Wheels and axles replace Fairground (same objective i.e. axles)