

Design and Technology

Curriculum Plan



SOUTHRIDGE FIRST SCHOOL - Design and Technology Long Term Plan

(Including Cookery and Nutrition)

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 for Key Stage 1

Pupils should be taught:

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, such as 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 such as 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, such as levers, sliders, wheels and axles, in their products.

Subject content for 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, such as 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, such as 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, such as gears, pulleys, cams, levers and linkages
- understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs, buzzers and motors

- apply their understanding of computing to programme, monitor and control their products.

Attainment targets:

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

COOKING & NUTRITION**Pupils should be taught to:****Key stage 1**

- use 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.

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.

Design and Technology Long Term Plan - Year 1

<p>Autumn 1</p> <p>Jurassic Forest</p>	<p>See Spring 1</p>
<p>Autumn 2</p> <p>Welcome to Pirate Island</p>	<p>A Pirate Problem – Design and make a waterproof lunch box</p> <ul style="list-style-type: none"> Make simple plans Make a structure/model using different materials. Talk with others about how they want to construct their product. Select appropriate resources and tools for their building projects.
<p>Spring 1</p> <p>Amazing Animals</p>	<p>See Spring 2</p>
<p>Spring 2</p> <p>Growing</p>	<p>Topic: Levers and sliders</p> <ul style="list-style-type: none"> Make an Easter card which moves. Cut materials using scissors. Describe the materials they choose using different words. Say why they have chosen moving parts. Describe how something works.

Summer 1 Castles	Make a plain scone using basic ingredients.
Summer 2 Explorers	Topic: Wheels and axles. <ul style="list-style-type: none"> • Design a space buggy. • Discuss plan and consider mechanisms needed. • Make a space buggy using cardboard boxes, dowel axles and cardboard wheels.

Design and Technology Long Term Plan - Year 2

Autumn 1 Beside the Seaside	Topic: Boat Builder Challenge. <ul style="list-style-type: none"> • Design a boat for the seaside based on specific design criteria. • Draw and discuss their ideas and plans. • Select appropriately from a range of available materials and tools. • Make, test and adapt their product. • Evaluate finished product.
Autumn 2 The Great Fire of London	See Autumn 1
Spring 1	Topic: Design a Healthy Menu. <ul style="list-style-type: none"> • Consider the needs of the wounded soldiers.

Heroes	<ul style="list-style-type: none"> • Design a healthy hospital menu for them. • Prepare some healthy choices from the menu
Spring 2 Local Heroes	See Spring 2
Summer 1 Inventors, Inventions and Machines	Topic: Pencil Pots. <ul style="list-style-type: none"> • Explore and evaluate a range of existing pencil pots. • Design and make a pencil pot for use in the classroom. • Evaluate each other's' products.
Summer 2 What's the Weather Like?	See Summer 1

Design and Technology Long Term Plan - Year 3

Autumn 1 The stone ages	Enquiry Based Learning Project. Shell structures Design, make and evaluate <ul style="list-style-type: none"> • Create container to protect a small object. • Select suitable materials and justify their choice.
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	<ul style="list-style-type: none"> To use and design nets
Autumn 2 The stone ages to Iron ages	Bookmarks and embroidery Sewing skills- Different stitches of embroidery Food technology- to prepare a sweet dish
Spring 1 The Romans	Mechanical systems. Levers and linkages What could children design, make and evaluate E.g. Storybook / poster / class display / greetings card / information book / storyboard etc. Enquiry base learning project Investigate the development of catapults over time. Research, design, make and evaluate a Roman Catapult
Spring 2 The Romans	See Spring 1
Summer 1 WWII	Enquiry Based Learning Project Research, design, make and evaluate models of artefacts linked WWII.
Summer 2 What is life like in France?	Food Technology Design, make and evaluate - Meal plan linked to rationing and 'dig for victory'

	Children will also learn about food production, diet and sample/make recipes related to their topic on WW2
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Design and Technology Long Term Plan - Year 4	
Autumn 1 Ancient Egypt	Mechanical systems - Levers and linkages <ul style="list-style-type: none"> • Poster • Class display - Switches used in circuits (Science) • Information book – Pop up page (History)
Autumn 2 The Water Cycle and Rivers	Design, make and evaluate - <ul style="list-style-type: none"> • Personalised Christmas cards • Tree baubles, table decorations, paper chains, bouncy snowmen, 3D paper tree
Spring 1 The Rainforest	Textiles. Design, make and evaluate - 2-D shape to 3-D product. <ul style="list-style-type: none"> • Pencil case • Rainforest box
Spring 2 Producers, Predators and Prey	Food Technology- Celebrating culture and seasonality. Design, make and evaluate <ul style="list-style-type: none"> • Bread (Pao de queijo)

	<ul style="list-style-type: none"> • Brigadeiros <p>Link to work in Geography – Brazil</p>
<p>Summer 1</p> <p>Great Victorians</p>	<p>Electrical systems - Simple circuits and switches.</p> <ul style="list-style-type: none"> • Reading light • Nightlight • Torches • Buzzer for school office
<p>Summer 2</p> <p>Why is Newcastle such a great place to live?</p>	<p>Structures - Shell structures.</p> <ul style="list-style-type: none"> • Gift boxes/containers • Desk tidy • Disposable/recyclable lunchboxes

PROGRESSION OF SKILLS IN DESIGN AND TECHNOLOGY

KEY STAGE ONE

Materials and Components – Knowledge and Understanding	Developing, Planning and Communicating Ideas	<ul style="list-style-type: none"> Follow verbal instructions Explain what they are making and which materials they are using Name the tools they are using Describe what they need to do next Select materials from a limited range that will meet the design criteria Select and name the tools needed to work the materials Select appropriate technique explaining First.....Next.....Last.... Explore ideas by rearranging materials Model ideas with kits, reclaimed materials Select pictures to help develop ideas Use pictures and words to convey what they want to design and make Describe their models and drawings of ideas and intentions Use kits/reclaimed materials to develop an idea Use drawings to record ideas as they are developed Discuss their work as it progresses Add notes to drawings to help explanations
	Food	<ul style="list-style-type: none"> Develop a food vocabulary using taste ,smell, texture and feel Group familiar food products e.g. fruit and vegetables Cut, peel, grate, chop a range of ingredients Work safely and hygienically Understand the need for a variety of foods in a diet Measure and weigh food items, non statutory measures e.g. spoons, cups
	Textiles	<ul style="list-style-type: none"> Colour fabrics using a range of techniques e.g. fabric paints, printing, painting Cut out shapes which have been created by drawing round a template onto the fabric Join fabrics by using running stitch, glue, staples ,over sewing, tape Decorate fabrics with buttons, beads, sequins, braids, ribbons
	Construction	<ul style="list-style-type: none"> Make vehicles with construction kits which contain free running wheels Use a range of materials to create models with wheels and axles e.g. tubes, dowel, cotton reels Attach wheels to a chassis using an axle Join appropriately for different materials and situations e.g. glue, tape, Mark out materials to be cut using a template Cut strip wood/dowel using hacksaw and bench hook See glue gun used by an adult
	Sheet Materials	<ul style="list-style-type: none"> Fold, tear and cut paper and card Roll paper to create tubes Cut along lines, straight and curved Curl paper Use hole punch Insert paper fasteners for card linkages Create hinges Use simple pop ups Investigate strengthening sheet materials Investigate joining - temporary, fixed and moving
	Evaluating	<ul style="list-style-type: none"> Identify the strengths and weaknesses of their design ideas Decide which design idea to develop Consider and explain how the finished product could be improved Discuss how well the finished product meets the design criteria and how well it meets the needs the needs of the user.

PROGRESSION OF SKILLS IN DESIGN AND TECHNOLOGY

KEY STAGE TWO

Materials and Components – Knowledge and Understanding	Developing, Planning and Communicating Ideas	<ul style="list-style-type: none"> Investigate similar products to the one to be made to give starting points for a design Draw/sketch products to help analyse and understand how products are made Think ahead about the order of their work and decide upon tools and materials Plan a sequence of actions to make a product Record the plan by drawing (labelled sketches) or writing Develop more than one design or adaptation of an initial design Propose realistic suggestions as to how they can achieve their design ideas Add notes to drawings to help explanations
	Food	<ul style="list-style-type: none"> Develop sensory vocabulary/knowledge using, smell, taste, texture and feel Analyse the taste, texture, smell and appearance of a range of foods Follow instructions Make healthy eating choices from and understanding of a balanced diet Join and combine a range of ingredients e.g. snack foods Work safely and hygienically Measure and weigh ingredients appropriately
	Textiles	<ul style="list-style-type: none"> Understand seam allowance Join fabrics using running stitch, over sewing, back stitch Explore fastenings and recreate some e.g. sew on buttons and make loops Prototype a product using J cloths Use appropriate decoration techniques e.g. appliqué(glued or simple stitches) Create a simple pattern Understand the need for patterns
	Construction	<ul style="list-style-type: none"> Incorporate a circuit with a bulb or buzzer into a model Create shell or frame structures, strengthen frames with diagonal struts Make structures more stable by giving them a wide base Prototype frame and shell structures Measure and mark square selection, strip and dowel accordingly to 1cm Use glue gun with close supervision (one to one)
	Sheet Materials	<ul style="list-style-type: none"> Identify the strengths and weaknesses of their design ideas Decide which design idea to develop Consider and explain how the finished product could be improved Discuss how well the finished product meets the design criteria and how well it meets the needs the needs of the user.
Evaluating		<ul style="list-style-type: none"> Identify the strengths and weaknesses of their design ideas Decide which design idea to develop Consider and explain how the finished product could be improved Discuss how well the finished product meets the design criteria and how well it meets the needs the needs of the user.