



DESIGN AND TECHNOLOGY INTENT - TO what do we aspire for our children?

'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.'

Source: National Curriculum, 2013

School's key drivers and how the subject develops them:

- **Be Proud**
 - Children are proud of their designs and products
 - Articulate their learning journey alongside their successes
 - To nurture creativity in the design process and develop a personal style

- **Be Kind**
 - Make informed and respectful evaluations of their own and others' products in order to change and advance their design
 - Use empathy to design a brief for others; understanding that design can be life changing

- **Strive for Success**
 - Develop resilience through reviewing and adapting their designs and products
 - Value nutritional knowledge and cooking knowledge as essential life skills
 - Inspire pupils to be innovative and creative thinkers who develop an appreciation of the product design cycle through ideation, creation and evaluation
 - learn about the designed and made world and how things work; learn to design and make functional products for particular purposes and users.
 - Pupils take risks and develop confidence through drafting design concepts, modelling, testing and to be reflective learners who respectfully evaluate their work and the work of others
 - Participate in focused practical tasks in which children develop particular aspects of knowledge and skills

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
- articulate their understanding of themselves as designers and their process of designing
- broaden experiences that help them understand how design impacts on their lives today: locally and nationally



Long term sequence (Including EYFS to KS1 progression)

Early Years:

Expressive Arts and Design

Expressive Arts and Design involves the development of the children’s artistic and cultural awareness and supports their imagination and creativity. The frequency and range of opportunities is important to enable them to explore and play using a wide range of media and materials.

The quality and variety of what the children see, hear and participate in is crucial for their understanding, self-expression, vocabulary and ability to communicate through the arts.

Design and Technology is covered in Expressive Arts and Design	Nursery – how is this achieved?	Reception – how is this achieved?	Key vocabulary	Core Books that link to foundational experiences & knowledge
<p>Expressive Arts and Design <u>Creating with Materials</u></p> <ul style="list-style-type: none"> • 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. • Make use of props and materials when role -playing characters in narratives and stories. 	<p>Children use a variety of tools and materials with guidance following their interests.</p> <p>Children celebrate their creations with their peer group using learnt vocabulary.</p> <p>Children use props in their role -play that they have designed, to enable them to be involved in narratives and known stories.</p>	<p>In addition....</p> <p>Children confidently use different materials and tools, learning how to use them appropriately to create their designs drawing on their own experiences. They use different mediums with confidence.</p> <p>Model ideas by exploring materials, components and construction kits.</p> <p>Children celebrate their designs by explaining what they have achieved to their peers and adults using appropriate vocabulary.</p> <p>Children select the materials and design props for role- playing characters in narratives and stories during their learning. They are able to explain what they have designed and how they use it.</p>	<p>Plan Design Make Review Change Improve Cut Stick Attach Build Draw</p>	<p>The House that Jack Built Dig Dig Dig The Street Beneath my Feet Rosie Revere Engineer The Dot The magic Paintbrush What We’ll Build</p>

Continuous Provision Play experiences with provocations for Design and Technology based thinking and talk
<p>Role play – home corner Construction equipment Book corner, creative area Art and design display area Dressing up clothes/props Household objects Outside, role play and building</p>



D&T Topics 2021-2022

	Term1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 1	Moving Story book Mechanisms	Windmills Structures	Food Technology	Wheels and axles	Puppets Textiles	School study
Year 2	Make a pouch Textiles	Making a moving Monster Mechanisms	Baby Bear's Chair Structures	Fairground Wheel Mechanisms	Balanced Diet Food Tech	School study
Year 3	Cushions Textiles	Static electricity Electrical systems	Pneumatic Toy Mechanical systems	Digital World E charm	Eating seasonally Food Tech	A castle Structures
Year 4	Adapting a recipe Food Tech	Torches Electrical systems	Slingshot car Mechanical systems	Pavilions Structures	Fastenings Textiles	Electronic charm Digital world
Year 5	What could be Healthier Food tech	Greeting cards Electrical systems	Stuffed Toys Textiles	Bridges Structures	Eating seasonally Food tech	Pop up Books Mechanical Systems
Year 6	Playgrounds Structures	Automata toys Mechanical	Come Dine with Me Food Tech	Waistcoats Textiles	Eating seasonally Food Tech	Steady hand game Electrical

There are 4 core strands run through each unit (with cooking and nutrition as the focus on one unit per year) giving children an opportunity to revisit and deepen their understanding of these across the curriculum.

- Design
- Make
- Evaluate
- Technological Knowledge
- Cooking and nutrition

Sequence of [vocabulary progression](#)



An example of the progression in the core strand of design can be found below:

Kapow Primary Strands:		Key stage 1		Key stage 2			
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design Make Evaluation Technical knowledge	Structures	<ul style="list-style-type: none"> Learning the importance of a clear design criteria Including individual preferences and requirements in a design 	<ul style="list-style-type: none"> Generating and communicating ideas using sketching and modelling Learning about different types of structures, found in the natural world and in everyday objects 	<ul style="list-style-type: none"> Designing a castle with key features to appeal to a specific person/purpose Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials need and colours Designing and/or decorating a castle tower on CAD software 	<ul style="list-style-type: none"> Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect Building frame structures designed to support weight 	<ul style="list-style-type: none"> Designing a stable structure that is able to support weight Creating frame structure with focus on triangulation 	<ul style="list-style-type: none"> Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs
	Mechanisms/ Mechanical systems	<ul style="list-style-type: none"> Explaining how to adapt mechanisms, using bridges or guides to control the movement Designing a moving story book for a given audience Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move Creating clearly labelled drawings which illustrate movement 	<ul style="list-style-type: none"> Creating a class design criteria for a moving monster Designing a moving monster for a specific audience in accordance with a design criteria Selecting a suitable linkage system to produce the desired motions Designing a wheel Selecting appropriate materials based on their properties 	<ul style="list-style-type: none"> Designing a toy which uses a pneumatic system Developing design criteria from a design brief Generating ideas using thumbnail sketches and exploded diagrams Learning that different types of drawings are used in design to explain ideas clearly 	<ul style="list-style-type: none"> Designing a shape that reduces air resistance Drawing a net to create a structure from Choosing shapes that increase or decrease speed as a result of air resistance Personalising a design 	<ul style="list-style-type: none"> Designing a pop-up book which uses a mixture of structures and mechanisms Naming each mechanism, input and output accurately Storyboarding ideas for a book 	<ul style="list-style-type: none"> Experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement Understanding how linkages change the direction of a force Making things move at the same time Understanding and drawing cross-sectional diagrams to show the inner-workings of the automata

Here below is an example of the overview of the **skills** and **knowledge** covered in each year group and strand and how these are developed through our Design and Technology scheme of work.

		Progression of skills and knowledge		Structures
		Year 1	Year 2	
		<u>Constructing a windmill</u>	<u>Baby bear's chair</u>	
Skills	Design	<ul style="list-style-type: none"> Learning the importance of a clear design criteria Including individual preferences and requirements in a design 	<ul style="list-style-type: none"> Generating and communicating ideas using sketching and modelling Learning about different types of structures, found in the natural world and in everyday objects 	
	Make	<ul style="list-style-type: none"> Making stable structures from card, tape and glue Learning how to turn 2D nets into 3D structures Following instructions to cut and assemble the supporting structure of a windmill Making functioning turbines and axles which are assembled into a main supporting structure 	<ul style="list-style-type: none"> Making a structure according to design criteria Creating joints and structures from paper/card and tape Building a strong and stiff structure by folding paper 	
	Evaluate	N/A	<ul style="list-style-type: none"> Exploring the features of structures Comparing the stability of different shapes Testing the strength of own structures Identifying the weakest part of a structure Evaluating the strength, stiffness and stability of own structure 	
Knowledge	Technical	<ul style="list-style-type: none"> To understand that the shape of materials can be changed to improve the strength and stiffness of structures To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses) To understand that axles are used in structures and mechanisms to make parts turn in a circle To begin to understand that different structures are used for different purposes To know that a structure is something that has been made and put together 	<ul style="list-style-type: none"> To know that shapes and structures with wide, flat bases or legs are the most stable To understand that the shape of a structure affects its strength To know that materials can be manipulated to improve strength and stiffness To know that a structure is something which has been formed or made from parts To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move To know that a 'strong' structure is one which does not break easily To know that a 'stiff' structure or material is one which does not bend easily 	
	Additional	<ul style="list-style-type: none"> To know that a client is the person I am designing for To know that design criteria is a list of points to ensure the product meets the clients needs and wants To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity To know that windmill turbines use wind to turn and make the machines inside work To know that a windmill is a structure with sails that are moved by the wind To know the three main parts of a windmill are the turbine, axle and structure 	<ul style="list-style-type: none"> To know that natural structures are those found in nature To know that man-made structures are those made by people 	



Knowledge organisers are used to detail the key learning (knowledge and vocabulary) for each unit. These are used to reduce the split attention effect for learners.

An example of a KS1 [Knowledge Organiser](#)

An example of a KS2 [Knowledge Organiser](#)

‘Golden Thread’: Oracy

At Stoke Park Primary, we recognise the vital role that oracy plays in the lives of our children, both during their time in primary school and for the rest of their lives. Research shows that oracy not only acts as a powerful tool for learning but is a key skill in itself which employers actively seek. By ensuring that children have explicit opportunities to develop their oracy skills as well as opportunities to learn through oracy across the curriculum, we aspire to create young adults who are able to work confidently, articulately and collaboratively.

We promote oracy through Design and Technology by teaching vocabulary that allows the children to design, make, evaluate and share their ideas.

IMPLEMENTATION - how will we deliver the curriculum?

Design and Technology is taught over 3 weeks, one double session per week allowing for the practical activities. This is alternated with art and design.

This ensures that the core strands are revisited regularly giving an opportunity to deepen their understanding and knowledge, and meaning that children are regularly engaging in creative learning.

Lesson design; will include most or all of the following depending on where they are in the design cycle. (bold in every lesson)

- **Explicit teaching of and recapping of vocabulary**
- **Recap on prior knowledge**
- **Explicit reference to the core 4 strands**
- Stimulus or evaluating existing products
- **Sketchbooks used the teachers and children using individual sketchbooks to chart the design cycle and continue to be used throughout**
- **Knowledge organisers used to support key knowledge and vocabulary**
- **Reasonable adjustments made to ensure that all children can make progress**
- Focussed practical task with modelling
- **Opportunities for discussion and purposeful talk**
- **Excellence in effort, technique and outcome highlighted and celebrated**
- **Respectful and knowledgeable use of materials**
- When appropriate, a ‘Gallery Walk’

Curriculum enrichment

We use the local environment as well as organised trips within the Bristol area



- The Clifton Suspension Bridge
- SS Great Britain
- British Aerospace Museum
- Pizza workshops

- draw on parental expertise such as engineering, architecture, chefs, etc
- explore diverse and world wide designers, from different cultures and social backgrounds.

IMPACT - how do we know our curriculum is effective?

Pupil Voice

- demonstrate a passion and enthusiasm for D&T
- use vocabulary correctly
- talk about the 4 core strands
- talk about the 'why' behind the work
- explain how learning builds on previous knowledge

critically evaluate their and others' products respectfully

High quality outcomes: book study of floor books in EYFS and Y1, sketchbooks for Y2 - 6

- demonstrates pride and effort
- captures increasing understanding of the 4 core strands and knowledge
- demonstrates a clear sequence of learning
- vocabulary clearly visible
- all children make progress regardless of starting points