St Walburga's Catholic Primary School
Whole School Design and Technology Scheme of Work

EYFS			
	Early Learning Goal / EYFS Ages and Stages: Expressive arts and design: Exploring and Using media and materials / Being imaginative • Beginning to be interested in and describe the texture of things. • Uses various construction materials. • Beginning to construct, stacking blocks vertically and horizontally, making enclosures and creating spaces. • Joins construction pieces together to build and balance. • Realises tools can be used for a purpose. • Manipulates materials to achieve a planned effect. • Constructs with a purpose in mind, using a variety of resources. • Uses simple tools and techniques competently and appropriately. • Selects appropriate resources and adapts work where necessary. • Selects tools and techniques needed to shape, assemble and join materials they are using. **Early Learning Goals: Expressive arts and design** Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories.		
	AUTUMN	**SPRING**	**SUMMER**
Topic	Me and my world Changing seasons Christmas in the past	Amazing Creatures Chinese New Year Once Upon a Time	The Gruffalo and Friends
Addressing Stereotypes		Include some traditional tales with atypical endings	Female Firefighters, Male nurses etc
Brief	To make a Christmas card (construction)	To make a slider picture (mechanism)	Construction
	To experiment with fabric to make collage	To make a model vehicle	Make a gingerbread person
Research	• Children look at familiar objects and begin to explain what they like and dislike about them.	Look at different artefacts relating to **Chinese New Year –** identify common elements e.g. colour. Express preference for designs.	Listen to **Traditional tales** and **Julia Donaldson stories**

	• Children disassemble familiar objects to explore how they work. • Children talk to family members about familiar objects to decide what they like and discuss about them Look at different **Christmas cards** – express preferences for design. Think about use and purpose.	Talk to a friend about their choice of **car/vehicle.** What do they like about it? Why did they choose it? (Did in Summer 22 as part of people who help us /Zog) **Look at famous bridges using Google earth**	Look at **roof shapes** and fabrics to identify similarities and reasons for use.
Design	• Talk about what they want to make in relation to the design brief and what they have observed. • Draw a simple picture to help them record their ideas.	Talk about what they want to make in relation to the design brief and what they have observed. Draw **model vehicle** before making it	Talk about what they want to make in relation to the design brief and what they have observed. Draw the **stick men** they are going to make
Make - Mechanism		**Make a slider picture**	
Make - Construction	CONSTRUCTION KITS – introduce tasks and challenges		
	Explore materials, tools and techniques through painting, printing, collage and scissor practice. Uses various construction materials. -Beginning to construct, stacking blocks vertically and horizontally, making enclosures and creating spaces. -Joins construction pieces together to build and balance. -Constructs with a purpose in mind, using a variety of resources.	Explore materials, tools and techniques through painting, printing, collage and scissor practice. Chinese dragons, lanterns, sun catchers, tangram. Cut paper and other materials safely and with some accuracy. - Join paper and other materials using a variety of basic methods such as gluing, taping, stapling, tying. **Made a bridge using spaghetti and marshmallow.**	Test materials – Design a roof for the **3 Little Pigs** house – which material would be best? Which shape roof would be best? Experiment with joining materials to make **stick men** – what is the best fixing material to use? Children use what they have learnt about materials and begin to select the appropriate materials and tools for the task.
Make – Textiles	• **Collage** to include work with fabric • with support, children cut fabric for collage. They consider different properties such as colour and texture in their choices		

Make – Food		Taste different foods – **express preferences and talk about likes and dislikes.** **Observe basic food hygiene procedures** with support – washing hands; cleaning surfaces before and after eating.	Make a gingerbread person. With adult support, follow a recipe. Observe measuring and talk about ingredients. **Mix, roll and cut using a cutter.** **Observe basic food hygiene procedures with** support – washing hands; cleaning surfaces before and after preparing food.
Evaluate	Talk about what they have made, what they like about it and begin to describe what went well and what they would change.		
Subject specific vocabulary – Key Words	Please note that these definitions of key words need to be understood in the context of Design and Technology across all year groups. Design – 1. Plan to do something with a specific purpose in mind 2. do a drawing of something before making it Designer – 1. A person who creates a plan for something they want to make 2. KS2 – also a focus on 'designer' as a job title/career Technology – using what we know about science to make useful things Product – an outcome piece with a function/ that does something – not necessarily a thing that can be sold. Brief – the initial instruction that tells us what we need to do in our project User – the person who we are designing our product for, whose needs/ wants must be taken into account		
Subject specific Vocabulary	Design, designer, materials, tools, construct		
	Cut, fold, join, strong, make	Cut, join, slide, make, mechanism, work	Test, waterproof, select
		Select, design, join, experiment	Ingredients, healthy, cook, taste

YEAR 1

Subject content 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.

	AUTUMN	SPRING	SUMMER
Topic	Toys Winter Wonderland	Happily, Ever After [Castles and Fairy Tales]	Explorers The Great Outdoors
Addressing sterotypes	Toys in past were gender specific – ours aren't! Different types of family – step parents etc	Example of female rulers – Boudicca/ Mary Tudor. Mary Bankes who defended Corfe Castle	Amelia Earhart
Brief	**To design and create a moving picture Christmas card to give to a family member**	**To make a small flag to put at the top of a castle**	**To design and create a fruit salad or fruit kebabs for the garden party**
Key questions	What is a designer? What is a mechanism? What sort of card would your XXXX like?	Why would you put a flag on top of a castle? How can you join fabric? What design would you like on your flag and why?	What is a chef? How does a chef chop/prepare food?
Research	• Discuss how these products could help them with their own design • *Explore a range of toys from the past, discussing how they are made and how they work.*	• Look at different types of flag – relate to family backgrounds flags of countries of ancestry, royal standard (when the Queen is home), Union flag etc	• Talk at home about different fruit – what are people's likes and dislikes. • Explore where food comes from – talk about seasonal/unseasonal fruit.

	• Explore a range of Christmas cards incorporating a **slider, pop up or pivot mechanism.** Discuss how these products could help them with their own design.	• *Look at the construction of castles and elements included in the structure to make it strong!*	• Find out about a famous chef (home learning task)
Design	• Talk about what they want to make in relation to the design brief and their research • Draw a simple picture of their product and add some words • Choose the materials/tools they will need, from a limited selection • Write down some of the materials/ingredients/ tools they will need using a word bank to help them	• Talk about what they want to make in relation to the design brief and their research • Draw a simple picture of their product and add some words • Choose the materials/tools they will need, from a limited selection • Write down some of the materials/ingredients/ tools they will need using a word bank to help them	• Talk about what they want to make in relation to the design brief and their research • Draw a simple picture of their product and add some words • Choose the materials/tools they will need, from a limited selection • Write down some of the ingredients they will need using a word bank to help them • Understand the basic principles of a healthy and varied diet and that they are designing a healthy dish • Create a basic recipe, using drawings
Make - Mechanism	• 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 according to their characteristics • Mark materials before cutting. • Cut paper and other materials safely and with some accuracy. • Join paper and other materials using a variety of basic methods such as gluing, taping, clipping, tying. • Use simple components, such as split pins. • Create a basic mechanism (lever/slider). • Test their product as they work.		

Make- Construction /structures		*Use construction kits/ recycled boxes etc to design a bridge for the Three Billy Goats Gruff* *Use construction kits/ recycled boxes etc to make castles.*	
Make - Textiles		• Select from a range of fabrics to create an appliqué flag. Cut with adult support, glue to create flag. Use fabric pens. • With adult support, sew a simple seam along the edge of the flag using running stitch.	
Make – Food			• Observe basic food hygiene procedures with support – washing hands; washing fruit/veg cleaning surfaces before and after preparing food. • Peel fruit where necessary. • Use a knife and chopping board safely. • Serve food in an appealing way. • Clean/wash up after themselves.
Evaluate	• Describe what went well and which aspects of their products they are pleased with. • Describe anything that didn't work as well and any changes they had to make • Discuss whether they think their intended user will like the product and why (Can be done verbally or written)		

Subject specific vocabulary – Key Words	Please note that these definitions of key words need to be understood in the context of Design and Technology across all year groups. Design – 1. Plan to do something with a specific purpose in mind 2. do a drawing of something before making it Designer – 1. A person who creates a plan for something they want to make 2. KS2 – also a focus on 'designer' as a job title/career Technology – using what we know about science to make useful things Product – an outcome piece with a function/ that does something – not necessarily a thing that can be sold. Brief – the initial instruction that tells us what we need to do in our project User – the person who we are designing our product for, whose needs/ wants must be taken into account		
Subject specific Vocabulary	Design, designer, materials, tools, brief, product, evaluate, problem-solving		
	Cut, join, moving picture, mechanism, lever, slider, pivot	Cut, stick, thread, sew, needle, stitch	Ingredients, healthy, cook, taste, cook, cut, peel, skewer

YEAR 2

Subject content 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.

	AUTUMN	SPRING	SUMMER
Topic	Paddington Bear/ Coming Home/ Santa's Workshop	Antarctica/Lost and Found/ Great Fire of London	Pirates / Local Geography
Addressing steroptypes		Ingrid Christensen	Female Pirates – Anne Bonney and Mary Reed Black Pirate – Black Caesar
Brief	**To design and make a fabric Christmas decoration for a family member**	**To design a cart to carry your things away from the Great Fire of London –** create a group of things which need to be transported.	**To design and make a healthy wrap for lunch**
Key questions	Who are you making the decoration for? What colours would you like to use? How can you join fabric? How can you stuff the ornament?	What would you need to make a strong cart? How many wheels would you use? (Could be two or four?) How does an axel work?	How does a chef chop/prepare food?
Research	• Explore a range of existing products, discussing how they are made and how they work.	Explore a range of existing products, discussing how they are made and how they work. Discuss how these products could help them with their own design	• Talk at home about different fruit – what are people's likes and dislikes. • Explore where food comes from – talk about seasonal/unseasonal vegetables

	• Discuss how these products could help them with their own design Look at other Christmas tree decorations – what are the features? Something to hang them by, shiny etc	Look at some examples of vehicles with axels, what do they notice about the way they are fixed?	• Find out about a famous chef
Design	• Design purposeful, functional, appealing products for themselves and others based on design criteria. • Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and where appropriate information and communication technology. • Talk about what they want to make in relation to the design brief and their research • Draw a simple picture of their product and add some words, e.g. its parts/materials. • Choose the materials/tools they will need, from a limited selection • Write down some of the materials/ingredients/ tools they will need using a word bank to help them	• Design purposeful, functional, appealing products for themselves and others based on design criteria. • Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and where appropriate information and communication technology. • Talk about what they want to make in relation to the design brief and their research • Draw a simple picture of their product and add some words, e.g. its parts/materials. • Choose the materials/tools they will need, from a limited selection • Write down some of the materials/ingredients/ tools they will need using a word bank to help them	• Design purposeful, functional, appealing products for themselves and others based on design criteria. • Talk about what they want to make in relation to the design brief and their research • Draw a simple picture of their product and add some words, e.g. its parts/materials. • Choose the materials/tools they will need, from a limited selection • Write down some of the ingredients they will need using a word bank to help them • Understand the basic principles of a healthy and varied diet and that they are designing a healthy dish • Create a basic recipe, using drawings
Make – Mechanisms		• Use a box for the cart – the task is around fitting the wheels to the mechanism rather than making the structure • Mark materials before cutting and sometimes measure. • Cut paper and other materials safely and with increasing accuracy. Use paper strips to attach axel to box • Begin to choose the most effective joining methods for the task/materials. • Use simple components, such as ready cut axels and wheels.	

		• Test their product as they work, to see if it meets the requirements of the intended user.	
Make – Construction/ Structures		• Apply their knowledge of materials to make a structure stiffer/ more stable as they work.	*Experiment with buoyancy to design a ship to carry pirate treasure.*
Make Textiles	• Making/using simple paper pattern pieces. • Cutting fabric carefully. • Learning sewing basics – threading a needle, knotting your thread, finishing off. • Sewing using running stitch, attempting to produce neat, equal stitches • Creating a design on fabric using applique. • Creating a design on fabric using pens/paint.		
Make – Food			• Observe basic food hygiene procedures with support – washing hands; washing fruit/veg • cleaning surfaces before and after preparing food. • Peel Veg where necessary. • Use a knife and chopping board to neatly chop ingredients • Use a spoon to add condiments • Carefully roll up the wrap • Serve food in an appealing way. • Clean/wash up after themselves.
Evaluate	• Describe what went well and which aspects of their products they are pleased with. • Describe anything that didn't work as well and any changes they had to make • Discuss whether they think their intended user will like the product and why • Suggest how their product could be improved		

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Designer – 1. A person who creates a plan for something they want to make
2. KS2 – also a focus on ‘designer’ as a job title/career
Technology – using what we know about science to make useful things
Product – an outcome piece with a function/ that does something – not necessarily a thing that can be sold.
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<tr><td>Pattern, fabric, cut, thread, running-stitch, applique, stuff, needles, pin</td><td>Cut, saw, axel, wheel, pivot, handle, load</td><td>Ingredients, healthy, cook, taste, cook, cut, peel, skewer, balanced, nutritious, appealing, savoury</td></tr>
</table>

YEAR 3

Subject Content- 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.

	AUTUMN	SPRING	SUMMER
Topic	Stone Age/ Bronze Age/ Iron Age	World Geography – focus on Italy	Victorians/ Forces and Magnets
Brief	**To design and make a wooden Christmas decoration for a family member**	**To design and make a pizza** ***Explore structures and experiment (Leaning Tower of Pisa)***	**To design and make a game using magnets incorporate a second mechanism e.g. a bridge** ***Make a Binca bookmark in style of sampler***
Addressing stereotypes	Satoshi Kitamura (author of Stone Age Boy) Cath Kitson, Gisela Graham	Amy Johnson Female chef eg: Camille Rodriguez Dame Zada Hadid (architect)	Female scientists and physicist Samplers were only for girls but now boys can do them too! Grayson Perry tapestries
Key questions	Who are you making the decoration for? What colours would you like to use?	Talk at home – what are your family's favourite pizzas?	How can you make a Victorian style game using magnets? How can you ensure your game is robust?
Research	• Learn about how key events and individuals in design and technology have helped shape the world.	• Learn about how key events and individuals in design and technology have helped shape the world.	• Learn about how key events and individuals in design and technology have helped shape the world.

	• Investigate and analyse a range of existing products, discussing their features, construction, purpose and intended users. • Look at other Christmas tree decorations – what are the features? Something to hang them by, shiny etc • Look at the work of other designers such as Cath Kitson, Gisela Graham	• Investigate and analyse a range of existing products, discussing their features, construction, purpose and intended users. • Investigate different types of pizza – when pizza came to UK etc • Find out about a famous Italian chef/ or restaurant. • Look at the calories in pizza – how can you make them healthier? • Investigate seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.	• Investigate and analyse a range of existing products, discussing their features, construction, purpose and intended users. • Look at examples of Victorian track games- explore what sort of theme you might use e.g. Racing horses not cars – why? • Look at examples of Victorian samplers and cross stitch
Design	• Use their research to develop some of their own design criteria. • Draw a fully labelled sketch/diagram of their product, including some measurements. • Create pattern pieces where necessary • Choose the materials/tools they will use, based on their suitability for the task. • List the materials/ ingredients/tools they will need. • Order the main stages of making.	• 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 • Use their research to develop some of their own design criteria. • Draw a fully labelled sketch/diagram of their product, including some measurements. • Choose the tools they will need, from a limited selection • Understand and apply the principles of healthy and varied diet • Prepare and cook a variety of predominantly savoury dishes, using a range of cooking techniques	• 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 • Use their research to develop some of their own design criteria. • Draw a fully labelled sketch/diagram of their product, including some measurements. • Indicate where a mechanism will go and briefly explain how it will function. • Choose the materials/tools they will use, based on their suitability for the task. • List the materials/ ingredients/tools they will need. Order the main stages of making.
Make – Mechanisms	•		• Select from and use a wider range of 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, according to their functional qualities and aesthetic properties. • Measure and mark materials before cutting. • Cut materials accurately, using appropriate tools. • Join a range of materials using a variety of methods, usually choosing the method most suited to the task. • Test their product as they work, making informed adjustments to ensure their product meets the design criteria. • Incorporate a further element such as a bridge to go under or trap door to avoid – think about the way in which this should be joined. • Pay attention to the finishing of their product.
Make – Construction/ Structures	• Select from and use a wider range of 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, according to their functional qualities and aesthetic properties. • Use a band saw or small hand saw to cut a rectangle from a strip of balsa • Use a hand drill to make a hole in the top (measure using a ruler) • Decorate decoration using paints, fabric etc • Measure and mark materials before cutting. • Cut materials accurately, using appropriate tools – band saw and hand saw • Join a range of materials using a variety of methods, usually choosing the method most suited to the task. • Test their product as they work, making informed adjustments to ensure their product meets the design criteria. Pay attention to the finishing of their product.	*Apply their prior knowledge and understanding to make structures stiffer/ more stable as they work.* *Use a range of junk materials/ newspaper etc to make the highest structure you can* • Measure and mark materials before cutting. • Cut materials accurately, using appropriate tools. • Join a range of materials using a variety of methods, usually choosing the method most suited to the task. • Test their product as they work, making informed adjustments to ensure their product meets the design criteria.	
Make			*Binca book marks in style of Victorian samplers.* • *Cutting fabric carefully.*

Textiles			• *Learning sewing basics – threading a needle, knotting your thread, finishing off.* • *Sewing using running stitch, and cross stitch attempting to produce neat, equal stitches* • *Creating a design on fabric using stitches*
Make – Food		• Observe basic food hygiene procedures – washing hands, washing fruit/veg; avoiding cross contamination when preparing raw meat; cleaning surfaces before and after preparing food. • Use appropriate tools to peel, chop, slice, grate and mix ingredients. • Make a simple sauce. • Knead and roll out the dough • Cook the product in the oven, ensuring it is fully cooked. • Serve food in an appealing way. • Clean/wash up after themselves	
Evaluate	• Identify and discuss the strengths of their product. • Identify any areas for development/ improvements that could be made. • Discuss whether the product meets the requirements of the brief/the needs of the user – is it fit for purpose? • Take part in peer evaluation, giving and receiving feedback from fellow pupils.		

Subject specific vocabulary – Key Words	Please note that these definitions of key words need to be understood in the context of Design and Technology across all year groups. Design – 1. Plan to do something with a specific purpose in mind 2. do a drawing of something before making it Designer – 1. A person who creates a plan for something they want to make 2. KS2 – also a focus on 'designer' as a job title/career Technology – using what we know about science to make useful things Product – an outcome piece with a function/ that does something – not necessarily a thing that can be sold. Brief – the initial instruction that tells us what we need to do in our project User – the person who we are designing our product for, whose needs/ wants must be taken into account		
Subject specific Vocabulary	Design, designer, materials, tools, brief, product, evaluate, problem-solving, label, technology, intended user, annotated sketch, components		
	Design, cut, saw, drill, sand, attach, finish, measure	Hygiene, utensils, slice, dice, recipe, pizza, base, dough, roll, texture, oven temperature.	Moving part, mechanism, magnet, repel/attract, linkage, bridge, attach Running stitch, cross stitch, measure, knot

YEAR 4

Subject Content- 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.

	AUTUMN	SPRING	SUMMER
Topic	The Romans / The Egyptians	Egyptians cont… Electricity	World War 2 /Bridges
Addressing stereotypes	Cleopatra and other Egyptian queens Boudicca	Edith Clarke – Electrical engineer	Role of Women in WW2 Emily Warren Roebling – Brooklyn bridge engineer
Brief	**To design and make a Roman shield**	**To design and make a light up toy**	**To adapt a World War 2 recipe – carrot scones. Plan an afternoon tea based on rationing.** https://www.parkinsons.me/post/2016-11-11-wartime-carrot-scones

	To design and make an Egyptian canopic jar		*To design a bridge (relate to the Bailey Bridges made in D day landings)*
Key questions	Why did the Romans use shields? What colours might you use for a shield? What designs might you include? What shape should your shield be?	Can you use your knowledge of circuits to make a toy that lights up?	What was rationing – why were some ingredients in short supply?
Research	• Learn about how key events and individuals in design and technology have helped shape the world. • Investigate and analyse a range of existing products, discussing their features, construction, purpose and intended users. • Look at pictures of Roman shields. • Why were they made in rectangular shape – look at the testudo and discuss how this would work – look at collaboration. • *Look at canopic jars – how would they personalise their own?*	• Learn about how key events and individuals in design and technology have helped shape the world. • Investigate and analyse a range of existing products, discussing their features, construction, purpose and intended users. • Look at life of Alexander Graham Bell and Nikola Tesla – job of electrical engineer • How can you make a simple circuit?	• Learn about how key events and individuals in design and technology have helped shape the world. • Investigate and analyse a range of existing products, discussing their features, construction, purpose and intended users. • Investigate rationing during World War 2 – look at ways in which food was adapted e.g. cardboard wedding cakes. • Investigate Ministry of Food propaganda and Marguerite Patten
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 • Draw a fully labelled/annotated sketch/diagram of their product, including measurements and cross-sections. • Indicate where/how materials will be joined in order to create a stable structure. • Choose the materials/ tools they will use, based on their suitability for the task, including sourcing their own materials where appropriate.	• 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 • Use their research to develop some of their own design criteria. • Draw a fully labelled sketch/diagram of their product, including some measurements. • Indicate where electrical components will go and briefly explain how they will function. • Choose the materials/tools they will use, based on their suitability for the task.	• 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 • Design a menu for an afternoon tea based on rationing. Decorate a menu Explore the recipe for carrot scones and talk about way it can be adapted e.g.: double or halve the recipe.

	List the materials/ tools they will need. • Write (brief) instructions for how they intend to make their product.	• List the materials/ ingredients/tools they will need. • Order the main stages of making.	
Make – Mechanisms		• Select from and use a wider range of 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, according to their functional qualities and aesthetic properties. • Measure and mark materials before cutting. • Cut materials accurately, using appropriate tools. • Join a range of materials using a variety of methods, usually choosing the method most suited to the task. • Test their product as they work, making informed adjustments to ensure their product meets the design criteria. • Apply understanding of how to strengthen, stiffen and reinforce more complex structures • Understand and use electrical systems in their products, for example circuits incorporating simple switches. • Pay attention to the finishing of their product.	•
Make – Construction/ Structures	• Select from and use a wider range of 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, according to their functional qualities and aesthetic properties. • Measure and mark materials before cutting.		*Experiment with a range of materials to construct a bridge to cross from one space to another.* *Work in a team to plan and design a structure and explore ways of strengthening the bridge to carry a specific weight.*

	• Cut materials accurately, using appropriate tools. • Join a range of materials using a variety of methods, usually choosing the method most suited to the task. • Test their product as they work, making informed adjustments to ensure their product meets the design criteria. • Apply understanding of how to strengthen, stiffen and reinforce more complex structures • Pay attention to the finishing of their product.		
Make Textiles			
Make – Food			• Understand and apply the principles of a healthy and varied diet • Prepare and cook a variety of predominantly savoury dishes during a range of cooking technique • Observe basic food hygiene procedures – washing hands, washing fruit/veg; avoiding cross contamination when preparing raw meat; cleaning surfaces before and after preparing food. • Use appropriate tools to peel, chop, slice, grate and mix ingredients. • Use a range of cooking techniques – cream, grate, fold, roll • Cook the product in the oven, ensuring it is fully cooked. • Serve food in an appealing way. • Clean/wash up after themselves

Evaluate	• Evaluate their own ideas and products against their own design criteria and consider the views of others to improve their work • Discuss whether the product meets the requirement of the brief/needs of the user – is it fit for purpose? • Analyse what went well in the process and what they would change. • Discuss any problems they experienced and how they overcame them • Understand how key events and individuals in design and technology have helped shape the world

Subject specific vocabulary – Key Words	Please note that these definitions of key words need to be understood in the context of Design and Technology across all year groups. Design – 1. Plan to do something with a specific purpose in mind 2. do a drawing of something before making it Designer – 1. A person who creates a plan for something they want to make 2. KS2 – also a focus on 'designer' as a job title/career Technology – using what we know about science to make useful things Product – an outcome piece with a function/ that does something – not necessarily a thing that can be sold. Brief – the initial instruction that tells us what we need to do in our project User – the person who we are designing our product for, whose needs/ wants must be taken into account		
Subject specific Vocabulary	Design, designer, materials, tools, brief, product, evaluate, technology, intended user, design ciriteria		
	Cut, measure, design, strengthen, support, shape, finish	Battery, circuit, switch, bulb, electrical engineer	Ingredients, healthy, cook, taste, cook, cut, peel, skewer, balanced, nutritious, appealing, savoury, rationing, grate, measure

YEAR 5

Subject Content- 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.

	AUTUMN	SPRING	SUMMER
Topic	Earth and Space / Ancient Greece	Brazil and Rivers Vikings and Anglo Saxons	Japan/ The Olympics
Addressing stereotypes	**Helen Sharman Mae C Jemison** **Ancient astronomers**	***Ismael Al-Jazari (12th century engineer)***	**Look at racism in the Olympics – Jesse Owens**
Brief	**To use wood to make a simple frame to display a piece of artwork.**	**Use pulleys to design a method for getting goods across a river** ***To investigate different types of bridges***	**To design and make a tote bag to commemorate the Japan Olympics**
Key questions	Why put a picture in a frame? Why do people choose different types of frame (e.g. ornate, simple) What will you need to do to ensure your frame is rigid?	How can you move a bag of XXXX from one side of the river to the other? How can you use pulleys and ropes to help you?	Why do people buy souvenirs?
Research	• Learn about how key events and individuals in design and technology have helped shape the world.	• Learn about how key events and individuals in design and technology have helped shape the world.	• Learn about how key events and individuals in design and technology have helped shape the world.

	• Investigate and analyse a range of existing products, discussing their features, construction, purpose and intended users. • Look at a framing website to see the range of frames available! Talk about the amount of choice and why people might choose different ones. • *Look at a Holbein's painting of Henry VII and discuss how the frame enhances the sense of majesty.* • *Look at The Snail by Matisse where the frame is part of the work.* • *Look at Rothko paintings in the Tate which have no frame.* • *Discuss how work is displayed in school – we 'frame' work for display*	• Investigate and analyse a range of existing products, discussing their features, construction, purpose and intended users. • Research Ismail Al-Jazari (12th century engineer) • Research how pulleys, levers and gears help move items: https://www.twinkl.co.uk/resource/t2-s-374-levers-pulleys-and-gears-task-setter-powerpoint-activity-pack	• Investigate and analyse a range of existing products, discussing their features, construction, purpose and intended users. • Research textile designs for charity: TOMS shoes, Barcelona football (UNICEF), War child celebrity T shirts (Vivienne Westwood); charity tote bags (WWF, Bee Conservation, Marine Conservation).
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 • Use their research to develop some of their own design criteria. • Draw a fully labelled sketch/diagram of their product, including some measurements. • Choose the materials/tools they will use, based on their suitability for the task, including sourcing their own materials where appropriate. • List the materials/ ingredients/tools they will need. • Order the main stages of making.	• 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 • Use their research to develop some of their own design criteria. • Draw a fully labelled sketch/diagram of their product, including some measurements. • Indicate where the mechanism will go and briefly explain how they will function. • Indicate where/how materials will be joined in order to create a stable structure. • Choose the materials/tools they will use, based on their suitability for the task, including sourcing their own materials where appropriate. • List the materials/ ingredients/tools they will need. • Order the main stages of making.	• 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 • Use their research to develop some of their own design criteria. • Draw a fully labelled sketch/diagram of their product, including some measurements. • Consider use of patterns to aid cutting out – particularly decorations • LChoose the materials/tools they will use, based on their suitability for the task, including sourcing their own materials where appropriate. • List the materials/ ingredients/tools they will need. • Order the main stages of making.

Make – Mechanisms		• Select from and use a wider range of 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, according to their functional qualities and aesthetic properties. • Measure and mark materials with increased accuracy before cutting. • Cut materials accurately, using appropriate tools. • Join a range of materials using a variety of methods, usually choosing the method most suited to the task. • Test their product as they work, making informed adjustments , and sometimes anticipating problems, to ensure their product meets the design criteria. • Apply understanding of how to strengthen, stiffen and reinforce more complex structures • Understand and use mechanisms in their products, for example levers, pulleys and cogs • Create a polished and well-finished product.	
Make – Construction/ Structures	• Select from and use a wider range of equipment to perform practical tasks, for example cutting, shaping, joining and finishing accurately. • Select from and use a wider range of 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, according to their functional qualities and aesthetic properties. • Measure and mark materials before cutting. – use a set square to mark right angles. Measure a piece of cardboard to fix to back to reinforce		

	• Cut materials accurately, using appropriate tools. Use a hand saw and bench hook to cut right angles. • Join a range of materials using a variety of methods, usually choosing the method most suited to the task. Use hot glue gun to fix joints and stapler to reinforce. Use PVA glue to attach card to back. • Test their product as they work, making informed adjustments to ensure their product meets the design criteria. • Apply understanding of how to strengthen, stiffen and reinforce more complex structures • Pay attention to the finishing of their product. Think about decorating before they put the picture in the frame!		
Make Textiles			• Select from and use a wider range of 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, according to their functional qualities and aesthetic properties. • Measure and mark materials with increased accuracy before cutting. – use a paper pattern for bag, incorporating a seam allowance. • Use a paper pattern to cut out any decorations to be added to the bag • Cut materials accurately, using appropriate tools. • Join a range of materials using a variety of methods, usually choosing the method most suited to the task. • With adult support, use a sewing machine to complete straight seams around the bag. • Use PVA glue or fabric glue to attach decorations

			• Test their product as they work, making informed adjustments to ensure their product meets the design criteria.
Make – Food			
Evaluate	• Evaluate their own ideas and products against their own design criteria and consider the views of others to improve their work • Discuss whether the product meets the requirement of the brief/needs of the user – is it fit for purpose? • Analyse what went well in the process and what they would change. • Discuss any problems they experienced and how they overcame them • Understand how key events and individuals in design and technology have helped shape the world		

Subject specific vocabulary – Key Words	Please note that these definitions of key words need to be understood in the context of Design and Technology across all year groups. Design – 1. Plan to do something with a specific purpose in mind 2. do a drawing of something before making it Designer – 1. A person who creates a plan for something they want to make 2. KS2 – also a focus on 'designer' as a job title/career Technology – using what we know about science to make useful things Product – an outcome piece with a function/ that does something – not necessarily a thing that can be sold. Brief – the initial instruction that tells us what we need to do in our project User – the person who we are designing our product for, whose needs/ wants must be taken into account		
Subject specific Vocabulary	Design, designer, materials, tools, brief, product, evaluate, technology, intended user, design criteria, cross-sectional diagram		
	Cut, measure, design, strengthen, support, shape, finish, frame structure, reinforce, saw, mitre, join	Pulley, driver, transport, mechanical system.	Pattern pieces, machine, bobbin, thread, seam allowance turn out, ethical product, corporate social responsibility.

YEAR 6

Subject Content- 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.

	AUTUMN	SPRING	SUMMER
Topic	World War 1 Natural Disasters	Mission Mysterious Benin	Crime and Punishment/ Celebrating difference
Addressing stereotypes			**Cressida Dick** **Nowell Roberts**
Brief	**To design and make a toy incorporating Hydraulics / to use simple hydraulics to make a model of a Natural disaster**	*Electrical circuits – in science lessons. To use knowledge and understanding of circuits to create a fairground attraction.* **To create a fabric banner using a range of fixings**	**To create a small 'green house' structure to grow lettuce plants** **To use the lettuce they have grown to make a healthy wrap for lunch**
Key questions	Who is the product for? How will the mechanism be incorporated?	*Can you use your knowledge of electrical circuits to make a fairground attraction*	Why grow things in a greenhouse? What are the features of a greenhouse – what does each part need to do? What are the advantages (warmth) and disadvantages? (You need to water more often)

Research	• Learn about how key events and individuals in design and technology have helped shape the world. • Investigate and analyse a range of existing products, discussing their features, construction, purpose and intended users. • *https://www.instructables.com/Easy-Hydraulic-Machines/* • *Look how hydraulics have been used in the past* • *https://hcsplating.com/history-of-hydraulics/*	• LLearn about how key events and individuals in design and technology have helped shape the world. • Investigate and analyse a range of existing products, discussing their features, construction, purpose and intended users. • look at different types of fairground attraction – explore how they move, common features etc • Explore range of African patterns and designs. Link with art work around printing and batik • https://www.vectorstock.com/royalty-free-vectors/african-banners-tribal-vectors • Explore different types of fixings e.g. Velcro, buttons, snap fasteners, hook and eye	• Learn about how key events and individuals in design and technology have helped shape the world. • Investigate and analyse a range of existing products, discussing their features, construction, purpose and intended users. • Look at greenhouse design at Eden project and at Kew – different shapes and purposes.
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 • Use their research to develop some of their own design criteria. • Draw a fully labelled sketch/diagram of their product, including accurate measurements. • Indicate where the mechanism will go in their design and how they will incorporate it • Choose the materials/tools they will use, based on their suitability for the task. • List the materials/ ingredients/tools they will need. • Order the main stages of making. • Create a prototype to test out their ideas	• 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, pattern pieces and computer-aided design • Use their research to develop some of their own design criteria. • Draw a fully labelled sketch/diagram of their product, including some measurements. • Choose the materials/tools they will use, based on their suitability for the task. • Select type of fixing to be used and indicate how this will be incorporated into their design. ` • List the materials/ ingredients/tools they will need. • Order the main stages of making.	• 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 • Use their research to develop some of their own design criteria. • Draw a fully labelled sketch/diagram of their product, including accurate measurements. • Choose the materials/tools they will use, based on their suitability for the task. • List the materials/ ingredients/tools they will need. • Order the main stages of making

Make – Mechanisms	• Select from and use a wider range of 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, according to their functional qualities and aesthetic properties. • Measure and mark materials accurately before cutting. • Cut materials accurately, using appropriate tools. • Join a range of materials using a variety of methods, usually choosing the method most suited to the task. • Test their product as they work, making informed adjustments and striving to address any anticipated problems to ensure their product meets the design criteria. • Incorporate a hydraulic mechanism, paying attention to how it should be joined to the product to allow it to work efficiently. • Apply understanding of how to strengthen, stiffen and reinforce more complex structures • Create a polished and well-finished product		•
Make – Construction/ Structures			• Select from and use a wider range of 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, according to their functional qualities and aesthetic properties. • Measure and mark materials accurately before cutting. • Cut materials accurately, using appropriate tools.

			• Join a range of materials using a variety of methods, usually choosing the method most suited to the task. Use corner method to construct three-dimensional structure • Cover structure in clear plastic – consider best way to attach, fold on corners etc. • Test their product as they work, making informed adjustments and striving to address any anticipated problems to ensure their product meets the design criteria. • Apply understanding of how to strengthen, stiffen and reinforce more complex structures • Create a polished and well-finished product..
Make Textiles			
Make – Food			• Understand and apply the principles of a healthy and varied diet • Prepare and cook a variety of predominantly savoury dishes during a range of cooking technique • Observe basic food hygiene procedures – washing hands, washing fruit/veg; avoiding cross contamination when preparing raw meat; cleaning surfaces before and after preparing food. • Use appropriate tools to peel, chop, slice, grate and mix ingredients. • Use a range of cooking techniques – cream, grate, fold, roll. • Serve food in an appealing way. • Clean/wash up after themselves

Evaluate	• Evaluate their own ideas and products against their own design criteria and consider the views of others to improve their work • Use peer review to review and adapt their design while working. • Discuss whether the product meets the requirement of the brief/needs of the user – is it fit for purpose? • Analyse what went well in the process and what they would change. • Discuss any problems they experienced and how they overcame them • Understand how key events and individuals in design and technology have helped shape the world

Subject specific vocabulary – Key Words	Please note that these definitions of key words need to be understood in the context of Design and Technology across all year groups. Design – 1. Plan to do something with a specific purpose in mind 2. do a drawing of something before making it Designer – 1. A person who creates a plan for something they want to make 2. KS2 – also a focus on 'designer' as a job title/career Technology – using what we know about science to make useful things Product – an outcome piece with a function/ that does something – not necessarily a thing that can be sold. Brief – the initial instruction that tells us what we need to do in our project User – the person who we are designing our product for, whose needs/ wants must be taken into account		
Subject specific Vocabulary	Design, designer, materials, tools, brief, product, evaluate, product, intended user, design criteria, exploded diagram, innovation		
	Cut measure, hydraulic, syringe, tubing, mechanical system, driver, follower	Battery, circuit, switch, monitor, control, program, electrical engineer. Cut, thread, sew, attach, fixing, Velcro, snap fastener, button	Frame structure, triangulation, strengthen, reinforce, greenhouse, agricultural engineering, hygiene, seasonality, deconstructed food.