# St Bede's Catholic Primary School: Design and Technology Long Term Plan - Cycle A

Please ensure all objectives from the progression document are covered across the year.

| Year | Autumn | Spring | Summer |
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| 1/2 | **Materials**<br><br>**Focus:To plan, design and build a stable structure to a given criteria, evaluating the outcome.**<br>**Suggestion**:Linked to the English text of the, The Three Little Pigs. Look at the materials the pigs used to build their houses. Explore strength and stability. Look at how to join materials to add strength and stability. What would make a good join? Children work in ability groups to plan, design and build a house. Could link weaving technique for straw, overlapping of lollipop sticks ( strengthening), lego bricks, or stones.<br>A test could be carried out at the end ( with hairdryer) to test the strength of the structure.<br><br>Key Skills Covered:<br>**Y1**<br>• To develop design criteria with a group and support.<br>• To make simple diagrams to show design.<br>• To cut safely using tools provided<br>• To begin to show a range of cutting and shaping techniques e.g. cutting, folding, tearing etc.<br>• To begin to demonstrate a range of joining techniques e.g. glueing etc.<br>• To begin to use their understanding of materials and their properties to strengthen, stiffen and reinforce products.<br>• To begin to explore objects to identify likes and dislikes.<br><br>**Y2**<br>• To design products that have a clear purpose and an intended user.<br>• To make diagrams to show the design.<br>• To develop their design criteria.<br>• To cut materials safely using tools.<br>• To measure and mark out to the nearest cm.<br>• To demonstrate a range of joining techniques e.g. glueing, hinges etc | **Fantastic Firsts**<br><br>**Focus: To investigate first inventions from the past, how they were made, the materials used, moving parts and how they move. To plan, design, make and evaluate an object with moving parts e.g. wheels**<br>**Suggestion**: Explore first inventions, car, train, bicycle, rocket,boat, aircraft, telephone, light bulb etc. Look at the materials used to make the product. Did it have moving parts? How did they move?What made them move? Do they have a motor, light etc<br><br>Key Skills Covered:<br>**Y1**<br>• To begin to explore how products have been created.<br>• To make simple diagrams to show my design.<br>• To design products that have a clear purpose and an intended user with support.<br>• To cut safely using tools provided.<br>• To begin to use tools to practise for instance, drilling, glueing,nailing, to make and strengthen<br>• To begin to make products using for instance, levers, wheels and winding mechanisms.<br>• To begin to refine my design as they work.<br>• To begin to choose the right materials for making a product according to the properties needed.<br>• To begin to use their understanding of materials and their properties to strengthen, stiffen or reinforce a product.<br>• To develop an understanding of how to use mechanical systems like gears, pulleys, levers, linkages in their design and products.<br>• To develop an understanding of how to use simple electrical circuits that include switches and bulbs.<br>• To evaluate the design product against the design criteria.<br>• To begin to show an understanding of how historical events or people have helped shape the technological world today. | **Holidays**<br><br>**Focus: To plan and make a healthy picnic lunch including a bag to carry it. To look at a balanced diet, preparation of food skill, health and hygiene.**<br>**Suggestion:** Looking at holiday time and trips to parks, beaches etc discuss food and snacks that we take. Yr1. Talk about a balanced diet and how we should incorporate items from each food group.What food should we take? What would we need to make a sandwich? How would we make a bowl of fruit? Look at food hygiene and safety. Cutting and spreading skills.<br><br>Key Skills Covered:<br>**YR1**<br>• To begin to know how to be healthy.<br>• To begin to show understanding of a varied diet.<br>• To show some understanding of where food comes from.<br>• To cut, peel or grate ingredients safely and hygienically with support.<br>• To begin to measure and weigh using measuring cups or electronic scales.<br>• To begin to assemble or cook ingredients.<br>• To show some understanding of safety when cooking/working with ingredients.<br>• To begin to suggest improvements to existing design.<br><br>**YR2**<br>• To talk about how to be healthy.<br>• To show an understanding of a varied diet.<br>• To talk about where food comes from.<br>• To cut, peel or grate ingredients safely and hygienically.<br>• To measure or weigh using measuring cups or electronic scales.<br>• To assemble or cook ingredients.<br>• To show an understanding of safety when cooking/working with ingredients.<br>• To evaluate their design of product against their own design criteria.<br>• To suggest improvements to existing design. |

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| | • To choose the right materials for making a product according to the properties needed.<br>• To use their understanding of materials and their properties to strengthen, stiffen or reinforce products.<br>• To explore objects to identify likes and dislikes.<br>• To suggest improvements to existing design.<br><br>**Key vocabulary:**<br>Plan, design, build, stable, structure, evaluate, strengthen, reinforce, join, improvements, materials | **Y2**<br>• To explore how products have been created.<br>• To make diagrams to show my design.<br>• To develop my own design criteria.<br>• To cut materials safely using tools.<br>• To measure and mark out to the nearest cm.<br>• To demonstrate a range of joining techniques e.g gluing, hinges, combining materials to strengthen.<br>• To use materials to practise for instance drilling, screwing, gluing, and nailing to make and strengthen products.<br>• To create products using for instance, levers, wheels and winding mechanisms.<br>• To make products refining the design as their work progresses.<br>• To use their understanding of materials and their properties to strengthen, stiffen or reinforce products.<br>• To understand and use mechanical systems like, gears, pulleys, wheels, levers and linkages in their design and product.<br>• To understand and use simple electrical circuits that include for instance switches, bulbs, buzzers or motors in their products.<br>• To evaluate their design against their own design drawing.<br>• To talk about how historical events or people have helped shape the technological world today.<br>**Key vocabulary:**<br>Inventions, materials, historical, mechanism, mechanical, winding, circuit, lever, refining | **Key vocabulary:**<br>Hygiene, safety, balanced, diet, healthy, cut, grate, peel, spreading, cutting, weigh, stitch |
| **3/4** | **Fantasy Stories**<br><br>**Focus**: To improve design, stitching, sewing, cutting and measuring skills by making a cushion to represent a fantasy story of your choice.<br>The fabric used will be from art in the first half term.<br>**Suggestion:** To investigate cushions. Look at how they are made, how many seams do they have? How do they fasten? What is inside them to make them soft? What fabric has been used?Do they have any additional detail for decoration? In their opinion what is needed for a cushion to be good?<br>Think about the fabric they dyed in the first half term, this was for the background, what can you do to make it represent an image from a fantasy world? Children design and plan an image they would like to create as decoration. | **Romans**<br><br>**Focus:** To explore what the Romans ate and find recipes from their time. To plan, design and make a food product, safely and hygienically, using scales for measurements.To use tools safely and measure accurately.<br><br>**Suggestion:** Compare recipes from Roman times to today. What is different, what is the same?Why do you think they used those ingredients?How would they store their food, did they have refrigerators? What would they cook with? What utensils would they have, would they be the same as today?When we cook we talk about safety and hygiene, would it be the same in those times?From their findings children think about designing/ creating | **Light**<br><br>**Focus:** To investigate different type of torch, their brightness, how they are made, how they operate, what their casing is like, comparing results, before designing, planning and making their own torch for a specific purpose, using an electrical circuit.<br>**Suggestion:** To look at a variety of torches.Compare to each other. Why is the size of the casing different? Are the bulbs the same size? Do they have more than one bulb? What colour light do they have? How do they work?look at electrical circuits with switch, battery and bulb.Children then look to design their own torch, incorporating an electrical circuit and bulb. Children decide on the shape and materials to be used. They could think about how they would change the colour of the light? Also to consider, what is the purpose of their torch, what will they use it for? |

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| | K<br><br>**Key Vocabulary:**<br><br>**Stitching, running stitch, back stitch, textiles, template, design, accuracy, measurement** | their own product, but must improve the recipe by adding different ingredients, flavourings, colours etc.<br><br>Recipe- Ancient Roman honey cookies with sesame seeds<br><br>Key Skills Covered<br>**YR3**<br>• To put together a plan showing the equipment and tools they will need..<br>• To choose the right ingredients for the product.<br>• To say what to do to be hygienic and safe.<br>• To use equipment safely.<br>• To make sure the product looks good.<br>• To describe how my combined ingredients come together.<br>• To evaluate own product.<br>• To suggest a change that could be made to improve a product.<br>**YR4**<br>• To design with purpose by identifying opportunities to design.<br>• To prepare ingredients hygienically using appropriate tools.<br>• To measure ingredients to the nearest gram.<br>• To follow a recipe.<br>• To assemble or cook ingredients, controlling the temperature of the oven or hob if cooking.<br>• To refine work and techniques as my work progresses, continually evaluating the product design.<br>• To improve upon existing designs, giving reasons for choices.<br><br>**Key Vocabulary:**<br><br>**Recipe, compare, hygiene, storage, utensils,** | Key Skills Covered<br>**YR3**<br>• To describe a design using an accurately labelled diagram.<br>• To use a range of tools and equipment accurately.<br>• To measure, mark out, assemble and join materials and components with some accuracy.<br>• To choose textiles for a purpose.<br>• To think about how to make a product strong.<br>• To devise a template.<br>• To be able to look at products and talk about how they work.<br>• To practise evaluation skills by evaluating existing products.<br><br>**YR4**<br>• To create cross-sectional diagrams to demonstrate design,<br>• To cut materials accurately and safely by selecting appropriate tools.<br>• To measure and mark out to the nearest mm.<br>• To make products by working efficiently e.g. carefully selecting materials etc.<br>• To choose suitable techniques to construct products.<br>• To strengthen products using suitable techniques.<br>• To apply appropriate cutting and shaping techniques that include cuts within the perimeter of the materiale.g. Slots or cut-outs.<br>• To use scientific knowledge of transference of forces to choose appropriate mechanisms for a product e.g. levers, winding mechanism, pulleys, gears, switches.<br>• To disassemble products to understand how they work.<br>• To identify some great designs in all areas of study to generate ideas for design.<br><br>**Key Vocabulary:**<br><br>ey Skills Covered:<br>**Y3**<br>• To show that my design meets a range of requirements.<br>• To use a range of tools and equipment accurately. |

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| | | | • To measure, mark out, assemble and join materials and components with some accuracy.<br>• To practise evaluation skills by evaluating existing products.<br>• To choose textiles for a purpose.<br>• To join textiles of different types in different ways.<br>• To explain how to join things in different ways.<br>• To devise a template.<br>• To evaluate own product.<br>**Y4**<br>• To design with purpose by identifying opportunities to design.<br>• To cut materials accurately and safely by selecting appropriate tools.<br>• To measure and mark out to the nearest mm<br>• To understand the need for a seam allowance.<br>• To join textiles with appropriate stitching.<br>• To make products by working efficiently e.g carefully, selecting materials etc.<br>• To apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material e.g. slots or cut outs.<br>• To select appropriate joining techniques.<br>• To select the most appropriate techniques to decorate textiles.<br>• To create a series of parallel cuts.<br>• To refine work and techniques as my work progresses, continually evaluating the product design.<br>• To improve upon existing designs, giving reasons for choices.<br>**Circuit, purpose, bulb, switch, wires, battery, powe, disassemble, template** |

| 5/6 | **WWI**<br>**Focus:** To improve textile and sewing techniques. Designing and making a product. Creating a template for the design. Accurately cut and assemble product to design criteria.<br><br>**Suggestion:** Before WW1 the Steiff teddy bear from Germany was popular, because of the war the bear was not imported to Britain for sale. Children investigate the Steiff Bear, looking at the design, shape and features. Investigate teddy bears today. How are they made? Do they look the same? Are they made from the same fabric? Are there variations in design? Do they have moving parts? Are they all one colour?<br>From their findings, children will look to design their own bear, choosing fabric, colour, features. Y5 will be a more basic shape, Yr6 to think about 3D facial features and possible moving parts.Do they want to include different fabrics and finishes in their work? Children create a template and pattern for their teddy bear. Using the pattern they cut and sew the materials improving on previous learned skills. Children look to adapt as they go along, solving problems that arise and modifying plans to improve initial design.<br><br>Key Skills Covered:<br>**Y5**<br>• To come up with a range of ideas after they have collected information.<br>• To take a users view into account when designing<br>• To cut materials more accurately and safely by selecting appropriate tools.<br>• To measure and mark out accurately to the nearest mm.<br>• To ensure a product has a seam allowance.<br>• To join textiles using simple stitches.<br>• To choose appropriate tools to cut shape and justify choices with my knowledge e.g. fabric may require sharper scissors than paper would need.<br>• To begin to use the qualities of materials to create suitable visual and tactile effects in decoration of textiles.<br>• To evaluate the design and suggest improvements, considering the materials and methods that have been used.<br>• To practise evaluation skills by evaluating existing products against criteria which has been set. | **WWII**<br>**Focus:** To improve cooking skills by creating a product with limited ingredients. To create/adapt a recipe. Improve preparation and working safely and hygienically.<br><br>**Suggestion:** To look at rationing during WW11 and dishes which were popular at that time. Look at the ingredients and how it relates to their weekly food allowance. What foods were part of their staple diet and why? Children to think about how they can make a product using part of their rationed food but also to include some food products that could be home grown to add flavour. Children to be able to scale the recipe down so that their rationed foods could last. Also consider how food could be stored to avoid waste?<br>Children plan and design a product scaling amounts accordingly. Write a detailed step-by-step plan.<br><br>Key Skills Covered<br>**Y5**<br>• To come up with a range of ideas after collecting information.<br>• To produce a detailed step-by-step plan.<br>• To understand the correct storage and handling of ingredients.<br>• To begin to measure accurately and calculate ratios of ingredients to scale up or down from a recipe.<br>• To begin to demonstrate a range of baking and cooking techniques.<br>• To begin to create and refine recipes, including ingredients, methods, cooking times and temperatures.<br>• To evaluate the final product.<br>• To evaluate the design and suggest improvements, considering the materials and methods that have been used.<br><br>**Y6**<br>• To design with the user in mind, motivated by the service a product will offer.<br>• To understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms).<br>• To measure accurately and calculate ratios of ingredients to scale up or down from a recipe.<br>• To demonstrate a range of baking and cooking techniques.<br>• To create and redefine recipes, including ingredients, methods, cooking times and temperatures. | **Has life got better for children in Britain?**<br>**Focus:** To look at transport over the years, from Victorian times till the present day. To further develop and improve planning, designing, making and adapting skills to create a moving vehicle including a sturdy structure and an electrical circuit.<br><br>**Suggestions:** To look at transport since Victorian times. Find out what a vehicle would include at that time. Choose a modern car of today and compare the difference in design and components , noting why these changes may have been made. Streamline shape, electrical windows, hybrid engines, petrol engines, radios etc Children design plans adapting shape and choices. They must include an electrical circuit, could be for lights, motor, horn etc<br><br>Key Skills Covered<br>**Y5**<br>• To come up with a range of ideas after they have collected information.<br>• To produce a detailed step-by-step plan<br>• To produce prototypes to show my ideas.<br>• To cut materials more accurately and safely by selecting appropriate tools.<br>• To measure and mark out accurately to the nearest mm.<br>• To use a range of tools expertly.<br>• To begin to create circuits using electronic kits tha employ a number of components.<br>• To begin to develop a range of practical skills to create products, cutting drilling, screwing, nailing etc.<br>• To begin to use innovative combinations of electronics and mechanics in product designs.<br>• To test and evaluate the final product.<br>• To evaluate the appearance and function against the original criteria.<br>• To explain why their finished product is going to be of good quality.<br>• To think about the functionality of their work.<br>**Y6**<br>• To use prototypes, cross sectional diagrams and computer aided designs to represent designs<br>• To cut materials with precision and refine the finis with appropriate tools e.g. sand wood after cutting etc.<br>• To show an understanding of the qualities of materials to choose appropriate tools to cut and shape. |
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| | • To explain why their product will appeal to the audience.<br>• To think about the aesthetic qualities of their work.<br>**Y6**<br>• To design with the user in mind, motivated by the service a product will offer ( rather than simply for profit).<br>• To create innovative designs that improve upon existing products.<br>• To cut materials with precision and refine the finish with appropriate tools e.g. more precise scissor cut after roughly cutting out a shape.<br>• To create objects that need a seam allowance.<br>• To join textiles with a combination of stitching techniques e.g. back stitch for seams, running stitch to attach decorations.<br>• To show an understanding of the qualities of materials to choose appropriate tools to cut and shape.<br>• To use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles.<br>• To ensure products have a high quality finish, using art skills where appropriate.<br>• To evaluate the design of products so as to suggest improvements to the user experience.<br><br>Key Vocabulary<br>Design, template, evaluate, precise, paper pattern | • To evaluate the design of products so as to suggest improvements to the user experience.<br><br>**Key vocabulary:**<br><br>**Ingredients, scale, ratio, measure, accurately** | • To create circuits using electronics kits that employ a number of components.<br>• To develop a range of practical skills to create products e.g. cutting, drilling, screwing, nailing sanding etc.<br>• To convert rotary motion to linear using cams.<br>• To use innovative combinations of electronics and mechanics in product design.<br>• To make products through stages of prototypes, making continual refinements.<br>• To ensure products have a high quality finish, using art skills where appropriate.<br>• To combine elements of design from a range of inspirational designers throughout history, giving reasons for choices.<br><br>**Key Vocabulary:**<br><br>**Innovative, electronics, prototypes, refinements, precision, streamline** |