

Long Term Plan 2021/22 – Design and Technology

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
	Topic: Box Modelling	Topic: Food and Nutrition	Topic: Creating 3D Models	Topic: Structures: Natural Materials	Topic: Construction Sets	Topic: Mechanisms: Flaps and Hinges
	Books: Zog Zog and the Flying Doctors Room on the Broom	Books: Rama And Sita The Gunpowder Plot Owl Babies Kipper's Birthday The First Christmas – The Nativity Story	Books: Percy the Park Keeper: One Snowy Night Lost and Found	Books: What the Ladybird Heard I Don't Want to be a Frog We're Going on an Egg Hunt The Easter Story	Books: Jack and the Beanstalk Jasper's Beanstalk The Three Little Pigs The Three Little Wolves and the Big Bad Pig The Three Billy Goats Gruff The Troll	Books: What the Ladybird Heard at the Seaside The Lighthouse Keeper's Lunch The Rainbow Fish Commotion in the Ocean
EYFS	Pupils will use box modeling to make representations of emergency vehicles. They will select materials from a limited range. Beginning to use one handed equipment. Naming the tools they are using. Learning simple joining techniques including glue and tape. Pupils will say what they like and don't like about what they have made.	Pupils will develop their food vocabulary using taste, smell and texture. Making celebration food hygienically using a range of ingredients. Pupils will learn techniques including spreading, kneading, rolling and cutting out. Stating preferences and identifying healthy choices.	Pupils will build upon previously taught modelling skills to create a 3D polar habitat. They will select from a range of materials to express ideas and developing the ability to represent them. Pupils will begin to use scissors to cut straight and curve edges and hole punches to punch holes. Using 2D materials to create 3D representations. Beginning to talk about their designs and identify good and bad points.	Pupils will use design and planning skills to create a bug hotel. They will learn to sketch and annotate simple plans listing components. They will use a variety of natural resources create a structure using the plans they have made. Learning about building structures by stacking, balancing and joining. Starting to talk about changes made during the process and the overall design.	Pupils will create scenes from traditional tales using construction sets. They will produce annotated sketches and explaining processes used. They will build upon previous knowledge of structures through joining and stability. Identifying changes made during the process and reasons for them.	Using skills covered so far, pupils will create a model of a lighthouse. They will produce and annotate plans. Pupils will learn to safely using a variety of tools, materials and previously taught techniques. They will experiment with colour, design and texture. Learning to use flaps and simple hinges to create windows and doors. Discussing how closely finished products meet initial design.

Year 1

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
	Topic: Mechanisms: Sliders	Topic: Cooking and Nutrition; Cold Savoury	Topic: Cooking and Nutrition: Hot Sweet	Topic: Structures	Topic: Textiles: Puppets	Topic: Textiles: Puppets
	Book: But Why Can't I?	Book: The Tiger That Came to Tea	Book: The Gruffalo	Book: Rosie Revere	Book: The Hunter	Book: Rainforest Adventure
	<p>Pupils will use slider mechanisms to create an animated scene. They will choose appropriate materials for the slider. Pupils will learn how to produce simple annotated designs. Marking out and cutting materials to size. Assembling components to recreate plans. Evaluating the product and how well it works.</p>	<p>Using principles of a healthy and varied diet, pupils will design and create a sandwich. They will evaluate existing products and select from a range of ingredients. They will learn how to hygienically and safely prepare food including spreading and chopping. Evaluating ideas and products against the design criteria.</p>	<p>Building on previously taught food and nutrition skills, pupils will produce a fruit crumble. Researching where different fruits are grown and how they get to our table. Pupils will explore local ingredients. Choosing ingredients based on flavour and texture to design a crumble. Learning how to combine ingredients and follow a simple recipe. Evaluating products and changes that could be made.</p>	<p>Pupils will learn to use joining and shaping skills to create a free-standing bridge. They will research different types of bridges and what makes them strong and stable. Pupils will select from a range of materials to design and create a bridge. Producing annotated sketches. Using a range of tools to assemble, join and combine materials. Testing and evaluating bridges for stability and strength.</p>	<p>Pupils will use textiles to create an animal hand puppet. They will explore and evaluate a range of existing products. Pupils will learn that a hand puppet can be assembled from two identical fabric shapes. Designing a puppet producing annotated sketches. Selecting from a range of fabrics thinking about the properties of each material. They will learn how to fix different materials together safely and securely using fabric glue and simple sewing techniques. Discussing how closely the finished product resembled the plan.</p>	

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 2	Topic: Mechanisms: Sliders	Topic: Cooking and Nutrition; Cold Savoury	Topic: Cooking and Nutrition: Hot Sweet	Topic: Structures	Topic: Textiles: Puppets	Topic: Textiles: Puppets
	Book: But Why Can't I?	Book: The Tiger That Came to Tea	Book: The Gruffalo	Book: Rosie Revere	Book: The Hunter	Book: Rainforest Adventure
	Pupils will use slider mechanisms to create an animated scene. Choosing appropriate materials for the slider. They will learn how to produce annotated designs containing multiple sliders. Pupils will measure, mark out and cut materials to size. Assembling components to recreate plans. Evaluating the product and how well it works.	Using principles of a healthy and varied diet, pupils will design and create a sandwich. Evaluating existing products and selecting from a range of ingredients. Pupils will learn how to hygienically and safely prepare food including spreading, grating, slicing and chopping. Evaluating ideas and products against the design criteria.	Building on previously taught food and nutrition skills, pupils will produce a fruit crumble. Researching where different fruits are grown and how they get to our table. Pupils will explore and incorporate local produce. They will choose ingredients based on flavour and texture to design a crumble. Learning how to measure, weigh and combine ingredients and follow a simple recipe. Evaluating products and changes that could be made.	Pupils will use joining and shaping skills to create a bridge. They will research different types of bridges and what makes them strong and stable. Pupils will select from a range of materials to design and create a bridge. Producing annotated sketches. Using a range of tools to assemble, join and combine materials including elements to strengthen the design. Pupils will test and evaluate bridges for stability and strength and looking for ways to improve the product.	Pupils will use textiles to create an animal hand puppet. They will explore and evaluate a range of existing products. Pupils will learn that a hand puppet can be assembled from two identical fabric shapes. They will design a puppet by producing annotated sketches. Creating a template by drawing around their own hand shape. Selecting from a range of fabrics thinking about the properties of each material. Pupils will learn how to fix different materials together safely and securely using simple sewing techniques. Discussing how closely the finished product resembled the plan.	

Year 3

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
	Topic: Mechanical Systems: Cams	Topic: Electrical Systems	Topic: Mechanical Systems: Levers and Linkages	Topic: Product Design	Topic: Cooking and Nutrition	Topic: Structures
	Book: George's Marvelous Medicine	Book: Operation Gadgetman	Book: Homework on Pluto	Book: The Chocolate Tree	Book: The Edible Pyramid	Book: The Explorer
	<p>Pupils will use cam mechanisms to create an animated scene from George's Marvelous Medicine. They will learn how to produce detailed, annotated plans with labelled components. Following plans to assemble by measuring, marking out, cutting and joining parts. Evaluating the product against original design criteria.</p>	<p>Pupils will learn to use electrical systems to create a burglar alarm. They will explore simple series circuits that incorporate switches, buzzers, bulbs and motors. Building upon previously planning skills to produce annotated designs. Producing and testing prototypes. Evaluating the product against original design criteria.</p>	<p>Pupils will use levers and linkages to design a flag raising mechanism for Shackleton to use when reaching the Antarctic. They will explore a range of different lever and linkage mechanisms and the movement they produce, naming the components. Producing annotated diagrams of the designs. Building on previous knowledge of assembling a mechanism including accurate measuring and cutting make a prototype of the design. Pupils will evaluate the product both during and at the end of the project.</p>	<p>Pupils will use research and design skills to create packaging for a chocolate bar. They will explore existing products and using knowledge of materials to select a material that is fit for purpose. They will design packaging with aesthetics and function in mind and produce clearly labelled plans. Making the product using previously taught assembling skills. Evaluating the product against the original design criteria.</p>	<p>Applying the principles of a healthy and varied diet, pupils will create a pizza. Researching seasonality and where and how some ingredients are grown. Pupils will produce annotated design sketches which take account of taste and aesthetics. Pupils will learn techniques such as peeling, chopping, slicing, grating and kneading. Evaluate the product thinking of both appearance and taste.</p>	<p>Pupils will create a model of a raft combining materials and components accurately. They will research which materials and shapes are buoyant and float and what makes structures strong and stable. Selecting from a range of materials to design and create a raft. Producing detailed annotated sketches. Selecting from a range of tools to make the product. Building on previous knowledge to assemble and combine materials. Evaluate the product carrying out appropriate tests and modifying if needed.</p>

Year 4

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
	Topic: Mechanical Systems: Cams	Topic: Electrical Systems	Topic: Mechanical Systems: Levers and Linkages	Topic: Product Design	Topic: Cooking and Nutrition	Topic: Structures
	Book: George's Marvelous Medicine	Book: Operation Gadgetman	Book: Homework on Pluto	Book: The Chocolate Tree	Book: The Edible Pyramid	Book: The Explorer
	<p>Pupils will use cam mechanisms to create an animated scene from George's Marvelous Medicine. They will explore how different shaped cams produce different movements. Pupils will learn how to produce annotated plans with labelled components. Following plans to assemble by measuring, marking out, cutting and joining parts. Evaluating the product against their own design criteria and consider the views of others to improve their work.</p>	<p>Pupils will use electrical systems to create a burglar alarm. They will explore simple series circuits that incorporate switches, buzzers, bulbs and motors. Building upon previously planning skills to produce annotated designs. Producing and testing prototypes. Pupils will evaluate the product against their own design criteria and its suitability for the individual or group that it was designed for.</p>	<p>Pupils will use multiple lever and linkage mechanisms to design a flag raising system for Shackleton to use when reaching the Antarctic. They will explore a range of different lever and linkage mechanisms and the movement they produce, naming the components. They will produce annotated diagrams of the designs. Building on previous knowledge of assembling a mechanism including accurate measuring and cutting make a prototype of the design. Evaluating the product both during and at the end of the project.</p>	<p>Pupils will use research and design skills to create packaging for a chocolate bar. They will explore existing products and use knowledge of materials to select a material that is fit for purpose. Designing packaging with aesthetics and function in mind and producing clearly labelled plans. Including temporary and permanent joins in the design. Making the product using previously taught assembling skills. Evaluating the product against the original design criteria.</p>	<p>Applying the principles of a healthy and varied diet, pupils will create a pizza. They will research seasonality and where and how some ingredients are grown. They will produce annotated design sketches which take account of taste and aesthetics. Pupils will learn techniques such as peeling, chopping, slicing, grating and kneading. Evaluate the product thinking of both appearance and taste. Researching and considering differing dietary requirements.</p>	<p>Pupils will create a model of a raft by combining materials and components accurately. Pupils will research which materials and shapes are buoyant and float and what makes structures strong and stable. Pupils will select from a range of materials to design and create a raft. They will produce detailed annotated sketches. Selecting from a wider range of tools to make the product. Building on previous knowledge to assemble and combine materials. Pupils will evaluate the product by carrying out appropriate tests and modifying if needed. Suggest improvements and assess product thinking of both appearance and how the product worked.</p>

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 5	Topic: Computer Aided Design		Topic: Structures		Topic: Mechanical Systems: Gears	
	Book: Cosmic		Book: The Boy at the Back of the Class		Book: Cogheart	
	<p>Pupils will create packaging for The Drax Phone using informed product design. They will explore and evaluate existing packaging including cost and sustainability. Pupils will develop criteria to identify fit for purpose. They will communicate ideas through discussion, annotated sketches and computer aided design. Producing detailed plans and prototypes. Learning how to make a net to produce a 3D shape. Pupils will accurately measure, mark out and cut to produce a final product. Applying a range of finishing techniques including those from Art and Design. Evaluating products against a set list of criteria.</p>		<p>Pupils will use structural understanding and knowledge of materials to create a refugee shelter. They will consider different materials in terms of durability and suitability for purpose. Selecting from and using a wide range of materials and components, including construction materials and textiles according to their functional properties and aesthetic qualities. Researching examples of existing famous structures and landmarks to identify, compare and evaluate different materials. Considering which are most suitable for extreme weather conditions and force. Using testing to explore different materials, simulating different extreme weather conditions. Producing a step by step detailed planning sheet. Assembling the shelter using techniques such as cutting, sticking, shaping building and joining. Evaluating and testing whether the product is successful and fit for purpose.</p>		<p>Pupils will use gears to create a moving scene from the cannon book. Pupils will learn about gears and why they are used. They will explore the use of gears and handles in existing products and how they can be used to produce movement. Pupils will evaluate how successful the gears and handles are in creating movement. Developing design criteria to inform the design of innovative and appealing products. Producing annotated sketches and plans detailing the mechanisms used and movement created. Using previously taught assembling skills to create the model and insert the mechanism. Evaluating the product against a set list of criteria and seeking out the opinions of others.</p>	

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 6	Topic: Computer Aided Design		Topic: Structures		Topic: Mechanical Systems: Gears	
	Book: Cosmic		Book: The Boy at the Back of the Class		Book: Cogheart	
	<p>Pupils will create packaging for The Drax Phone using informed product design. They will explore and evaluate existing packaging including cost and sustainability. Developing criteria to identify fit for purpose. Communicating ideas through discussion, annotated sketches and CAD. Producing detailed plans and prototypes. Learning how to make a net to produce a 3D shape. Accurately measuring, marking out and cutting to produce a final product. Applying a range of finishing techniques including those from Art and Design. Evaluating products against a set list of criteria. Pupils will pitch their final product to a panel of judges, presenting their design choices and speaking in a persuasive manner.</p>		<p>Using structural understanding and knowledge of materials, pupils will create a refugee shelter. They will consider different materials in terms of durability and fit for purpose, and select from and use a wide range of materials and components, including construction materials and textiles according to their functional properties and aesthetic qualities. Pupils will research examples of existing famous structures and landmarks to identify, compare and evaluate different materials. Considering which are most suitable for extreme weather conditions and force. Using testing to explore different materials, simulating different extreme weather conditions. Producing a step by step detailed planning sheet. Assembling the shelter using techniques such as cutting, sticking, shaping building and joining. Learning how to strengthen and reinforce a 3D framework. Evaluating and testing whether the product is successful and fit for purpose.</p>		<p>Pupils will learn to use gears to create a moving scene from the cannon book. They will learn about gears and why they are used. Exploring the use of gears and handles in existing products and how they can be used to produce movement. Pupils will learn that mechanical systems have input, process and output. Evaluating how successful the gears and handles are in creating movement Developing design criteria to inform the design of innovative and appealing products. Producing annotated sketches and plans detailing the mechanisms used and movement created. Using previously taught assembling skills to create the model and insert the mechanism. Aiming to make and achieve a quality product. Evaluating the product against a set list of criteria and seeking out the opinions of others.</p>	