Becontree Primary School

Design Technology Curriculum Overview

	EYFS
Birth to Three Years	• Pass things from one hand to the other. Let go of things and hand them to another person or drop them. • Develop manipulation and control. • Build independently, with a range of resources. • Explore materials with different properties. • Explore natural materials, indoors and outdoors. • Explore different materials and tools. • Explore different materials, using all their senses to investigate them. • Manipulate and play with different materials. • Use their imagination as they consider what they can do with different materials. • Make simple models to express their ideas.
Three and Four Year Olds	• Choose the right resources to carry out their own plan. For example, choosing a spade to enlarge a small hole they dug with a trowel. • Collaborate with others to manage large items, such as moving a plank safely or carrying large, hollow blocks. • Use one-handed tools and equipment, for example, making snips in paper with scissors. • Use all their senses in a hands-on exploration of natural materials. • Explore collections of materials with similar or different properties. • Explore how things work. • Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. • Explore different materials freely, in order to develop their ideas about how to use them and what to make. • Develop their own ideas and then decide which materials to use to express them. • Join different materials and explore different textures. • Use a comfortable grip with good control when holding pens and pencils • Create closed shapes with continuous lines and begin to use these shapes to represent objects
Reception	• Develop their fine motor skills so they may use a range of tools competently, safely and confidently. Suggested tools: pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons. • Explore the natural world around them. • Create collaboratively sharing ideas, resources and skills.

	Cooking and Nutrition	Textiles	Mechanisms
Year 1	**Topic: Fruit kebabs (BECONTREE)** **Skills** • To design a fruit kebab • To evaluate their kebab against their design criteria • To select and prepare fruit for a fruit kebab • To cut food safely using a knife • To understand that the way we present the fruit kebab could look more appealing as a pattern. Knowledge • To understand that our food choices should be healthy and balanced • To understand where food comes from • To understand the importance of food hygiene and safety when handling food	**Topic: Puppets (KAPOW)** **Skills** • Using a template to create a design for a puppet. • Cutting fabric neatly with scissors. • Using joining methods to decorate a puppet. • Sequencing steps for construction. • Reflecting on a finished product, explaining likes and dislikes. **Knowledge** • To look at existing products and understand that there are different types of 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. • 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. Possible trip: Bethnal Green Museum of Childhood	**Topic: Moving storybook using sliders (KAPOW)** **Skills** • Explaining how to adapt mechanisms, using bridges or guides to control the movement. • Designing a moving storybook for a given audience. • Following a design to create moving models that use levers and sliders. • Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed. • Reviewing the success of a product by testing it with its intended audience. Knowledge • A mechanism is the parts of an object that move together. • A slider mechanism moves an object from side to side or up and down. • A slider mechanism has a slider, slots, guides and an object. • Bridges and guides are bits of card that purposefully restrict the movement of the slider. To be completed near World Book Day

	Cooking and Nutrition	Structures	Mechanisms
Year 2	**Topic: Making sandwiches (BECONTREE)** **Skill** • To design a healthy sandwich • To make a healthy sandwich by selecting a type of bread and choosing their fillings as per their design • To evaluate their sandwich against their design criteria • To cut food safely using a knife • To spread butter and other sandwich fillings Knowledge • To understand the importance of food hygiene and safety when handling food • To understand that our food choices should be healthy and balanced • To understand where food comes from	**Topic: Baby Bear's Chair (KAPOW)** Skill • Using a simple design brief that outlines the intended use, target user and key features of the product to create simple design criteria. • Creating ideas with design criteria in mind. • Referring to specific parts of existing products when generating ideas • Choosing materials, ingredients or components from a wider range of materials, ingredients or components. • Explaining their choices based on the properties of materials and components. • Looking for ways to make cutting easier, for example, turning the material they are cutting, not fully closing the scissors, etc. • Choosing known geometric shapes when making. • Beginning to shape objects to improve how they work. • Discussing a range of existing products and saying what they like and dislike about them. • Comparing a range of products and explaining why some better meet different design criteria than others. • Evaluating their ideas and creations against simple design criteria. • Recognising that different structures are used for different purposes. • Exploring the features of structures. • Making stable structures from card. • Creating supporting structures to aid stability. • Using stable objects like cylinders to create structures. • Building a strong and stiff structure by folding paper. • Folding to strengthen or stiffen. • Comparing the stability of different shapes. • Identifying the weakest part of a structure. Knowledge	**Topic : Moving Vehicles (BECONTREE)** Skill • To create a design brief • Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move. • Creating clearly labelled drawings that illustrate movement. • Begin to cut large shapes and thicker materials like card. • To test and improve vehicles • To evaluate vehicles against the design brief Knowledge • To learn some techniques for strengthening and stiffening structures • An axle allows the wheel to turn without falling off. • 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. • To know some real-life items that use wheels.

		To know: • A design brief helps to decide what to make. • Design criteria are the steps for making a product successful. • Design criteria help when thinking of ideas. • Different products work in different ways and have parts that make them work. • Some properties of materials, such as hard, soft, flexible, waterproof, strong, etc. • The names of some geometric shapes, such as triangle, pyramid, square, cube, circle and sphere. • Existing products can be evaluated against design criteria. • Design criteria help to decide if their product is a success. • Improve means to make something better. • A structure is something that has been made and put together. • The shape of a structure affects its strength. • Materials can be manipulated to improve strength and stiffness. • A **strong** structure is one which does not break easily. • A **stiff** structure or material is one which does not bend easily. To be completed near World Book Day	

	Cooking and Nutrition	Mechanisms	Digital World
Year 3	**Topic: Pizza (BECONTREE)** **Skills** • To evaluate products and identify ideas to use in our own work • To design a product using ingredients for a specific purpose and audience • To appreciate taste, texture and the aesthetic qualities when designing	**Topic: Pneumatic toys (KAPOW)** **Skills** • Taking part in structured idea-generation sessions. • Coming up with more ideas and considering the feasibility of their ideas in the classroom. • Developing drawing and sketching skills with a focus on clarity and simplicity. • Developing designs by adding details and justifications about materials, tools and methods.	**Topic: Wearable Technology (KAPOW)** **Skills** • 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. • Developing design ideas through annotated sketches to create a product concept.

	• To make a plan of how to make the product • To select and use the appropriate tools • To evaluate your own product identifying any strengths and any areas for development against the original specifications • To identify any changes you would make if you repeated the task • To design packaging which is suitable for its purpose • To peel and grate vegetables safely Knowledge • To know that products are designed for different purposes and users • To understand how to handle foods safely and hygienically • To know how to prepare and cook a vegetable pizza for a party • To understand the principles of a healthy and varied diet • To investigate commercial packaging • To use sharp knives safely using a claw and bridge grip • Possible trips: Pizza Express	• Beginning to recognise the benefit of a range of diagram types of prototypes to communicate ideas. • Adding extra information on drawings or diagrams to help the user understand a design or idea. • Using thumbnail sketches that are less detailed, quick sketches. • Identifying cross-sectional diagrams that show the inside of a product and exploded diagrams that show how the parts of a product fit together. • Selecting equipment required for a series of tasks based on the plan. Explain why each piece is suitable for each stage. • Suggesting simple safety rules based on their understanding of tool dangers. • Participating in discussions about classroom safety procedures. • Cutting out more complex shapes accurately. • Choosing shapes to suit the function of a product. • Painting or colouring precisely to improve the finish. • Making facades from a range of materials. • Creating different textural effects with a variety of materials. • Analysing why specific products, designers or inventors are successful. • Evaluating their designs by comparing them against design criteria and considering feedback from peers to suggest improvements. • Evaluating how effective their chosen materials and tools were in fulfilling the design brief. • Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements. **Knowledge** • How mechanisms work. • A mechanical system can allow us to move something more easily. • Mechanical systems can have more than one mechanism that moves to make them work. • Mechanical systems are often hidden in products to make them look more appealing.	• Developing design criteria to respond to a design brief. • Following a list of design requirements. • Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm. • Analysing and evaluating an existing product. • Using feedback from peers to improve a design. Knowledge • 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. • To know that a simulator is able to replicate the functions of an existing piece of technology. • To know what the 'Digital revolution' is and features of some of the products that have evolved as a result. • To understand what is meant by 'point of sale display.' • To know that CAD stands for 'Computer-aided design'. • To know what a focus group is by taking part in one.

		• Pneumatic systems can be found in everyday objects. • Pushing air can be used to move a mechanism. • Pivots can be used to create more movement in a mechanical system. • A combination of mechanisms can improve a product	

	Cooking and Nutrition	Textiles	Structures	Electrical Systems
Year 4	**Topic: Salads (Food a fact of life)** Skills • use the internet to research a selection of different salads. • prepare ingredients for a salad bar by safely using the bridge hold, claw grip and grating techniques. • create a questionnaire to research the requirements and preferences of their salad recipient. • identify design criteria for a salad based around the requirements of an individual and purpose. • apply their knowledge, experience and research findings to design a salad which meets their design criteria • communicate their salad design through notes and sketches. • make the salad they have planned safely and hygienically. • select the correct equipment for different food preparation tasks. • evaluate their salad against the design criteria and feedback from others. Knowledge • recall and discuss different types of salad. • identify salad ingredients and sort them into the correct *eatwell plate* food groups. • explain the key messages from each *eatwell plate* food group. • explain that a third of the food we eat should come from the Fruit and vegetable group and a third should come from the Bread, rice, potatoes, pasta and other	**Topic: Book sleeves (KAPOW)** **Skills** • Writing design criteria for a product, articulating decisions made. • Designing a personalised book sleeve. • Making and testing a paper template with accuracy and in keeping with the design criteria. • Measuring, marking and cutting fabric using a paper template. • Selecting a stitch style to join fabric. • Sewing neatly using small regular stitches. • Incorporating a fastening to a design. • Testing and evaluating an end product against the original design criteria. Knowledge • To know that a fastening is something that holds two pieces of material together. • To know that different fastening types are useful for different purposes. • To know that creating a mock-up (prototype) of their design is	**Topic: Making a marble run (BECONTREE)** **Skills** • Design and make a marble run according to the design criteria and whether it will appeal to a specific person • Designing a stable marble run that is aesthetically pleasing and selecting materials to create a desired effect. • Evaluating own work and the work of others based on functionality and stability and make improvements by considering the views of others. • Suggesting points for modification of the individual designs. • To use appropriate cutting, joining and paper engineering techniques • To join paper and card by using slots, tabs and slots • To join tubes to flat surfaces using flanges • Building a strong and stiff free-standing structure by folding paper that will support the weight of a marble. Knowledge • To know that materials can be manipulated to improve strength and stiffness. • To know that a structure is something which has been formed or made from parts. • To know that aesthetics are how a product looks. • To know that a marble run is a game where the marble will move freely around the course. • To know that a 'free-standing' structure is one that can stand on its own.	**Topic: Light-up poster KAPOW** **(One lesson linked to science topic and adapted to link to Anglo Saxons history topic)** **Skills** • Develop a range of initial ideas and generate a final design for the electric poster with consideration for the client's needs and design criteria. • Planning the positioning of the bulb (circuit component) and its purpose • Mounting the poster onto corrugated card to improve its strength and withstand the weight of the circuit on the rear • Fitting an electrical component (bulb) • Learning to give and accept constructive criticism on their work and the work of others Knowledge • To understand that an electrical system

	• starchy foods group and explain the key messages from these two food groups. • recall that foods in the two largest food groups provide fibre and explain the role of fibre in the diet. • recall the get ready to cook steps, explain how they should be carried out and why they are necessary. • use a range of sensory vocabulary to describe a selection of foods. • recall foods associated with a selection of countries around the world.	useful for checking ideas and proportions. • To learn how to do a running stitch and a cross stitch to join their material To be completed near World Book Day	• To understand that wide and flat based objects are more stable. • To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move. • 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.	is a group of parts (components) that work together to transport electricity around a circuit. • To understand that an electric product uses an electrical system to work (function).

	Cooking and Nutrition	Structures, Mechanisms, Digital World and Electrical Systems.
Year 5	**Topic: Biscuits (adapting a recipe) KAPOW** **Skills** • Evaluating and comparing a range of products. • Following a baking recipe. • Understanding safety and hygiene rules. • Identifying a target audience. • Designing a biscuit within a given budget. • Suggesting modifications. • Adapting a recipe. • Conducting market research. • Evaluating an adapted recipe. Knowledge • That the amount of an ingredient in a recipe is known as the 'quantity'. • That safety and hygiene are important when cooking. • The following cooking techniques: sieving, measuring, mixing/stirring, cutting out and shaping. • The importance of budgeting while planning ingredients for a recipe. • That products often have a target audience.	**Topic: Fairground rides BECONTREE** **Skills** • To design and make a fairground ride using a frame structure to create support for the base • To attach a motor to aid their fairground ride's movement. • To attach wood using a glue gun safely • To explore using pulleys and/or gears and axles • To use a computer-aided program (Crumble) to control fairground rides (speed and direction) • To understand and draw cross section and exploded diagrams • Independently measuring and marking wood accurately. • Using the correct techniques to saw safely. • Measuring and marking out wood independently • Reinforce corners to strengthen a structure. • To decorate fairground rides for an aesthetically pleasing effect. Knowledge • To apply their knowledge of block coding to control the speed and direction of the motor. • To understand how to work safely with new tools • To understand how gears and pulleys can be used as a mechanism for movement • To use a motor for a purpose • To know how to strengthen a frame • To know what existing fairground rides exist so that they can create their own appealing idea.

	Cooking and Nutrition	Textiles	Mechanisms
Year 6	**Topic: Seasonal savoury vegetable turnovers BECONTREE** Skills • Investigate and evaluate ingredients using **sensory vocabulary**; • Use research into **seasonality, provenance and food miles** to make and justify informed ingredient choices; • Develop a **design specification** for a savoury food product based on an intended consumer; • Select and combine ingredients appropriately for flavour, texture and purpose; • Follow and adapt a recipe with increasing independence; • **Weigh and measure ingredients accurately**; • Select and use appropriate utensils and equipment safely; • Use appropriate preparation techniques, including **chopping, slicing, grating and peeling**; • Use the **rubbing-in method** and combine ingredients to make shortcrust pastry; • **Roll, fill, fold, seal and crimp** pastry to create an individual savoury turnover; • Apply a glaze and prepare a pastry product appropriately for baking; • Work safely and hygienically when preparing and cooking food; • Evaluate the finished product **against the design specification**, including its sensory qualities, and suggest purposeful improvements.	**Topic: Stuffed Toys KAPOW** **Skills** • Designing a stuffed toy considering the main component shapes required and creating an appropriate template. • Considering the proportions of individual components. • Creating a 3D stuffed toy from a 2D design. • Measuring, marking and cutting fabric accurately and independently. • Creating strong and secure blanket stitches when joining fabric. • Threading needles independently. • Using appliqué to attach pieces of fabric decoration. • Sewing blanket stitch to join fabric. • Applying blanket stitch so the spaces between the stitches are even and regular. • Testing and evaluating an end product and giving points for further improvements. Knowledge • To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric. • To understand that it is easier to finish simpler designs to a high standard. • To know that soft toys are often made by creating appendages separately and then attaching them to the main body.	**Topic: Pop-up books KAPOW** Skills • Designing a pop-up book which uses a mixture of structures and mechanisms. • Naming each mechanism, input and output accurately. • Storyboarding ideas for a book. • Following a design brief to make a pop up book, neatly and with focus on accuracy. • 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. • Evaluating the work of others and receiving feedback on own work. • Suggesting points for improvement. Knowledge • 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 a design brief is a description of what I am going to design and make. • To know that designers often want to hide mechanisms to make a product more aesthetically pleasing. To be completed near World Book Day

	Knowledge • Food is **grown, reared, caught or processed** and that some foods go through several stages of production; • **Seasonality** refers to the times of year when foods are naturally grown and harvested; • Foods available outside their UK growing season may be **imported, stored or grown under protected conditions**; • The **country of origin** of ingredients can be used to investigate where food has come from; • F**ood miles** describe the distance food travels from its source to the consumer and can be one consideration when making informed food choices; • Ingredients have different **taste, texture, aroma and appearance**, and that these properties can change when cooked; • Different ingredients can be selected and combined to meet the needs and preferences of an **intended consumer**; • **Shortcrust pastry** is made by rubbing fat into flour and adding liquid to form a dough; • Safe food preparation, hygiene and appropriate cooking are important when producing food**.**	• To know that small, neat stitches which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely	