Design Technology at Astwood Bank Primary

Policy	**Design and Technology**
Last review	October 2023
Reviewed by	Miss B. Middleton Mrs F. Barker

"Design and Technology is about making things that people want and that work well. Creating these things is hugely exciting; it is an inventive, fun activity."

James Dyson.

At Astwood Bank Primary School, we believe that Design and Technology is a vital part of the education of all children. This policy outlines the purpose, nature and management of Design and Technology in our school. Design and Technology allows pupils to become resourceful, innovative and enterprising in an increasingly technological world. Design and Technology is about identifying needs, generating ideas, designing, making, testing and evaluating to find the best solution to design and make products. Whilst covering the statutory requirements, children are given the opportunities to become creative and imaginative problem solvers. Opportunities also arise for pupils to develop social and communication skills. Co-operation and concentration are also developed as pupils learn, evaluate, think and intervene creatively as individuals and as members of a team. Through the teaching of Design and Technology, pupils will have opportunities to draw on other disciplines such as mathematics, science, computing, engineering and art.

Intent

Design and Technology aims to:

1. Enable pupils to develop their knowledge and understanding:
    - Children will have opportunities to explore the working characteristics of a range of materials, which includes food.
    - Children will have the opportunity to explore how structures, mechanisms and control systems work.
    - Children will have the opportunity to investigate and evaluate familiar products.
2. Develop pupils' ability to design, plan and communicate their ideas:
    - Children will generate ideas by drawing upon their experiences and their developing knowledge and understanding of materials and components. Social, environmental, aesthetic and functional issues will be considered in Key Stage 2.
    - Children will have varied opportunities to communicate their ideas through discussion, drawings, model making, IT, written activities, shaping materials and putting components together.
    - Children will learn to view the design process as a sequence of activities, planning at KS1 what to do next and at KS2, a sequence of actions and alternatives.
3. Develop pupils' making skills, enabling them to create consistently higher quality products. Through focused practical tasks and design projects children will:
    - Learn various joining methods for a range of materials and components.
    - Have opportunities to select their own tools, techniques and materials.
    - Acquire and apply health and safety knowledge.
    - Develop marking out, cutting, measuring and shaping skills.

- Improve quality with varied finishing techniques.
- Children will evaluate their products through discussion and testing in order to make improvements to ongoing or future design projects.

Design and Technology Curriculum Implementation

The Design and Technology curriculum follows the National Curriculum objectives for each key stage, long term planning grids ensure all objectives are covered over the course of the year. 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. Design and Technology will enable pupils to have experience of a range of directed, focused and open-ended activities. The class teacher, with the support of the co-ordinator, plans Design and Technology. Teaching normally takes place in the classroom or kitchen with a range of individual, group or whole class teaching, learning and practical activities. Differentiation is normally by outcome but may involve specific tasks. Health and safety issues are to be taught for each topic.

- Reception pupils are taught skills and concepts following the Early Learning Goals within a range of cross-curricular topics. During their Continuous Provision the children have opportunities to design and make with different materials.
- In KS1 and KS2 pupils will cover the topics in a progressive manner. The New National Curriculum 2014 is followed with cross-curricular links made as appropriate and builds on the design process and technical knowledge.
- The pupils in KS1 and KS2 will have opportunities to design and make innovative, functional and appealing products that are fit for purpose.
- Pupils will have experience of the whole design process through investigative and disassembly activities, focused practical tasks, design and make assignments which include evaluating the product made.
- Pupils will have experience across the different material areas, i.e., textiles, ingredients and construction in each key stage.
- Cooking activities will be planned by the teacher and can take place in the kitchen.
- As a school we understand the importance of real-life application which is why we run events such as the Café, puppet making and game designs for annual fairs.
- We capitalise on the opportunity that Design and Technology projects provide which enables us to include parents during the making process.

Cooking

Cooking and nutrition learning is key. Pupils should be taught how to cook and apply the principals of nutrition and healthy eating. A love of cooking opens a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill children should learn.

<u>Key Stage One</u>

Basic principles of a healthy and varied diet to prepare dishes and to understand where food comes from.

<u>Key Stage Two</u>

The main focus is to learn to prepare and cook a variety of mostly savoury dishes and to learn a range of cooking techniques. Children should also understand the farming process (grown, reared, caught, processed).

Equal Opportunities

All children regardless of cultural background, gender or ability will have the same access to the Design and Technology curriculum and will be given the opportunity to join in with all activities. Design and Technology is taught in a cross-curricular way and teachers provide work that is stimulating, challenging and inclusive for all children.

Special Educational Needs (SEND)

All children including those with SEN should have the fullest possible access to the D & T curriculum. Special equipment or varying levels of adult support should be used to facilitate this aim. Extra time should be allocated as appropriate to ensure progress and the achievement of satisfying results. Tasks may also be tackled at adapted levels to ensure all children can participate and all children are challenged.

Resources

Resources are stored securely across the school. Books are available from the library. All cooking equipment is stored in labelled kitchen cupboards, with sharp knives in a knife box out of children's reach. Food is stored appropriately in the kitchen fridge and cupboards are regularly checked.

Assessment

Assessment for learning is a powerful means of helping each teacher to tailor their teaching to get the best progress for each child. Teachers will use formative assessments, usually through observation and questioning to determine the skills and knowledge each child has acquired in a topic. Assessment tasks may also be used, such as discussions or written questions. Assessment can be seen through children's work to see what they have learnt. The children will be judged on whether they are meeting expected levels of development, expected levels, or not yet reaching expected levels. The children also have opportunities to self and peer assess against the success criteria and the processes of design, making and evaluation.

Monitoring

The Design and Technology subject leader is responsible for:

- Monitoring the standard of work and the quality of teaching in Design and Technology.
- Reviewing and updating resources.
- Being informed about current developments in the subject.
- Developing assessment to ensure progression and continuity.
- Evidence of planning, photographs and examples of work will be kept and placed in a subject portfolio (both digital and photocopied bookwork) to act as exemplars of expectations and will be maintained by the co-ordinator.
- New for Nov 2023, teachers will be given DT 'floor books' – one per class for KS2, one per year group for KS1. Evidence to be accumulated across the year when projects are undertaken, following the Design, Make and Evaluate process with physical and photographic evidence.

Closing Declaration

At our school we are committed to providing children with a range of Design and Technology learning opportunities. These opportunities provide hands on experience of a wide range of materials, skills and techniques and enjoyable design and make assignments, which allow for a development of knowledge and understanding, as well as a chance to apply all the aspects of their learning. All children are encouraged to feel a sense of achievement as they complete projects by evaluating and identifying their own successes and future targets.

	KS1	LKS2	UKS2
Design	**KS1 Design and Technology National Curriculum** 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. 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]. Children design purposeful, functional, appealing products for themselves and other users based on design criteria. They generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. Children can: a use their knowledge of existing products and their own experience to help generate their ideas; b design products that have a purpose and are aimed at an intended user; c explain how their products will look and work through talking and simple annotated drawings; d design models using simple computing software; e plan and test ideas using templates and mock-ups; f understand and follow simple design criteria; g work in a range of relevant contexts, for example imaginary, story-based, home, school and the wider environment.	**KS2 Design and Technology National Curriculum** 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. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. Children 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. They generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design. Children can: a identify the design features of their products that will appeal to intended customers; b use their knowledge of a broad range of existing products to help generate their ideas; c design innovative and appealing products that have a clear purpose and are aimed at a specific user; d explain how particular parts of their products work; e use annotated sketches and cross-sectional drawings to develop and communicate their ideas; f when designing, explore different initial ideas before coming up with a final design; g when planning, start to explain their choice of materials and components including function and aesthetics; h test ideas out through using prototypes; i use computer-aided design to develop and communicate their ideas (see note on p. 1); j develop and follow simple design criteria; k work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment.	**KS2 Design and Technology National Curriculum** 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. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. Children 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. They generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design. Children can: a use research to inform and develop detailed design criteria to inform the design of innovative, functional and appealing products that are fit for purpose and aimed at a target market; b use their knowledge of a broad range of existing products to help generate their ideas; c design products that have a clear purpose and indicate the design features of their products that will appeal to the intended user; d explain how particular parts of their products work; e use annotated sketches, cross-sectional drawings and exploded diagrams (possibly including computer-aided design) to develop and communicate their ideas; f generate a range of design ideas and clearly communicate final designs; g consider the availability and costings of resources when planning out designs; h work in a broad range of relevant contexts, for example conservation, the home, school, leisure, culture, enterprise, industry and the wider environment.
Make	**KS1 Design and Technology National Curriculum** 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 making. Children select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. They select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. Children can: Planning a with support, follow a simple plan or recipe; b begin to select from a range of hand tools and equipment, such as scissors, graters, zesters, safe knives, juicer; c select from a range of materials, textiles and components according to their characteristics; Practical skills and techniques d learn to use hand tools and kitchen equipment safely and appropriately and learn to follow hygiene procedures; e use a range of materials and components, including textiles and food ingredients; f with help, measure and mark out; g cut, shape and score materials with some accuracy; h assemble, join and combine materials, components or ingredients; i demonstrate how to cut, shape and join fabric to make a simple product; j manipulate fabrics in simple ways to create the desired effect; k use a basic running stich; l cut, peel and grate ingredients, including measuring and weighing ingredients using measuring cups; m begin to use simple finishing techniques to improve the appearance of their product, such as adding simple decorations.	**KS2 Design and Technology National Curriculum** 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 making. Children select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] accurately. They 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. Children can: Plan a with growing confidence, carefully select from a range of tools and equipment, explaining their choices; b select from a range of materials and components according to their functional properties and aesthetic qualities; c place the main stages of making in a systematic order; Practical skills and techniques d learn to use a range of tools and equipment safely, appropriately and accurately and learn to follow hygiene procedures; e use a wider range of materials and components, including construction materials and kits, textiles and mechanical and electrical components; f with growing independence, measure and mark out to the nearest cm and millimetre; g cut, shape and score materials with some degree of accuracy; h assemble, join and combine material and components with some degree of accuracy; i demonstrate how to measure, cut, shape and join fabric with some accuracy to make a simple product; j join textiles with an appropriate sewing technique; k begin to select and use different and appropriate finishing techniques to improve the appearance of a product such as hemming, tie-dye, fabric paints and digital graphics.	**KS2 Design and Technology National Curriculum** 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 making. Children select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. They 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. Children can: Planning a independently plan by suggesting what to do next; b with growing confidence, select from a wide range of tools and equipment, explaining their choices; c select from a range of materials and components according to their functional properties and aesthetic qualities; d create step-by-step plans as a guide to making; Practical skills and techniques e learn to use a range of tools and equipment safely and appropriately and learn to follow hygiene procedures; f independently take exact measurements and mark out, to within 1 millimetre; g use a full range of materials and components, including construction materials and kits, textiles, and mechanical components; h cut a range of materials with precision and accuracy; i shape and score materials with precision and accuracy; j assemble, join and combine materials and components with accuracy; k demonstrate how to measure, make a seam allowance, tape, pin, cut, shape and join fabric with precision to make a more complex product; l join textiles using a greater variety of stitches, such as backstitch, whip stitch, blanket stitch; m refine the finish using techniques to improve the appearance of their product, such as sanding or a more precise scissor cut after roughly cutting out a shape.

	KS1 Design and Technology National Curriculum	KS2 Design and Technology National Curriculum	KS2 Design and Technology National Curriculum
Evaluate	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. Children explore and evaluate a range of existing products. They evaluate their ideas and products against design criteria. Children can: a explore and evaluate existing products mainly through discussions, comparisons and simple written evaluations; b explain positives and things to improve for existing products; c explore what materials products are made from; d talk about their design ideas and what they are making; e as they work, start to identify strengths and possible changes they might make to refine their existing design; f evaluate their products and ideas against their simple design criteria; g start to understand that the iterative process sometimes involves repeating different stages of the process.	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. Children investigate and analyse a range of existing products. They evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. They understand how key events and individuals in design and technology have helped shape the world. Children can: a explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose; b explore what materials/ingredients products are made from and suggest reasons for this; c consider their design criteria as they make progress and are willing to alter their plans, sometimes considering the views of others if this helps them to improve their product; d evaluate their product against their original design criteria; e evaluate the key events, including technological developments, and designs of individuals in design and technology that have helped shape the world.	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. Children investigate and analyse a range of existing products. They evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. They understand how key events and individuals in design and technology have helped shape the world. Children can: a complete detailed competitor analysis of other products on the market; b critically evaluate the quality of design, manufacture and fitness for purpose of products as they design and make; c evaluate their ideas and products against the original design criteria, making changes as needed.

	KS1 Design and Technology National Curriculum	KS2 Design and Technology National Curriculum	KS2 Design and Technology National Curriculum
Technical Knowledge	Children build structures, exploring how they can be made stronger, stiffer and more stable. They explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. Children can: a build simple structures, exploring how they can be made stronger, stiffer and more stable; b talk about and start to understand the simple working characteristics of materials and components; c explore and create products using mechanisms, such as levers, sliders and wheels.	Children apply their understanding of how to strengthen, stiffen and reinforce more complex structures. They understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. They understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. They apply their understanding of computing to program, monitor and control their products. Children can: a understand that materials have both functional properties and aesthetic qualities; b apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products; c understand and demonstrate how mechanical and electrical systems have an input and output process; d make and represent simple electrical circuits, such as a series and parallel, and components to create functional products; e explain how mechanical systems such as levers and linkages create movement; f use mechanical systems in their products.	Children apply their understanding of how to strengthen, stiffen and reinforce more complex structures. They understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. They understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. They apply their understanding of computing to program, monitor and control their products. Children can: a apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products; b understand and demonstrate that mechanical and electrical systems have an input, process and output; c explain how mechanical systems, such as cams, create movement and use mechanical systems in their products; d apply their understanding of computing to program, monitor and control a product.

	KS1 Design and Technology National Curriculum	KS2 Design and Technology National Curriculum	KS2 Design and Technology National Curriculum
Cooking and Nutrition	Children use the basic principles of a healthy and varied diet to prepare dishes. They understand where food comes from. Children can: a explain where in the world different foods originate from; b understand that all food comes from plants or animals; c understand that food has to be farmed, grown elsewhere (e.g. home) or caught; d name and sort foods into the five groups in the Eatwell Guide; e understand that everyone should eat at least five portions of fruit and vegetables every day and start to explain why; f use what they know about the Eatwell Guide to design and prepare dishes.	Children understand and apply the principles of a healthy and varied diet. They prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. They understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. Children can: a start to know when, where and how food is grown (such as herbs, tomatoes and strawberries) in the UK, Europe and the wider world; b understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically; c with support, use a heat source to cook ingredients showing awareness of the need to control the temperature of the hob and/or oven; d use a range of techniques such as mashing, whisking, crushing, grating, cutting, kneading and baking; e explain that a healthy diet is made up of a variety and balance of different food and drink, as represented in the Eatwell Guide and be able to apply these principles when planning and cooking dishes; f understand that to be active and healthy, nutritious food and drink are needed to provide energy for the body; g prepare ingredients using appropriate cooking utensils; h measure and weigh ingredients to the nearest gram and millilitre; i start to independently follow a recipe; j start to understand seasonality.	Children understand and apply the principles of a healthy and varied diet. They prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. They understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. Children can: a know, explain and give examples of food that is grown (such as pears, wheat and potatoes), reared (such as poultry and cattle) and caught (such as fish) in the UK, Europe and the wider world; b understand about seasonality, how this may affect the food availability and plan recipes according to seasonality; c understand that food is processed into ingredients that can be eaten or used in cooking; d demonstrate how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source; e demonstrate how to use a range of cooking techniques, such as griddling, grilling, frying and boiling; f explain that foods contain different substances, such as protein, that are needed for health and be able to apply these principles when planning and preparing dishes; g adapt and refine recipes by adding or substituting one or more ingredients to change the appearance, taste, texture and aroma; h alter methods, cooking times and/or temperatures; i measure accurately and calculate ratios of ingredients to scale up or down from a recipe; j independently follow a recipe.