



Wincheap Foundation Primary School



Design and Technology

We use Kapow to support teaching and learning in Design and Technology

	Autumn Term	Spring Term	Summer Term
EYFS	<p>Structures: Junk Modelling</p> <p>Explore and investigate the tools and materials in the junk modelling area. Investigate cutting different materials. Learn how to plan and select the correct resources needed to make a model. Verbally plan and create a junk model. Share a finished model and talk about the processes in its creation. Explore different ways to join materials together temporarily.</p> <p><i>Optional Seasonal Projects:</i> Autumn: Hibernation Boxes Christmas: Sliding Santa Chimneys</p>	<p>Textiles: Bookmarks</p> <p>Develop threading and weaving skills. Practise and apply weaving skills to a specific material e.g. paper. Practise and apply threading skills with specific materials e.g. hessian and wool. Use threading or sewing to design a product (bookmark). Create a textiles product (bookmark) following their own design. Evaluating bookmarks – children reflect on how they have achieved their aims.</p> <p><i>Optional Seasonal Projects:</i> Spring: Flower threading Hanging Easter Egg Decoration</p>	<p>Structures: Boats</p> <p>Understand what waterproof means and to test whether materials are waterproof. Test and make predictions for which materials float or sink. Compare the uses of boats. Investigate how the shape and structure of boats affects the way they move. Design a boat. Create a boat based upon their own design.</p> <p><i>Optional Seasonal Project Summer: Making a Rainbow Salad</i></p>
Year 1	<p>Structures: Stable Structures</p> <p>Explain that structures are things that are built and have a purpose. Understand that structures with a wider base are more stable than ones with a narrow base. Explain that extra weight added to the base of a structure makes it more stable. Design a product for a particular user. Use a sketch to show ideas. Choose the best method for joining the parts of the product. Make evenly spaced cuts. Use scissors to cut out a shape neatly and accurately. Explain what they like and dislike about their final product.</p>	<p>Textiles: Simple Stitches</p> <p>Name some objects made of fabric. Describe the look and feel of different fabrics. Thread a needle. Make a series of stitches that match each other in embroidery fabric. Choose colours and shapes for a design. Explain their ideas to others verbally and with a sketch. Choose materials based on their texture. Follow the general position of the lines of a design with stitches. Say what they like about someone else's stitching and what could be made better.</p>	<p>Cooking and Nutrition: Smoothies</p> <p>Describe fruits and vegetables and explain how to identify fruits. Name a range of places that fruits and vegetables grow. Describe basic characteristics of fruit and vegetables. Prepare fruits and vegetables to make a smoothie.</p>
Year 2	<p>Structures: A Chair For a Bear</p> <p>Describe how chairs are made for different users and purposes. Explain how design briefs and design criteria help when making a new product. Name some shapes that are stronger than others.</p>	<p>Mechanisms: Making a Moving Monster</p> <p>Identify the correct terms for levers, linkages and pivots. Analyse popular toys with the correct terminology. Create functional linkages that produce the desired input and output motions.</p>	<p>Mechanisms: Fairground Wheel</p> <p>Describe how axles help wheels move a vehicle and design and label a working fairground wheel. Evaluate different designs. Describe the properties of different materials and select appropriate materials for the wheel.</p>

	<p>Describe how making a material thicker makes it more stiff.</p> <p>Understand and use the vocabulary of strong, weak, stiff and flexible.</p> <p>Make a stable chair structure for a particular user.</p> <p>Select suitable materials and join them securely.</p> <p>Evaluate a product against the design criteria.</p> <p>Improve parts of a product based on the design criteria.</p>	<p>Design monsters suitable for children, which satisfy most of the design criteria.</p> <p>Evaluate their two designs against the design criteria, using this information and the feedback of their peers to choose their best design.</p> <p>Select and assemble materials to create their planned monster features.</p> <p>Assemble the monster to their linkages without affecting their functionality.</p>	<p>Build a stable structure, test elements of the design and adapt the design as necessary.</p> <p>Make the wheel rotate, evaluate a wheel mechanism and adapt it as necessary.</p> <p>Recall that a survey is used to find out what people like, tally results and use the results to inform the design.</p> <p>Add pods for the correct number of people and ensure that the pods stay upright when rotating around a fixed point.</p> <p>Explain the decisions for the pod design.</p>
Year 3	<p>Cooking and Nutrition: Eating seasonally</p> <p>Explain that fruits and vegetables grow in different countries based on their climates and identify which grow where.</p> <p>Understand that seasonal fruits and vegetables grow in a given season and that eating them in season positively affects the environment.</p> <p>Identify which foods grow in which season and find recipes that contain seasonal foods.</p> <p>Know that importing food impacts the environment.</p> <p>Identify the equipment used to prepare food and explain why food needs to be prepared safely.</p> <p>Describe the taste of various fruits and vegetables and identify flavours.</p> <p>Design a seasonal dish and describe the ingredients' nutritional benefits.</p> <p>Evaluate the dishes and give and receive feedback to identify strengths.</p>	<p>Structures: Product Packaging</p> <p>Investigate and analyse a range of existing packaging products, identifying shapes, form and function.</p> <p>Evaluate what makes good packaging and what shapes suit which products.</p> <p>Design, make and evaluate product packaging, following design criteria.</p> <p>Use CAD software (Sketchpad) to create 2D shapes that form the net of 3D shapes, including the tabs.</p> <p>Give and receive feedback and identify errors in nets to help suggest improvements.</p> <p>Cut, fold and stick the parts of a net together to make a 3D shape.</p> <p>Use ribbing to strengthen packaging.</p> <p>Decorate packaging with an intentional design that shows its function.</p>	<p>Textiles: Cross Stitch and Applique</p> <p>Demonstrate their ability to use cross-stitch as a decorative feature or to join two pieces of fabric together.</p> <p>Develop appliqué designs based on design criteria.</p> <p>Design, cut and shape their template for with increasing accuracy.</p> <p>Decorate their cushion using a variety of techniques, such as appliqué, cross-stitch, beads, buttons and pinking.</p> <p>Measure and attach a ribbon with a running stitch.</p> <p>Recognise different types and qualities of fabrics.</p> <p>Explain the aesthetic and functional properties of some of their material choices.</p>
Year 4	<p>Mechanical systems: Mechanical cars</p> <p>Describe key design improvements in the history of the automobile.</p> <p>Measure and compare the distance travelled by different mechanical cars.</p> <p>Choose and use appropriate tools and materials to make mechanical cars.</p> <p>Draw exploded diagrams and annotated sketches of my different mechanical cars.</p> <p>Use a problem statement to identify the design criteria.</p> <p>Assess the product against the design criteria.</p> <p>Conduct market research into existing products.</p> <p>Provide specific feedback and adjust my design to incorporate customer feedback.</p>	<p>Electrical Systems: Torches</p> <p>Identify electrical products and explain why they are useful.</p> <p>Help to make a working switch.</p> <p>Identify the features of a torch and how it works.</p> <p>Describe what makes a torch successful.</p> <p>Create suitable designs that fit the success criteria and their own design criteria.</p> <p>Create a functioning torch with a switch according to their design criteria.</p>	<p>Structures: Helmets</p> <p>Describe what a shell structure is and describe what makes an effective helmet.</p> <p>Design a helmet for a specific user by choosing appropriate features.</p> <p>Explain layering techniques used to strengthen a helmet.</p> <p>Use layering techniques to make a helmet and reflect on the process.</p> <p>Evaluate the strengthening required in the helmet and justify appropriate strengthening techniques.</p> <p>Follow a design plan and use appropriate techniques to strengthen and stiffen the helmet.</p> <p>Communicate with peers when making improvements.</p> <p>Analyse helmets' strengths and weaknesses and evaluate how they work for their purpose.</p>
Year 5	<p>Mechanical Systems: Gears and Pulleys</p> <p>Give examples of machines that use gears and/or pulleys.</p> <p>Describe how gears and pulleys work and their purpose.</p> <p>Design and make a gear and pulley system.</p>	<p>Electrical Systems: Wobble Bots</p> <p>Identify some simple elements of a circuit (battery, wires, bulb, motor and switch) and explain their function.</p>	<p>Cooking and Nutrition: Developing a Recipe</p> <p>Describe the process of beef production.</p> <p>Research a traditional recipe and make changes to it.</p>

	<p>Write a problem statement. Write questions for market research, provide feedback and research market competitors. Write and use a design brief to guide design. Evaluate a product against a set of design criteria, provide useful feedback and incorporate changes. Draw and annotate an eco-gadget bike design.</p>	<p>Explain that for electricity to flow around a circuit, it must be closed. Describe a motor as an electrical circuit component that changes electricity into movement. Provide examples of motorised products that use movement to rotate or spin different parts. Make a product that uses a motor. Design a motorised product for a particular purpose. Determine appropriate design criteria based on the function of the proposed product. Explain design choices based on the desired functionality of a product. Create an innovative motorised product based on knowledge of existing products. Discuss the effectiveness of a product while considering the design criteria.</p>	<p>Add nutritional value to a recipe by selecting ingredients. Prepare and cook a version of bolognese sauce.</p>
<p>Year 6</p>	<p>Textiles: Waistcoats Explore and compare real textile products, thinking about how they look, how they are used and how they affect the environment. Develop and test design ideas by creating pattern pieces and making prototypes to explore how well they work. Use labelled drawings and diagrams to show clear design ideas, including how pattern pieces will fit together. Use fabrics and materials suitable for the product, thinking about how they look and how well they work. Make textile shapes by carefully cutting, folding and joining materials to match the design. Join fabrics securely using stitches or knots and add decorative details to improve the appearance. Use pins, scissors and other tools carefully to keep fabric flat and measure and cut accurately. Evaluate how well the final product meets the design criteria and suggest improvements.</p>	<p>Digital world: Navigating the World Incorporate key information from a client's design request such as 'multifunctional' and 'compact' in their design brief. Write a program that displays an arrow to indicate cardinal compass directions with an 'On start' loading screen. Identify errors (bugs) in the code and suggest ways to fix (debug) them. Self and peer evaluate a product concept against a list of design criteria with basic statements. Identify key industries that use 3D CAD modelling and why. Recall and describe the name and use of key tools used in Tinkercad (CAD) software. Combine more than one object to develop a finished 3D CAD model in Tinkercad. Complete a product pitch plan that includes key information.</p>	<p>Structures: Playgrounds Create five apparatus designs, applying the design criteria to their work. Make suitable changes to their work after peer evaluation. Make roughly three different structures from their plans using the materials available. Complete their structures, improving the quality of their rough versions and applying some cladding to a few areas. Secure their apparatus to a base. Make a range of landscape features using a variety of materials which will enhance their apparatus.</p>