Southway Junior School

DESIGN TECHNOLOGY (D.T.) Curriculum

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.

KEY STAGE 2 Curriculum

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].

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**.

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.

COOKING: 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**.

DESIGN AND TECHNOLOGY: KEY STAGE 2

- **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.

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"Learning and Achieving Together"

DESIGN TECHNOLOGY curriculum map

Year group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3	**Me and My World** Woodwork: Picture frames		**Raiders & Invaders** Making hand and finger puppets for a production		**Battles and Bangs** LEGO	
	Food Tech: Scones & gingerbread		**Food Tech**: Bumbo drink		**Food Tech**: Healthy sandwich wraps	
Year 4	**Victorian Towns and Twisted Tales** Woodwork: Box with hinge and lid		**Mysterious Maya** Chocolate Day		**To Infinity and Beyond** LEGO	
	Food Tech: Victoria sponge		**Food Tech**: Maya guacamole		**Food Tech**: Space ice cream	
Year 5	**Power and Palaces** Making Tudor money pouches (textiles).		**We'll Meet Again** LEGO		**Seas, Storms & Survival** Woodwork: Bird Boxes	
	Food Tech: Cheese and onion quiche		**Food Tech**: VE day rations & bubble and squeak		**Food Tech**: Sushi	
Year 6	**Frozen in Time** LEGO		**Walk Like an Egyptian** Woodwork: crane		**Blood, Bones and Body Bits** LEGO: Overcoming contextual problems	
	Food Tech: Soup		**Food Tech**: Sautéed chicken and salad		**Food Tech**: The Great Southway 3-course-menu	

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D.T./STEM LEGO WeDo 2.0 (LKS2) Whole School Curriculum Map

Year group				
Year 3	Getting Started: Glowing Snail	Getting Started: Cooling Fan	Getting Started: Moving Satellite	Getting Started: Spy Robot
Year 3	Getting Started: D. Milo - Collaborating	Guided Project – Science . Frog's Metamorphosis	Guided Project – Science 5. Plants and Pollinators	Guided Project – Computational Thinking 20. Volcano Alert
Year 4	Getting Started: A. Milo the Science Rover	Getting Started: B. Milo's Motion Sensor	Getting Started: C. Milo's Tilt Sensor	Guided Project – Science 17. Moon Base
Year 4	Guided Project – Science 2. Speed	Guided Project – Science 6. Prevent Flooding	Guided Project – Computational Thinking 18. Grabbing Objects	Guided Project – Science 19. Send Messages

Spare Guided Projects (if year groups have extra curriculum time): 1 – Pulling, 3 – Robust Structures, 7 – Drop and Rescue, 8 – Sort to Recycle. All 'Open Projects' are contexts for children to create their own devices to solve said context. They are open-ended (not guided).

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D.T./STEM LEGO Machines & Mechanisms (UKS2) Whole School Curriculum Map

Year group									
Year 5	1	2	3	4	8	9	10	17	18
Year 6	5	6	7	11	12	13	14	15	16

Overview – 8 each

- Year 5 Models: 1, 2, 3, 4, 8, 9, 10, 17, 18.
- Year 6 models: 5, 6, 7, 11, 12, 13, 14, 15, 16.

Curriculum Progression

DESIGN AND TECHNOLOGY (D.T.) Curriculum

Foci	Across the curriculum (All year groups)	Year 3 & Year 4 (Lower Key Stage 2)	Year 5 & Year 6 (Upper Key Stage 2)
Designing: **Understanding contexts, users and purposes**	Work confidently within a range of contexts, such as the home, school, industry and the wider environment Describe the purpose of their products and explain how the design features of their products will appeal to intended users Explain how particular parts of their products work	Gather information about the needs and wants of particular individuals and groups Develop their own design criteria and use these to inform their ideas	Carry out research to identify the needs, wants, preferences and values of particular individuals and groups
Designing: **Generating, developing, modelling and communicating ideas**	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 & communicate ideas Use computer-aided design to develop and communicate their ideas	Generate realistic ideas, focusing on the needs of the user	Generate innovative ideas, drawing on research
Technical knowledge: **Making products work**	Know how to use learning from **science** and **mathematics** to help design and make products that work Know that materials have both functional properties and aesthetic qualities Know that mechanical and electrical systems have an input, process and output	Know how mechanical systems such as levers and linkages or pneumatic systems create movement Know how to program a computer to monitor changes in the environment and control their products	Know how mechanical systems such as cams or pulleys or gears create movement Know how more complex electrical circuits and components can be used to create functional products Know how to reinforce and strengthen a 3D framework

Foci	Across the curriculum (All year groups)	Year 3 & Year 4 (Lower Key Stage 2)	Year 5 & Year 6 (Upper Key Stage 2)
Making: **Planning**	Select tools and equipment suitable for the task Select materials and components suitable for the task Explain their choice of materials and components according to functional properties and aesthetic qualities		
Making: **Practical skills and techniques**	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	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	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 Demonstrate resourcefulness when tackling practical problems
Evaluating: **Own ideas and products**	Identify the strengths and areas for development in their ideas and products Consider the views of others, including intended users, to improve their work	Evaluate the quality of the design, suggesting some improvements if they were to do it again	Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make
Evaluating: **Existing products**	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	Investigate and analyse when products were designed and made Investigate whether their products can be recycled or not	Investigate and analyse how sustainable the materials in their products are
Evaluating: **Key individuals or events**	Research and/or learn about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products		

Foci	Across the curriculum (All year groups)	Year 3 & Year 4 (Lower Key Stage 2)	Year 5 & Year 6 (Upper Key Stage 2)
Cooking and nutrition: **Where food comes from**	Know 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	Know what Fairtrade means and its impact on the food chain and users of the food chain	Know that seasons may affect the food available Know how some foods can be processed into ingredients so that it can be eaten or used in cooking
Cooking and nutrition: **Food preparation, cooking and nutrition**	Know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source Know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking	Know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in 'The Eatwell Plate' Know that to be active and healthy, food and drink are needed to provide energy for the body	Know that different food and drink contain different substances – nutrients, water and fibre – that are needed for health Know that food ingredients can be fresh, pre-cooked and processed

Resources to Support

DESIGN TECHNOLOGY (D.T.) Curriculum

WEBSITES

- http://www.technologystudent.com/ – Subject knowledge
- https://www.data.org.uk/ - Design and Technology association

BOOKS

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PHYSICAL RESOURCES

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Foundation enquiry vocabulary progression

Vocabulary Progression

Basic / beginning	Years 1 & 2	Recognise Identify Describe Observe Select Categorise Classify Sequence Compare and contrast Recall Reason/speculate
Developing	Years 3 & 4	Summarise Synthesise Explain Demonstrate understanding
Specialised	Years 5 & 6	Empathise Reach informed conclusions Make reasoned judgements Justify Apply Evaluate Critique Hypothesise