Woodham Burn Primary
Design Technology

In DT, like all other subjects, we recognise the importnace of the methods and practice of teaching we choose to use in enabling pupils to know more, understand more and remember more. In DT, the following approaches will be used and be evident in pupils' books, in order to ensure that the DT learning opportunities are as effective as possible and that pupils progress throughout the year and across year groups during their DT experiences in school

National Curriculum statements - Key stage 1

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment]. When designing and making, pupils should be taught to:

Design

- design purposeful, functional, appealing products for themselves and other users based on design criteria
- generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

Make

- select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

Evaluate

- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria Technical knowledge
- build structures, exploring how they can be made stronger, stiffer and more stable
- explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.

Cooking and nutrition

- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from.

National Curricumlum statements - Key stage 2

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to:

Design

- use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

Make

- select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

Evaluate

- investigate and analyse a range of existing products
- evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- understand how key events and individuals in design and technology have helped shape the world Technical knowledge
- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
- apply their understanding of computing to program, monitor and control their products.

Cooking and nutrition

- 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

Overarching Vocabulary

Please note these definitions of key words which need to be understood in the specific context of primary Design and Technology, across all year groups.

Design - 1. plan to do something with a specific purpose in mind; 2. do a drawing of something before making it

Designer - 1. a person who creates a plan for something they want to make; 2. KS2 – also focus on 'designer' as a job title/career, e.g. 'fashion designer'

Technology - using what we know about Science to help us make useful things

	Product - an outcome piece with a function/that does something - not necessarily a thing which can be sold **Brief -** the initial instructions that tell us what we need to do in our project **User -** the person who we are designing our product for, whose needs/wants must be taken into account			
DT Specific vocabulary	**Design** designer materials tools construct **Construction** Make Cut Join strong **Food** ingredients healthy cook taste	**Design** designer materials tools brief product evaluate label technology problem-solving **Construction** boat buoyant (Science) water-proof (Science) stable Isambard Kingdom Brunel **Textiles** textiles needle thread pin pattern piece applique William Morris **Food** ingredients hygiene balanced nutritious appealing	**Design** technology product intended user annotated sketch component design criteria computer-aided design **Construction** net scoring tab accuracy packaging product designer graphic designer shelf-appeal battery circuit switch bulb electrical engineer Alexander Graham Bell Nikola Tesla **Textiles** pattern piece running stitch cross stitch applique embroidery textile designer Cath Kidston **Food** hygiene grown reared Local producer seasonal produce dough knead bake	**Design** technology product intended user design criteria Cross- sectional diagram exploded diagram innovation **Construction** frame structure triangulation strengthen reinforce greenhouse agricultural engineering architect Nicolas Grimshaw mechanical system pulley driver follower load transport mechanical engineer Ismail Al-Jazari Edmund Cartwright George Stephenson **Textiles** Pattern pieces back stitch tension seam allowance turn out fastener fashion designer ethical product corporate social responsibility **Food** hygiene cross contamination local produce seasonality cooking technique deconstructed food
	Early Years	**Key Stage One**	**Lower Key Stage Two**	**Upper Key Stage Two**
	Nursery / **Reception**	**Year 1** / **Year 2**	**Year 3** / **Year 4**	**Year 5** / **Year 6**
Research	**ELG** • Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. • Children represent their own ideas, thoughts and feelings through design and technology	• Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. • Children represent their own ideas, thoughts and feelings through design and technology.	• Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. • Children represent their own ideas, thoughts and feelings through design and technology.	• Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. • Children represent their own ideas, thoughts and feelings through design and technology.
Design		• Talk about what they want to make, in relation to the design brief and their research. • Draw a labelled picture of their product, which may include parts, components, materials. • Choose the materials/ingredients/tools they will use, from a selection. • Write a list of the materials/ ingredients/tools they will need. **Food and cookery** • Understand that the basic principles of a healthy and varied diet feature within their design. • Create a basic recipe, using drawings and labels.	• Use their research to develop some of their own design criteria. • Draw a fully labelled sketch/diagram of their product, including some measurements. • Indicate where electrical components will go and briefly explain how they will function. • Choose the materials/ ingredients /tools they will use, based on their suitability for the task. • List the materials/ ingredients/tools they will need. • Order the main stages of making. • Use computer aided design. **Food and cookery** • Use the principles of a healthy and varied diet to help inform their design decisions. • Understand seasonality and locality of food and use this knowledge when designing their product. • Create/adapt a recipe, including some weight/volume measurements	• Use their research to develop their own design criteria. • Draw a fully labelled/annotated sketch/diagram of their product, including measurements and cross-sections. • Indicate where/how materials will be joined in order to create a stable structure. • Indicate where electrical components will go and explain how they will function. • Explain how computer programming will control the product. • Indicate where mechanisms will go and explain how they will function • Choose the materials/ingredients/tools they will use, based on their suitability for the task, including sourcing their own materials where appropriate. • List the materials/ ingredients/tools they will need. • Write (brief) instructions for how they intend to make their product. **Food and cookery**

				• Independently apply the principles of a healthy and varied diet to inform their design decisions. • Apply their knowledge of seasonality and locality of food to inform their design decisions. • Create/adapt a recipe, including weight/volume measurements.
Make - Construction		• Mark materials before cutting and sometimes measure. • Cut paper and other materials safely and with increasing accuracy. • Begin to choose the most effective joining methods for the task/materials. • Use simple components, such as split pins. • Test their product as they work, to see if it meets the requirements of the intended user. • Apply their knowledge of materials to make a structure stiffer/ more stable as they work.	• Measure and mark materials before cutting. • Cut materials accurately, using appropriate tools. • Score and fold paper/card accurately. • Join a range of materials using a variety of methods, usually choosing the method most suited to the task. • Test their product as they work, making informed adjustments to ensure their product meets the design criteria. • Apply their prior knowledge and understanding to make structures stiffer/ more stable as they work. • Create a basic electrical circuit and incorporate it into their product. • Pay attention to the finishing of their product.	• Measure and mark materials with increased accuracy, before cutting. • Cut materials accurately, using appropriate tools. • Join a range of materials using a variety of suitable methods. • Test their product as they work, making informed adjustments and striving to address any anticipated problems. • Apply their prior knowledge and understanding to make structures stiffer/ more stable as they work. • Create a working mechanism (pulleys and gears) and incorporate it into their product. • Create a basic electrical circuit and incorporate it into their product. • Programme a computer to control their product. • Create a polished and well-finished product.
Make - Textiles		• Making/using simple paper pattern pieces. • Cutting fabric carefully. • Learning sewing basics – threading a needle, knotting your thread, finishing off. • Sewing using running stitch, attempting to produce neat, equal stitches • Creating a design on fabric using applique. • Creating a design on fabric using pens/paint.	• Making/using simple paper pattern pieces. • Cutting fabric carefully. • Learning sewing basics – threading a needle, knotting your thread, finishing off. • Sewing using running stitch, attempting to produce neat, equal stitches • Creating a design on fabric using applique. • Creating a design on fabric using pens/paint. • Sewing basics – threading a needle, knotting your thread, finishing off. • Sewing on simple components – buttons/sequins/ribbons. • Using stuffing	• Making/using a paper pattern (front and back pieces). • Including a seam allowance. • Cutting fabric accurately. • Sewing basics – threading a needle, knotting your thread, finishing off. • Sewing neatly using running stitch/back stitch. • Turning out so stitching is hidden. • Creating designs on fabric using applique/pens/ paint. • Incorporating a fastening component – button/zip/press stud
Make - Food		• Observe basic food hygiene procedures with support – washing hands; washing fruit/veg; keeping meat separate; cleaning surfaces before and after preparing food. • Use a knife and chopping board to neatly chop ingredients. • Use a spoon to add condiments. • Carefully roll up their wrap. • Serve food in an appealing way. • Clean/wash up after themselves.	• Observe basic food hygiene procedures – washing hands, washing fruit/veg; avoiding cross contamination when preparing raw meat; cleaning surfaces before and after preparing food. • Use appropriate tools to peel, chop, slice, grate and mix ingredients. • Knead and roll out dough. • Cook the product in the oven, ensuring it is fully cooked. • Serve food in an appealing way. • Clean/wash up after themselves	• Observe basic food hygiene procedures – washing hands, washing fruit/veg; avoiding cross contamination when preparing raw meat; cleaning surfaces before and after preparing food. • Use appropriate tools to peel, chop, slice, grate and mix ingredients. • Cook food in the oven and/or on a stove top, ensuring it is fully cooked. • Serve food in an appealing way. • Clean/wash up after themselves
Evaluat		• Describe what went well and which aspects of their product they are pleased with. • Describe anything that didn’t work as well and any changes they had to make.	• Identify and discuss the strengths of their product. • Identify any areas for development/ improvements that could be made.	• Identify and discuss the strengths of their product. • Identify any areas for development/ improvements that could be made.

		• Discuss what the intended user might think about the product. • Suggest how their product could be improved.	• Discuss whether the product meets the requirements of the brief/the needs of the user – is it fit for purpose? • Take part in peer evaluation, giving and receiving feedback from fellow pupils.	• Discuss whether the product meets the requirements of the brief/the needs of the user – is it fit for purpose? • Take part in peer evaluation, giving and receiving feedback from fellow pupils

D.T. Key Stage One

	Y1/2	Y3/4	Y5/6
cooking	Children use the basic principles of a healthy and varied diet to prepare dishes. They understand where food comes from. Children can: a explain where in the world different foods originate from; b understand that all food comes from plants or animals; c understand that food has to be farmed, grown elsewhere (e.g. home) or caught; d name and sort foods into the five groups in the Eatwell Guide; e understand that everyone should eat at least five portions of fruit and vegetables every day and start to explain why; f use what they know about the Eatwell Guide to design and prepare dishes. Cut food safely	Children understand and apply the principles of a healthy and varied diet. They prepare and cook a variety of predominantly savory dishes using a range of cooking techniques. They understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. Children can: a start to know when, where and how food is grown (such as herbs, tomatoes and strawberries) in the UK, Europe and the wider world; b understand how to prepare and cook a variety of predominantly savory dishes safely and hygienically; c with support, use a heat source to cook ingredients showing awareness of the need to control the temperature of the hob and/or oven; d use a range of techniques such as mashing, whisking, crushing, grating, cutting, kneading and baking; e explain that a healthy diet is made up of a variety and balance of different food and drink, as represented in the Eatwell Guide and be able to apply these principles when planning and cooking dishes; f understand that to be active and healthy, nutritious food and drink are needed to provide energy for the body; g prepare ingredients using appropriate cooking utensils; h measure and weigh ingredients to the nearest gram and millilitre; i start to independently follow a recipe; start to understand seasonality.	Children understand and apply the principles of a healthy and varied diet. They prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. They understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. Children can: a know, explain and give examples of food that is grown (such as pears, wheat and potatoes), reared (such as poultry and cattle) and caught (such as fish) in the UK, Europe and the wider world; b understand about seasonality, how this may affect the food availability and plan recipes according to seasonality; c understand that food is processed into ingredients that can be eaten or used in cooking; d demonstrate how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source; e demonstrate how to use a range of cooking techniques, such as griddling, grilling, frying and boiling; f explain that foods contain different substances, such as protein, that are needed for health and be able to apply these principles when planning and preparing dishes; g adapt and refine recipes by adding or substituting one or more ingredients to change the appearance, taste, texture and aroma; h alter methods, cooking times and/or temperatures; i measure accurately and calculate ratios of ingredients to scale up or down from a recipe; j independently follow a recipe.

textiles	Children should be able to ➢ describe how different textiles feel ➢ make a product from textiles that requires gluing ➢ measure textiles to the nearest cm ➢ join textiles to make something ➢ cut textiles using appropriate equipment with help ➢ explain why they have chosen a certain textile ➢ explain what they have made, what went well and what would they change ➢ draw pictures of their design before beginning ➢	Children should be able to: ➢ Show their design meets the design requirements ➢ Show clear instructions ➢ Describe design using clearly labeled diagram or sketch ➢ Join textiles in a range of ways – gluing, sewing ➢ Select textiles for their properties and appearance ➢ Measure accurately to the nearest mm ➢ Explain what they could change to improve their design ➢ Explain how they can make their product strong and durable ➢ Select appropriate materials for the brief ➢ Make a template for multiple production ➢ Explain how to join textiles in a range of ways ➢ Show a reasonable level of control with a range of tools – needle work, sawing ➢ Explain their product idea to others ➢ Evaluate the appearance and practicality of the finished product	Children should be able to: ➢ Collect ideas and requirements from potential customers (market research) ➢ Reflect on market research when designing the product ➢ Produce a detailed step by step plan ➢ Select textiles based on customer wants and views ➢ Make their product both attractive and strong ➢ Make a working prototype ➢ Use a range of joining techniques ➢ Preform checks to ensure products durability ➢ Evaluate the appearance and function ➢ Explain why a product will appeal to the given audience ➢ Use a range of tools required to complete the task – independently if appropriate ➢ Measure and cut to the nearest mm ➢ Explain why their product is fit for purpose ➢ Suggest improvements ➢ Develop a sales campaign ➢
mechanisims	Children should be able to: ➢ Make a product which moves ➢ Cut materials using scissors ➢ Explain why they have chosen that part to move ➢ Explain what they are making ➢ Describe how it works ➢ Explain what tools they are using ➢ Use pictures and words to plan ➢ Join things in different ways ➢ Add a design to their product ➢ Join materials together as part of a moving product ➢ Select the bet materials and tools ➢ Explain what was successful and what they would improve		

materials	Children should be able to: ➢ Make a structure using more than one material ➢ Ensure their work is tidy ➢ Make models stronger ➢ Discuss what to reinforce materials – joining, rolling, folding ➢ Explain what materials go well together ➢ Explore materials used to make joins – which is best and why. Prit stick, glue, celotape ➢ Measure materials in a model ➢		

construction	Children should be able to: ➢ Talk about what they want to build ➢ Select appropriate resources and tools ➢ Make simple plans through drawings and words before making objects ➢ Select most appropriate material and explain why ➢ Incorporate a moving part ➢ Explain how they would improve their design		
Electrical and mechanical components		Children should be able to: ➢ Explain different conductors ➢ Explain how electricity travels ➢ Add different components to their circuits ➢ Make a product that using mechanical and electrical components ➢ Use a range of joining methods to allow products to move ➢ Select appropriate tools and techniques ➢ Alter their end product to improve or fix ➢ Explore and try a range of ideas to improve their end product ➢ Create a circuit with more than one output ➢ Evaluate their work and offer improvements ➢ Plan and explain their design and components to others	Children should be able to: ➢ Incorporate a switch in their product ➢ Refine and improve the end product ➢ Include hydraulics ➢ Explain how their product will appeal to the target audience ➢ Evaluate products function ➢ Use a range of components ➢ Use a range of circuits in their product ➢ Explain how adding a circuit improves the product ➢ Justify their idea to someone else ➢ Compose market research around their product
Stiff and flexible sheet materials		Children should be able to: ➢ Select the most sppropriate materials for their product ➢ Accurately cut holes and cuts ➢ Join materials using a varierty of joins folding, rolling, a frame etc ➢ Selects materials and joins to strengthen their structure ➢ Measure and cut with precision ➢ Evaluate and improve design	Children should be able to: ➢ Ensure measurements and cuts are to the nearest mm ➢ Ensure their product is strong and fit for purpose ➢ Explain how the product will appeal to target market ➢ Plan and design product in detail ➢ Use a variety of joins and materials appropriate to selected material for joins ➢ Justify selected material ➢ Work within a budget – understand and consider the cost and value of given materials ➢ Hide joints to improve ascetics of finished product
Mouldable materials		Children should be able to: ➢ Select appropriate material ➢ Use tools to cold, sculpt, scrape ➢ Us cross hatch to ensure strong joins ➢ Use finishing techniques – dampening clay, smoothing with tools and hands, blending joins ➢ Make adaptations to ensure success throughout build	Children should be able to ➢ Refine and improve their product and its ascetics ➢ Persevere and modify their product ➢ Plan and evaluate product

Topic vocabulary	Hygiene Surface Texture Varied diet Cut Chop Mix Stir Decorate Clean Scrub Hygiene	Produce Grow Cut Chop Grate Fold Knead crush savory seasonality score evaluate finishing off running stitch	Ascetic Local global dice rear catch poultry market research target market product refine back stitch