DT Whole School Curriculum -Bowerham Primary and Nursery School

EYFS

EYFS - Expressive arts and design

ELG Creating with materials
• Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
• Share their creations, explaining the process they have used.
• Make use of props and materials when role playing characters in narratives and stories.

EYFS – Physical development

ELG Fine motor
• Use a range of small tools, including scissors, paintbrushes and cutlery.

In foundation stage the children…….

• Have daily opportunities to make their own creations using a wide range of different materials, fixings and tools which are freely available in continuous provision.
• Are taught how to use tools such as scissors, hole punch, string, sellotape, cutters etc.
• Are encouraged to talk about what they would like to make, how they will do it and what they think about it when it is finished.
• Are encouraged to evaluate what they have made and make changes as appropriate.
• Take part in whole school projects e.g. DT week. This involves designing and then making things linked to a particular theme and for a particular audience e.g. parents

KS1 – National Curriculum for Design and Technology

Key stage 1
Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].
When designing and making, pupils should be taught to:

Design
☐ design purposeful, functional, appealing products for themselves and other users based on design criteria
☐ generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

Make
☐ select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
☐ select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

Evaluate
☐ explore and evaluate a range of existing products
☐ evaluate their ideas and products against design criteria

Technical knowledge
☐ build structures, exploring how they can be made stronger, stiffer and more stable
☐ explore and use mechanisms [for example, levers, sliders, wheels and axles], in their Products.

Cooking and nutrition
As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.
Pupils should be taught to:

Key Stage 1
☐ use the basic principles of a healthy and varied diet to prepare dishes
☐ understand where food comes from.

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Year	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
	Objective led: Knowledge and skills will be covered throughout the year following a child centred curriculum, based on children's interests.					
1	Pizza: Investigate where food comes from by sorting a range of products into plant based foods and animal based foods as well as what is healthy and what is a treat. Design a healthy pizza that appeals to their own tastes by trying different pizza toppings and creating a food vocabulary linked to these foods. Pizzas to be made and tasted to evaluate against design ideas and criteria. • Can I generate ideas and recognise characteristics of familiar products? • Can I use pictures and words to describe what I want to do? • Can I explain what I am making? • Can I talk about my own and other people's work in simple terms?	Christmas makes – Make a range of products including decorations, calendars and cards on a Christmas theme. Products are to be made to appeal to themselves and other users. Tools and equipment to be selected appropriately for each product in order to perform linked practical tasks such as cutting, shaping, joining and finishing. Make a Christmas card with a simple slider. • Can I generate ideas and recognise characteristics of familiar products? • Can I explain what I am making? • Can I describe which tools I use? • Can I use tools and materials with help, where needed? • Can I talk about my own and other people's work in simple terms?	The Egg drop challenge – Linked to science. Design and make a functional contraption, fit for purpose, to cushion an egg from a high drop to stop it breaking. Through the experience of science experiments and existing products to inform choices, materials are to be selected to aid shock absorption and air resistance. Products are to be made by selecting materials according to their characteristics, and the appropriate tools for these joining materials. • Can I generate ideas and recognise characteristics of familiar products? • Can I use pictures and words to describe what I want to do? • Can I explain what I am making? Can I describe which tools I use?	Design a moving vehicle for a fantasy character communicating ideas through the use of information and communication technology on Purple Mash software. Make the vehicles by selecting appropriate tools to cut, shape and join materials. Explore the use of mechanisms by creating an axle which allows the vehicle to move. Evaluate the vehicle against design criteria and quality of product outcome. • Can I generate ideas and recognise characteristics of familiar products? • Can I explain what I am making? • Can I describe which tools I use? • Can I use tools and materials with help, where needed? • Can I describe how a product works? • Can I talk about my own and other people's work in simple terms?	Design a functional bird box communicating their ideas, based on existing products through talk and the use of a booklet to illustrate these design ideas and final designs. These ideas are to be made by selecting appropriate tools for cutting, shaping joining and finishing their product. The finished product will be evaluated against design criteria. • Can I generate ideas and recognise characteristics of familiar products? • Can I use pictures and words to describe what I want to do? • Can I explain what I am making? • Can I describe which tools I use? • Can I use tools and materials with help, where needed? • Can I describe how a product works? • Can I talk about my own and other people's work in simple terms?	
Enrichment		Christmas cards and decorations to take home to families.	Egg Drop challenge competition (Parent event)	Teddy's House competition – Homework (School/home collaboration) Engineering week	Take bird boxes home to be put up in gardens to create a new habitat for a family of birds.	

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2		Christmas makes – Make a range of products including decorations, calendars and cards on a Christmas theme. Products are to be made to appeal to themselves and other users. Tools and equipment to be selected appropriately for each product in order to perform linked practical tasks such as cutting, shaping, joining and finishing. Design a Christmas biscuit that appeals to their own tastes after trying different existing biscuits. Make biscuits selecting appropriate tools. Biscuits to be made and tasted to evaluate against design ideas and criteria. Make a Christmas card with a pivot slider. • Can I use models, pictures and words to describe my designs? • Can I select appropriate tools, techniques and materials & explain my choices? • Can I suggest things I could do better in the future?	Puppets - Design a functional puppet using textiles skills with links to dinosaurs topic in the design brief, communicating their ideas, based on existing products through talk and the use of a booklet to illustrate these design ideas and final designs. These ideas are to be made by selecting appropriate tools for cutting, shaping joining and finishing their product. Research and experiments to take place throughout the process to examine how to make the puppet stronger/stiffer. The finished product will be evaluated against design criteria. • Can I generate ideas and plan what to do next, based on my experience of working with materials and components? • Can I use models, pictures and words to describe my designs? • Can I select appropriate tools, techniques and materials & explain my choices? • Can I use tools and assemble, join and combine materials and components in a variety of ways?	Make a pop-up Mother's day card with a pop-up mechanism. • Can I generate ideas and plan what to do next, based on my experience of working with materials and components? • Can I use models, pictures and words to describe my designs? • Can I select appropriate tools, techniques and materials & explain my choices? • Can I use tools and assemble, join and combine materials and components in a variety of ways? • Can I recognise what I have done well as my work progresses? • Can I suggest things I could do better in the future?		Design a healthy dish: Make planned dish selecting appropriate tools to prepare food items such as cutting, peeling, chopping, grating and measuring. Dish to be made and tasted to evaluate against design ideas and criteria. • Can I cut, peel, grate & chop a range of ingredients? • Can I measure and weigh food items (non-standard measures) eg spoons, cups etc)? • Can I select appropriate tools, techniques and materials & explain my choices?

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			• Can I recognise what I have done well as my work progresses? • Can I suggest things I could do better in the future?			
Enrichment		Christmas cards and decorations to take home to families.		Engineering week		

KS2 – National Curriculum for Design and Technology

Key Stage 2
Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].
When designing and making, pupils should be taught to:
Design
☐ use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
☐ generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
Make
☐ select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
☐ select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities
Evaluate
☐ investigate and analyse a range of existing products
☐ evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
☐ understand how key events and individuals in design and technology have helped shape the world
Technical knowledge
☐ apply their understanding of how to strengthen, stiffen and reinforce more complex structures
☐ understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
☐ understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
☐ apply their understanding of computing to program, monitor and control their products.

Cooking and nutrition
As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.
Pupils should be taught to:
Key Stage 2
☐ understand and apply the principles of a healthy and varied diet
☐ prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
☐ understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Year	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
3	Evaluate existing products and build upon previous learning to design a pop up toy with at least 2 moving parts that is fit for purpose to be used by a consumer or group of consumers. Designs to be generated through discussion and illustrated through a booklet that includes annotated sketches. Selecting from a wide range of tools, perform practical tasks such as cutting, shaping,	Christmas makes – Make a range of products including decorations, calendars and cards on a Christmas theme. Products are to be made to appeal to themselves and other users. Tools and equipment to be selected appropriately for each product in order to perform linked practical tasks such as cutting, shaping, joining and finishing with increasing accuracy.		Design a moving cart that is capable of supporting and carrying a 1KG and moves with a mechanism. Designs to be generated through discussion and illustrated through a booklet that includes annotated sketches showing evidence of evaluation taking place throughout the design process. Make carts selecting from a wide range of tools to perform practical tasks. Select materials according to their functional properties and aesthetic qualities. Evaluate their ideas and product against the design criteria and		Research and design a healthy savoury dish. Make the dish using a range of cooking techniques. Evaluate the dish paying attention to taste and how healthy it is and other design criteria. • Can I make healthy eating choices from an understanding of a balanced diet? • Can I join and combine a range of ingredients?

	joining and finishing. Select materials according to their functional properties and aesthetic qualities. Evaluate their ideas and product against their own design criteria and consider the views of others to improve their work in the future.	• Can I generate ideas and recognise that my designs have to meet a range of different needs? • Can I make realistic plans for achieving my aims? • Can I clarify ideas when asked and use words, labelled sketches and models to communicate the details of my designs? • Can I use tools and equipment with increasing accuracy to cut and shape materials and to put together components? • Can I think ahead about the order of my work, choosing appropriate tools, equipment, materials, components and techniques? Can I identify where evaluation of my design, make process and my final products has led to improvements?		consider the views of others to improve their work in the future. • Can I generate ideas and recognise that my designs have to meet a range of different needs? • Can I make realistic plans for achieving my aims? • Can I clarify ideas when asked and use words, labelled sketches and models to communicate the details of my designs? • Can I think ahead about the order of my work, choosing appropriate tools, equipment, materials, components and techniques? • Can I use tools and equipment with increasing accuracy to cut and shape materials and to put together components? • Can I identify where evaluation of my design, make process and my final products has led to improvements?		• Can I select appropriate tools, techniques and materials & explain my choices?
Enrichment				Engineering Week		Having a healthy picnic to celebrate the food designed and created by the children.

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4		Christmas makes – Make a range of products including decorations, calendars and cards on a Christmas theme. Products are to be made to appeal to themselves and other users. Tools and equipment to be selected appropriately for each product in order to perform linked practical tasks such as cutting, shaping, joining and finishing with increasing accuracy. Research, investigate and analyse a range of existing products to design original witches biscuit to appeal to their own tastes. Select from a wider range of ingredients to make the biscuits with the consumer in mind. Understand the seasonality of the ingredients and research where they come from and how they are grown or processed. Evaluate the dish paying attention to the view of the parent consumer in order to improve future work. Make a xmas tree using textiles and sewing skills. • Can I generate ideas by researching, collecting and using information? • Can I take users' views into account when developing designs and produce plans? • Can I communicate alternative ideas using words, labelled sketches and models? • Can I select and work with a range of tools and equipment? • Can I select & prepare foods for a particular purpose? • Can I reflect on my designs as they develop? • Can I identify what is working well and what could be improved?		Design and make a moving electric vehicle • Can I generate ideas by researching, collecting and using information? • Can I take users' views into account when developing designs and produce plans? • Can I communicate alternative ideas using words, labelled sketches and models? • Can I reflect on my designs as they develop? • Can I identify what is working well and what could be improved?		Research and investigate a shaduf and the mechanism they use. Make a shaduf and the mechanism required • Can I work with a variety of materials and components with increasing accuracy? • Can I select and work with a range of tools and equipment? .

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Enrichment		Sharing saturnalia biscuits with parents to help with evaluation.		Engineering Week		
5		Christmas makes – Make a range of products including decorations, calendars and cards on a Christmas theme. Products are to be made to appeal to themselves and other users. Tools and equipment to be selected appropriately for each product in order to perform linked practical tasks such as cutting, shaping, joining and finishing accurately.	Design and make a Viking Shield using TinkerCAD Understand the function of a Viking shield and the specific shape, to inform a design criteria. Research Viking shield patterns and the meaning behind them, using accurate historical information to inform. Understand the program Tinkercad and how to create shapes and patterns to represent a Viking shield • Can I sketch a Viking shield design, using annotated diagrams to explain choices linked back to previous learning and design criteria? • Can I ensure that the design created on CAD can be successfully printed through evaluation and discussion? • Can I evaluate a printed Viking Shield made using CAD against the design criteria. To evaluate the accuracy of the printed shield against design and discuss improvements for when using Tinkercad in the future?	Design a Viking boat. Make the product by selecting from a wide range of tools to perform practical tasks such as cutting, shaping, joining and finishing. Select from a wide range of materials and components, including construction materials and textiles according to their functional properties and aesthetic qualities. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Evaluate their ideas and products throughout the process and make adjustments and improvements as necessary considering the views of others to improve their work. • Can I generate ideas by researching, collecting and using information? • Can I take users' views into account when developing designs and produce step-by-step plans? • Can I communicate alternative ideas using words, labelled sketches and models, showing that I am aware of constraints? Can I work with a variety of materials and components with accuracy, paying attention to quality of finish and to function? • Can I select and work with a range of tools and equipment? • Can I reflect on my designs as they develop, bearing in mind the way the product will be used? • Can I identify what is working well and what could be improved?		Research, investigate and analyse a range of existing products to design savoury Greek dishes that are appealing to parent consumers. Understand the seasonality of the ingredients and research where they come from and how they are caught, reared, grown or processed. Prepare the dishes selecting appropriate tools to complete practical tasks. Evaluate their ideas and products throughout the process and make adjustments and improvements as necessary considering the views of others to improve their work. • Can I generate ideas by researching, collecting and using information? • Can I take users' views into account when developing designs and produce step-by-step plans? • Can I communicate alternative ideas using words, labelled sketches and models, showing that I am aware of constraints? • Can I select and work with a range of tools and equipment? • Can I select & prepare foods for a particular purpose? • Can I decorate foods appropriately?

Enrichment				Engineering Week		Greek feast and work exhibition with parents.

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6		Christmas makes – Make a range of products including decorations, calendars and cards on a Christmas theme. Products are to be made to appeal to themselves and other users. Tools and equipment to be selected appropriately for each product in order to perform linked practical tasks such as cutting, shaping, joining and finishing accurately. Research, investigate and analyse a range of historical and existing products to design savoury war time, under rationing, dishes that are appealing to parent consumers. Understand the seasonality of the ingredients and research where they come from and how they are caught, reared, grown or processed. Prepare the dishes selecting appropriate tools to complete practical tasks. Evaluate their ideas and products throughout the process and make adjustments and improvements as necessary considering the views of others to improve their work. • Can I draw on and use various sources of information? • Can I clarify my ideas through discussion and drawing? • Can I use my understanding of the characteristics of familiar products when developing and communicating my own original ideas? • Can I develop food products for a range of particular purposes? • Can I describe clearly the choices I have made, in relation to a healthy and balanced diet, in developing and preparing foods? • Can I evaluate my use of information sources? • Can I evaluate my final product and communicate		Research, investigate and analyse historical and existing products to design a new product including a CAM mechanism showing understanding of how key events and individuals in design and technology have helped shape the world. Illustrate research and design process in a booklet including annotated sketches, cross-sectional and exploded diagrams to explain ideas. Make the product by selecting from a range of tools to perform practical tasks such as cutting, shaping, joining and finishing. Select from a wide range of materials and components, including construction materials and textiles according to their functional properties and aesthetic qualities. Evaluate their ideas and products throughout the process and make adjustments and improvements as necessary considering the views of others to improve their work. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures during this process. Products to show understanding and use of electrical systems [for example, series circuits incorporating switches, bulbs, buzzers and motors] • Can I draw on and use various sources of information? • Can I clarify my ideas through discussion, drawing and modelling? • Can I use my understanding of the characteristics of familiar products when developing and communicating my own original ideas? • Can I work from my own detailed plans, modifying them where appropriate? • Can work with a range of tools, materials, equipment, components and processes with precision? • Can I check my work as it develops and modify my approach in the light of progress?		Make a textiles product – cross stictch by selecting from a wide range of tools to perform practical tasks such as cutting, shaping, joining and finishing. Select from a wide range of sustainable materials and components, including construction materials and textiles according to their functional properties and aesthetic qualities. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Evaluate their ideas and products throughout the process and make adjustments and improvements as necessary considering the views of others to improve their work. • Can I draw on and use various sources of information? • Can I clarify my ideas through discussion, drawing and modelling? • Can I use my understanding of the characteristics of familiar products when developing and communicating my own original ideas? • Can I work from my own detailed plans, modifying them where appropriate? • Can work with a range of tools, materials, equipment, components and processes with precision? • Can I check my work as it develops and modify my approach in the light of progress? • Can I test and evaluate my products, showing that I understand the situations in which my designs will have to function and are aware of resources as a constraint? Can I evaluate my use of information sources?

		my conclusions?		• Can I test and evaluate my products, showing that I understand the situations in which my designs will have to function and are aware of resources as a constraint? • Can I evaluate my use of information sources? • Can I evaluate my final product and communicate my conclusions?		
Enrichment				Engineering week		