Heene Church of England (Aided) Primary School

'Together in faith, we love, grow and learn'

Design and Technology

National Curriculum

Purpose of study	Aims	Key stage 1	Key stage 2
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.	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.	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 ♣ 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 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 use the basic principles of a healthy and varied diet to prepare dishes ♣ understand where food comes from.	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. 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.

Curriculum Overview

	Autumn	Spring	Summer
EYFS	A blanket to keep a character warm	Mechanisms and structures	A healthy snack
Year 1	**Christmas card with a slider to be given to parents** In this unit of work pupils will look at existing pop up Christmas cards before making their own.	**Hand puppet** In this unit of work pupils will evaluate existing puppets and create their own.	**Healthy sandwich** In this unit of work pupils will learn how to evaluate existing sandwiches before making their own.
Year 2	**Christmas tree decoration** In this unit of work pupils will study existing Christmas tree decoration products before sewing their own to go on a class Christmas tree.	**Moving vehicle** In this unit of work pupils will study mechanisms that move vehicles before making their own.	**Picnic food** In this unit of work pupils will look at the components of making different picnic foods.
Year 3	**Skyscraper Construction** In this unit of work pupils will design and create a skyscraper.	**Easter egg packaging** In this unit of work pupils will explore what makes effective packaging before designing and creating an Easter egg packet.	**Amulet** In this unit of work pupils will observe different Egyptian amulet designs before creating their own.
Year 4	**A Roman inspired purse** In this unit of work, pupils will explore different types of purses and wallets. Design brief: design a purse or pouch for a Roman civilian.	**Scones** In this unit of work, pupils will explore food tasting of different flavoured scones through market research. Design brief: bake a scone.	**Torches** In this unit of work, pupils will explore different designs of torches that already exist. Design brief: create a torch with a handle and circuit.
Year 5	**Pencil case with a zip fastened** In this unit of work, pupils will look at a variety of different pencil cases with zips. Design brief: create a pencil case with a zipper that is sown into the top,	**Pizza** In this unit of work, pupils will explore different flavours of pizza and how it is made. Design brief: pupils to make a pizza as part of a pizza making workshop.	**Marble Run** In this unit of work, pupils will explore the design aspects of how marble runs work. Design brief: create a marble run including tubes, movement and incorporation of other elements.
Year 6	**Bread** In this unit of work, pupils will taste different bread before baking their own.	**Textile bag with handle** In this unit of work, pupils will study and compare different bags. They will make a bag of their own big enough to fit an exercise book in ready for secondary school.	**Pinball Game** In this unit of work pupils will compare and study existing pinball machine games. They will design and make their own.

Year Group	Textiles	Mechanisms and structures	Food	Developing, planning and communicating ideas
EYFS	• Join fabrics using glue, tape and treasury tags. • Develop fine motor control through funky finger activities. • Glue on decorations such as sequins. • Decorate with fabric pens.	• Explore books with moving parts. • Experiences of simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape. • Have experience of making simple hinges and flaps from card and paper. • Explore moving vehicles through play. • Assemble vehicles with moving wheels using construction kits. • Explore building simple structures through play.	• Explore and develop a wider food vocabulary which addresses taste, smell and texture. • Begin to understand how we should have a variety of foods in our diets. • Select items from the local market and be involved in the decision about what to make. • Understand that we need to wash our hands before handling food. • Tear food to divide it. • Peel fruit with their hands. • Begin to chop, spread, mix and grate with support (121 or 122). • Begin to measure ingredients with support (121 or 122).	• Share their creations, explaining the process they have used. • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Create collaboratively, sharing ideas, resources and skills.
1	• Join pre-cut fabric shapes with holes provided using a running stitch. • Show how to thread a needle and have a go. • Decorate using fabric pens. Glue on decorations such as sequins, beads, googly eyes and ribbons.	• Explore books and pictures with moving parts. • Investigate and discuss how the parts move. • With help measure, mark out, cut and shape a range of materials. • Make a lever and a slider from card. • Make a bridge/guide from card to control the movement of the slider.	• Begin to understand that all food comes from plants or animals. • Develop vocabulary which addresses taste, smell and texture. • Develop understanding that we need a variety of foods in our diet. • Understand why we need to wash our hands before handling food.	• Begin to design from a brief – who is it for and for what purpose? What must it include? • Begin to evaluate their finished product. • Follow verbal instructions. • Name the tools they are using.

		• Explore using tools safely, for example scissors and hole punch. • Begin to assemble, join and combine materials and components together using a variety of temporary methods e.g. glues, masking tape and paper fasteners. • Begin to build structures, exploring how they can be made stronger, stiffer and more stable.	• Develop skills of peeling, chopping, spreading, mixing and grating from EYFS when preparing dishes.	• Select materials from a limited range that will meet the design criteria. • Use labelled pictures to develop ideas. • Describe what they need to do next. • Explain what they are making and which materials they are using. • Discuss their work as it progresses. • Use their own ideas.
2	• Draw around a template. • Cut out simple shapes from felt. • Join fabrics by using running stitch and over sewing. • Gain confidence in threading a needle. • Decorate using fabric pens. Glue on decorations such as sequins, beads and ribbons.	• Explore vehicles with moving parts. • Explore wheels, axles and bearings and how they can make a vehicle move. • Start to assemble, join and combine materials in order to make a product. • Make a vehicle move using wheels and either a fixed axle or free axle. • With help measure, cut and score with some accuracy. • Further develop cutting, shaping and joining skills using scissors, glue and masking tape. • Learn to use hand tools safely and appropriately. Build structures, exploring and discussing how they can be made stronger, stiffer and more stable.	• Understand that food has to be farmed, grown or caught and it has to be brought to the home. • Develop understanding of the 5 groups of food and the 'Eat Well Guide.' • Develop understanding of hygiene measures when handling food. • Be more independent with the techniques of peeling, chopping, spreading, mixing and grating. • To have more independence when selecting and using tools to carry out these techniques safely. Develop measuring skills and begin to understand the importance of accuracy.	• With support, investigate products to give a starting point for a design. • Design from a brief, taking into consideration the intended recipient of their product. • Discuss and evaluate their ideas and product against the brief. • Make changes to their ideas and product as needed. • Select and name tools needed to work with the materials. • Use pictures and words to show what you want to design and make. • Select appropriate techniques, explaining the basic steps. • Describe models and drawings of ideas and intentions. • Use labelled drawings to record ideas as they are developed. • Use kits/reclaimed materials to develop an idea. • Add notes to design to help discuss and evaluate their work.
3	• Use simple provided patterns as a template to draw around and cut different fabrics. • Join fabrics using running stitch, over sewing and backstitch. • Confidently thread a needle using a large eye. Add applique decorations using running stitch.	• Explore packaging, materials used and how the materials are joined. • Explore nets to make 3D shapes. • Begin to apply their understanding of how to strengthen, stiffen and reinforce more complex structures • Measure, mark out, cut, score and assembly components with increasing accuracy and independence. • Work safely with a range of tools. Explain their choice of tools and equipment in relation to the skills and techniques they will be using.	• Begin to know that food is grown, reared and caught in the UK , Europe and the wider world. • Discuss the general positives and negatives around this. • Begin to follow a simple recipe with support. • Be able to use a range of techniques that build on the previous three years and explain the reasons for their choice of tool. • Have an understanding of the safety considerations needed when using a stove/oven/cooking equipment. • Demonstrate an understanding of hygiene measures when handling food. Develop measuring skills and understand the importance of accuracy.	• Investigate products to understand their purpose and how they are made. • Begin to analyse products by drawing and sketching them to understand how they are made. • Use research to produce a product for a specific audience. • Record the plan by drawing or writing. • Select the most appropriate tools and techniques for a given task. • Plan a sequence of actions to make a product. • Prove the design meets the criteria by evaluating their design against the knowledge of the product. • Evaluate own product against the brief.
4	• Draw own pattern as a template to draw around and cut a range of fabrics. • Join fabrics using over sewing, backstitch and blanket stitch. • Confidently thread a needle using a smaller eye.	• Measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques. • Start to join and combine materials and components in temporary and permanent ways. • Work safely with a range of tools.	• Gain a deeper understanding of food production in the UK, Europe and the world and how this relates to the dish that is being made.	• Investigate and analyse products by drawing and sketching to understand how they are made. • Use research to produce a product for a specific audience.

	Adding applique decorations using over sewing and running stitch.	• Using their knowledge of construction, explain how to reinforce and strengthen a 3D framework. • Understand and use mechanical systems in their products. For example, gears, pulleys, cams, levers and linkages. • Begin to understand that mechanical and electrical systems have an input, process and output. Use their knowledge of mechanical systems to build a structure/moving product.	• Learn about the seasonality of food in the UK and discuss how we have food that is not in season. • Follow a simple recipe with some independence. • Develop technical skills taught in previous years and show greater independence. • Measure ingredients with greater accuracy and independence. • Demonstrate an understanding of the safety precautions needed to bake a savoury dish. • Demonstrate an understanding of hygiene measures when handling food. • Understand how the food they are making fits in as part of a healthy diet. • Research, plan and consider the views of others to improve their work (taste testing), produce and evaluate own product. • Think about the appearance of their product and how important this is when cooking.	• Select and explain choice of tools and techniques for a given task. • Develop more than one design. • Suggest improvements for a design. • Produce a clear, sequenced plan and explain it. • Adapt initial designs to create new ones. • Use ideas from other people when evaluating own design.
5	• Decide on pattern layout and cut using a range of fabrics. • Demonstrate an awareness of seam allowance. • Joining buttons and loops using over sewing and backstitch. • Select some needles to match the thread. • Adding applique decorations, beads, sequins using over sewing and backstitch. Add a zip to fasten product.	• With growing confidence measure, mark out, cut, shape and join with accuracy to ensure a good-quality finish to the product. • Using their knowledge of construction, explain how to reinforce and strengthen a 3D framework. • Work safely with a range of tools. • Understand and use mechanical systems in their products. For example, gears, pulleys, cams, levers and linkages. • Use their knowledge of mechanical systems to build a structure/moving product.	• Understand that seasons, politics, weather may affect the food that is available. • Understand how food is processed into ingredients that can eaten or used in cooking. • Demonstrate increasing independence when following a recipe. • Gain more confidence in the technical skills taught previously. • Learn how to knead. • Demonstrate an understanding of the safety precautions needed to bake a savoury dish. • Demonstrate an understanding of hygiene measures when handling food. • Apply the understanding of a healthy and varied diet to create a savoury dish to a brief. • Research and plan and consider the views of others to improve their work (taste testing), produce and evaluate own product. • Begin to cost their product. • Think about the appearance of their product and how important this is when cooking.	• Research a range of ideas from different sources to understand how products are made. • Investigate and analyse products by drawing and sketching to understand how they are made. • Use research to produce a product for a specific audience. • Use a range of tools and equipment competently. • Make prototypes to support the final design. • Produce a clear, detailed plan for final design based on the prototype. • Suggest alternative plans; outlining the positive features and draw backs when evaluating.
6	• Decide and use complex pattern layouts and cut using a range of fabrics of their choice. • Joining a variety of fabrics using a range of stitches. • Choose from a range of needles to match the appropriate thread for the material of choice. • Choose their own decorations and stitches to fit their purpose. • Add an embroidered motif to their bag.	• Apply their understanding of computing to program, monitor and control their products. • With confidence measure, mark out, cut, shape and join with accuracy to ensure a good-quality finish to the product. • Work safely and independently with a range of tools. • Construct products using permanent joining techniques. • Explain how mechanical systems such as cams or pulleys or gears create movement. • Use their knowledge of mechanical systems to build a structure/moving product.	• Become increasingly skilled at the techniques used when preparing mainly savoury dishes. • Follow a recipe independently. • Demonstrate an understanding of hygiene measures needed when preparing food. • Cost their food products and take this into account when making their product. • Look at impact of food costs around the world (cheaper food and its impact). • Think about the presentation of their product and what it brings to cooking and eating and selling.	• Use market research to inform to inform and plan ideas. • Use a range of tools including a computer to model ideas competently. • Plan a sequence of work using a storyboard to show the final design of the prototype. • Follow and refine plans. • Explain how products should be stored and give reasons. • Justify plans in a convincing way. • Consider culture and society in plans and designs. • Test and evaluate products.

				• Demonstrate greater independence when working through the design, research and making process in response to a brief.