# Design and Technology

Progression Map

## Level Expected at the End of EYFS

The closest links to the Design and Technology curriculum within the EYFS is:

**Expressive Arts and Design (Exploring and Using Media and Materials)**
Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

**Expressive Arts and Design (Being Imaginative)**
Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories.

**Physical Development (Moving and Handling)**
Children handle equipment and tools effectively, including pencils for writing.

## Key Stage 1 National Curriculum Expectations

### Design

Pupils should be taught to:

- 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

Pupils should be taught to:

- 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

Pupils should be taught to:

- explore and evaluate a range of existing products;
- evaluate their ideas and products against design criteria.

### Technical Knowledge

Pupils should be taught to:

- 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

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 National Curriculum Expectations

### Design

Pupils should be taught to:

- 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

Pupils should be taught to:

- 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

Pupils should be taught to:

- 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

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.

## Intent

At St Gabriel's, we aim to develop a sense of enjoyment in designing and making products. We want children to learn how products have been, and continue to be, created to help solve real life problems. The school intends to provide children with the skills to enable them to design, make and evaluate their own products and the products of others. We aim for our children to be innovative and to understand products are consciously imagined and developed by individual inventors or groups of innovators collaborating.

## Implementation

Design and Technology is taught alongside Art and Design each half-term through weekly lessons. We follow the guidance set out in the National Curriculum and, where possible, use Design and Technology to make meaningful links to other curriculum areas such as Science and Maths. At St Gabriel's, children learn about how and why products have been designed in the past. Children replicate design and technology processes including designing a product, making it and evaluating it.

During the design phase, children talk about their ideas, draw and make templates. These are used to support the making of products using different materials and components including construction materials, textiles and ingredients. Children use a range of tools to help them cut, shape, join and finish their design as well as mechanical and electrical systems. Children then evaluate their products, comparing them to those made by others; they use evaluations to improve their products applying their technical knowledge.

## Impact

Assessment for learning strategies are employed to enable teachers to identify the strength of understanding of the children. Teachers use this information to make adaptations to their planning to meet the needs of the children. Teachers may also change the focus of learning during a lesson to ensure children are supported and challenged. Teachers use their professional judgement to support them in tracking pupils' attainment and progress. School leaders monitor pupil's work termly and hold termly meetings with subject leaders to ensure they are supported to provide a high-quality curriculum. In addition, children's views and understanding are ascertained through pupil interviews/surveys.

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

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

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| **Cooking and Nutrition** | **KS1 Design and Technology National Curriculum**<br>Children use the basic principles of a healthy and varied diet to prepare dishes.<br><br>They understand where food comes from.<br><br>Children can:<br>a explain where in the world different foods originate from;<br>b understand that all food comes from plants or animals;<br>c understand that food has to be farmed, grown elsewhere (e.g. home) or caught;<br>d name and sort foods into the five groups in the Eatwell Guide;<br>e understand that everyone should eat at least five portions of fruit and vegetables every day and start to explain why;<br>f use what they know about the Eatwell Guide to design and prepare dishes. | **KS2 Design and Technology National Curriculum**<br>Children understand and apply the principles of a healthy and varied diet.<br><br>They prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.<br><br>They understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.<br><br>Children can:<br>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;<br>b understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically;<br>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;<br>d use a range of techniques such as mashing, whisking, crushing, grating, cutting, kneading and baking;<br>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;<br>f understand that to be active and healthy, nutritious food and drink are needed to provide energy for the body;<br>g prepare ingredients using appropriate cooking utensils;<br>h measure and weigh ingredients to the nearest gram and millilitre;<br>i start to independently follow a recipe;<br>j start to understand seasonality. | **KS2 Design and Technology National Curriculum**<br>Children understand and apply the principles of a healthy and varied diet.<br><br>They prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.<br><br>They understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.<br><br>Children can:<br>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;<br>b understand about seasonality, how this may affect the food availability and plan recipes according to seasonality;<br>c understand that food is processed into ingredients that can be eaten or used in cooking;<br>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;<br>e demonstrate how to use a range of cooking techniques, such as griddling, grilling, frying and boiling;<br>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;<br>g adapt and refine recipes by adding or substituting one or more ingredients to change the appearance, taste, texture and aroma;<br>h alter methods, cooking times and/or temperatures;<br>i measure accurately and calculate ratios of ingredients to scale up or down from a recipe;<br>j independently follow a recipe. |