

Wortham Primary School

Design & Technology Curriculum

Class	Structures & Mechanisms	Cooking and Nutrition	Structures & Mechanisms	Textiles
Bumblebee class YR. R/1	Making a kite	Stir fry	Structures	Making hand/finger puppets
Hedgehog class Yr. 2/3	Making a Vehicle – Wheels and Axels	Wortham Bakery	Moving Pictures - Lever and Sliders	Bookmark
Barn Owl class Yr. 3/4	Making a Photo Frame	Savoury Pastry Slice	Mechanics	Patchwork Blanket – Applique
Otter class	Monitoring and Control			Making a Drawstring Bag



Bumblebee Class

Title	Making a Kite	
Overview	The aim of this unit is to develop the children's knowledge, understanding and skills needed to engage in designing and making. This unit will aim to allow children the opportunity to explore designs and evaluate these, before designing their own product, using a range of materials and tools and evaluating their own product. Children will be given the opportunity to explore structures and how they are able to make their kite stronger, stiffer and more stable.	
	 EYFS ➤ Children can construct with a purpose in mind, selecting appropriate resources and adapting work where necessary. ➤ Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. 	
Vocabulary	Kite, design, tools, resources, material, construct/build, fly, evaluate, colour, texture, strength, stiff, stable	
Key Learning Objectives	 To understand what a kite is and how it is used. To explain what they will be designing and making. To represent their ideas for a kite through writing and drawing. To choose suitable resources and tools. To explore kite shapes and structures, linking to strength and stability To construct a kite based on their own design. To complete simple evaluations about their design. 	
Suggested Learning Experiences	 Discuss our own experiences of flying kites Look at key events and individuals involved in the making of kites. Investigate and analyse a range of existing kites, linking to strength and stability. Plan and design a kite through drawings and discussion including the tools and materials needed Construct a kite using tools and materials safely Fly and evaluate their kite Discussion throughout the designing, planning, making and evaluating processes 	



Tiálo	Chin Em.
Overview	 Stir Fry The aim of this unit is to provide children with the knowledge and understanding of the basic principles of nutrition and healthy eating. Children will be taught where food comes from. The children will be able to cut and prepare the vegetables for the stir fry. EYFS ➤ Children know the importance of a healthy diet and are able to talk about ways to keep healthy. ➤ Children show good control and coordination in small movements and can handle tools and equipment effectively and safely.
Vocabulary	Healthy eating/diet, ingredients, recipe, vegetables (onion, pepper, courgette, beansprouts), knife, chopping board, safety, taste, flavour
Key Learning Objectives	 To understand where food comes from (plants and animals) To identify the five food groups and understand that we need to have a healthy balanced diet To explain why eating fruit and vegetables is important (Five portions of fruit and vegetables a day) To explore and evaluate existing products. To prepare and safely cut the vegetables. To observe the stir fry being cooked and understand the process. To taste and evaluate the stir fry.
Suggested Learning Experiences	 Sort food into the five food groups Explore and taste a selection of vegetables, discussing the vegetables the taste, smell, texture and appearance. Discuss our own experiences of eating fruit, vegetables and stir frys Research different vegetables where they come from? Why they are good for you? Grow beansprouts. Look at different stir fry recipes and ingredients. Write our own recipe for stir fry, discussing the reasoning for our recipe choice Use tools and techniques to prepare vegetables safely and hygienically Prepare, cook and taste the stir fry. Discussion throughout the designing, planning, making and evaluating processes



Title	Structures	
Overview	The aim of this unit is to develop the children's knowledge, understanding and skills needed to construct, develop and revise the structures of bridges and towers. Children will learn about the different types of bridges and towers and then make these using construction materials and joining techniques. Once made, children will evaluate and improve their structure to make it stronger and more stable.	
	 EYFS Children can construct with a purpose in mind, selecting appropriate resources and adapting work where necessary. Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. 	
Vocabulary	Bridge, suspension bridge, arch bridge, beam bridge, cantilever bridge, ropes, chain, cables, pillars, vertical, horizontal, steel, iron, metal, tower, base, apex, stiffer, stable, stronger, joining together, rolling, folding, layering, rigid,	
Key Learning Objectives	 To know the purposes and properties of bridges and towers To identify the different types of bridges and towers To know and explore methods of building a bridge To know and explore how bridges can be made stronger, stiffer and more stable To know and explore methods of building a tower To know and explore how towers can be made stronger, more stable and rigid 	
Suggested Learning Experiences	 Look at famous bridges and towers and identify their type and purpose Discuss have we seen bridges and towers before, are there any in our local area? Design, construct and evaluate their bridge and tower Improve their design to make it stronger and more stable Discussion throughout the designing, planning, making and evaluating processes 	



Tid.	88-1-2	
Overview	Making hand/finger puppets The aim of this unit is for children to handle, manipulate and enjoy using a range of materials. Children will first explore and evaluate existing puppets, before designing and making hand or finger puppets using a range of materials, tools and techniques.	
	 EYFS Children can construct with a purpose in mind, selecting appropriate resources and adapting work where necessary. Children show good control and coordination in small movements and can handle tools and equipment effectively and safely. 	
Vocabulary	Textile, colour, material, puppets, purpose, audience, fabric, join, glue, sew, staple, strength, decoration, evaluate	
Key Learning Objectives	 To sort materials into different colours and textures To explore and evaluate a range of existing puppets, including purpose and intended audience Draw on research to generate own ideas, drawing plan and deciding tools and materials necessary. Identify/investigate ways of joining pieces of fabric and how that may strengthen the puppet. Use tools safely to measure, mark out, cut, and join fabric to create and decorate a puppet to improve appearance Evaluate your own design 	
Suggested Learning Experiences	 Explore different types of puppets – materials, form, purpose, including how they are joined together. Do you like them? Is there anything you don't like about them? Explore ways of joining fabric – including sewing, gluing, stapling Design a hand/finger puppet thinking about what / who it will be used for – think about material and appearance Thread a needle and practice a running stitch Begin to decide suitable order to complete tasks Create puppet using a template, demonstrating shaping, cutting and joining skills Add decorations to the puppet to improve appearance Evaluate your puppet in relation to the design criteria Discussion throughout the designing, planning, making and evaluating processes 	



Hedgehog Class

Title	Making a Vehicle
Overview	The aim of this unit is to for the children to learn how wheels and axles work Children will evaluate existing moving vehicles and mechanisms and to apply this knowledge to plan, design, make and evaluate their own vehicle with a moving mechanism.
Vocabulary	Wheels, axles, pneumatic systems, vehicles, rotate, movement, stationary, model
Key Learning Objectives	 To understand how wheels and axles work. To understand how pneumatic systems work. To evaluate existing products against a given success criteria (consider the product sustainability). To design a moving vehicle based upon a design criteria. To confidently explain their design and design choices. To plan the process of making, considering the stages needed to make the product. To select tools and materials, using these safely with growing accuracy. To make and evaluate my moving vehicle.
Suggested Learning Experiences	 Look at a range of vehicles, including 'real life' vehicles, observing and discussing the mechanics of movement Discuss how the mechanisms have been designed and made, including the materials used and the sustainability Explore different materials to make the mechanism with, creating several models Explain the choices of materials, tools, function and aesthetics Receive a letter from a Toy Shop to ask them to make a new vehicle. They will send the children the success criteria. Challenge – Can you include a pneumatic system? Discussion, reflection and reasoning opportunities throughout the designing, planning, making and evaluation processes Self and Peer Assessment according to the success criteria



Title	Bread and Rolls / Wortham Bakery
Overview	The aim of this unit is for the children to learn about the process of making bread, particularly the process of kneading, proving and the effect yeast has on the dough. The children will also learn about the vast range of bread types that are on offer and the bread types from different countries.
Vocabulary	bloomer, farmhouse, chapatti, knot, crusty, granary, wholemeal, baguette, soda, bagel, tortilla, knead, prove, dough, yeast, pitta, plait, wrap
Key Learning Objectives	 To know the five food groups and explain what each food group provides to keep us healthy (include water) To know that food is grown, reared and caught across the world To know about the range of bread types and the countries they originate from. To evaluate a range of different types of bread and rolls. To know that food is processed into ingredients To understand the process of making bread. To design my bread roll. To confidently explain their design and design choices To plan the process of making, considering the stages needed to make the product To select tools and materials, using these safely with growing accuracy To make and evaluate my bread roll.
Suggested Learning Experiences	 Tasting a range of bread, discussing taste, texture, smell and appearance Collect data find the most popular bread type Design their bread including clear labels on their design Weigh and measure ingredients Prepare and cook the bread safely and hygienically Discussion, reflection and reasoning opportunities throughout the designing, planning, making and evaluation processes Self and Peer Assessment according to the design/ success criteria 'Bake off' have a special visitor to come in and blind taste the children's bread and vote for winner.



Title	Moving Pictures
Overview	The aim of this unit is for the children to understand how levers and sliders work, experiment making their own and then apply this learning to create a picture that moves.
Vocabulary	Slider, lever, horizontal, vertical, handle, specification, slot, pivot
Key Learning Objectives	 To explore and use a slider To explore and use a lever To design a moving picture To confidently explain their design and design choices To plan the process of making, considering the stages needed to make the product To select tools and materials, using these safely with growing accuracy to make a moving picture To evaluate finished design against the design criteria
Suggested Learning Experiences	 Explore how levers and sliders work. Look at 'real life' levers and sliders Make a clear design of the moving picture with labels In the creation of sliders and levers learn how to score safely Discussion, reflection and reasoning opportunities throughout the designing, planning, making and evaluation processes Self and Peer Assessment according to the design/ success criteria Link the theme of their picture to something relevant to the children / linked to another area of learning or allow the children complete freedom to choose their own theme.



Title	Book Mark
Overview	The aim of this unit is for the children to develop their skills in modifying threads and fabrics. The children will then demonstrate these skills to create a book mark.
Vocabulary	Threads, fabric, material, needle, running stitch, knotting, fraying, fringing, pulling threads, twisting, plaiting, interfacing. Bookmark, tassel
Key Learning Objectives	 To explore how threads and fabrics can be modified (knotting, fraying, fringing, pulling threads, twisting, plaiting) To design a bookmark for a target audience To understand and draw the steps needed to make a bookmark To make a bookmark using tools, joining and finishing techniques To evaluate the completed bookmark
Suggested Learning Experiences	 Explore a range of existing bookmarks, explaining what they like and dislike about the products with reasoning Discuss how the bookmarks have been designed and made, including the materials used and the sustainability Discuss how we could make a material bookmark stronger, explore how interfacing works. Measure and mark out to create the templates needed Practice confidently threading a needle and using a running stitch Construct the bookmark using materials, tools and techniques taught Add finishing touches including a tassel/cord/plait Self and Peer Assessment according to the success criteria Discussion, reflection and reasoning opportunities throughout the designing, planning, making and evaluation processes



Barn Owl Class

Title	Picture Frames
Overview	The aim of this topic is for children to learn about how photo frames are developed and made through a process of research, design, make and evaluate. Pupils will start by investigating a range of photo frames, identifying what makes them successful and completing market research. Moving forward, we will create a design specification that we will use to build our own frames. When building the frames we will learn to use a range of resources such as; saw, clamp, safety block, hot glue gun etc. and explore different joins. We will look at different ways of adding strength to our free standing frames.
Vocabulary	material, market research, mitre join, butt join, wood, cut, mark, groove, saw, glue, sandpaper, wood blocks, clamp, hot glue gun, design, design criteria, evaluate
Key Learning Objectives	 To understand that photo frames are made out of a variety of materials. To complete market research (material, colour, size, join etc.) To learn about the sustainability/recyclability and impact of using wood in a product To start to understand how much products cost Design a product which takes into account the needs of the users (market research) Create own success / design criteria Make a labelled drawing which shows the key features of a product and different views of the product Select from and use a range of tools and equipment, including, saw, clamp, glue gun to construct the frame Experiment with two joining techniques (Mitre and Butt) To learn how to strengthen and reinforce their free standing frame Use finishing techniques to improve the appearance of the frame Evaluate the frame against original design criteria and identify some modifications they have made, including the safety of the product.
Suggested Learning Experiences	 Look at wood craftsmen and examples of what they make Investigate a selection of photo frames, consider where and how it was designed and made, analysing their key features and understand their purpose also Look at a range of existing frames, identify the cost and consider the sustainability and recyclability of the product Complete Market Research, use the results to inform their design Look at the sustainability of using wood Learn about a manufacturing company or design and make frames Consider the financial costing of making the product also – Can you make the frame within budget? Children to explore the two joins and explore which method is best Children to select from and use safely a range of materials and tools to construct their frame according to the functional properties and aesthetic qualities Measure, mark out, cut and shape the wood to construct the frame Children will be using tools with confidence ensuring a high quality finish Opportunities to explain their choices of process, tools, materials linking to function and aesthetics Evaluate their photo frame and others by considering the design criteria and meeting the user needs Link to mathematics learning of measuring, angles and costing Link to Science – materials Discussion, reflection and reasoning opportunities throughout the designing, planning, making and evaluation processes



Title	Savoury Pastry Slice
Overview	The aim of this unit is to prepare and cook a savoury puff pastry slice. Children will apply their knowledge of having a healthy, varied diet to plan, prepare and cook a healthy lunch option. Children will consider which food types are needed and which ingredients complement each other to create a tasty dish.
Vocabulary	puff pastry, sift, chill, round bladed knife, spring back, roll
Key Learning Objectives	 To know that a healthy balanced diet contains the five food groups and what this provides our bodies To understand that food and drink contain different substances (nutrients, water, fibre and minerals) needed for health To know that we have sweet and savoury foods To have an understanding of seasonality To plan a savoury pastry slice To begin to understand that certain foods complement each other To know that people have different diets (vegetarian, vegan etc.) To understand the process of making fresh pastry To make fresh pastry To prepare the topping of pastry, selecting and using appropriate tools, equipment and techniques safely To cook the pastry slice To evaluate the completed dish
Suggested Learning Experiences	 Sort ingredients and foods into sweet and savoury Explore combinations of ingredients and foods to find out which complement and begin to explain why Complete a vote of design options to find out the preferred topping Challenge of designing a topping for a vegetarian/vegan/gluten intolerance etc. Create a cross sectional diagram of the planned pastry slice Link to Mathematics (measuring ingredients, making pastry to size etc.) Opportunities to explain their choices of process, tools, materials linking to function and aesthetics Children will be self-selecting their ingredients, tools and techniques from a wider range using these confidently Weigh and measure the time, dry ingredients and liquids needed Prepare the area for cooking hygienically, ensuring hands are washed and all other cleanliness measures are completed Link to Science – Changes throughout the process Plan, prepare, cook and taste the completed pastry slice Taste test, theirs and others pastry slice! Discussion, reflection and reasoning opportunities throughout the designing, planning, making and evaluation processes



Title	Mechanics
Overview	The aim of this unit is to understand and use mechanical systems. Children will have the opportunity to observe, explore and investigate existing gears, pulleys, cams, levers and linkages. Children will use their knowledge of how these mechanical systems work to build their own.
Vocabulary	Mechanical systems, levers, gears, pulleys, forces, levers, linkages, cams, (round, snail, eccentric, egg shapes, ellipse, hexagon) cam handle, slider, follower, rotate, movement, linear, follower cam and eccentric cam, touched wheels, direction, belt, speed, input, output,
Key Learning Objectives	 To learn about the different mechanical systems (levers, gears and pulleys) To understand that mechanical and electrical systems have an input, process and output To construct and explore levers, gears and pulleys To learn about the mechanical systems of levers, linkages and cams To construct and explore levers, linkages and cams To design a wooden cam toy To create a wooden cam toy To evaluate a wooden cam toy
Suggested Learning Experiences	 Explore a range of existing products that use mechanical systems, disassemble the products to find out how it was made and how it works Identify the mechanical system used in different products Identify the pioneers of the mechanical systems and their ground breaking products To identify the required tools, construction methods and method to assembly To work in groups to develop and improve mechanical systems Sketch ideas for creating the mechanical systems Opportunities to explain their choices of process, tools, materials linking to function and aesthetics Children will be self-selecting their materials, tools and techniques from a wider range What would happen if exploration opportunities Look at the cartoonist Rube Goldberg's invention Each lesson provides opportunities for rich discussion, playful exploration, collaboration and evaluations of own and others mechanisms using the success criteria Links to Mathematics and Science – problem solving & materials Discussion, reflection and reasoning opportunities throughout the designing, planning, making and evaluation processes Use research in the process of designing cam toy Children will bring together all of their learning to create a wooden cam toy, creating their own success criteria and research as a basis. The designnning, making and evaluating process will be followed.



Title	Patchwork Blanket
Overview	Within this textile unit of work, children will work together to create a class Patchwork blanket. Children will learn the decorative stich of cross stich and learn what applique is and understand the process of creating applique. These skills will then be used to design and create a patch, which will then be assembled to create a class patchwork blanket. There will then be an opportunity to reflect upon and evaluate their work from a given success criteria.
Vocabulary	Types of stiches – straight, zig, zag, whip/blanket, blind, button hole, overlock, forward and back stich, cross stitch, applique, shapes and patterns
Key Learning Objectives	 To learn about the different types of stitches and their purposes To learn the decorative stitch of cross stich To understand what applique is To design a patch of a patchwork blanket from a given success criteria To select materials and tools to, join and stitch a decorative patch To evaluate my completed textile project
Suggested Learning Experiences	 Look at the different types of stiches and discuss the purposes of these, identify these stitches on objects To look at examples of cross stitching, applique and patchwork blankets including key designers / manufacturers Learn and practice cross stich To look at examples of applique Look at existing patch work blankets and understand the process of how they are constructed Design brief could link to a chosen audience or celebrate a special event/anniversary/topic Together create a design / success criteria Measure, cut and join their materials Select suitable stiches when hand stitching their patch Links to Mathematics and Science – Measuring & Materials Discussion, reflection and reasoning opportunities throughout the designing, planning, making and evaluation processes Evaluate own and others patches, looking closely at the quality of the design, manufacture and fitness for purpose



Otter Class

Title	Monitoring and Control
Overview	In this topic children will use their knowledge and understanding of computing to program,
	monitor and control their chosen products. Children can choose to make products such an
	alarm, lighting system or an electronic moneybox.
Vocabulary	Reed switch, toggle, switch, push-to-make switch, push-to-break switch, light dependent
	resistor (LDR), tilt switch, light emitting diode (LED), bulb, bulb holder, battery, battery holder,
	USB cable, wire, insulator, conductor, crocodile clip. Control, program, system, input device, output device, series circuit, parallel circuit, function, innovative, design specification, design
	brief, user, purpose
Key Learning	Discuss a range of relevant products that respond to changes in the environment
Objectives	using a computer control program
Objectives	 Investigate sensors including light dependent resistors and a range of switches and
	use these in a simple circuit
	To learn about famous inventors (including Thomas Edison)
	Create a circuit using different input and output devices
	Explore a range of electrical systems that could be used to control their products
	Write and modify computer control programs including inputs, outputs and decision
	making
	➤ Test the programs using electrical components connected to microcontrollers,
	interface boxes / standalone boxes
	Using knowledge, research and experimentation create a design criteria considering the purpose and needs of the user
	 Communicate ideas through annotated sketches / pictorial representations / circuit
	diagrams
	Produce detailed step by step plans and list tools, equipment and materials needed
	Make high quality products
	Critically evaluate throughout and the final product, comparing it to the design
	specification
	Test the system to demonstrate its effectiveness for the intended user and purpose.
Suggested	Research and explore the impact of existing computer controlled programs
Learning	Discuss how these work and create annotated sketches / cross - sectional diagrams
Experiences	of these. ➤ Create mini versions of circuits and prototypes
	Explore the key inventors, designers and engineers and manufacturers that have
	shaped the field.
	➤ Link to maths and science throughout
	➤ Test own and others products
	Invite other classes and parents in to see the completed projects, this will enable
	children to talk through the steps in their projects.



Title	Drawstring Bags
Overview	In this unit, children will be designing and making their very own drawstring fabric bag. They will begin by exploring and evaluating a range of products and thinking about their design features. Alongside this, the children will also discuss the ways in which these bags have been made. They will then learn the techniques of Batik and applique and incorporate these into a bag design. Children will use a pattern before cutting and stitching together their different pieces using various techniques to construct the bag and its features.
Vocabulary	Textiles, fabric, stitching, running stitch, back stitch, drawstring, function, cord, eyelet, pattern piece, seams, hem lines, Batik, wax resist, applique, pattern, joining, evaluate.
Key Learning Objectives	 To investigate and evaluate existing bags including identifying their features To look at a famous designer and manufacturer of bags To find out about the costings, time to make and sustainability of fabric bags and use this to inform my planning I can use research to help me develop my design and inform the design criteria enabling me create an innovative, functional and appealing product To design a drawstring bag To use Batik to create a pattern To use a prepared pattern piece to mark, measure and cut fabric To join fabric pieces by hand stitching To add design features including eyelets and cord To critically evaluate own and others products
Suggested	Before beginning formulate a step by step guide, including the tools,
Learning	equipment and materials needed.
Experiences	Evaluate existing products (discuss functionality, appearance, size, how they've been made etc.).and also critically consider the impact these products have beyond their intended purpose (sustainability and recyclability)
	Learn skills of Batik and experiment with creating different designs and patterns
	 Learn how to use a prepared pattern Stitch bag together using different grades of threads and needles and stiches
	 Use a range of tools, safely and accurately to assemble materials and components to make a high quality product
	 Use strengthening, stiffening and reinforcing techniques
	 Add purpose and functionality features that are functional but also aesthetically pleasing
	 Discussion throughout the designing, planning, making and evaluating processes
	 Critically evaluate own and others product, including design, manufacture, fitness for purpose
	 Link to Mathematics and Science – Measuring and changing materials

