



FOUR MARKS CE PRIMARY SCHOOL

DESIGN AND TECHNOLOGY CURRICULUM MAP

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Our Design and Technology curriculum is based on the following:

- DFE Early Years foundation stage statutory framework (EYFS) (2017)
- DFE National Curriculum (2014)
- The Equality Act (2010)
- The Church of England's Guidance Documents: Vision for Education
 - 'Deeply Christian, Serving the Common Good'; Autumn 2016
 - Valuing All God's Children (VAGC); 2019 (2nd Edition)
 - The Fruit of the Spirit; October 2015
 - Pastoral Principles for Living Well Together; Church of England; April 2019

NC:	Statements:					
Overview:	<u>Purpose of study</u> Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation. <u>Aims</u> The national curriculum for design and technology aims to ensure that all pupils: - develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world - build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users - critique, evaluate and test their ideas and products and the work of others - understand and apply the principles of nutrition and learn how to cook. <u>Attainment targets</u> By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.					
Key Stage 1:	<u>Overview:</u> 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].	<u>Design</u> - 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	<u>Make</u> - 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	<u>Evaluate</u> - explore and evaluate a range of existing products - evaluate their ideas and products against design criteria	<u>Technical knowledge</u> - 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.	<u>Cooking and nutrition</u> - Use the basic principles of a healthy and varied diet to prepare dishes. - Understand where food comes from.
Key Stage 2:		<u>Design:</u> - 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.	<u>Make:</u> - Select from and use a wider range of tools and equipment to perform practical task (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.	<u>Evaluate:</u> - 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.	<u>Technical knowledge:</u> - 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.	<u>Cooking and nutrition</u> - Understand and apply the principles of a healthy and varied diet. - Prepare and cook a variety of predominantly savoury dishes using a range of techniques - Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Early Years Foundation Stage Framework					
Early learning Goal: Creating with Materials Children at the expected level of development will: - 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.					
Educational programme: Expressive Arts and Design: The development of children's artistic and cultural awareness supports their imagination and creativity. It is important that children have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. The quality and variety of what children see, hear and participate in is crucial for developing their understanding, self-expression, vocabulary and ability to communicate through the arts. The frequency, repetition and depth of their experiences are fundamental to their progress in interpreting and appreciating what they hear, respond to and observe.					
Aim Example	Research	Tinker Table	Design	Make	Evaluate
To design a super hero outfit that can help Supertato.	Children can research different superheroes who they like. Opportunity for role play, think about what is a good super power to have.	Explore different materials attaching to a potato or different vegetables. Taste test different vegetables.	Verbally discuss how they might design their potato. Some children could draw it and annotate if they like or be given a template.	Children to then attach different materials to their potato thinking about why it would help Supertato.	Children to test their Supertato thinking about all the special powers he might have. E.G. Can he fly? Children to run with their potato and see if their cape survives.

Early Years Foundation Stage

Please note that the Foundation Stage Curriculum is separate to the National Curriculum which starts in Year 1. However, the Foundation Stage curriculum plays an important part in securing foundation skills in National Curriculum subjects.

	Autumn	Spring	Summer
Expressive art and design NC links: Design and Technology	<u>Creating with Materials</u> <u>Children will:</u> - Make imaginative and complex ‘small worlds’ with blocks and construction kits, such as a city with different buildings and a park. - Explore different materials freely, to develop their ideas about how to use them and what to make. - Develop their own ideas and then decide which materials to use to express them. Join different materials and explore different textures. - Create closed shapes with continuous lines and begin to use these shapes to represent objects.	<u>Creating with Materials</u> <u>Children will:</u> - Return to and build on their previous learning, refining ideas and developing their ability to represent them. - Create collaboratively, sharing ideas, resources and skills.	<u>ELG: Creating with Materials</u> <u>Children will:</u> - 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
	<u>Being Imaginative and Expressive</u> <u>Children will:</u> - Make imaginative and complex ‘small worlds’ with blocks and construction kits, such as a city with different buildings and a park. - Explore different materials freely, to develop their ideas about how to use them and what to make. - Develop their own ideas and then decide which materials to use to express them. Join different materials and explore different textures.	<u>Being Imaginative and Expressive</u> <u>Children will:</u> Create collaboratively, sharing ideas, resources and skills.	<u>ELG: Being Imaginative and Expressive</u> NA
Physical Development	<u>Fine Motor Skills</u> <u>Children will:</u> - Use one-handed tools and equipment, for example, making snips in paper with scissors. - Use a comfortable grip with good control when holding pens and pencils. - Show a preference for a dominant hand.	<u>Fine Motor Skills</u> <u>Children will:</u> Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Suggested tools: pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons.	<u>ELG: Fine Motor Skills</u> <u>Children will:</u> Use a range of small tools, including scissors, paint brushes and cutlery

KS1 Cycle A			
	Autumn	Spring	Summer
Aim	To create a paper aeroplane for the Wright brothers to have the best design.	To create Jamaican jewellery for Mary Seacole to represent her heritage/culture	To create a lunch for the light keeper that promotes healthy eating.
Research	The children will research different designs of aeroplanes and see how they have developed over the years.	The children will look at different types of jewellery and consider different sizes e.g. bigger for adults. They can also look at the style of traditional Jamaican jewellery and the patterns from there.	The children will research existing sandwiches in the local supermarkets either via ICT or a selection of the shops. They will consider their target user and what the light keeper might like and why.
Tinker Table	The children will have the opportunity to practice origami and different designs as well as different materials.	The children can practice threading different sized beads as well as getting the correct size for different body parts. E.G. a bracelet vs a necklace.	The children can experience different foods, trying them for themselves as well as considering the bread that they will use. Will it survive the journey to the light keeper?
Design	The children can settle on a design based on what they learnt at the Tinker table. They should think about the material used, as well as the specific design.	The children can design their own piece of jewellery for Mary Seacole thinking about the material and pattern they are going to do.	The children can then design their sandwich based on the flavours they tried previously. They can also consider how the light keeper will receive their lunch.
Make	The children will then make their design using a variety of materials such as paper, card or anything else they would like to try.	The children will then make their design taking into consideration their target user and to consider using repeating patterns.	The children can then make their sandwich that they have designed.
Evaluate	The children can test their designs by seeing how well it flies. The children will consider their strengths and weaknesses of their final product and why it worked as well as it did.	The children can see if their jewellery fits an adult then consider the strengths and weaknesses of their product and how they could improve it.	The children can try their final sandwiches to see if their flavours work. They can consider if the sandwich would hold in the journey to getting to the light keeper.

Key Stage 1 Cycle B			
	Autumn	Spring	Summer
Aim	To create a house for the 3 little pigs to live in safely.	To create a child's toy with a slider about the titanic	To create eco-friendly packaging for Tesco's fruit.
Research	Houses today, go for a walk around the local area what kind of houses do they see? What are they made of? Can they look at houses from other stories or in history how have houses been made in the past?	Look at different children's toys around boats. Are there any similarities and differences? The children can then look at products with sliders, how do they think it works?	The children will research different packaging in the shops. What is it made of? Can it be recycled? Does it protect the product well?
Tinker Table	Making walls out of different materials what happens if they are hit by different weathers? The children could use paper, sticks, clay, Lego etc.	The children will build their own sliders to see how they work. Will it go up and down or side to side? Does the design change as they change direction?	The children can explore different packaging nets, how does it connect. They can think about which fruit needs protecting and why. E.G a banana has a layer of skin that we do not eat whereas grapes do not.
Design	The Children can design their house for the 3 pigs to live in. Do they have their own separate rooms? Does it have 2 floors? What material is going to be used?	The children can then design their own slider with the particular direction that they want. Will they show the Titanic sailing or sinking? What material will the slider be made out of? What will the rest of the toy be made out of?	The children can then design their packaging for their fruit thinking about how they are going to make it, what materials are going to be used and is it easily recycled.
Make	The children will then make their house and decorate it accordingly to the style of the 3 little pigs.	The children can make their slider toy based upon their design.	The children can make their packaging based upon their design.
Evaluate	The children to test their houses against severe weather conditions such as wind and earthquakes does it stand strong? The children can then evaluate their design thinking about the strengths and weaknesses.	The children can test their product, does the slider work? Is it easy for a child to use? Can it be used as a toy or is it too delicate? Children can then evaluate their design thinking about the strengths and weaknesses.	The children can test how protective their packaging is and see if all the materials used can be easily recycled.

Lower Key Stage 2 Cycle A			
	Autumn	Spring	Summer
Aim	To create a pulley system model fairground ride for Paulton's Park.	To create a Roman Bulla purse for a child with 5 coins.	To create a chocolate box for a new flavour of Cadbury's chocolate.
Research	The children can look at existing roller coaster and see how they work and their different systems. Introduction to pulley systems and how they work.	The children can look at Roman jewellery from the past, what was it like? Who wore it? What materials did they use?	The children can look at existing chocolate packaging, what makes them appealing to users, what it made from?
Tinker Table	Children to try using pulley systems, what happens if they add more gears does it make it easier or harder?	The children can practice their different sewing techniques with different materials. Which did they find the best to work with? What style of stitch would be best suited for this project?	The children can practice making different shaped boxes using nets of shapes. They can also use different materials such as cardboard, card, correx board to see which is easier to use. The children can also learn about scoring card. CAD opportunity.
Design	The children can design their own fairground ride thinking about who their intended user is, how the pulley system will work and the place it would be in relation to the ride.	The children can then design their Bulla considering the different stitches they would use as well as the material they would like.	The children can design their own packaging for the chocolate bar, thinking about the net they are going to use, what material and the colours to be appealing to users.
Make	The children can then make their model fairground using materials provided focusing on the correct use of a pulley system.	The children can then make their Bullas using their chosen material and stitch.	The children can then make their nets for their packaging and then make it all together.
Evaluate	The children then evaluate their model. Would Paulton's park accept their design? Why? Has the pulley system worked? Is there any adaptations needed to make it even better?	The children to then test their product can it hold 5 coins? Would the child like the design why? Did the stitch work?	The children can test their packaging- does it fit the chocolate bar? Does it protect the bar from breaking? Is the packaging appealing to the intended users? Would Cadbury choose their design? Why?

Lower Key Stage 2 Cycle B			
	Autumn	Spring	Summer
Aim	To create a replica Round house village for a local museum using as many natural resources as possible.	To create Egyptian loaves of bread to host a feast in the name of Pharaoh	To create a model bridge for members of the community to walk over the water cress.
Research	The children can research the types of houses made in the Iron, stone and bronze age. Thinking about the shape and the materials used. They can discuss what other building might be included in a village. The children could even visit Winchester City Museum to see what exhibit the museum is looking for and scale.	The children can research the food eaten in Ancient Egypt time. Looking at the method used as well to create it and compare it to the method used today.	The children can research different bridges in the local area and famous bridges across the world. How are they made? What materials are used there?
Tinker Table	The children can explore the use of clay and natural resources to create a house. Focusing on the joining of the materials together as well as the accuracy in relation to the point in history.	The children can explore the use of gluten and how it creates elasticity and the process of kneading. Also opportunity to try different flavours for the taste.	Children to explore different materials and structures that can hold the most weight. Children can try different materials as well as different structure. CAD opportunity: the bridge designer software.
Design	The children can then design their house looking at the materials, how it will be joined together. This design can be extended by looking at the whole village rather than just the house.	The children can then design their loaf thinking about the shape they want to design, the key ingredients and any scoring in the loaf.	Using what the children learnt previously, the children can then design their bridge thinking about the weight, material and type of structure.
Make	The children can then make their roundhouses using their materials that they can collect from the local area.	The children can then create their dough based on their design.	The children can then create their model of a bridge using their chosen structure and materials.
Evaluate	The children can evaluate their village in terms of accuracy and how strong and secure their final pieces are.	Once baked, the children can evaluate the taste of the bread as well as the success of following the method of creating Egyptian bread.	The children can test their bridges adding weight at different points to see if the structure will hold.

Upper Key Stage 2 Cycle A			
	Autumn	Spring	Summer
Aim	To create a model island for an endangered species of animal to prevent them going extinct.	To create a burglar alarm, for the school to prevent intruders.	To create anglo-saxon jewellery for King Alfred to wear at his coronation. (Winchester City Museum)
Research	The children can research different animals that are going extinct and the reason why. There should be a particular focus on their habitat. The children can then look at their ideal environment in order for the animal to thrive.	The children can research different alarms and their purpose. They could look at what needs to be protected in school, interview the caretaker to talk about what security protocols are already in place (not in lots of detail obviously but the general gist).	The children can research King Alfred and see the big statue at Winchester City Museum. They can also look at the type of jewellery worn in Anglo-saxon times.
Tinker Table	The children can practise working with polystyrene and other materials to get the contour layers and using the saws. They can also consider how they might decorate their island and the adhesiveness of polystyrene by either painting, adding fabric or any other way they might want to decorate it.	The children can practise working with circuits and considering what else they would need in order to do this on a full school scale.	The children can experiment using the aluminium to create different designs. They can consider the patterns and symbols in the jewellery and what tools they could use to achieve this pattern. They can also consider how much material they would need to produce different types of jewellery. E.G. they would need more for a brooch rather than a ring.
Design	The children can then lay out their design considering all they have learnt at the tinker table. The children should be able to justify why they are using the materials from a manufacturing point of view as well as the benefits of the landscape for their chosen animal.	Based on their understanding of circuits, the children can design their burglar alarm for the school, taking into consideration the amount of material they may need e.g. if it is going around a door.	Based on their research on King Alfred the children can design a piece of jewellery that they think he would wear. They can carefully chose their pattern as well as the materials and tools they would need.
Make	The children can now make their designs using their chosen materials.	The children can now make their designs.	The children can now make their jewellery.
Evaluate	Once they have built their island they can then evaluate their design comparing it to their original design. They can think about how successful their making process was and if it will benefit their chosen animal.	The children can test their alarms to see if they would work against an intruder and then consider how the alarm could be improved if they were to do it again.	The children can evaluate their jewellery taking into consideration the comfort of wearing their piece of jewellery, would it last a long time and what would they change for next time.

Upper Key Stage 2 Cycle B			
	Autumn	Spring	Summer
Aim	Design a rocket keyring for a child to show progression of rockets through history.	To create a Greek chariot that will be the fastest in the next Olympics. (DT Unit with Amery as well)	To create a parachute that can safely deliver food parcels for WW2 Evacuees.
Research	The children can research rocket designs through the ages, see how they have changed to become more aerodynamic. They can look at the materials used and the cost to create different rockets. The children can also research existing keyrings and consider who they were made for as well as why they work successfully.	The children can research the original Olympics and chariot races. They should discuss how they were made in Ancient Greek times and how it would be made now.	The children can research different parachutes used in WW2, why they were used and the materials chosen. Could research the women pilots in that time as well. Children could also research what food parcels or care packages were needed in those times.
Tinker Table	The children can experiment sawing wood and creating a rocket design. Considering the shape of their rocket e.g. adding small fine details might not be easy to cut out with the saw. They can also look at sanding pieces of wood down as well as drilling holes and the safety precautions around that.	The children can research gears, pulleys, cams, levers and linkages considering how this might benefit creating a racing chariot.	The children can experiment creating their own parachutes out of different materials that were available in WW2 and the different weights they can hold. They could also consider what height it would need to be dropped in order to be safe.
Design	The children can design their rocket keyring thinking about which style of rocket they might use. The grain of the wood and where the hole for the keyring will go.	Using what they have learnt about all the different systems, the children can design their chariots thinking about making it streamline and able to turn corners as well as the material used to make it lightweight.	The children can then design their parachutes thinking about what they are going to use to make it and predict how much weight it might be able to hold.
Make	The children can now make their chosen keyring. Based on the skill level seen in the tinker table stage this could be done in a 1:1 setting or in a group with children that are more confident.	The children can then make their chariots. Teacher discretion on whether it is a group project for a life size chariot or smaller individual models.	Using a variety of resources, the children can now make their parachute thinking about how they might attach their parachute to the food parcel.
Evaluate	The children can evaluate their design. They can think about if it is a clear representation of one of the rockets from the past. If it is suitable for their intended user and if it is safe e.g. soft edges, smooth surface etc.	The children can race their chariots on the tables or the playground around an arena. They can record the races and use the slow-mode feature to analysis how well their chariots worked at different points of the race e.g. taking corners and the mechanical systems.	The children can test their parachutes by dropping them at various heights or adding more weight on each time. They could also consider the cost it would take to make a full scale parachute from this design.