



'Creativity is allowing yourself to make mistakes, design is knowing which ones to keep.'
Scott Adams

Our Intent

The Design and Technology curriculum at South Hykeham Community Primary School aims to inspire children through a broad range of practical experiences to create innovative designs which solve real and relevant problems within a variety of different contexts. The curriculum is structured and sequenced to ensure children develop a secure knowledge and skills base. The curriculum contains the following:

- A list of areas that will be covered;
- The design and technology concepts pupils should understand;
- Criteria for progression within the design and technology concepts;

Opportunities are provided for children to evaluate key events and individuals who have helped shape the world, showing the real impact of design and technology on the wider environment and helping to inspire children to become the next generation of innovators. Children are encouraged to take creative risks to produce innovative ideas and prototypes, carry out thorough research, show initiative and ask questions to develop a detailed knowledge of users' needs. Children are taught the importance of acting as responsible designers and makers, working ethically, using limited materials carefully and working safely. Throughout the curriculum, children will be shown how to manage risks to manufacture products safely and hygienically, and will develop a thorough knowledge of which tools, equipment and materials to use to make their products.



Implementation

Through Design and Technology lessons, we intend to inspire pupils and practitioners to develop a love of Design and Technology and see how it has helped shaped the ever revolving technological world they live in. Each scheme of work will allow for the revision of ideas to become part of good practice, ultimately helping to build a depth to children's understanding. Through revisiting and consolidating skills, children build on prior knowledge alongside introducing new skills, knowledge and challenge.

Some of our content is subject specific, whilst other content is combined in a cross curricular approach.

Impact

Design and Technology learning is appreciated by teachers and pupils across school. All children use technical vocabulary accurately and pupils are expected to know, apply and understand the media, skills and processes learned about. Children improve their enquiry skills and inquisitiveness about the world around them through the impact design and technology has on the world. Children will become more confident in analysing their work and giving their opinion on that of others. Children show competences in improving their resilience and perseverance by continually evaluating and improving their work. All children in school can speak confidently about their design and technology work and their skills. As designers and makers, the majority of children have sustained mastery of the skills: they are confident in their knowledge and application of a range of skills.



Expectations

Level Expected at the End of EYFS

In our Foundation Stage, this involves following the 'Statutory framework for the Early Years Foundation Stage', and the following are expected:

Physical Development

ELG: Fine Motor Skills

Children at the expected level of development will

- Use a range of small tools, including scissors, paint brushes and cutlery;
- Begin to show accuracy and care when drawing.

Expressive Arts and Design

ELG: Creating with Materials

Children at the expected level of development will:

- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function;
- Share their creations, explaining the process they have used.



Expectations

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.



Expectations

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

Pupils should be taught to:

- 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.

Design and Technology Curriculum FS-KS1

	<u>Autumn</u>	<u>Spring</u>	<u>Summer</u>
<u>FS</u>	Cooking and Nutrition Soup	Structures- bridges Three billy goat gruff	Junk modelling Draw/design/evaluate Explore materials
<u>KS1</u> <u>CYCLE A</u>	Mechanisms Sliders and levers DTA Simple slider to make a moving picture./ story book. Christmas card.	Textiles Template and joining techniques DTA Finger puppets	Cooking and Nutrition Preparing fruit and vegetables DTA
<u>KS1</u> <u>CYCLE B</u>	Free standing structures DTA House Three Little Pigs.	Pivots, linkages and levers Moving pictures CC link—great fire of London.	Mechanisms DTA Driving aliens round the bend. Wheels and axles (CClink toys.

Design and Technology Curriculum Yr 3 -YR 6 CYCLE A

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
YEAR 3	Mechanical systems Levers and linkages DTA Christmas card		Structures Shell structures DTA CC link—War shelters??		Cooking and Nutrition Healthy and varied diet DTA Create a healthy packed lunch for a specific diet eg gluten free, vegetarian, Hindu	
YEAR 4	Cooking and Nutrition Making and kneading Dough Design a pizza - CC link—Italy		Textiles 2d shape to 3d product DTA yr 3/4		Electrical systems Simple program and control DTA	
YEAR 5	Cooking and Nutrition Celebrating culture and seasonality DTA Link to farming in Lincolnshire Harvest day—October.	Combining different fabric shapes DTA	Mechanical systems Pulleys or gears DTA CC link—Egyptians Shaduf		Structures Frame structures DTA	
YEAR 6	Electrical Systems More complex switches and circuits DTA CC link WWII searchlights OR Monitoring and control DTA	Textiles Using a computer aided design in textiles. DTA	Cooking and Nutrition Come dine with me. (WWII style) Chopping cooking budgets WWII rationing Design a table setting.		Mechanical systems Pulleys and gears OR Cams DTA	

SHCPS Progression in Design and Technology

	EYFS	KS1	LKS2	UKS2
<u>Designing</u> Generating, developing, modelling and communicating ideas		Across KS1 pupils should: • generate ideas by drawing on their own experiences • use knowledge of existing products to help come up with ideas • develop and communicate ideas by talking and drawing • model ideas by exploring materials, components and construction kits and by making templates and mock-ups • use information and communication technology to develop and communicate their ideas	Across KS2 pupils should: • share and clarify ideas through discussion • model their ideas using prototypes and pattern pieces • use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas • use computer-aided design to develop and communicate their ideas In early KS2 pupils should also: • generate realistic ideas, focusing on the needs of the user • make design decisions that take account of the availability of resources	Across KS2 pupils should: • share and clarify ideas through discussion • model their ideas using prototypes and pattern pieces • use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas • use computer-aided design to develop and communicate their ideas In late KS2 pupils should also: • generate innovative ideas, drawing on research • make design decisions, taking account of constraints such as time, resources and cost

SHCPS Progression in Design and Technology

	EYFS	KS1	LKS2	UKS2
Making Planning	Personal, Social and Emotional Development *Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them. Understanding the World *Explore how things work. Expressive Arts and Design *Explore different materials freely, in order to develop ideas about how to use them and what to make. *Develop their own ideas and then decide which materials to use to express them. *Explore, use and refine a variety of artistic effects to express their ideas and feelings. *Return to and build on their previous learning, refining ideas and developing their ability to represent them. *Create collaboratively, sharing ideas, resources and skills. *Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	Across KS1 pupils should: • plan by suggesting what to do next • select from a range of tools and equipment, explaining their choices • select from a range of materials and components according to their characteristics	Across KS2 pupils should: • select tools and equipment suitable for the task • explain their choice of tools and equipment in relation to the skills and techniques they will be using • select materials and components suitable for the task • explain their choice of materials and components according to functional properties and aesthetic qualities In LKS2 pupils should also: • order the main stages of making	Across KS2 pupils should: • select tools and equipment suitable for the task • explain their choice of tools and equipment in relation to the skills and techniques they will be using • select materials and components suitable for the task • explain their choice of materials and components according to functional properties and aesthetic qualities In UKS2 pupils should also: • produce appropriate lists of tools, equipment and materials that they need • formulate step-by-step plans as a guide to making

SHCPS Progression in Design and Technology

	EYFS	KS1	LKS2	UKS2
Making Practical skills and techniques	Physical Development *Use one-handed tools and equipment, for example, making snips in paper with scissors. † *Progress towards a more fluent style of moving, with developing control. • *Develop their small motor skills so that they can use a range of tools competently, safely and confidently. *Progress towards a more fluent style of moving, with developing control. *Develop their small motor skills so that they can use a range of tools competently, safely and confidently.	Across KS1 pupils should: • follow procedures for safety and hygiene • use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components • measure, mark out, cut and shape materials and components • assemble, join and combine materials and components • use finishing techniques, including those from art and design	Across KS2 pupils should: • follow procedures for safety and hygiene • use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components In LKS2 pupils should also: • measure, mark out, cut and shape materials and components with some accuracy • assemble, join and combine materials and components with some accuracy • apply a range of finishing techniques, including those from art and design, with some accuracy	Across KS2 pupils should: • follow procedures for safety and hygiene • use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components In UKS2 pupils should also: • accurately measure, mark out, cut and shape materials and components • accurately assemble, join and combine materials and components • accurately apply a range of finishing techniques, including those from art and design • use techniques that involve a number of steps • demonstrate resourcefulness when tackling practical problems

SHCPS Progression in Design and Technology

	EYFS	KS1	LKS2	UKS2
Evaluating Own ideas and products	Expressive Arts and Design *Create collaboratively, sharing ideas. *Return to and build on their previous learning, refining ideas and Developing their ability to represent them. Creating with materials *Share their creations, explaining the process they have used.	Across KS1 pupils should: • talk about their design ideas and what they are making • make simple judgements about their products and ideas against design criteria • suggest how their products could be improved	Across KS2 pupils should: • identify the strengths and areas for development in their ideas and products • consider the views of others, including intended users, to improve their work In LKS2 pupils should also: • refer to their design criteria as they design and make • use their design criteria to evaluate their completed products.	Across KS2 pupils should: • identify the strengths and areas for development in their ideas and products • consider the views of others, including intended users, to improve their work In UKS2 pupils should also: • critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make • evaluate their ideas and products against their original design specification
Evaluating Existing products	Understanding the World *Explore how things work.	Across KS1 pupils should explore: • what products are • who products are for • what products are for • how products work • how products are used • where products might be used • what materials products are made from • what they like and dislike about products	Across KS2 pupils should investigate and analyse: • how well products have been designed • how well products have been made • why materials have been chosen • what methods of construction have been used • how well products work • how well products achieve their purposes • how well products meet user needs and wants In LKS2 pupils should also investigate and analyse: • who designed and made the products • where products were designed and made • when products were designed and	Across KS2 pupils should investigate and analyse: • how well products have been designed • how well products have been made • why materials have been chosen • what methods of construction have been used • how well products work • how well products achieve their purposes • how well products meet user needs and wants In late KS2 pupils should also investigate and analyse: • how much products cost to make • how innovative products are • how sustainable the materials in products are • what impact products have beyond

	EYFS	KS1	LKS2	UKS2
Evaluating Key events and individuals		Not a requirement in KS1	Across KS2 pupils should know: • about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products	Across KS2 pupils should know: • about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products
Technical Knowledge Making products work	E Expressive Arts and Design • *Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. • *Explore different materials freely, in order to develop their ideas about how to use them and what to make. • *Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	Across KS1 pupils should know: • about the simple working characteristics of materials and components • about the movement of simple mechanisms such as levers, sliders, wheels and axles • how freestanding structures can be made stronger, stiffer and more stable • that a 3-D textiles product can be assembled from two identical fabric shapes • that food ingredients should be combined according to their sensory characteristics • the correct technical vocabulary for the projects they are undertaking	Across KS2 pupils should know: • how to use learning from science to help design and make products that work • how to use learning from mathematics to help design and make products that work • that materials have both functional properties and aesthetic qualities • that materials can be combined and mixed to create more useful characteristics • that mechanical and electrical systems have an input, process and output • the correct technical vocabulary for the projects they are undertaking In LKS2 pupils should also know: • how mechanical systems such as levers and linkages or pneumatic systems create movement • how simple electrical circuits and components can be used to create functional products • how to program a computer to control their products • how to make strong, stiff shell structures see • that a single fabric shape can be used to make a 3D textiles product • that food ingredients can be fresh, pre-cooked and processed	Across KS2 pupils should know: • how to use learning from science to help design and make products that work • how to use learning from mathematics to help design and make products that work • that materials have both functional properties and aesthetic qualities • that materials can be combined and mixed to create more useful characteristics • that mechanical and electrical systems have an input, process and output • the correct technical vocabulary for the projects they are undertaking In UKS2 pupils should also know: • how mechanical systems such as cams or pulleys or gears create movement • how more complex electrical circuits and components can be used to create functional products • how to program a computer to monitor changes in the environment and control their products • how to reinforce and strengthen a 3D framework • that a 3D textiles product can be made from a combination of fabric shapes • that a recipe can be adapted by adding or substituting one or more ingredients

SHCPS Progression in Design and Technology

	EYFS	KS1	LKS2	UKS2
Cooking and Nutrition Where food comes from	Understanding the world *Explore how things work.	Across KS1 pupils should know: • that all food comes from plants or animals • that food has to be farmed, grown elsewhere (e.g. home) or caught	Across KS2 pupils should know: • that a recipe can be adapted a by adding or substituting one or more ingredients • that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world	Across KS2 pupils should know: • that a recipe can be adapted a by adding or substituting one or more ingredients • that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world In UKS2 pupils should also know: • that seasons may affect the food available • how food is processed into ingredients that can be eaten or used in cooking
Cooking and Nutrition Food preparation, cooking and nutrition	Understanding the world *Explore how things work. Physical Development *Use one-handed tools and equipment. • *Develop their small motor skills so that they can use a range of tools competently, safely and confidently. (Fine motor skills) *Use a range of small tools, including cutlery.	Across KS1 pupils should know: • how to name and sort foods into the five groups in the Eatwell Guide https://www.nhs.uk/live-well/eat-well/the-eatwell-guide/ • that everyone should eat at least five portions of fruit and vegetables every day • how to prepare simple dishes safely and hygienically, without using a heat source • how to use techniques such as cutting, peeling and grating	Across KS2 pupils should know: • how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source • how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking In LKS2 pupils should also know: • that a healthy diet is made up from a variety and balance of different food and drink, as depicted in the Eatwell Guide https://www.nhs.uk/live-well/eat-well/the-eatwell-guide/ • that to be active and healthy, food and drink are needed to provide energy for the body	Across KS2 pupils should know: • how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source • how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking see In UKS2 pupils should also know: • that recipes can be adapted to change the appearance, taste, texture and aroma • that different food and drink contain different substances - nutrients, water and fibre - that are needed for health