



Design Technology Subject Overview

Year 5	National Curriculum Objectives	Skills	Key Questions	Suggested Learning Experiences	Vocabulary (Tier 2/3)
Autumn To Infinity and Beyond: The Ancient Greeks Mechanisms Design and make machines	<p>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</p> <p>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p> <p>Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</p>	<p>Develop a clear idea of what has to be done and use research to develop design criteria to inform the design of innovative, functional and appealing products that are fit for purpose, aimed at particular groups or individuals.</p> <p>How to research effectively against current and previous designs to make effective comparisons as part of their evaluations.</p> <p>How their design can be edited and change over time depending on what their research tells them, the materials they have available and the purpose of their product.</p>	<p>Can you use what you have learned in Science about forces to make a pulley?</p> <p>What are the names of simple types of mechanisms and how do they work?</p> <p>What did the ancient Greeks use cranes and pulleys for?</p> <p>How tall will your pulley need to be?</p> <p>What will the length and width of your pulley be?</p> <p>What are the sizes of the different part that make your pulley?</p> <p>What weight do you expect your pulley to hold?</p>	<p>1). Remind children of previous learning. In Year 4 they made a light box in their construction topic. In Year 3, they made an erupting volcano through their mechanisms and pneumatics topic. What skills were important when making those products? What did you have to do before you could begin making your product?</p> <p>Know what a machine is: A mechanical device that is used to change: the size of a force or the direction of a force.</p> <p>Look at a range of everyday machines and identify the forces applied and how they make life easier.</p> <p>Know that there are 6 basic types of machines: Inclined plane (slope) – Wedge – Lever – Pulley – Wheel and axle – Screw – gears.</p> <p>Identify machines in everyday life where these are used.</p> <p>2). Know what a pulley is and be able to label the mechanisms and forces that are used to make it work. Give children a diagram that they can label the mechanisms and forces on to prepare for when they design and plan their own.</p> <p>3). Can they make a pulley? Give children equipment (cereal box, cotton reels, dowel and string) and see if they can create using one wheel. Explore how Pulley systems work. Pupils work in pairs/small teams to come up with their own criteria, which must be set for all groups to achieve.</p> <p>4). Draw and label a diagram of their own design labelling the forces using arrows acting on it and materials they are going to use to build it.</p> <p>5). The Ancient Greeks invented the crane. Examine how cranes use pulleys to move things. Work in pairs (or groups of 3?) to make a crane to lift an agreed weight of stones or water using a cereal box, cotton reels, dowel and string. Children should</p>	<p>Tier 2 Launch Examine</p> <p>Tier 3 Machine Mechanical Mechanism Force Push Pull Wedge Lever Pulley Wheel and axel Screw Gears Catapult crane</p>

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	<p>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</p> <p>Investigate and analyse a range of existing products</p> <p>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p> <p>Understand how key events and individuals in design and technology have helped shape the world</p> <p>Apply their understanding of how to strengthen, stiffen and reinforce more complex structures</p>	<p>How to use tools in a safe way and a safe environment.</p> <p>Holding tools and techniques so they work effectively to give you a further efficient product.</p>	<p>How will you ensure it can hold that weight?</p> <p>What happens when more/less wheels are added/removed to your pulley?</p> <p>Can they design and make a machine to move building materials?</p>	<p>use their plan from the previous lesson and make edits where needed to ensure it can lift the agreed weight.</p> <p>6). Write a set of instructions for how to build your crane, how the materials should be used and include detail for what it should be able to do when it is finished.</p> <p>7/8). Produce design and plan. Make the crane in pairs or threes. When it is complete, test by seeing who can carry a weight (links to mass in maths) of stones or water (volume) in their pulley (Science investigation)</p> <p>9). Evaluation of their product against an agreed criterion formed by both the teachers and children. Consider what they have learnt about crane and how they need to be built to be effective. Why did their work well/not well? Was it a design fault? What needed to be done differently? Use more or less of something when constructing?</p>	
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	<p>Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]</p> <p>Apply their understanding of computing to program, monitor and control their products.</p>				
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<p>Spring</p> <p>Egypt: Ancient Egypt and Tutankhamun</p> <p>Textiles</p> <p>Produce a t-shirt with an Egyptian Pattern</p>	<p>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 group</p> <p>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p> <p>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</p>	<p>Plan, design and re-design their product and know the importance of editing their work continuously against criteria</p> <p>Be able to articulate and explain why and how they have made changes to their design/product and why it is beneficial</p> <p>How to use tie dye effectively on material to produce an effective final product</p> <p>How to use tie-dye in a safe environment for themselves and others</p>	<p>Can you design and make a t-shirt with an African pattern?</p> <p>What makes a good African pattern?</p> <p>What shapes can you see?</p> <p>What colours can you see? Do they work well together?</p> <p>Why are these colours used?</p> <p>What else do you sometimes see on African patterns?</p> <p>Is the African pattern getting across a message? If so, what?</p>	<p>1). Remind children of previous learning. In Year 4 they made a Tudor money pouch in the textiles topic. In Year 2, they made a seaside blanket for a seaside picnic in their textiles topic. What skills were important when making those products? What did you have to do before you could begin making your product? Investigate different tie-dye techniques and the patterns they produce? https://www.tiedyeyoursummer.com/techniques What is similar/ different about them? What makes them a distinctly Egyptian design?</p> <p>2). Use small square pieces of cloth to try different tie-dye techniques. What do you notice about the different techniques? Which techniques would be the best technique(s) to use to produce an Egyptian pattern? Why? Create design criteria/specification for t-shirt/cap/headband.</p> <p>3). Produce plan and design of t-shirt/cap/headband. Identify the techniques/colours they are going to use and the effect they are hoping for. What is the message your Egyptian pattern means? Children should select an appropriate message for their design.</p> <p>4). Design the t-shirt/cap/headband with your pattern. Include labels and information about the tie-dye pattern (colours used, contrasts, patterns, symbols, letters or numbers that are used)</p> <p>5). Write a set of instructions for how to produce the produce. This should begin from the planning phase in the beginning.</p> <p>6/7). Buy cheap plain white t-shirt/cap/headband or ask children to bring in. Also, ask to bring coat hangers in to hang and dry. Make the t-shirts including the tie-dye patterning.</p> <p>8). Evaluate t-shirts against design specification agreed by teachers and children. Consider what children have learnt about patterns and using tie-dye and what an effective design is. Did it look like you planned originally? Why? Did your design change in the planning phase? Why? Did you have to change what you did as you were making the product? Why? Can their t-shirts be evaluated by Year 4 or Year 6?</p>	<p>Tier 2 techniques effect</p> <p>Tier 3 Design Tie dye Cloth Colours Design specification Pattern</p>
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	<p>Investigate and analyse a range of existing products</p> <p>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p>				
Summer Travellers: Early Islamic Civilisation (Baghdad)	<p>Understand and apply the principles of a healthy and varied diet</p> <p>Prepare and cook a variety of predominantly</p>	<p>Weigh and measure accurately (time, dry ingredients, liquids)</p>	<p>How can you add you own twist on a traditional Viking bread recipe?</p> <p>How will you weigh your ingredients?</p>	<p>1). Remind children of previous learning. In Year 4, they made a chocolate bar in the food topic. In Year 3, they made a healthy pasta dish in the food topic. What skills were important when making those products? What did you have to do before you could begin making your product?</p> <p>Use the links to look at the different types of Islamic bread: https://aquila-style.com/breads-from-the-arab-world/ </p>	<p>Tier 2 Version process product</p> <p>Tier 3 Recipe Ingredients</p>

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<p>Food</p> <p>Making bread</p>	<p>savoury dishes using a range of cooking techniques</p> <p>Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</p> <p>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p> <p>Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</p> <p>Select from and use a wider range of materials and</p>		<p>What units will you use?</p> <p>How will you ensure you don't include too many ingredients?</p> <p>If you were to make your bread for 100/1000/10,000 Vikings, what would you have to do to your ingredients?</p>	<p>https://www.arabamerica.com/arab-bread-comes-in-different-shapes-and-tastes/</p> <p>Do children know of any others? Look at the recipes. Teachers bring in some of the different breads for children to taste. Create a criteria with teachers about what they are looking for when they taste the bread. What is important to them and why? Link to science work on changes in materials. How cooking is an irreversible change.</p> <p>2). How can they use the basic recipe to make a new version of the bread by adding different ingredients? Provide children with the recipe for one type of Islamic bread (teachers to decide) and children will edit the recipe to add an additional 1 or 2 ingredients (teachers to decide how many) Allow children the opportunity to select what ingredient they want to add to the bread.</p> <p>3). Explore and evaluate different types of Islamic bread. Why do Islamic people eat bread with most/every meal? Identify the ingredients that have been used. What might be a good choice for an additional ingredient in Islamic bread. Link back to the previous lesson; did you make a good choice? How do you know? If you selected an ingredient that wasn't suitable for Islamic bread, why wasn't it? What can you choose to ensure it is suitable?</p> <p>4). In pairs or groups of 3, come up with their own twist on the original Islamic bread recipe. Children to write out their recipe. Produce own recipe thinking carefully about the measurements of ingredients (link to maths) and the process. Use what they have learnt in the research process to make sure ingredients go together. Will having too many additional ingredients affecting the cooking of the bread? Talk and learn about under cooking and over cooking.</p> <p>5). Create a diagram of their design of what they want their bread to look like. This can be a flat 2D version. Teachers might want to change and ask children to complete an exploded diagram if they are going to use an additional ingredient as a filling. Children can then label the inside elements as well as the outside elements of their bread.</p> <p>6). Children follow their recipe and cook their bread.</p>	<p>Irreversible change</p> <p>Bread</p> <p>Dough</p> <p>Mixture</p> <p>Weigh</p> <p>Measure</p>
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	<p>components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</p> <p>Investigate and analyse a range of existing products</p> <p>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p>			<p>7). Evaluate their bread against design specification agreed by teachers and children. Consider what children have learnt about Islamic bread and why people in Islamic countries eat bread. Did it look and taste like you planned originally? Why? Why not? Did your design or recipe change in the planning phase? Why? Did you have to change what you did as you were making the bread? Why? Can children taste each other's bread as part of their evaluations?</p>	
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