



Design & Technology Long Term Plan 2022-23

Our intent

The Bridge design and technology curriculum aims to teach the skills and knowledge laid out in the national curriculum. This is delivered through topic-based lessons which are aimed at engagement through being creative, practical and knowledge rich. We believe children need to be engaged in the process of designing and making to ensure they have the core knowledge and skills to be proficient in applying this to tasks and topics. Whilst cooking, we believe it is vital for children to understand and apply the principles of nutrition and healthy eating. We make sure that children have fundamental deliberate practice through lessons of 'design, make, evaluate and using technical knowledge'.

Implementation

Planning is supported by the Design & Technology Association's 'Projects on a Page' schemes of work. These resources are adapted according to the particular needs of our children, while still following the National Curriculum requirements, and follow a general 'design, make, evaluate' structure. As supporting our children to learn about healthy eating is an important aspect of our overall curriculum at Bridge, each year group learns about nutrition and cooking at least once during the year, with additional opportunities for growing fresh produce included where possible. This supports with children's understanding of seasonality, and also encourages healthy eating habits.

Impact

The impact of the Design & Technology curriculum is assessed in a number of different ways, including both formal and informal pupil voice, book looks and lesson visits by subject coordinators and senior leaders. Children are able to remember key knowledge, skills and vocabulary, through the use of discussion and retrieval opportunities to talk about their learning. The subject and curriculum leaders will regularly review the impact of teaching and learning; children have a clear enjoyment and increasing levels of confidence in Design & Technology



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End of Key Stage 1 expectations

Pupils should be taught:

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

End of Key Stage 2 expectations

Pupils will be taught:

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



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What are we teaching at Bridge

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Yr3	2-D shape to 3-D product Textiles				Shell Structures Structures	Healthy & varied diet- sandwiches Food
Yr4		Levers & Linkages Mechanical Systems			Simple circuits & switches Electrical systems	Healthy and varied diet- fruit muffin Food
Y5		Frame Structures Structures			Celebrating culture and seasonality-soup Food	Cams Mechanical Systems
Y6		Combining different fabric shapes Textiles			Celebrating culture and seasonality- cake Food	Electrical systems



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Progression of DT skills			
Designing	Prior Learning KS1	Year 3/4	Year 5/6
Understanding contexts, users and purposes	<p>Across KS1 pupils should:</p> <ul style="list-style-type: none"> work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment state what products they are designing and making say whether their products are for themselves or other users describe what their products are for say how their products will work say how they will make their products suitable for their intended users use simple design criteria to help develop their ideas 	<p>Across KS2 pupils should:</p> <ul style="list-style-type: none"> work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment describe the purpose of their products indicate the design features of their products that will appeal to intended users explain how particular parts of their products work 	
		<p>In early KS2 pupils should also:</p> <ul style="list-style-type: none"> gather information about the needs and wants of particular individuals and groups develop their own design criteria and use these to inform their ideas 	<p>In late KS2 pupils should also:</p> <ul style="list-style-type: none"> carry out research, using surveys, interviews, questionnaires and web-based resources identify the needs, wants, preferences and values of particular individuals and groups develop a simple design specification to guide their thinking
Generating, developing, modelling and communicating ideas	<p>Across KS1 pupils should:</p> <ul style="list-style-type: none"> 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, where appropriate, to develop and communicate their ideas 	<p>Across KS2 pupils should:</p> <ul style="list-style-type: none"> 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 	
		<p>In early KS2 pupils should also:</p> <ul style="list-style-type: none"> generate realistic ideas, focusing on the needs of the user make design decisions that take account of the availability of resources 	<p>In late KS2 pupils should also:</p> <ul style="list-style-type: none"> generate innovative ideas, drawing on research make design decisions, taking account of constraints such as time, resources and cost



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Making	Prior Learning KS1	Year 3/4	Year 5/6
<p align="center">Planning</p>	<p>Across KS1 pupils should:</p> <ul style="list-style-type: none"> 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 	<p>Across KS2 pupils should:</p> <ul style="list-style-type: none"> 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 	
	<p>In early KS2 pupils should also:</p> <ul style="list-style-type: none"> order the main stages of making 	<p>In late KS2 pupils should also:</p> <ul style="list-style-type: none"> produce appropriate lists of tools, equipment and materials that they need formulate step-by-step plans as a guide to making 	
<p align="center">Practical skills and techniques</p>	<p>Across KS1 pupils should:</p> <ul style="list-style-type: none"> 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 	<p>Across KS2 pupils should:</p> <ul style="list-style-type: none"> 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 	
	<p>In early KS2 pupils should also:</p> <ul style="list-style-type: none"> 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 	<p>In late KS2 pupils should also:</p> <ul style="list-style-type: none"> 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 	



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Evaluating	Prior Learning KS1	Year 3/4	Year 5/6
Own ideas and products	Across KS1 pupils should: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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 early KS2 pupils should also: <ul style="list-style-type: none"> refer to their design criteria as they design and make use their design criteria to evaluate their completed products 	In late KS2 pupils should also: <ul style="list-style-type: none"> 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
Existing products	Across KS1 pupils should explore: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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 early KS2 pupils should also investigate and analyse: <ul style="list-style-type: none"> who designed and made the products where products were designed and made when products were designed and made whether products can be recycled or reused 	In late KS2 pupils should also investigate and analyse: <ul style="list-style-type: none"> how much products cost to make how innovative products are how sustainable the materials in products are what impact products have beyond their intended purpose
Key events and individuals	Not a requirement in KS1	Across KS2 pupils should know: <ul style="list-style-type: none"> about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products 	



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Technical Knowledge	Prior Learning KS1	Year 3/4	Year 5/6
Making products work	<p>Across KS1 pupils should know:</p> <ul style="list-style-type: none"> • 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 	<p>Across KS2 pupils should know:</p> <ul style="list-style-type: none"> • 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 	
		<p>In early KS2 pupils should also know:</p> <ul style="list-style-type: none"> • 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 • that a single fabric shape can be used to make a 3D textiles product • that food ingredients can be fresh, pre-cooked and processed 	<p>In late KS2 pupils should also know:</p> <ul style="list-style-type: none"> • 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



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Cooking and Nutrition	Prior Learning KS1	Year 3/4	Year 5/6
Where food comes from	Across KS1 pupils should know: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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 late KS2 pupils should also know: <ul style="list-style-type: none"> that seasons may affect the food available how food is processed into ingredients that can be eaten or used in cooking
		Across KS2 pupils should know: <ul style="list-style-type: none"> 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 	
Food preparation, cooking and nutrition	Across KS1 pupils should know: <ul style="list-style-type: none"> how to name and sort foods into the five groups in The 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: <ul style="list-style-type: none"> 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 late KS2 pupils should also know: <ul style="list-style-type: none"> 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
		In early KS2 pupils should also know: <ul style="list-style-type: none"> that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell Guide that to be active and healthy, food and drink are needed to provide energy for the body 	