Audlem St James C of E Primary School

Progression in Design & Technology under the 2014 National Curriculum

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, such as 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 such as 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, such as levers, sliders, wheels and axles, in their products.

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.

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

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, such as 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, such as 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, such as gears, pulleys, cams, levers and linkages
• understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs, buzzers and motors
• apply their understanding of computing to programme, monitor and control their products.

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.

Pupils should be taught to:
• 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.

Design and Technology - Key Stage One
Progressive statements

Year Group	Design	Make	Evaluate	Technical Knowledge	Cooking and Nutrition
	• 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	• 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	• explore and evaluate a range of existing products • evaluate their ideas and products against design criteria	• 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.	• use the basic principles of a healthy and varied diet to prepare dishes • understand where food comes from.
Term					
Year 1	• I can model designs using software with support • I can design products that have a clear purpose and an intended user	• I can make products • I can cut materials safely using tools provided • I can demonstrate a range of cutting and shaping techniques *(such as tearing, cutting, folding and curling)*	• I can say what I like and dislike about my existing designs • I can refine my design as my work progresses • I can explore objects and designs to identify likes and dislikes • I can explore how products have been created in the past	• I can measure and mark out to the nearest centimetre • I demonstrate a range of joining techniques (such as gluing, hinges, or combining materials to strengthen) • I can create products using levers, wheels and winding mechanisms	• I can cut, peel or grate ingredients safely and hygienically with support • I can measure or weigh using measuring cups or electronic scales • I can assemble or cook ingredients
Term					
Year 2	• I can model designs using software showing increasing independence • I can design products that have a clear purpose and meet the needs of the intended user	• I can shape textiles using templates • I can join textiles using running stitch • I can colour and decorate textiles using a number of techniques *(such as dyeing, adding sequins or printing)* • I can use materials to practise drilling, screwing, gluing and nailing to make and strengthen products	• I can suggest improvements to my work and the work of others • I can refine my design as my work progresses and explain my reasons for changes • I can explain why I like and dislike aspects of designs and objects • I can explore how products have been created throughout history	• I can diagnose faults in battery operated devices *(such as low battery, water damage or battery terminal damage)*	

	Design and Technology - Key Stage Two Progressive statements				
Year Group	**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 D+T 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.
Term					
Year 3	• I can design with purpose by identifying opportunities to design • I can use software to design and represent product designs	• I can cut materials accurately and safely by selecting appropriate tools • I can measure and mark out to the nearest millilitre • I can apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (*such as slots or cut outs*) • I can select appropriate joining techniques • I can make products by working efficiently (*e.g. by carefully selecting materials*)	• I can refine work and techniques as work progresses, continually evaluating the product design	• I can control and monitor models using software designed for this purpose • I can use scientific knowledge about forces to chose appropriate mechanisms for a product (*such as levers, winding mechanisms, pulleys and gears*)	• I can prepare ingredients hygienically using appropriate utensils • I can measure ingredients to the nearest gram accurately • I can assemble or cook ingredients (controlling the temperature of the oven or hob if cooking) • I can follow a recipe

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Term					
Year 4	• I can design with purpose by identifying opportunities to design • I choose appropriate software to design and represent product designs • I can identify some of the great designers in all of the areas of study (*including pioneers and horticultural techniques)* to generate ideas for designs	• I can make a range of products by working efficiently and independently (*e.g. by carefully selecting materials*) • I understand the need for a seam allowance • I can join textiles with appropriate stitching • I can select the most appropriate techniques to decorate textiles • I can choose suitable techniques to construct products or to repair items	• I can refine work and techniques as work progresses, continually evaluating the product design • I can disassemble products to understand how they work • I can improve upon existing designs giving detailed reasons for choices	• I can control and monitor models using software designed for this purpose • I can create series and parallel circuits • I can strengthen materials using suitable techniques	

Design and Technology - Key Stage Two Progressive statements				

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Term					
Year 5	• I can design with the user in mind, motivated by the service a product will offer (rather than for profit). • I can use innovative combinations of electronics (or computing) and mechanics in product design. • I can combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • I can creative innovative designs that improve upon existing products. • I can use prototypes, cross-sectional diagrams and computer aided designs to represent designs	• I can create objects (e.g. a cushion) that employ a seam allowance • I can join textiles with a combinations of stitching techniques (such as backstitch for seams, running stitch to attach decoration) • I can use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as soft decoration for comfort on a cushion) • I can develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding) • I can ensure products have a high quality finish using art skills where appropriate.	• Evaluate the design of products so as to suggest improvements to the user experience • I can make products through stages of prototypes making continual refinements.	• I can write code to control and monitor models and products. • I can convert rotary motion to linear motion using cams.	

	Progressive statements				
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Term					
Year 6	• I can design with the user in mind, motivated by the service a product will offer (rather than for profit). • I can use prototypes, cross-sectional diagrams and computer aided designs to represent designs with increasing complexity	• I can cut materials with precision and refine the finish with appropriate tools *(such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape)* • I can ensure products have a high quality finish using art skills where appropriate.	• I can make products through stages of prototypes making continual refinements.	• I can independently write code to control and monitor models and products. • I can show an understanding of the qualities of materials to choose appropriate tools to cut and shape *(such as the nature of fabric may require sharper scissors than would be used to cut paper)* • I can create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips)	• I can understand the importance of correct storage and handling of ingredients *(using knowledge of micro-organisms)* • I can measure accurately and calculate ratios and ingredients to scale up or down from a recipe • I can demonstrate a range of baking and cooking techniques • I can create and refine recipes including ingredients, methods, cooking times and temperatures