Whiston Willis Primary Academy

Curriculum Progression

Subject: Design & Technology

	Designing	Making	Evaluating	Technical Knowledge
Year 1 and 2	Understanding contexts, users and purposes Across KS1 pupils should: • Work confidently within a range of contexts, such as imaginary, story based, home, school, gardens, playgrounds, local community, industry and the wider environment. • State what products they are designing and making. • Say whether their products are for themselves or other users. • Describe what their products are for. • Say how their products will work. • Say how they will make their products suitable for their intended users. • Use simple design criteria to help develop their ideas. Generating, developing, modelling and communicating ideas Across KS1 pupils should: • Generate ideas by drawing on their own experiences. • Use knowledge of existing products to help come up with ideas.	Planning Across KS1 pupils should: • Plan by suggesting what to do next. • Select from a range of tools and equipment, explaining their choices. • Select from a range of materials and components according to their characteristics. Practical skills and techniques Across KS1 pupils should: • Follow procedures for safety and hygiene. • Use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components. • Measure, mark out, cut and shape	Own ideas and products Across KS1 pupils should: • Talk about their design ideas and what they are making. • Make simple judgements about their products and ideas against design criteria. Suggest how their products could be improved. Existing products Across KS1 pupils should explore: • What products are • Who products are for • What products are for • How products work • How products are used • Where products might be used • What materials products are made from • What they like and dislike about products.	Making products work Across KS1 pupils should know: • About the simple working characteristics of materials and components. • About the movement of simple mechanisms such as levers, sliders, wheels and axles. • How freestanding structures can be made stronger, stiffer and more stable. • That a 3D textiles product can be assembled from two identical fabric shapes.

	• Develop and communicate ideas by drawing and talking. • Model ideas by exploring materials, components and construction kits and by making templates and mock ups. • Use information and communication technology where appropriate to develop and communicate their ideas.	materials and components. • Assemble, join and combine materials and components. • Use finishing techniques, including those from Art and design.		

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Year 3 and 4	Understanding contexts, users and purposes Across KS2 pupils should: • Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider community. • Describe the purpose of their products. • Indicate the design features of their products that will appeal to intended users. • Explain how particular parts of their products work. In early KS2 pupils should also: • Gather information about the needs and wants of particular individuals and groups. • Develop their own design criteria and use these to inform their ideas.	Planning Across KS2 pupils should: • Select tools and equipment suitable for the task. • Explain their choice of tools and equipment in relation to the skills and techniques they will be using. • Select materials and components suitable for the task. • Explain their choice of materials and components according to functional properties and aesthetic qualities. In early KS2 pupils should also: • Order the main stages of making. Practical skills and techniques Across KS2 pupils should:	Own ideas and products Across KS2 pupils should: • Identify the strengths and areas for development in their ideas and products. • Consider the views of others, including intended users to improve their work. In early KS2 Pupils should also: • Refer to their design criteria as they design and make. • Use their design criteria to evaluate their completed products. Existing products Across KS2 pupils should investigate and analyse: • How well products have been designed • How well products have been made. • Why materials have been chosen. • What methods of construction have been used.	Making products work Across KS2 pupils should know: • How to use learning from Science to help design and make products that work. • How to use learning from Mathematics to help design and make products that work. • That materials have both functional and aesthetic qualities. • That materials can be combined and mixed to create more useful characteristics. • That mechanical and electrical systems have an input, process and output. • The correct technical vocabulary for the projects they are undertaking. In early KS2 pupils should also know:

	Generating, developing, modelling and communicating ideas Across KS2 pupils should: • Share and clarify ideas through discussion. • Model their ideas using prototypes and pattern pieces. • Use annotated sketches, cross sectional drawings and exploded diagrams to develop and communicate their ideas. • Use computer-aided design to develop and communicate their ideas. In early KS2 pupils should also: • Generate realistic ideas, focusing on the needs of the user. • Make design decisions that take account of the availability of resources.	• Follow procedures for safety and hygiene. • Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components. In early KS2 pupils should also: • Measure, mark out, cut and shape materials and components with some accuracy. • Assemble, join and combine materials and components with some accuracy. • Apply a range of finishing techniques, including those from Art & Design with some accuracy.	• How well products work. • How well products achieve their purposes • How well products meet their needs and wants. In early KS2 pupils should also investigate and analyse: • Who designed and made the products. • Where products were designed and made. • When products were designed and made. • Whether products can be recycled or reused Key events and individuals Across KS2 pupils should know: About inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.	• How mechanical systems such as levers and linkages or pneumatic systems create movement. • How simple electrical circuits and components can be used to create functional products. • How to program a computer to control their products. • How to make strong, stiff shell structures. • That a single fabric shape can be used to make a 3D textiles product. • That food ingredients can be fresh, pre-cooked and processed.

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Year 5 and 6	Understanding contexts, users and purposes Across KS2 pupils should: • Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider community. • Describe the purpose of their products. • Indicate the design features of their products that will appeal to intended users. • Explain how particular parts of their products work. In late KS2 pupils should also: • Carry out research, using surveys, interviews, questionnaires and web based resources. • Identify the needs, wants, preferences and values of particular individuals and groups.	Planning Across KS2 pupils should: • Select tools and equipment suitable for the task. • Explain their choice of tools and equipment in relation to the skills and techniques they will be using. • Select materials and components suitable for the task. • Explain their choice of materials and components according to functional properties and aesthetic qualities. In late KS2 pupils should also: • Produce appropriate lists of tools, equipment and materials that they need. • Formulate step by step plans as a guide to making. **Practical skills and techniques** Across KS2 pupils should:	Own ideas and products Across KS2 pupils should: • Identify the strengths and areas for development in their ideas and products. • Consider the views of others, including intended users to improve their work. In late KS2 Pupils should also: • Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. • Evaluate their ideas and products against their original design specification. Existing products Across KS2 pupils should investigate and analyse: • How well products have been designed • How well products have been made. • Why materials have been chosen. • What methods of construction have been used. • How well products work.	Making products work Across KS2 pupils should know: • How to use learning from Science to help design and make products that work. • How to use learning from Mathematics to help design and make products that work. • That materials have both functional and aesthetic qualities. • That materials can be combined and mixed to create more useful characteristics. • That mechanical and electrical systems have an input, process and output. • The correct technical vocabulary for the projects they are undertaking. In late KS2 pupils should also know: • How mechanical systems such as cams or pulleys or gears create movement.

	Develop a simple design specification to guide their thinking. Generating, developing, modelling and communicating ideas Across KS2 pupils should: • Share and clarify ideas through discussion. • Model their ideas using prototypes and pattern pieces. • Use annotated sketches, cross sectional drawings and exploded diagrams to develop and communicate their ideas. • Use computer-aided design to develop and communicate their ideas. In late KS2 pupils should also: • Generate innovative ideas, drawing on research. Make design decisions, taking account of constraints such as time, resources and cost.	• Follow procedures for safety and hygiene. • Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components. In late KS2 pupils should also: • Accurately measure, mark out, cut and shape materials and components. • Accurately assemble, join and combine materials and components. • Accurately apply a range of finishing techniques, including those from Art & Design with some accuracy. • Use techniques that involve a number of steps. • Demonstrate resourcefulness when tackling practical problems.	• How well products achieve their purposes • How well products meet their needs and wants. In late KS2 pupils should also investigate and analyse: • How much products cost to make. • How innovative products are. • How sustainable the materials in products are. • What impact products have beyond their intended purpose. Key events and individuals Across KS2 pupils should know: About inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.	• How more complex electrical circuits and components can be used to create functional products. • How to program a computer to monitor changes in the environment and control their products. • How to reinforce and strengthen a 3D framework. • That a 3D textiles product can be made from a combination of fabric shapes. • That a recipe can be adapted by adding or substituting one or more ingredients.