Design & Technology at Wantage CE Primary

Design Revision Nov 2023

Skills Key: Designing Making Evaluating Technical Knowledge Cooking and Nutrition

Year/ Term	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Nursery		Build models using a variety of resources.		Build models as props to support role play and storytelling		Construct with a purpose: aeroplane, ferry, train etc Make felt
Reception	Making story puppets. Choosing own materials	Making Christmas decorations	Making pancakes			Designing and making healthy snacks
Year 1	**Where does my food come from?** **Unit:** Children to create fruit kebabs **National Curriculum**: Use the basic principles of a healthy and varied diet to prepare dishes and understand where food comes from **Key Knowledge**: ➢ Know why is it important to wash hands before preparing food and why we wash fruit ➢ Know simple utensils that can be used to process food and make it easier to eat ➢ Know that fruit is an essential part of a balanced diet ➢ Know that fruit and vegetables can be farmed or grown at home ➢ Know that fruit usually contains an edible seed and a vegetable is a plant used for food and pith is the soft white lining inside some fruit ➢ Know what sensory evaluation is (appearance, smell, taste, texture) **Key Skills**: ➢ Design appealing products for a particular user based on a simple design criteria ➢ Generate initial ideas and design criteria through investigating a variety of fruit and vegetables ➢ Communicate ideas through talk and drawings ➢ Use simple utensils and equipment to peel, chop, cut, slice, squeeze, grate and chop safely ➢ Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste		**Why are castles so strong?** **Unit:** Children to plan and build their own castle using a range of materials **National Curriculum:** Build structures, exploring how they can be made stronger, stiffer, and more stable **Key Knowledge:** ➢ Know how to join components together effectively ➢ Know that a range of tools can be used for different purposes (cutting, sticking, bending, joining etc.) ➢ To understand how structures can be made stronger and stiffer **Key Skills:** ➢ Generate and discuss their ideas through talking and drawing ➢ Use tools for different purposes ➢ Select and use a wide range of materials and components, such as paper, card, plastic and wood according to their characteristics ➢ Build structures by selecting appropriate materials and investigating ways to strengthen them ➢ Evaluate their design throughout the process and review against a success criteria **Enhancement:** A trip to look round a castle and think about the materials and structure		**How do pictures move?** **Unit:** Children to create moving picture books **National Curriculum**: Explore and use mechanisms (for example, levers, sliders, wheels and axles), in their products **Key Knowledge:** ➢ Understand that different mechanisms produce different types of movement ➢ Know and use technical vocabulary relevant to the project ➢ Understand the steps to make a moving picture (cutting, joining etc.) ➢ Understand that products are designed for users based on criteria, and what simple criteria for a moving picture book could be – e.g. the mechanism should work smoothly, it should make the right type of movement **Key Skills** ➢ Generate ideas based on a simple design criteria and their own experiences ➢ Develop, model and communicate their ideas through drawings and mock-ups with card and paper ➢ Plan and suggest steps in the creation phase ➢ Select and chose tools, explaining their choices to cut, shape and join paper and card **Enhancement:** Sharing books with children in other year groups e.g. Foundation and Nursery	

	➢ Taste and evaluate a range of fruit and vegetables to determine the intended users preference ➢ Evaluate ideas and finished products against design criteria, including intended user and purpose **Enhancement**: Children to plant their own seasonal fruit and veg		
Year 2	Puppets **Unit:** Create a hand puppet – could link to Christmas or Geography/History Topics **National Curriculum:** Design purposeful, functional and appealing products and select from a range of textiles **Key Knowledge:** ➢ To know what design criteria is and how it can be used to create a product ➢ Know which equipment is needed to sew material together ➢ Know and use key vocabulary, as relevant to the project – seam, thread, stitch ➢ Know how to evaluate their product against the design criteria and suggest improvements **Key Skills** ➢ Design and create a puppet, sewing the material together effectively at the seams ➢ Thread and use a needle safely ➢ Evaluate own and each other's products against the design criteria **Enhancement:** Create a puppet show to perform to EYFS or parents	Savoury Snack **Unit:** Children to create a healthy packed lunch – including creating and designing sandwich box **National Curriculum:** Use the basic principles of a healthy and varied diet to prepare dishes **Key Knowledge:** ➢ To know the purpose of different tools and which to select for use in preparing food (e.g. sieve, spatula, peeler) ➢ Know how to wash, peel, slice and grate vegetables, selecting and use appropriate kitchen equipment safely and purposefully ➢ Know how to grow vegetables and prepare for eating (peeling, chopping, boiling/steaming) ➢ Know the food groups that different healthy foods belong to and demonstrate this by selecting appropriate combinations ➢ Know the source of their meal **Key Skills** ➢ Plan and prepare a dish of nutritional value ➢ Prepare a meal safely, using a range of equipment appropriately ➢ Make and present food in an aesthetically pleasing way ➢ Evaluate the success of their own and others' dishes, involving critique of how dishes could be improved ➢ Begin to use and be aware of a range of methods of food preparation, such as peeling, chopping, steaming and boiling **Enhancement:** Children to have an outdoor picnic	**How do vehicles move?** **Unit:** Children to create their own fire engine with moving wheels **National Curriculum:** Explore and use mechanisms (for example, levers, sliders, wheels and axles), in their products **Key Knowledge:** ➢ Know that a mechanism is a device used to create movement in a product and wheels and axles are examples of this ➢ Know the difference between fixed and freely moving axles, using technical vocabulary ➢ Know the purpose of their product (product can be easily moved on wheels) ➢ Know what components are needed to construct a moving vehicle and use this to select appropriate materials according to which are most suitable **Key Skills:** ➢ Generate initial ideas and simple design criteria ➢ Develop and communicate ideas through drawings and mock-ups ➢ Using a range of tools and equipment to perform practical tasks, such as cutting and joining to allow movement and finishing ➢ Select from and using a range of materials and components, such as, paper, card, wood etc. according to their characteristics ➢ Use wheels and axles as mechanisms in their product ➢ Evaluate the success of their products against the design criteria **Enhancement:** Could extend activity by looking at pneumatics and hydraulics
Year 3	**Purse/Wallet** **Unit:** Children to create a fastening purse or wallet	**Is the chariot the best form of transport?** **Unit:** Children to make a Roman chariot with moving wheels	Bridge Making **Unit:** Children to create a range of different bridges in groups

	National Curriculum: Select and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. **Key Knowledge:** ➢ To know how to specify a design to make it more appealing to a specific target group ➢ To know different types of stitches for the purpose of functionality and aesthetics ➢ Know and use technical vocabulary relevant to the project ➢ Know how to evaluate their product against the product criteria they have generated individually, as a means to improve their work **Key Skills:** ➢ Design and make a functional purse with a fastening communicating initial ideas through annotated sketches ➢ Use research into the features of a functional and appealing purse/wallet to inform design criteria ➢ Select and use a range of tools to perform tasks e.g. joining by sewing and cutting ➢ Investigate different stitches and their effectiveness in joining seams and how that then effects the durability of the product ➢ Evaluate the outcome of the product referencing the design criteria	**Key Knowledge:** ➢ Know the difference between fixed and freely moving axles, using technical vocabulary and know the difference between a fixed and loose pivot ➢ Know about and research chariots to inform design so that is fit for purpose ➢ Know the purpose of their product (product can be easily moved on wheels) ➢ Know what components are needed to construct a moving vehicle and use this to select appropriate materials according to which are most suitable **Key Skills:** ➢ Generate initial ideas through annotated sketches and discussions and create a more detailed design criteria ➢ Develop and communicate ideas through drawings and mock-ups ➢ Choose and use a range of tools and equipment accurately to perform practical tasks, such as cutting and joining to allow movement and finishing ➢ Select from and using a range of materials and components, such as, paper, card, wood etc. according to their characteristics ➢ Use wheels and axles as mechanisms in their product ➢ Evaluate the success of their products against the design criteria ➢ Increased accuracy when measuring, marking out and cutting (i.e. measure in mm rather than cm or inches) **Enhancement:** Have a visit to an Italian restaurant to create pizza	**National Curriculum:** Apply their understanding of how to strengthen, stiffen and reinforce more complex structures **Key Knowledge:** ➢ Know that there are many different types of bridges (beam, arch, cable-stayed, suspension, cantilever) ➢ Know that there are many famous bridge engineers, e.g. Severn Bridge, Tower Bridge – John Wolfe Barry and Sir Horrace Jones ➢ Know that different materials can be used (steel, brick, wood, iron, rivets) ➢ Know how to work safely using tools and equipment ➢ Know how to strengthen a material or structure design using materials ➢ Understand how to assess the quantity of materials needed for a structure ➢ Know the design of particular bridges makes them particularly successful considering their design and purpose ➢ Know that cross-sectional diagrams, prototypes, pattern pieces and computer aided design can support their design process **Key Skills** ➢ Evaluate an existing bridge to inform plans and structures ➢ Compare the strengths of different shaped frameworks within 2D structures ➢ Sketch and annotate a plan of their planned bridge ➢ Use computer aided design to support their design process ➢ Write step-by-step instructions to follow for building the bridge (including tools and materials) ➢ Evaluate different materials and their suitability for use in a bridge ➢ Accurately join using appropriate and robust joins ➢ Work in a team to plan and build a bridge structure ➢ Build a bridge following a plan accurately ➢ Evaluate their completed project considering how successful their bridge is according to the original brief **Enhancement:** Walk around Wantage to look at local bridges and how they are constructed
Year 4	What goes in to making bread? **Unit:** Children to create a bread of their choice based on taste tests	Houses with Electrical Component **Unit: Create a Tudor house with electrical component**	Pneumatics **Unit:** Construct a simple pneumatic system – Jack in a box

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	National Curriculum: Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques **Key Knowledge:** ➢ Know that a range of utensils can be used for a range of techniques to prepare ingredients hygienically including the bridge and claw technique, grating, chopping, slicing, mixing, spreading, kneading and baking ➢ Know how to use appropriate equipment and utensils to prepare and combine food ➢ Know that the food's appearance is how it looks to the eye and the food's texture is how the product feels in the mouth ➢ Know that sensory evaluation means evaluating taste, texture, smell and appearance ➢ Know that processed foods includes ingredients that have been changed in some way to enable them to be eaten or used in food preparation and cooking. **Key Skills** ➢ Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose ➢ Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas ➢ Plan the main stages of a recipe, listing ingredients, utensils and equipment ➢ Select and use appropriate utensils and equipment to prepare and combine ingredients ➢ Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics ➢ Carry out sensory evaluations of a variety of ingredients and products and record the evaluations ➢ Evaluate the ongoing work and the final product with reference to the design criteria	**National Curriculum:** Understand and use mechanical systems in their products (e.g. gears, pulleys, cams, levers and linkages) Understand and use electrical systems in their products **Key Knowledge:** ➢ Know and can use different methods for joining wood including a butt joint and mitre joint ➢ Know how I can strengthen my wood joins ➢ To use understanding of how the shape of a structure can influence its strength and how their own structure can be strengthened by internal support and exterior reinforcement ➢ Know how to use and manipulate materials in order to create a structure **Key Skills:** ➢ Use research to inform the design criteria for a shelter suitable to the context of an era ➢ Select from and use finishing techniques suitable for the product they are creating ➢ Evaluate different materials and their suitability for use ➢ Accurately join using appropriate and robust joins ➢ Cut thin wood/dowel using hacksaw and bench hook ➢ Create a wooden shell or frame structure ➢ Prototype frame and shell structures ➢ Measure and mark square selection, strip and dowel accordingly to 1cm ➢ Use a cool melt glue gun with close supervision (one to one) ➢ Identify the strengths and weaknesses of my design ideas ➢ Decide which design idea to develop ➢ Consider and explain how the finished product could be improved and discuss how well the finished product meets the design criteria and how well it meets the needs of the user.	**National Curriculum:** Understand and use mechanical systems in their products (e.g. gears, pulleys, cams, levers and linkages) **Key Knowledge:** ➢ Know that pneumatic system is one that works using gases and a hydraulic system is one that works using liquids ➢ Know that energy produced by pneumatic systems can be more flexible, less costly, more reliable and less dangerous that some actuators and electrical motors ➢ Know that the 'input' is what goes into a system and 'output' is what comes out ➢ Know that a 'pivot' is a point about which a lever turns ➢ Know that the pressure is the force used on an object or surface ➢ Know that inflating something is filling it with air/gas to make it swell up and deflating is removing the pressurised air to allow an object to shrink ➢ Know that in a pneumatic system, the 'input movement' is where the user pushes or pulls a syringe or pump and the 'output movement' is where the object at the end of the tube moves. ➢ Know and use technical vocabulary relevant to the project **Key Skills** ➢ Understand and use pneumatic mechanisms ➢ Investigate, analyse and evaluate familiar objects that use air to make them work e.g. bicycle pump, balloon, foot pump, swimming aids etc. ➢ Construct simple pneumatic system by joining a balloon to tubing and a washing up bottle ➢ Generate realistic and appropriate ideas and their own design criteria through discussion, focusing on the needs of the user ➢ Use annotated sketches and prototypes to develop, model and communicate ideas ➢ Select and use appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons. ➢ Select from and use finishing techniques suitable for the product they are creating ➢ Investigate and analyse books, videos and products with pneumatic mechanisms ➢ Evaluate their own products and ideas against criteria and user needs, as they design and make

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	Enhancement: Visit The Mill and get flour		
Year 5	Anderson Shelters **Unit:** Children to create their own Anderson Shelters **National Curriculum:** Apply their understanding of how to strengthen, stiffen and reinforce more complex structures **Key Knowledge:** ➢ Know who the Anderson Shelter was designed by (William Peterson and Oscar Carl Kerrison in 1938) and named after (Sir John Anderson) and why ➢ Know the difference between an Anderson Shelter and a Morrison Shelter ➢ To use understanding of how the shape of a structure can influence its strength and how their own structure can be strengthened by internal support and exterior reinforcement ➢ Know how to use and manipulate materials in order to create a structure **Key Skills** ➢ Use research to inform the design criteria for a shelter suitable to the context of an era ➢ To investigate the construction of existing structures and evaluate their own design against the design criteria ➢ Use existing designs to inform own and communicate ideas through discussion, annotated sketches, cross-sectional diagrams and computer aided design ➢ Compare designs and understand the necessary features of a suitable structure (considering locational aspects; indoor/outdoor, speed of accessibility, strength and space)	Levers and Linkages **Unit:** Children to create a shadoof **National Curriculum**: Understand and use mechanical systems in their products Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. **Key Knowledge:** ➢ Know that levers and linkages are mechanisms that are used to create movement in a product ➢ Know that levers have been used by humans since the stone age and that Archimedes was the first to mathematically describe how levers multiply force ➢ Know that a shadoof is a type of lever that was used in Egypt and is still used in parts of Africa and Asia to draw water ➢ Know that there are four types of levers – linear, reciprocating, rotary and oscillating and know the difference between loose and fixed pivots (a paper fastener that joins card strips together is a loose pivot and a paper fastener that joins card strips to the backing card is a fixed pivot) ➢ Know that a lever is a rigid bar that moves around a pivot and that a linkage joins one or more levers together to produce the type of movement required ➢ Know that 'the slot' is the hole through which a lever is placed to enable part of a picture to move and 'the guide' is a short card strip used to keep lever and linkages in place and control movement ➢ Know that in a lever and linkage mechanism, the 'input movement' is where the user pushes or pulls a card strip, the 'output movement' is where one or more parts of the picture moves ➢ Know that a system is a set of related parts used to create an outcome and they have inputs, processes and outputs. **Key Skills** ➢ To evaluate existing structures that will inform their own design ➢ Generate realistic ideas and their own design criteria through discussion	Pop Up Café **Unit:** Children to create healthy snacks and dishes to sell to raise money **National Curriculum:** Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques **Key Knowledge:** ➢ Know where ingredients grow and climate they need to grow ➢ Know that some ingredients are seasonal and why ➢ Know that ingredients are grown under different farming processes (e.g. organic) and can be more expensive ➢ Understand that some ingredients complement each other and some ingredients go well together. ➢ Know that a healthy dishes involve more than one food group to be part of a healthy, balanced diet ➢ Know that local restaurants are meant to appeal to local community ➢ Food being served in public is regulated in accordance with good food hygiene practices ➢ Washing hands and food, where appropriate, helps reduce microorganisms and food instructions are important for this purpose too. ➢ Ingredients, textures and flavours can be changed through cooking processes (e.g. frying, baking, boiling, grilling) **Key Skills:** ➢ Generate ideas through research and discussion to develop a design brief and criteria for a design specification ➢ Explore a range of ideas, and make design decisions to develop a final product linked to user and purpose and costing ➢ Use words, annotated sketches and information technology to develop and communicate ideas ➢ Make, decorate and present the food product appropriately for the intended user and purpose ➢ Carry out sensory evaluations of a range of products and ingredients and record the results appropriately ➢ Evaluate final product with the design criteria and using the views of others ➢ Select and use a range of utensils, chopping boards, scales, measuring jugs, etc. ➢ Select and use a range of healthy ingredients for a balanced diet

		➢ Use annotated sketches and prototypes to develop, model and communicate ideas ➢ Select from and use appropriate tools with some accuracy to cut, shape and join paper and card ➢ Select from and use finishing techniques suitable for the product they are creating ➢ Investigate and analyse books and evaluate other products with lever and linkages prior to making their own ➢ Evaluate their own products and ideas against criteria and user needs ➢ Use skills and techniques to measure, mark out, cut, join and finish	➢ Review work against own design criteria, including aspects such as presentation, food combinations, popularity and healthiness **Enhancement:** Café to raise money for Year 6 jumpers – invite parents in
Year 6	**Vehicles (Electrical Component)** **Unit:** children to plan, design and make a working electrical circuit lighthouse or vehicle **National Curriculum:** Understand and use mechanical systems in their products (e.g. gears, pulleys, cams, levers and linkages) Understand and use electrical systems in their products **Key Knowledge:** ➢ Mechanical systems and pulleys have an input, process and output and that gears and pulleys can be used to speed up, slow down or change the direction of movement. ➢ Develop their use of technical vocabulary, for example, knowing how to check that a motor shaft rotates when powered. ➢ To know that a frame structure can be reinforced and strengthened with triangular shapes at the corners. ➢ Build on existing knowledge of axles and wheels, with a focus on ensuring that fixed axles allow the wheels to rotate freely and continuously when a pulley is attached. ➢ Know how to measure and cut different materials, including dowel, accurately and safely. ➢ Know the importance of a process of review of each construction phase to ensure that each part	**Textiles – Combining Fabric Shapes - Human rights activists (sashes and rosettes)** **Unit:** Children to create sashes and rosettes (links with Suffragettes and votes for women) **National Curriculum:** **Key Knowledge:** ➢ Fabrics can be strengthened, stiffened and reinforced where appropriate. ➢ Know that a 3D textile product can be made from a combination of accurately made pieces ➢ Know when to combine multiple different fabrics to create a 3D product ➢ Know how embroidery can embellish a product ➢ Know when to use particular stitch types (including finishing stitches) ➢ Know how to follow relevant health and safety protocols ➢ Know how to analyse existing products and report what joining/fastening methods and multiple pieces have been used ➢ Know some key dates in the development of fabric and textiles (i.e. 6000BC woven textiles used to wrap the dead, 500-1000AD spinning wheel invented in India, 1562 first use of purl stitch in Spanish tomb, 1890 first pair of jeans by Levi Strauss)	**Healthy Eating Meal** **Unit:** Children to create a healthy 3 course meal **National Curriculum:** ➢ Know where ingredients grow and climate they need to grow ➢ Know that some ingredients are seasonal and why ➢ Know that ingredients are grown under different farming processes (e.g. organic) and can be more expensive, Know about organic foods and the impact of these ➢ Understand that some ingredients complement each other and some ingredients go well together. ➢ Know that a healthy dishes involve more than one food group to be part of a healthy, balanced diet ➢ Know that local restaurants are meant to appeal to local community ➢ Food being served in public is regulated in accordance with good food hygiene practices ➢ Washing hands and food, where appropriate, helps reduce microorganisms and food instructions are important for this purpose too. ➢ Ingredients, textures and flavours can be changed through cooking processes (e.g. frying, baking, boiling, grilling) and now some more advance methods for mixing ingredients i.e. rubbing in and kneading doughs ➢ To know how to measure ingredients accurately using different units and how to follow a recipe

	works and is secure to achieve a fully effective end product. **Key Skills:** ➢ Accurately measure the lengths of square-section wood, sawing and smoothing ends with sandpaper. ➢ Build and reinforce a rectangular frame with triangles. ➢ Reinforce axles with bearings securing axle holders and checking that wheels move freely. ➢ Building a wooden pulley system with a secure fit. ➢ Create a chassis in order to hold a motor which will enable the vehicle to be powered. ➢ Assess to identify and address potential weaknesses and apply knowledge of strengthening, reinforcing and stiffening. ➢ Attach a battery with wires to a motor. ➢ Critically evaluate the quality of the design, manufacture, functionality, innovation and fitness for purpose, throughout the process and when the final product is in use, referring back to the design criteria. ➢ Follow step-by step plans with referral to lists of tools, equipment and materials needed. **Link:** Science unit on electricity	**Key Skills** ➢ Generate innovative ideas by carrying out research including surveys, interviews and questionnaires. ➢ Investigate and analyse textile products linked to their final product. Produce detailed lists of equipment and fabrics relevant to their tasks. ➢ Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design. ➢ Formulate step-by-step plans and, if appropriate, allocate tasks within a team with referral to lists of tools, equipment and materials needed. ➢ Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. ➢ Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost. ➢ Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose ➢ Compare the final product to the original design specification. ➢ Use a questionnaire is and how it can help with product design (children could create a simple questionnaire which could then be used to form a design brief) ➢ Test fabrics in order to select them for use ➢ Consider the views of others to improve their work.	➢ To know about a range of chefs and their individual styles of cooking **Key Skills:** ➢ Generate ideas through research and discussion to develop a design brief and criteria for a design specification ➢ Explore a range of ideas, and make design decisions to develop a final product linked to user and purpose and costing ➢ Use words, annotated sketches and information technology to develop and communicate ideas ➢ Make, decorate and present the food product appropriately for the intended user and purpose ➢ Carry out sensory evaluations of a range of products and ingredients and record the results appropriately ➢ Evaluate final product with the design criteria and using the views of others ➢ Select and use a range of utensils, chopping boards, scales, measuring jugs, etc. ➢ Select and use a range of healthy ingredients for a balanced diet ➢ Review work against own design criteria, including aspects such as presentation, food combinations, popularity and healthiness