

**Design and technology programmes of study:
Key stages 1 and 2
National curriculum in England**

Purpose of study

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Aims

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

Subject content

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.

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

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:

Key stage 1

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

Key stage 2

- 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.



Deeping St James CP School Progression of Skills in Design and Technology



	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Developing, planning and communicating ideas		<p>Follow verbal instructions.</p> <p>Explain what they are making and which materials they are using.</p> <p>Name the tools they are using.</p> <p>Describe what they need to do next.</p> <p>Select materials from a limited range that will meet the design criteria.</p> <p>Model ideas with kits, reclaimed materials.</p> <p>Select pictures to help develop ideas.</p> <p>Discuss their work as it progresses.</p>	<p>Select and name tools needed to work the materials.</p> <p>Select appropriate techniques explaining: First... Next... Last...</p> <p>Use pictures and words to convey what they want to design and make.</p> <p>Describe models and drawings of ideas and intentions.</p> <p>Use kits/reclaimed materials to develop an idea.</p> <p>Use drawings to record ideas as they are developed.</p> <p>Add notes to drawings to help explanations.</p> <p>+ Year 1 skills.</p>	<p>Investigate similar products to the one to be made to give starting points for a design.</p> <p>Draw/sketch products to help analyse how they are made.</p> <p>Think ahead about the order of their work and decide upon tools and materials.</p> <p>Plan a sequence of actions to make a product.</p> <p>Record the plan by drawing (labelled sketches) or writing.</p>	<p>Draw/sketch products to help understand how they are made.</p> <p>Develop more than one design or adaptation of an initial design.</p> <p>Propose realistic suggestions as to how they can achieve their designs.</p> <p>+ Year 3 skills.</p>	<p>Investigate products/images to collect ideas.</p> <p>Sketch and model alternative ideas.</p> <p>Record ideas using annotated diagrams.</p> <p>Make prototypes.</p> <p>Use found information to inform decisions.</p>	<p>Combine modelling and drawing to refine ideas.</p> <p>Plan a sequence of work using a storyboard.</p> <p>Use a computer to model ideas.</p> <p>Draw plans which can be read/followed by someone else.</p> <p>Give a report using correct technical vocabulary.</p> <p>+ Year 5 skills.</p>

<p>Food</p>		<p>Develop a food vocabulary using taste, smell, texture and touch.</p> <p>Group familiar food products e.g. fruit and vegetables.</p> <p>Cut and peel a range of ingredients.</p> <p>Work safely and hygienically.</p> <p>Understand the need for a variety of foods in the diet.</p>	<p>Grate and chop a range of ingredients.</p> <p>Measure and weigh food items - non-statutory measures e.g. spoons, cups.</p> <p>+ Year 1 skills.</p>	<p>Develop sensory vocabulary/knowledge using taste, smell, texture and touch.</p> <p>Follow instructions.</p> <p>Make healthy eating choices from an understanding of a balanced diet.</p> <p>Join and combine a range of ingredients.</p> <p>Work safely and hygienically.</p> <p>Measure and weigh ingredients appropriately.</p>	<p>Analyse the taste, texture, smell and appearance of a range of food.</p> <p>+ Year 3 skills.</p>	<p>Prepare food products taking into account the properties of ingredients and sensory characteristics.</p> <p>Select and prepare foods for a particular purpose.</p> <p>Taste a range of ingredients/food items to develop a sensory food vocabulary for use when designing.</p> <p>Weigh and measure using scales.</p> <p>Cut and shape ingredients using appropriate tools and equipment.</p> <p>Join and combine food ingredients appropriately.</p> <p>Decorate appropriately.</p> <p>Work safely and hygienically.</p> <p>Show an awareness of a healthy diet from an understanding of a balanced diet.</p>	<p>Prepare food products taking into account the properties of ingredients and sensory characteristics.</p> <p>Select and prepare foods for a particular purpose.</p> <p>Taste a range of ingredients/food items to develop a sensory food vocabulary for use when designing.</p> <p>Weigh and measure using scales.</p> <p>Cut and shape ingredients using appropriate tools and equipment.</p> <p>Join and combine food ingredients appropriately.</p> <p>Decorate appropriately.</p> <p>Work safely and hygienically.</p> <p>Show an awareness of a healthy diet from an understanding of a balanced diet.</p>
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<p>Textiles</p>		<p>Colour fabrics using a range of techniques e.g. fabric paints, printing and painting.</p> <p>Join fabrics with glue.</p> <p>Decorate fabrics with buttons, beads, sequins, braids and ribbons.</p>	<p>Cut out shapes which have been created by drawing around a template onto the fabric.</p> <p>Join fabrics by using a running stitch, staples, over sewing and tape.</p> <p>+ Year 1 skills.</p>	<p>Join fabrics using running stitch, over sewing and back stitch.</p> <p>Use appropriate decoration techniques (glue).</p> <p>Create a simple pattern.</p>	<p>Understand seam allowance.</p> <p>Explore fastenings and recreate some e.g. sew on buttons and make loops.</p> <p>Prototype a product using j cloths. Use appropriate decoration techniques (appliqué or simple stitches).</p> <p>Understand the need for patterns.</p> <p>+ Year 3 skills.</p>	<p>Create 3D products using pattern pieces and seam allowance.</p> <p>Understand pattern layout.</p> <p>Join fabrics using over sewing, back stitch and blanket stitch.</p> <p>Make quality products.</p>	<p>Decorate textiles appropriately often before joining components.</p> <p>Pin and tack fabric pieces together.</p> <p>Combine fabrics to create more useful properties.</p> <p>+ Year 5 skills.</p>
<p>Construction</p>		<p>Make vehicles with construction kits which contain free running wheels.</p>	<p>Use a range of materials to create models with wheels and axels e.g. glue, tape, dowel and cotton reels.</p> <p>Attach wheels to a chassis using an axle.</p> <p>Join appropriately for different materials and situations e.g. glue and tape.</p> <p>Mark out materials to be cut using a template.</p> <p>Observe glue gun being used by an adult.</p>	<p>Make structures more stable by giving them a wide base.</p>	<p>Create a shell or frame structure; strengthen frames with diagonal struts.</p> <p>Incorporate a circuit with a bulb or buzzer into a model.</p> <p>Prototype frame and shell structures.</p> <p>Measure and mark square selection, strip and dowel accordingly to 1cm.</p> <p>Use a glue gun with close one to one supervision.</p> <p>+ Year 3 skills.</p>	<p>Use bradawl to mark hole positions.</p> <p>Join materials using appropriate methods.</p> <p>Control a model using an ICT control programme.</p> <p>Use a cam to make an up and down mechanism.</p> <p>Build frameworks using a range of materials to support mechanisms. E.g. wood, corrugated card and plastic.</p> <p>Use a glue gun with close supervision.</p>	<p>Use a hand drill to drill tight and loose fit holes.</p> <p>Cut strip wood, dowel and square section wood accurately to 1cm.</p> <p>Incorporate a motor and a switch into a model.</p> <p>+ Year 5 skills.</p>

<p>Sheet materials</p>		<p>Fold, tear and cut paper and card.</p> <p>Roll paper to create tubes.</p> <p>Cut along lines, straight and curved.</p> <p>Use a hole punch.</p> <p>Insert paper fasteners for card linkages.</p> <p>Create hinges.</p> <p>Use simple pop ups.</p>	<p>Curl paper.</p> <p>Investigate strengthening sheet materials.</p> <p>Investigate joining temporary, fixed and moving materials.</p> <p>+ Year 1 skills.</p>	<p>Cut slots.</p> <p>Cut internal shapes.</p> <p>Use lolly sticks/card to make levers and linkages.</p>	<p>Use linkages to make movement larger or more varied.</p> <p>Use and explore complex pop ups.</p> <p>Create nets.</p> <p>+ Year 3 skills.</p>	<p>Cut slots.</p> <p>Cut accurately and safely to a marked line.</p> <p>Join and combine materials with temporary, fixed or moving joints.</p> <p>Use a craft knife, cutting mat and safety ruler with one to one supervision if appropriate.</p> <p>Choose an appropriate sheet material for a purpose.</p>	<p>Cut slots.</p> <p>Cut accurately and safely to a marked line.</p> <p>Join and combine materials with temporary, fixed or moving joints.</p> <p>Use a craft knife, cutting mat and safety ruler with one to one supervision if appropriate.</p> <p>Choose an appropriate sheet material for a purpose.</p>
<p>Evaluating</p>		<p>Say what they like and do not like about items they have made and attempt to say why.</p> <p>Talk about their designs as they develop and identify good and bad points.</p> <p>Talk about changes made during the marking process.</p>	<p>Discuss how closely their finished products meet their design criteria.</p> <p>+ Year 1 skills.</p>	<p>Identify the strengths and weaknesses of their design ideas.</p> <p>Consider and explain how the finished product could be improved.</p> <p>Discuss how well the finished product meets the design criteria and how well it meets the needs of the user.</p>	<p>Decide which design idea to develop.</p> <p>+ Year 3 skills.</p>	<p>Use design criteria to inform decisions about ways to proceed.</p> <p>Justify decisions about materials and methods of construction.</p> <p>Reflect on their work using design criteria stating how well the design fits the needs of the user.</p> <p>Identify what does and does not work in a product.</p> <p>Make suggestions as to how their design could be improved.</p>	<p>Use design criteria to inform decisions about ways to proceed.</p> <p>Justify decisions about materials and methods of construction.</p> <p>Reflect on their work using design criteria stating how well the design fits the needs of the user.</p> <p>Identify what does and does not work in a product.</p> <p>Make suggestions as to how their design could be improved.</p>