Whitesheet Primary Academy Design and Technology Progression Grid

In DT, like all other subjects, we recognise the importance 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 Curricumlum 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

	Early Years	Key Stage One		Lower Key Stage Two		Upper Key Stage Two	
	Reception:	**Year One:**	**Year Two:**	**Year Three:**	**Year Four:**	**Year Five:**	**Year Six:**
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 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	• Children represent their own ideas, thoughts and feelings through design and technology.	• 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
Evaluate		• 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. • Discuss what the intended user might think about the product. • Suggest how their product could be improved.	• Identify and discuss the strengths of their product. • Identify any areas for development/ improvements that could be made. • 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.	• Identify and discuss the strengths of their product. • Identify any areas for development/ improvements that could be made. • 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.
	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			

Subject 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 Jamie Oliver	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 Clare Smyth	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 Heston Blumenthal