Design and Technology Intent, Implementation and Impact

At Humshaugh C of E (Aided) First School, we encourage our pupils to develop investigation and exploration skills, embedding learning from all areas of the curriculum, our community and our heritage. The curriculum is designed to provide opportunities for pupils to explore existing products and gain technical knowledge from famous engineers, designers and inventors. We want to encourage children to foster, *'A desire to improve the world around them'*.

Our Design and Technology curriculum is flexible and can be adapted to maximise local and national opportunities and events, and to ensure that where possible there is a 'real-life' context. For example; pupils made treehouse models as part of the Kew Garden's international tree house competition. There is often a sharp environmental dimension and pupils use recycled materials wherever possible. For example, in Key Stage 1 pupils made bird feeders and Lacewing shelters using plastic bottles and Key Stage 2 children made moving posters to promote recycling at Christmas Time which were then put up around the village.

Regular STEM events are threaded throughout the curriculum. For example, coding, green screen, Spheros and stop motion animation. Our curriculum is further enhanced by our 'STEM Challenge' afternoons which allow children opportunities to develop their practical skills and problem solve around a particular theme for example Crazy Catapults, The Egg Drop Challenge and Robot Wars.

Our Design and Technology Curriculum is further enriched by our summer Forest School programme whereby pupils have the opportunity to put their design and making skills into practice through the participation in creative outdoor activities, for example, making Roman aqueducts in the stream, building bug homes, boats, bridges, structures and dens.

TOPIC OVERVIEWS

EYFS

YEAR A **USING RESOURCES AND TOOLS SAFELY AND EFFECTIVELY**	**YEAR A** **3D FORM & JUNK MODELLING**	**YEAR A** **BUILDING BOATS**
YEAR B **USING RESOURCES AND TOOLS SAFELY AND EFFECTIVELY**	**YEAR B** **VEHICLES**	**YEAR B** **TOWERS AND STRUCTURES**

YEAR 1 & 2

YEAR A **MECHANISMS** SLIDERS AND LEVERS	**YEAR A** **FOOD** PREPARING FRUIT AND VEGETABLES	**YEAR A** **STRUCTURES** FREE STANDING STRUCTURES
YEAR B **TEXTILES** TEMPLATES AND JOINING TECHIQUES	**YEAR B** **MECHANISMS** WHEELS AND AXLES	**YEAR B** **FOOD/STRUCTURES** PREPARING FRUIT AND VEGETABLES

YEAR 3 & 4

YEAR A **MECHANICAL SYSTEMS** LEVERS AND LINKAGES	**YEAR A** **STRUCTURES** SHELL STRUCTURES (INC. CAD)	**YEAR A** **FOOD** HEALTHY AND VARIED DIET
YEAR B **TEXTILES** 2-D SHAPE TO 3-D PRODUCT	**YEAR B** **ELECTRICAL SYSTEMS** SIMPLE CIRCUITS & SWITCHES (INC. PROGRAMMING & CONTROL)	**YEAR B** **MECHANICAL SYSTEMS** PNEMATICS

What will a Humshaugh First School Designer look like?	
By the end of EYFS they will have the following knowledge...	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. When designing and making, pupils should be taught to: **Design** – to explore ideas through drawing and through playing with different materials freely, to develop their ideas about how to use them and what to make. To use their new-found knowledge to design products (for example; a raincoat for a teddy) with opportunities to experiment with texture, form and function. **Make** - to safely use a variety of tools, and through opportunities for repetition and consolidation, both through teacher-led activities and play, they will feel confident to make and build using techniques and materials they have previously tried. **Evaluate** – Pupils can talk about their creations and explain the process they have used
By the end of Year 2 they will have the following knowledge…	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

At the end of Year 4 they will begin to have the following knowledge:	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

Progression of Key Skills from EYFS-Y4

Progression of key skills from EYFS– Y4	Developing, planning and communicating ideas.	Working with tools, equipment, materials and components to make quality products (inc. food)	Evaluating processes and products	Vocabulary
End of EYFS linked to ELGs	-Select and use technology for particular purposes -Constructs with a purpose in mind -Use what is known about media and materials, thinking about uses and purposes. -Represent ideas, thoughts and feelings through Design Technology (art, design, music, role play and stories) -Understand the importance and need for safety and hygiene when planning to make	-Use a variety of resources -Use simple tools and techniques competently and appropriately -Select tools and techniques needed to shape, assemble and join materials -Safely use and explore a variety of tools, materials and techniques -Experiment with colour, texture, design, form and function. -Use simple tools to effect change to materials -Handle tools, objects, materials and construction safely and with increasing control -Practise some appropriate safety measures without direct supervision -Know about the need for safety, consider and manage some risks when preparing food -Know about the importance of hygiene when dealing with food.	-Select appropriate resources and adapt work where necessary -Use what is known about media and materials and its uses and purposes to improve work -Express ideas effectively, develop own explanations by connecting own ideas or events -Link statements together and stick to a main theme or intention when talking about design product	*Tools, ideas, safety, design, make, plan, colour, describe, make better, explore, mix, texture, playdough, junk model, construction, build, scissors, glue, sellotape, shape, join, draw, label, healthy, clean, control*

End of Year 1	- Draw on their own experience to help generate ideas - Suggest ideas and explain what they are going to do - Identify who their design is for - Model their ideas -Talk about how they would improve their idea	- Make their design using appropriate techniques -With help measure, mark out, cut and shape a range of materials - Use tools e.g. scissors and a hole punch safely - Assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape - Select and use appropriate ingredients, processes and tools - Use basic food handling, hygienic practices and personal hygiene - Use simple finishing techniques to improve the appearance of their product	- Verbally evaluate their products identifying strengths and possible changes they might make -Talk about their ideas, saying what they like and dislike about them	*Model, generate, explain, target audience, purpose, research, measure, plan, equipment, product, hygiene, technique, evaluate, question, strength, sequence, improve, changes, likes, dislikes, fabric, features, design criteria, finishing techniques, materials, tools*
End of Year 2	-Generate ideas by drawing on their own and other people's experiences as well as knowledge of existing products -Communicate and develop their design ideas through discussion,	-Begin to select tools and materials; use vocabulary to name and describe them, and explain choices for use -Measure, cut and score with some accuracy -Use hand tools safely and appropriately -Assemble, join and combine materials and components in order to make a product	-Evaluate against their design criteria -Evaluate their products as they are developed, identifying strengths and possible changes they might make - Evaluate their product by answering simple questions about the design/make process	*Model, generate, explain, target audience, purpose, research, measure, plan, equipment, product, hygiene, technique, evaluate, question, strength, sequence, improve, changes, likes, dislikes, fabric, features, design criteria, finishing techniques, materials, tools*

	observation, drawing and modelling -Identify a purpose and create a simple design criteria -Make simple drawings and label parts	-Cut, shape and join fabric to make a simple garment. -Use basic sewing techniques -Follow safe procedures for food safety and hygiene -Choose and use appropriate finishing techniques		
End of Year 3	-Research and generate ideas for an item, considering its purpose and audience -Identify a purpose and establish criteria for a successful product -Plan the order of their work before starting -Explore, develop and communicate design proposals by modelling ideas (including use of ICT) -Make drawings with labels and annotations when designing	-Use tools and techniques for making their product to fit the needs of the task and purpose safely -Measure, mark out, cut, score and assemble components with more accuracy -Work safely and accurately with a range of simple tools -Think about their ideas as they make progress and be willing to change things if this helps them improve their work -Measure, tape or pin, cut and join fabric with some accuracy -Demonstrate hygienic food preparation and storage -Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT	-Evaluate their product against original design criteria e.g. how well it meets its intended purpose/audience -Evaluate their product by asking and answering questions about the design/make process -Identify strengths and improvements in relation to views of the target audience/purpose	*Healthy living, health and safety, designing to a brief, communicating ideas, labelling, evaluation*

End of Year 4	-Research and generate realistic ideas, considering the purpose, ensuring specific design features appeal to the target audience -Make annotated, labelled diagram from different views showing specific features -Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail -Disassemble existing products, evaluate and identify criteria that can be used to inform and improve their own designs	-Use appropriate tools and techniques for making their product in relation to functional properties and requirements safely -Measure, mark out, cut and shape range of materials, using appropriate tools, equipment and techniques -Join and combine materials and components accurately in temporary and permanent ways -Sew using a range of different stitches, weave and knit -Measure, tape or pin, cut and join fabric with some accuracy -Use simple graphical communication techniques	- Evaluate their work both during and at the end of the assignment -Evaluate their products and carrying out appropriate tests	*Healthy living, health and safety, designing to a brief, communicating ideas, labelling, evaluation*