Our Design and Technology Intent

Aspects of learning for EYFS planning are taken from 2020 Development Matters and are prerequisite skills for design & technology within the national curriculum. The table below outlines the relevant statements taken from the Early Learning Goals in the EYFS statutory framework and the Development Matters age ranges for Three and Four Year-Olds and Reception to match the programme of study for design & technology.			
Areas of Learning	**3 and 4 Year Olds** **Pupils will know how to:**	**Reception** **Pupils will know how to:**	**ELG** **Pupils will know how to:**
Personal, Social & Emotional Development	• Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them.		
Physical Development	• Use large-muscle movements to wave flags and streamers, paint and make marks. • Choose the right resources to carry out their own plan. • Use one-handed tools and equipment, for example, making snips in paper with scissors	• Progress towards a more fluent style of moving, with developing control and grace. • Develop their small motor skills so that they can use a range of tools competently, safely and confidently. • Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor	• Use a range of small tools, including scissors, paintbrushes and cutlery.
Understanding the World	• Explore how things work.		
Expressive Arts & Design	• 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, in order 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. • Create closed shapes with continuous lines, and begin to use these shapes to represent objects.	• Explore, use and refine a variety of artistic effects to express their ideas and feelings. • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Create collaboratively, sharing ideas, resources and skills	• 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.

TERM IN WHICH EACH UNIT IS TAUGHT			
Year 1	**Advent 1** **Food: Fruit and Vegetables** **(History Robin Hood Sherwood Forest)** **National Curriculum:** 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 • select from and use a range of tools and equipment to perform practical tasks for example, cutting • select from and use a wide range of materials and components, including a range of ingredients, according to their characteristics Evaluate • explore and evaluate a range of existing products e.g. tasting fruits and vegetables, smoothies evaluate their ideas and products against design criteria .	**Lent 1** **Mechanisms: Wheels** **(History Toys)** **National Curriculum** 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, 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 (wheels and axles], in their products.	**Pentecost 2** **Textiles: Punch & Judy Puppets** **(Geography Coastlines- The Seaside)** **National Curriculum** 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 textiles according to their characteristics Evaluate • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria

Core Knowledge	Know the difference between fruits and vegetables. Know that some foods typically known as vegetables are actually fruits (e.g. cucumber). Know that a fruit has seeds and a vegetable does not. Know that fruits grow on trees or vines. Know that vegetables can grow either above or below ground. Know that a blender is a machine which mixes ingredients together into a smooth liquid. Know that fruits and vegetables blend down from a solid to a liquid. Know which fruits and vegetables need to be peeled before blending and which do not. Know that ingredients need to be chopped into smaller prices before blending.	Know that wheels need to be round to rotate and move. Know that for a wheel to move it must be attached to a rotating axle. Know that an axle moves within an axle holder which is fixed to the vehicle or toy. Know that the frame of a vehicle (chassis) needs to be balanced. Know some real-life items that use wheels including aeroplanes to take off and land.	Know that 'joining technique' means connecting two pieces of material together. Know that there are various temporary methods of joining fabric by using staples, glue or pins. Know that different techniques for joining materials can be used for different purposes. Know that a template (or fabric pattern) is used to cut out the same shape multiple times. Know that drawing a design idea is useful to see how an idea will look.
Wider Knowledge	Know how fruits and vegetables grow. Know that different fruits and vegetables need different conditions to thrive. Know that some fruit and vegetables are seasonal.	Know that you can change the way the vehicle moves depending on the positioning of the axel on the wheel(s)	Know that Punch and Judy puppets were made from fabric with papier mâché heads in the past. Know that a glove puppet is designed to fit the hand so the thumb and fingers act as the puppet's hands to hold objects
Skills	• Designing smoothie carton packaging by-hand or on ICT software. • Chopping fruit and vegetables safely to make a smoothie. • Identifying if a food is a fruit or a vegetable. • Learning where and how fruits and vegetables grow. • Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging.	• Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move. • Creating clearly labelled drawings that illustrate movement. • Adapting mechanisms. • Testing mechanisms, • Identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move.	• Using a template to create a design for a puppet. • Cutting fabric neatly with scissors. • Using joining methods to decorate a puppet. • Sequencing steps for construction. • Reflecting on a finished product, explaining likes and dislikes.
Diversity Links			Know that Punch and Judy puppets were banned overtime because the story always involved Mr Punch hurting his wife Judy which is wrong.

			Female puppet make Judith Hope talks about her puppet design. **Storytelling, Cultural Unity in diversity # Puppet show**
Vocabulary	peel, slice, chop, fruit, vegetable, leaf, stem, seed, root, smoothie, carton, flavour, healthy, design,	Axle, axle holder, chassis, diagram, dowel, equipment, mechanism, wheel	Decorate, design, fabric, glue, model, hand puppet, safety pin, staple, stencil, template

Year 2	**Advent 1** **Mechanisms: Fairgrounds** **(History Goose fair)**	**Lent 1** **Structures: Constructing a Stuart house as in the 1660s** (History-Fire of London)	**Pentecost 2** **Food Design a Balanced Diet Wrap** (Geog- UK Produce)
	National Curriculum 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, 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.	**National Curriculum:** 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. Make • select from and use a range of tools and equipment to perform practical tasks [for example, cutting & joining. • select from and use a wide range of materials and components, including construction materials, according to their characteristics. Evaluate • explore and evaluate a range of existing products e.g look at the structure of houses today and in the past • evaluate their ideas and products against design criteria.	**National Curriculum** 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: • use the basic principles of a healthy and varied diet to prepare dishes. • understand where food comes from.

	• explore and use mechanisms (wheels and axles], in their products.	Technical knowledge • build structures, exploring how they can be made stronger, stiffer, and more stable.	
Core Knowledge	Know that different materials have different properties and are therefore suitable for different uses. Know the features of a Ferris wheel include the wheel, frame, pods, a base, an axle and an axle holder. Know how to attach a wheel to an axle so the wheel moves (revisit of Yr 1 prior learning).	Know that shapes and structures with wide, flat bases are the most stable. Know that triangle shapes are stronger than square or rectangular shapes. Know how to create a more stable triangular shape from a square by adding a bar corner to corner. Know that triangles can make corners stronger in a structure. Know that the shape of a structure affects it's strength. Know that materials can be chosen because of their properties and manipulated to improve strength and stiffness. Know that a structure is something which has been formed or made from parts.	Know that 'diet' means the food and drink that a person or animal usually eats. Know that 'ingredients' means the items in a mixture or recipe. Know the main food groups and identify foods that belong to each group. Know what makes a balanced diet is. Know how to follow a design brief/recipe to create a wrap.
Wider Knowledge	Know that a stable broad base is important for the stability of the whole structure. Know that it is important to test my design as I go along so that I can solve any problems that may occur.	Know that some materials are more flammable than others. Know that a 'stable' structure is one which is firmly fixed and unlikely to change or move. Know that a 'strong' structure is one which does not break easily. Know that a 'stiff' structure or material is one which does not bend easily. Know the best method to join structures to ensure strength and sustainability.	Know where to find the nutritional information on packaging. Know that nutrients are substances in foods that living thigs need to give us energy. Know that we should eat a range of different foods from each food group, and roughly how much of each food group. Know that I should only have a maximum of five teaspoons of sugar a day to stay healthy. Know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars'
Skills	• Selecting a suitable linkage system to produce the desired motions. • Designing a wheel.	• design a stable house structure based on design criteria. • generate, develop, model and communicate their ideas through talking, drawing, mock-ups.	• Designing a healthy wrap based on a food combination which works well together. • Slicing food safely using the bridge or claw grip. • Constructing a wrap that meets a design brief.

	• Selecting appropriate materials based on their properties. • Selecting materials according to their characteristics. • Following a design brief. • Evaluating different designs. • Testing and adapting a design	• select from and use a range of tools and equipment to perform practical tasks [for example, cutting & joining. • select from and use a wide range of materials and components, including construction materials, according to their characteristics. • explore and evaluate the structure of houses today and in the past. • evaluate their ideas and products against design criteria. • build structures, exploring how they can be made stronger, stiffer and more stable	• Describing the taste, texture and smell of fruit and vegetables. • Taste testing food combinations and final products. • Describing the information that should be included on a label. Evaluating which grip was most effective
Diversity Links		The Building Boy Story about a young boy inspired by his grandmother who had been an architect by Ross Montgomery & David Litchfield Elsie Owusu Ghanian/British black female architect	
Vocabulary	Design, design criteria, wheel, Ferris wheel, pods axle, axle holder, frame, mechanism	Structure, natural, man-made, materials, properties, stable, model, flammable, strengthen	Cut, chop, peel, grip, taste, texture, diet, wrap, nutrition, carbohydrates, fruits and vegetables, protein, dairy, fats and sugars.

Year 3	**Advent 2** **Electrical Systems** **Design an information board to show what you have learned about cities, counties and the countries of the UK using and electrical system.** (Geog- Map of UK Cities and Counties) **National Curriculum:** **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 ides through discussion, annotated sketches, cross-sectional and expanded diagrams, prototypes, pattern pieces and computer aided design. **Make:** • Select from and use a wider range of tools and equipment to perform practical tasks accurately. • Select from and use a wider range of 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. • Understand how key events and individuals in design and technology have helped shape the world **Technical knowledge:** • 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.	**Lent 2** **Mechanical Systems:** Pneumatic Toys (Geog-volcanoes) **National Curriculum:** **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 ides through discussion, annotated sketches, cross-sectional and expanded diagrams, prototypes, pattern pieces and computer aided design. **Make:** • Select from and use a wider range of tools and equipment to perform practical tasks accurately. • Select from and use a wider range of 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	**Pentecost 1** **Textiles:** Fastenings (History- Ancient Greeks) **National Curriculum** 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 textiles according to their functional properties and aesthetic qualities Evaluate • investigate and analyse a range of existing products

		• 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.	• 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
Core Knowledge	Know that an electrical system is a group of parts (components) that work together to transport electricity around a circuit. Know the common features of an electric product (switch, battery or plug, dials, buttons etc.) Know examples of common electric products (kettle, remote control etc.) Know an electric product uses an electrical system to work (function). Know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits.	Know how pneumatic systems work. Know that pneumatic systems can be used as part of a mechanism. Know that pneumatic systems operate by drawing in, releasing and compressing air. Know how to build secure housing for a pneumatic system.	• Know that a fastening is something that holds two pieces of material together. • Know that different fastening types are useful for different purposes. • Know that creating a mock-up (prototype) of their design is useful for checking ideas and proportions.
Wider Knowledge	Know how to present work in an attractive way to interest and engage an audience. Know how museums and places of interest communicate information in an appealing way.	Know that different types of drawings are used in design to explain ideas clearly. Know the purpose of exploded-diagrams through the eyes of a designer and their client	Know that the Ancient Greeks wore large loose pieces of cloth as a tunic called peplos for women and chiton for men. Know that the Ancient Greeks used a pin or fastenings to hold their tunics together.

Skills	• Carrying out research based on a given topic (e.g. Cities, Counties and Countries of the UK) to develop a range of initial ideas. • Generating a final design for the electric poster with consideration for the client's needs and design criteria. • Planning the positioning of the bulb (circuit component) and its purpose. • Know how to improve the product strength and withstand the weight of the circuit on the rear. • Measuring and marking materials out using a template or ruler. • Fitting an electrical component (bulb). • Learning ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge). • Learning to give and accept constructive criticism on own work and the work of others. • Testing the success of initial ideas against the design criteria and justifying opinions. • Revisiting the requirements of the client to review developing design ideas and check that they fulfil their need.	• Design a volcano model that uses a pneumatic system. • Develop design criteria from design brief. • Generate ideas using thumbnail sketches and exploded diagrams. • Create a pneumatic system to create a desired motion. • Use syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic model. • Test and modify the outcome, suggesting improvement.	• Writing design criteria for a product, articulating decisions made. • Designing a personalised book sleeve. • Making and testing a paper template with accuracy and in keeping with the design criteria. • Measuring, marking and cutting fabric using a paper template. • Selecting and cutting fabrics with ease using fabric scissors. • Threading needles with greater independence. • Tying knots with greater independence. • Selecting a stitch style to join fabric. • Sewing neatly using small regular stitches. • Incorporating a fastening to a design. • Testing and evaluating an end product against the original design criteria. • Evaluating an end product and thinking of other ways in which to use fastenings.
Diversity Links	**Joan Clarke (1917-1996)** Bletchley Park, is the old mansion in England where the cryptographers were working hard to decode documents from their enemies during World War II. Joan Clarke was among the best minds behind the codebreaking scheme as a cryptographer who unscrambled messages coming from the German	Lonnie Johnson designer of the super soaker **Letitia Geer** For many years before Letitia Geer developed the one-handed syringe in 1899, medical professionals used syringes that required both hands to administer injections.	Yinka Ilori textile & furniture designer who originated in Nigeria and grew up in England.

	navy. Clarke's work paved the way for almost instantaneous responses within the military that saved lives from possible U-boat attacks. The contributions of Clarke earned her the award in 1946 of a Member of the Order of the British Empire.		
Vocabulary	Bulb, battery, wire, circuit, connect, crocodile clip, design, product.	Mechanism, pivot, pneumatic system, thumbnail sketch, lever, component, properties, motion, reinforce	criteria, fastening, mock-up, fabric, fix, stitch, template.

Year 4	**Advent 1** **Electrical Systems: Torches** (Science- Electricity)	**Advent 2** **Food: adapting a recipe** (Geog- European the countries of Europe)	**Lent 1** **Mechanical Systems:** making a sling shot car (science- forces)
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	• 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 electrical circuit equipment, balsa wood, wire, 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 electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]		sketches, cross-sectional and exploded diagrams, prototypes 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, 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]

Core Knowledge	Know that electrical conductors are materials which electricity can pass through. Know that electrical insulators are materials which electricity cannot pass through. Know that a battery contains stored electricity that can be used to power products. Know that an electrical circuit must be complete for electricity to flow. Know that a switch can be used to complete and break an electrical circuit.	Know that the amount of an ingredient in a recipe is known as the 'quantity'. Know that it is important to use oven gloves when removing hot food from an oven. Know the following cooking techniques: sieving, creaming, rubbing method, cooling. Know the importance of budgeting while planning ingredients for biscuits	Know that all moving things have kinetic energy. Know that kinetic energy is the energy that something (object/person) has by being in motion. Know that air resistance is the level of drag on an object as it is forced through the air. Know that the shape of a moving object will affect how it moves due to air resistance
Wider Knowledge	Know that batteries should be removed from torches when not being used for a long time. Know how to dispose of batteries safely.	Know the hygiene rules to follow when cooking. Know the safety rules to follow when cooking. Know what how to seek customer preferences through carrying out a consumer survey. Know how different biscuits are designed, flavoured and made around Europe.	Know that shapes can increase or decrease speed as a result of air resistance. Know how to measure, mark, cut and assemble with increasing accuracy and why this is essential. The ballista was a powerful catapult, used by the Romans in battle, consisting of a beam with a frame at the end, mounting two rigid arms powered by torsion in bundles of sinew at each side, which would pull a bowstring between them propelling the projectile.
Skills	• Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. • Making a torch with a working electrical circuit and switch. • Using appropriate equipment to cut and attach materials. • Assembling a torch according to the design and success criteria. • Evaluating electrical products. • Testing and evaluating the success of a final product.	• Designing a biscuit within a given budget, drawing upon previous taste testing. • Following a baking recipe. • Cooking safely, following basic hygiene rules. • Adapting a recipe. • Evaluating a recipe, considering: taste, smell, texture and appearance. • Describing the impact of the budget on the selection of ingredients. • Evaluating and comparing a range of products. • Suggesting modifications.	• Designing a shape that reduces air resistance. • Drawing a net to create a structure from. • Choosing shapes that increase or decrease speed as a result of air resistance. • Personalising a design. • Measuring, marking, cutting and assembling with increasing accuracy. • Making a model based on a chosen design. • Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance

Diversity Links	**Olga D Gonzalez-Sanabria (19000s – present)** Olga D Gonzalez-Sanabria originally came from Puerto Rico. She was the woman behind the technology development that helped create space station batteries during the 1980s. She currently works as the director of energy at NASA's Glenn Research Center. While this invention might not be the catchiest you can find on this list, these nickel-hydrogen batteries and their long-life cycle help run the International Space Station, making this an important discovery.		**Agnès Poulbot (1967-present)** Agnès Poulbot was a French researcher who made improvements to car tyres. Poulbot's tire-tread design was responsible for their better strength and ability to last longer. The result is that the car uses less fuel while producing reduced amounts of carbon dioxide.
Vocabulary	lectricity, insulator, series circuit, switch, component design, design criteria, diagram, LED, model, input, recyclable, assemble, equipment, battery	design criteria, research, texture, innovative, aesthetic, measure, cross-contamination, diet, processed, packaging	Chassis, kinetic, air resistance, structure, research, energy, mechanism, design, graphics, model, template

Year 5	**Lent 1** **Textiles: Waistcoats** **Compare modern Islamic clothing (patterns-HG/FS)** **(History Early Islamic Civilization)**	**Lent 2** **Mechanisms: Pop Up Book** **(Geography-Rivers & Mountains)**	**Pentecost 1** **Structures: Constructing a castle** **(History-Caves and castles)**
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	• understand how key events and individuals in design and technology have helped shape the world	• 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, cams, levers and linkages]	• 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, cams, levers and linkages]
Core Knowledge	• Know that it is important to design clothing with the client/target customer in mind. • Know that using a template (or clothing pattern) helps to accurately mark out a design on fabric. • Know the importance of consistently sized stitches.	• Know that mechanisms control movement. • Know that mechanisms can be used to change one kind of motion into another. • Know how to use sliders, pivots and folds to create paper-based mechanisms. • Know that a design brief is a description of what I am going to design and make. • Know that designers often want to hide mechanisms to make a product more aesthetically pleasing.	• Know that wide and flat based objects are more stable. • Know the importance of strength and stiffness in structures. • Know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse – and their purpose. • Know that a façade is the front of a structure. • Know that a castle needed to be strong and stable to withstand enemy attack.
Wider Knowledge	• Know a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro. • Know different fastening types are useful for different purposes. • Know creating a mock up (prototype) of their design is useful for checking ideas and proportions.		• Know that Nottingham castle was built on rock. • Know that caves were dug into the rock below the castle and people lived there.
Skills	Designing a waistcoat in accordance with a specification and design criteria to fit a specific theme.	• Designing a pop-up book which uses a mixture of structures and mechanisms.	• Designing a castle with key features to appeal to a specific person/purpose.

	Annotating designs. Using a template when pinning panels onto fabric. Marking and cutting fabric accurately, in accordance with a design. Sewing a strong running stitch, making small, neat stitches and following the edge. Tying strong knots. Decorating a waistcoat – attaching objects using thread and adding a secure fastening. Learning different decorative stitches. Sewing accurately with even regularity of stitches. Evaluating work continually as it is created.	• Naming each mechanism, input and output accurately. • Storyboarding ideas for a book. • Following a design brief to make a pop up book, neatly and with focus on accuracy. • Making mechanisms and/or structures using sliders, pivots and folds to produce movement. • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result. • Evaluating the work of others and receiving feedback on own work. • Suggesting points for improvement	• Drawing and labelling a castle design using 2D shapes. • Designing and/or decorating a castle tower on CAD software. • Constructing a range of 3D geometric shapes using nets. • Creating special features for individual designs. • Making facades from a range of recycled materials. • Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison, to the original design. • Suggesting points for modification of the individual designs.
Diversity Links	10 most famous Muslim fashion designers		David Adjaye British Ghanaian architect's buildings Biography
Vocabulary	Annotate, decorate, design criteria, fabric, target customer, waistcoat, fastening	Design, input, motion, mechanism, criteria, research, reinforce, model	2D, 3D, castle, design, key features, net, shape, scoring, shape, stable, stiff, strong, structure, flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse

Year 6	**Advent 2** **Structures: Bridge Across the Amazon** **(Geog-Amazon Rainforest)** **National Curriculum** 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 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, 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	**Lent 2** **Food: Come Dine with me** **Produce from African Countries to make an around the continent meal** **(Geog- Developing Countries Africa)** **National Curriculum: 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.	**Lent 2** **Electrical Systems:** **Escape Route Game-Prison Alarm System** *See kapow unit 'steady hand game'* **(History- Crime and Punishment)** **National Curriculum** 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 and exploded diagrams, prototypes, pattern pieces 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 electrical circuit equipment, balsa wood, wire, according to their functional properties and aesthetic qualities Evaluate

	• 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, cams, levers and linkages]		• 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 electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
Core Knowledge	Know some different ways to reinforce structures. Know how triangles can be used to reinforce bridges. Know that properties are words that describe the form and function of materials. Know why material selection is important based on their properties. Know the material (functional and aesthetic) properties of wood.	Know that 'flavour' is how a food or drink tastes. Know that many countries have 'national dishes' which are recipes associated with that country. Know that 'processed food' means food that has been put through multiple changes in a factory. Know that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides. Know what happens to a certain food before it appears on the supermarket shelf (Farm to Fork).	Know that, in a series circuit, electricity only flows in one direction. Know when there is a break in a series circuit, all components turn off. Know which materials conduct electricity.
Wider Knowledge	Know different designs of bridges in the past and today. Know some of the different types of bridge construction today. Know how to problem solve. Know how to create a prototype to try out ideas. Know why accuracy of measurement is essential in bridge building. Know the importance to the environment of planting new trees for every tree harvested.	Know how to follow a recipe, including using the correct quantities of each ingredient. Know how to adapt a recipe based on research. Know that certain foods in world countries are more available because of the climate. Know how diet and healthy living are impacted by economic circumstances.	Know that 'form' means the shape and appearance of an object. Know the difference between 'form' and 'function'. Know that 'fit for purpose' means that a product works how it should and is easy to use. Know that 'form over purpose' means that a product looks good but does not work very well. Know the importance of 'form follows function' when designing: the product must be designed

			primarily with the function in mind. Know that the diagram perspectives 'top view', 'side view' and 'back'.
Skills	Making a range of different shaped beam bridges. Creating a frame structure with focus on triangulation. Using triangles to create truss bridges that span a given distance and support a load. Building a wooden bridge structure. Independently measuring and marking wood accurately. Selecting appropriate tools and equipment for particular tasks. Using the correct techniques to saw safely. Identifying where a structure needs reinforcement and using card corners for support. Explaining why selecting appropriate materials is an important part of the design process. Understanding basic wood functional properties. Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary. Suggesting points for improvements for own bridges and those designed by other	Writing a recipe, explaining the key steps, method and ingredients. Including facts and drawings from research undertaken. Following a recipe, including using the correct quantities of each ingredient. Adapting a recipe based on research. Working to a given timescale. Working safely and hygienically with independence. Evaluating a recipe, considering: taste, smell, texture and origin of the food group. Taste testing and scoring final products. Suggesting and writing up points of improvements in productions. Evaluating health and safety in production to minimise cross contamination. Working cooperatively in role as leader and team member.	Designing a 'escape route' game, identifying and naming the components required. Drawing a design from three different perspectives. Generating ideas through sketching and discussion. Modelling ideas through prototypes. Understanding the purpose of products (alarm systems), including what is meant by 'fit for purpose' and 'form over function'. Constructing a stable base for a game. Accurately cutting, folding and assembling a net. Making and testing a circuit. Incorporating a circuit into a base. Testing their own and others' finished games, identifying what went well and making suggestions for improvement. Gathering images and information about where and why alarm systems are used. Analysing a selection of existing alarms and security systems.
Diversity Links	Know **Santiago Calatrava** is one of the most famous architects and bridge designers of Spain who designed and built bridges across USA. Interview with Santiago Calatrava Olympic Stadium Greece Santiago Calatrava building on Year 5 unit Olympic Playground		Marie Van Brittan Brown black American woman who invented the house alarm system.
Vocabulary	beam bridge, arch bridge, truss bridge, strength, technique, corrugation, lamination, stiffness, rigid, factors, stability, aesthetics, joints, mark out,	Equipment, ingredients, method, bridge method, cross-contamination, preparation, flavours, recipe, farm to fork, economy, climate	Assemble, battery pack, bulb, buzzer, circuit symbol, conductor, design, design criteria, fine

	hardwood, softwood sandpaper/glass paper, bench hook/vice, tenon saw/coping saw, assemble, material, properties, reinforce, wood sourcing, evaluate, quality of finish, accuracy		motor skills, LED, evaluation, fit for purpose, function, form, insulator, user.