

Herne Junior School

Design and Technology Curriculum Progression

Our high-quality design and technology curriculum is planned as a 4-year journey across the school and, using creativity and imagination, our pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Our pupils learn how to be resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. 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. By the end of Key Stage 2, through a variety of creative and practical activities, our pupils will have been taught the knowledge, understanding and skills needed to engage in the process of designing and making. They will have worked in a range of relevant contexts, for example, the home, school, leisure, culture, enterprise, industry and the wider environment.

Our pupils are 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 - select and securely connect electrical components to produce a functional product, and create and modify a computer control program for an electrical product.
Evaluate	- investigate and analyse a range of existing products - test and 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 - know how to use utensils and equipment including heat sources to prepare and cook food, and develop design criteria including appearance, taste, texture and aroma

'Greater Depth' is achieved through a focus on **ACE** – tasks enable pupils to **Apply**, **Connect** and **Explain** (or **Explore**) & **Evaluate**

Apply	Pupils apply skills, knowledge and understanding from their current, and previous, learning independently and in new contexts.
Connect	Pupils make clear, strong and appropriate links between their skills, knowledge and understanding and the new context.
Explore & Evaluate	Pupils are able to explore and critically evaluate the effectiveness of their products and designs when independently using a variety of taught techniques, tools and materials.

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Learning Objectives	Year 3	Year 4	Year 5	Year 6
Food	HEALTHY AND VARIED DIET: PASTA SALADS Designing • 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. Making • 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. Evaluating		FOOD – CELEBRATING CULTURE AND <u>SEASONALITY</u>: SOUTH DOWNS OMELETTE (ACTIVITY COMPLETED IN 'WOODLAND WONDERS' SESSIONS.) Designing • Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification. • Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose. • Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas. Making • Write a step-by-step recipe, including a list of ingredients, equipment and utensils • Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients. • Make, decorate and present the food product appropriately for the intended user and purpose. Evaluating • Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams.	FOOD – CELEBRATING <u>CULTURE</u> AND <u>SEASONALITY</u>: MAYAN FLATBREADS Designing • Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification. • Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose. • Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas. Making • Write a step-by-step recipe, including a list of ingredients, equipment and utensils • Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients. • Make, decorate and present the food product appropriately for the intended user and purpose. Evaluating • Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations

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	• Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. • Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. Technical knowledge and understanding • Know how to use appropriate equipment and utensils to prepare and combine food. • Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. • Know and use relevant technical and sensory vocabulary appropriately.		• Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. • Understand how key chefs have influenced eating habits to promote varied and healthy diets. Technical knowledge and understanding • Know how to use utensils and equipment including heat sources to prepare and cook food. • Understand about seasonality in relation to food products and the source of different food products. • Know and use relevant technical and sensory vocabulary.	using e.g. tables/graphs/charts such as star diagrams. • Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. • Understand how key chefs have influenced eating habits to promote varied and healthy diets. Technical knowledge and understanding • Know how to use utensils and equipment including heat sources to prepare and cook food. • Understand about seasonality in relation to food products and the source of different food products. • Know and use relevant technical and sensory vocabulary.
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Structures	STRUCTURES – FRAME: WOODEN ROMAN PHOTO FRAME Designing • Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product. • Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas. Making • Order the main stages of making. • Use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy. • Explain their choice of materials according to functional properties and aesthetic qualities. • Use finishing and decorative techniques suitable for the product they are designing and making. Evaluating	STRUCTURES – SHELL: SAXON VIKING HOUSE Designing • Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources. • Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. • Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches. Making • Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used. • Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks. • Use finishing techniques suitable for the product they are creating. Evaluating • Investigate and evaluate a range of existing shell structures including the		
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	- Investigate and evaluate a range of existing frame structures. - Research key events and individuals relevant to frame structures. - Test and evaluate their own products against design criteria and the intended user and purpose. Technical knowledge and understanding - Understand how to strengthen, stiffen and reinforce 3-D frameworks. - Know and use technical vocabulary relevant to the project.	materials, components and techniques that have been used. - Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. Technical knowledge and understanding - Develop and use knowledge of how to construct strong, stiff shell structures. - Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes. - Know and use technical vocabulary relevant to the project.		
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Learning Objectives	Year 3	Year 4	Year 5	Year 6
Textiles	TEXTILES – 2D SHAPE TO 3D PRODUCT: CHRISTMAS DECORATION Designing • Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s. • Produce annotated sketches, prototypes, final product sketches and pattern pieces. Making • Plan the main stages of making. • Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing.	TEXTILES – 2D SHAPE TO 3D PRODUCT: BUG BOOKMARK Designing • Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s. • Produce annotated sketches, prototypes, final product sketches and pattern pieces. Making • Plan the main stages of making. • Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing. • Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern.	TEXTILES – COMBINING DIFFERENT FABRIC SHAPES: GREEK APPLIQUE Designing • Generate innovative ideas by carrying out research including surveys, interviews and questionnaires. • Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design. • Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. Making	TEXTILES – COMBINING DIFFERENT FABRIC SHAPES: CHRISTMAS FINGER PUPPET Designing • Generate innovative ideas by carrying out research including surveys, interviews and questionnaires. • Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design. • Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. Making

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	• Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern. Evaluating • Investigate a range of 3-D textile products relevant to the project. • Test their product against the original design criteria and with the intended user. • Take into account others' views. • Understand how a key event/individual has influenced the development of the chosen product and/or fabric. Technical knowledge and understanding • Know how to strengthen, stiffen and reinforce existing fabrics. • Understand how to securely join two pieces of fabric together. • Understand the need for patterns and seam allowances. • Know and use technical vocabulary relevant to the project.	Evaluating • Investigate a range of 3-D textile products relevant to the project. • Test their product against the original design criteria and with the intended user. • Take into account others' views. • Understand how a key event/individual has influenced the development of the chosen product and/or fabric. Technical knowledge and understanding • Know how to strengthen, stiffen and reinforce existing fabrics. • Understand how to securely join two pieces of fabric together. • Understand the need for patterns and seam allowances. • Know and use technical vocabulary relevant to the project.	• Produce detailed lists of equipment and fabrics relevant to their tasks. • Formulate step-by-step plans and, if appropriate, allocate tasks within a team. • 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. Evaluating • Investigate and analyse textile products linked to their final product. • Compare the final product to the original design specification. • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. Technical knowledge and understanding • A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics.	• Produce detailed lists of equipment and fabrics relevant to their tasks. • Formulate step-by-step plans and, if appropriate, allocate tasks within a team. • 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. Evaluating • Investigate and analyse textile products linked to their final product. • Compare the final product to the original design specification. • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. Technical knowledge and understanding • A 3-D textile product can be made from a combination of
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			Fabrics can be strengthened, stiffened and reinforced where appropriate.	accurately made pattern pieces, fabric shapes and different fabrics. Fabrics can be strengthened, stiffened and reinforced where appropriate.
Mechanical systems			MECHANICAL SYSTEMS – PULLEYS OR GEARS / CAMS: MARS BUGGIES Designing - Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources. - Develop a simple design specification to guide their thinking. - Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. Making	

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			• Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team. • Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. Measure and drill hole in wooden strip for cam and follower. Work within the constraints of time, resources and cost. Evaluating • Compare the final product to the original design specification. • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. • Investigate famous manufacturing and engineering companies relevant to the project. Technical knowledge and understanding • Understand that mechanical and electrical systems have an input, process and an output.	
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			• Understand how gears and pulleys / cams can be used to speed up, slow down or change the direction of movement. • Know and use technical vocabulary relevant to the project. • <i>Note: discuss 'levers and linkages' as previous knowledge from activities across the subjects using split pins, e.g. making cards and as tools e.g. scissors, pliers and wheelbarrows.</i> <i>Cross-curricular example is manipulating the limbs of the mannequin models in ART for drawing in proportion, also in year 5.</i>	
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Learning Objectives	Year 3	Year 4	Year 5	Year 6
Electrical systems		ELECTRICAL SYSTEMS – SIMPLE CIRCUITS AND SWITCHES: IMAGINARY WORLD CREATION Designing • Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. • Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams. Making • Order the main stages of making. • Select from and use tools and equipment to cut, shape, join and finish with some accuracy. • Select from and use materials and components, including construction materials using a shoebox shell structure for stability, other recycled materials and electrical components according to their functional properties and aesthetic qualities. • <i>Create and modify a computer control program to enable an electrical product to work – through</i>		ELECTRICAL SYSTEMS – MORE COMPLEX SWITCHES: CONTROLLABLE CIRCUS VEHICLES Designing • Use research to develop a design specification for a functional product that responds automatically to changes in the environment. Take account of constraints including time, resources and cost. • Generate and develop innovative ideas and share and clarify these through discussion. • Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. Making • Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. • Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. • Combine electrical components with pulley system for electrically-driven motion.

		the introduction of CRUMBLE boards to program lights and motors. Evaluating • Investigate and analyse a range of existing battery-powered products. • Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. Technical knowledge and understanding • Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers. • Apply their understanding of computing to program and control their products – through the introduction of CRUMBLE boards to program LED lights, bulbs and motors. • Know and use technical vocabulary relevant to the project.		• <i>Create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment – (possible <u>future</u> application of CRUMBLE boards, involving different surfaces, slopes and luggage with the vehicles)</i> Evaluating • Continually evaluate and modify the working features of the product to match the initial design specification. • Test the system to demonstrate its effectiveness for the intended user and purpose. • Investigate famous inventors who developed ground-breaking electrical systems and components. Technical knowledge and understanding • Understand and use electrical systems in their products. • <i>Apply their understanding of computing to program, monitor and control their products. (possible <u>future</u> application of CRUMBLE boards)</i> • Know and use technical vocabulary relevant to the project.
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(‘Key Learning for Progress Design and Technology’ amended and updated for Herne Junior School by DT leader in February 2026, from source: HIAS, Sarah Pook 2020.)

