

Bricknell Primary School

Design Technology Curriculum Overview



THE
CONSTELLATION
TRUST



Aspiration

Knowledge

Achievement

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The Curriculum – our approach

Bricknell Primary School’s curriculum has been developed over a period of 36 months. Much thought has gone into the research foundations for how children learn, the implication of subject specific best practice and the context of our school.

Through collaboration, rigours attention to detail and consultation with primary practitioners, trust leaders, secondary and Early Years teachers; the curriculum reflects a scheme of work that is intended to be sequenced form Early Years to Year 6 and enable pupils to be ready for the Key Stage 3 curriculum and world beyond education.

The curriculum design has a progressive approach at its core with a built in Aspiration Curriculum at the heart.



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Intent:

The curriculum is built on the foundations of success. We believe all children should be aspirational, knowledgeable and should achieve their goals. This is the model our curriculum builds from

Aspiration

- An Aspiration Curriculum at the heart of every lesson.
- Building life skills to succeed outside the world of education.
- Real life examples and experiences in local contexts and in the wider world.
- Working with local colleges and building links.
- Community outreach opportunities.

Knowledge

- High quality teaching at the heart.
- Progressive curriculum mapping.
- Carefully timetabled broad and balanced curriculum.
- Carefully researched and implemented curriculum.
- Subject specific pedagogy.

Achievement

- Ambitious curriculum outcomes.
- Assessability for all.
- Identification and facilitation of pupil's passions and love for a subject.
- Achievement beyond the classroom and into further education demonstrating a love for learning.
- Extensive extra-curricular offer.



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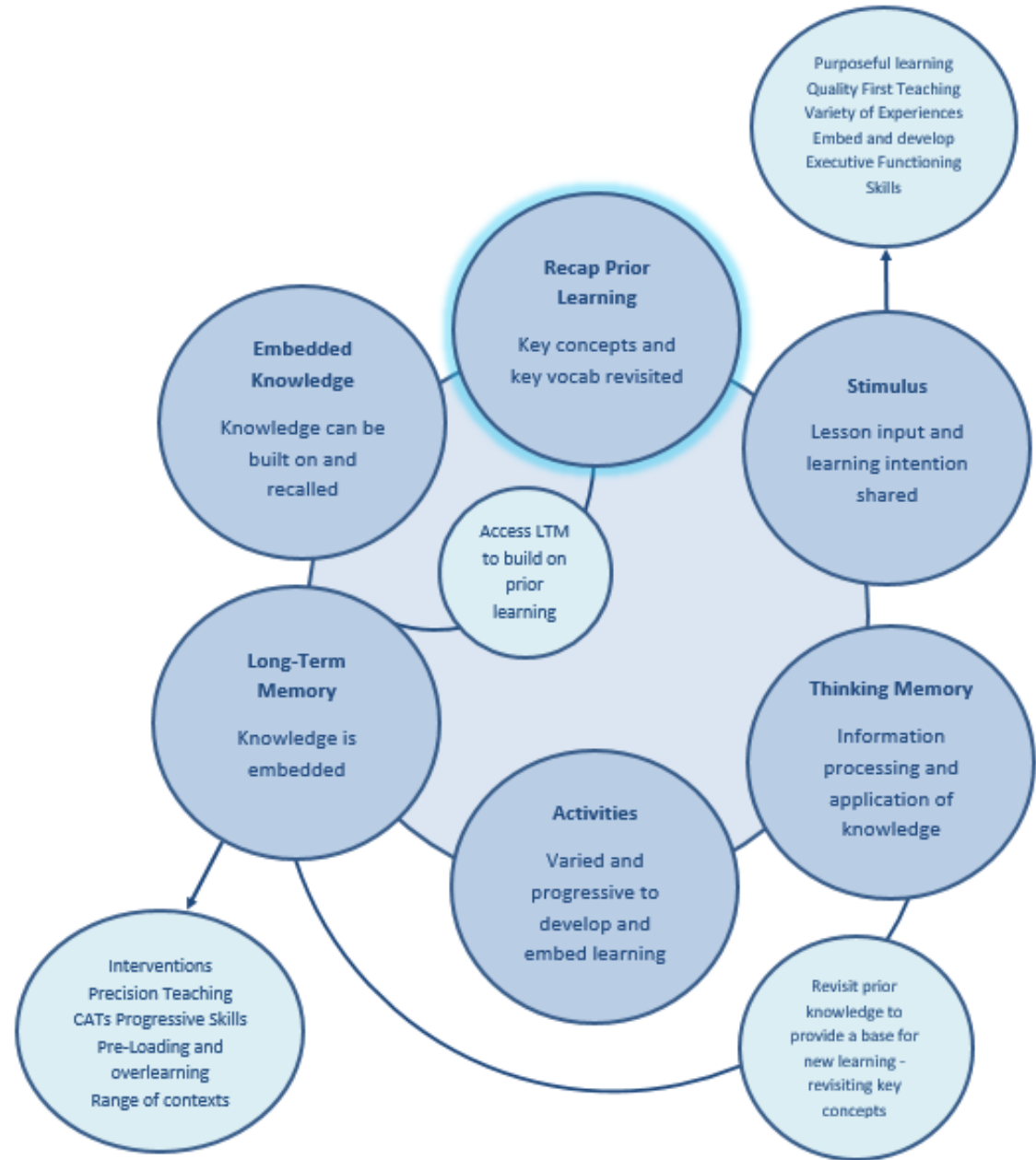
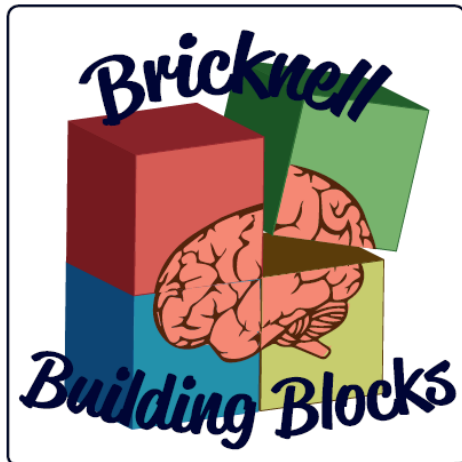
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Bricknell's Working Memory Model

With the collation of all this extensive research, we have generated a 'Working Memory Model' which enables teachers to ensure that learning is robust and that all pupils are using their interconnected schema to their full potential.

At the core of our model is the retrieval of prior knowledge. Therefore, all lessons at Bricknell Primary School start with Bricknell's Building Blocks; the foundations to learning.



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A Broad and Balanced Curriculum

Hours per day	4.25
Hours per week	21.25
Hours per year	828.75

Curriculum area	Hours per year	Total hours
English		
Reading	78	195
Writing	117	
Maths		
Maths	195	195
Computer Science		
Science	78	117
Computing	39	
Humanities		
RE	39	75
History	18	
Geography	18	
Creative		
Art	18	54
Design Technology	18	
Music	18	
Additional		
Physical Education	78	156
PSHE	39	
MFL	39	

Additional timetabled hours		
Enterprise Week	10	20
Transition Week	10	

At Bricknell, we want to ensure that we celebrate the talents of all pupils and provide everyone with opportunities to shine. Therefore, we have calculated the number of teaching hours available and have ensured that all pupils receive a broad and balanced curriculum at Key Stage 2.

To prepare our pupils for the digital world beyond the classroom and to enable their communication skills, upskilling them across all areas of the curriculum, we have allocated 39 hours a year to the computing curriculum. This can be cross curricular across all subjects and does not need to be taught each week.

Reading, Writing and Maths are taught daily.
Science Physical Education, PSHE, RE and MFL are required to be taught weekly.

These are highlighted in blue

History, Geography, Art, Design Technology and Music all have equal weighting with 18 hours a year broken down to 3 half-termly blocks.

Year 4 offer a wider opportunities musical programme to the children therefore music has an increased weighting of 39 hours and to compensate, computing has a reduced weighting of 18 hours

- Art and Design Technology will each have 3 half term blocks. These will be taught alternatively to support staff workload.
- Music will have 3 half-termly blocks which will be taught at the same time across the whole school.
- Computing, History and Geography can remain blocked (in line with MTP)
- In addition to the teaching hours, pupils at Bricknell Primary School also receive a minimum of 400 minutes (6 hours, 40 minutes) of Opal Play a week.



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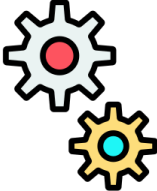
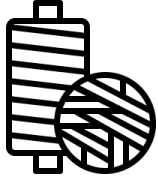
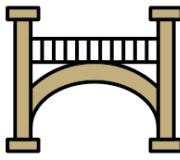
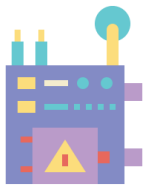

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Key Concepts

Through collaboration with subject leaders and subject specialists across our secondary schools, each subject has identified key concepts (big ideas) for their subject. These key concepts are the skills and knowledge essential to pupils achieving and exceeding expected standards in that specific subject. Key concepts are subject specific and build progressively as pupils move through the school. When pupils encounter a key concept, they will revisit other topics where they learnt about the same concept to enable them to make connections between different learning and build the schema they need.

Below is a summary of the key concepts for Design Technology.

Design Technology				
				
Mechanics	Textiles	Structures	Electric and digital	Cooking and nutrition



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Key concepts (Big Ideas) in Design and Technology

Pupils will become increasingly competent in designing, making and evaluating products. They will investigate how design has been used to solve problems and create products and structures in the real world, including the techniques used by designers to improve looks and functionality. They will have the opportunity to design their own products in response to design briefs, learn and experiment with a range of techniques before making and evaluating products.

Each unit of work will be based on the following teaching sequence.



The technical knowledge will be specific to the key concepts outlined below

Mechanics



Pupils will gain an understanding of how different mechanisms work, evaluate products with different mechanisms and design and make working products to fit a design brief. They will gain the technical knowledge needed to make different mechanisms work effectively.

Textiles



Pupils will gain the technical knowledge needed to work with textiles such as stitching, sewing and threading. They will study textile designs and how to make products which are practical as well as stylish and then apply this learning to their own designs and products.

Structures



Pupils will learn the technical knowledge used by designers to make structures which are strong and stable. They will learn and apply strengthening techniques, explore the benefits of different shapes and materials and apply this to their own designs and products.

Electric and digital



Pupils will learn how electronics and digital technologies are used when designing and creating products. They will gain the technical knowledge needed to programme devices and to make use of electric circuits including switches to power and control a product.

Cooking and nutrition



Pupils will learn where food comes from and how nutritional information can be used to plan a balanced and healthy diet. They will also learn techniques needed to prepare and cook food safely and design dishes and meals for specific purposes.



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Design Technology Key Concepts Year Group Mapping


	Autumn	Spring	Summer
EYFS Expressive Arts and Design Physical Development	In EYFS pupils are taught Design Technology through the strands Expressive Arts and Design and Physical Development Throughout the year pupils will be taught: Structures and Cooking and Nutrition		
Year 1	Cooking and Nutrition (Smoothies)	Textiles (Puppet)	Mechanics (Moving story book)
Year 2	Structures (Houses of Parliament)	Textiles (Easter basket)	Cooking and Nutrition (Wrap pizzas)
Year 3	Structures (Big Wheel)	Textiles (Mother's Day cushion)	Cooking and Nutrition (Vegetable parcels)
Year 4	Mechanics (Slingshot chariot)	Digital & electrical Digital World (Monitoring device)	Digital & electrical Electrical Systems (Torches)
Year 5	Cooking and Nutrition (3 Course Meal)	Textiles (Book Sleeve)	Structures (Bridges)
Year 6	Digital & electrical Electrical Systems (Steady hand game)	Digital & electrical Digital World (Navigating the world)	Mechanics (Automata toys)



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Knowledge and skills sequencing		DESIGN AND TECHNOLOGY					
	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
<p>Mechanics</p>  <p>Appraise and analyse</p> <p>Technical knowledge</p> <p>Practice</p> <p>Generate ideas and design</p> <p>Design and make</p> <p>Evaluate</p>		<p>To appraise and analyse mechanisms in existing products (moving story book and match box cars)</p> <p>To identify how mechanisms work in existing products e.g. sliders/levers and wheels/axels</p> <p>To be able to make prototype mechanisms</p> <p>To design using pictures and labels</p> <p>To create a product which includes sliders and levers / wheels and axels</p> <p>To evaluate my product against function</p>			<p>To analyse slingshot and identify how they work</p> <p>To identify how a chassis and launch mechanism works</p> <p>To produce a mechanical prototype – slingshot</p> <p>To design a car with a slingshot mechanism</p> <p>To select appropriate materials to produce a mechanical product – slingshot car</p> <p>To evaluate my product and identify ways to improve my design</p>		<p>To appraise and analyse a range of existing products – automata toys</p> <p>To gain an understanding of how cams and followers work</p> <p>To use a range of materials, tools and techniques to create a prototype – cams and followers</p> <p>To design a product that meets the design brief – automata toys</p> <p>To use a range of materials, tools and techniques to make a product</p> <p>To evaluate an end product against a design criteria and consider the views of others to improve their work</p>



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	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
<p>Textiles</p>  <p>Appraise and analyse</p> <p>Technical knowledge</p> <p>Practice</p> <p>Generate ideas and design</p> <p>Design and make</p> <p>Evaluate</p>		<p>To appraise and analyse a selection of puppets</p> <p>To identify techniques used to create a puppet (stapling, gluing etc)</p> <p>To practise a range of techniques used to make a puppet to create a prototype (stapling, gluing etc)</p> <p>To design a product using pictures and words</p> <p>To use a range of tools and materials to create a finished product</p> <p>To evaluate an end product in terms of aesthetics – puppet</p>	<p>To appraise and analyse a selection of easter baskets</p> <p>To identify techniques used to create a basket (sewing, threading etc)</p> <p>To practise a range of techniques used to make a basket (sewing, threading etc) PR</p> <p>To design a product using pictures and words based on a design criteria</p> <p>To use a range of technical knowledge and skills to create a finished product</p> <p>To evaluate my basket in terms of design</p>	<p>To research a design concepts or range of products and appraise them</p> <p>To understand how a cross stitch design is created</p> <p>To practise skills identified to develop a design of my own</p> <p>To be able to generate and develop ideas using exploding diagrams to design an end product</p> <p>To be able to think ahead about the order of my work, select tools needed for a given task and give reasons for my choices</p> <p>To be able to evaluate a finished product against a design brief</p>		<p>To appraise and analyse an existing product commenting on design features</p> <p>To understand how pattern pieces are used to make an end product</p> <p>To experiment with pattern pieces to create a prototype</p> <p>To design a product using pattern pieces to meet a design brief</p> <p>To use pattern pieces, appropriate materials and tools to create an end product</p> <p>To evaluate a product on appearance and function against an original design criteria and justify decisions made in the design and making process</p>	



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	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
<p>Structures</p>  <p>Appraise and analyse</p> <p>Technical knowledge</p> <p>Practice</p> <p>Generate ideas and design</p> <p>Design and make</p> <p>Evaluate</p>			<p>To appraise and analyse how a structure is made</p> <p>To identify how a net is created using shapes</p> <p>To practise making stable structures using nets to make a building (houses of parliament)</p> <p>To design a structure (building) using pictures and words based on a design criteria</p> <p>To make and join together a stable structure (building) using nets</p> <p>To evaluate my structure in terms of design</p>	<p>To research fairground structures (ferris wheels) and consider how these structures work</p> <p>To identify the structure of a big wheel and analyse the support techniques to make the structure strong</p> <p>To explore suitable materials to create a strong structure (wheel)</p> <p>To generate ideas and design a structure including strengthening techniques (ferris wheel)</p> <p>To use appropriate tools and construction materials to make a structure (ferris wheel)</p> <p>To evaluate my structure and suggest ways for improvement</p>		<p>To analyse structural designs in terms of functionality, aesthetics and materials</p> <p>To understand different methods of strengthening bridges</p> <p>To practise a range of structural designs to create bridges</p> <p>To generate ideas and design a structure (bridge) demonstrating my design from different perspectives</p> <p>To use a range of appropriate tools competently and To join and combine a range of materials competently</p> <p>To evaluate a product on appearance and function against an original design criteria and justify decisions made in the design and making process</p>	



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	EYFS	KS1	Y3	Year 4		Year 6	
<p>Electric and digital</p>  <p>Appraise and analyse</p> <p>Technical knowledge</p> <p>Practice</p> <p>Generate ideas and design</p> <p>Design and make</p> <p>Evaluate</p>				<p>Digital To explain what a monitoring device is and how they are used in every day life</p> <p>To learn how to use Makeocode to program a monitoring device</p> <p>To learn how to use TinkerCAD to make a prototype for a housing unit</p> <p>To design a monitoring device and housing unit for an animal enclosure</p> <p>To use Microbit and TinkerCAD to program a monitoring device and design a housing unit</p> <p>To evaluate virtual model against the design requirements</p>	<p>Electrical To appraise and analyse a range of torches and comment on their features</p> <p>To learn about electrical items and how they work</p> <p>To learn how a switch controls the flow of an electric current</p> <p>To design a torch based on a user profile</p> <p>To make a torch based on a user profile</p> <p>To evaluate my torch and identify any improvements that could be made.</p>	<p>Digital To appraise and analyse a selection of navigational tools and consider and suggest additional functions for them</p> <p>To know how to use Makeocode to program a navigational tool</p> <p>To know how to use TinkerCAD to make a prototype for a sustainable case</p> <p>To create a sustainable design of a navigational device and case considering material decisions</p> <p>To use Microbit and TinkerCAD to create an advanced program for a navigational tool and design a sustainable case</p> <p>To evaluate virtual model against own design criteria and consider the views of others to improve their work</p>	<p>Electrical To appraise and analyse a range of toys and identify if the form follows its function</p> <p>To create a range of electrical circuits and identify their components</p> <p>To practise using a range of tools and techniques to create part of a product</p> <p>To generate ideas and design a product that meets the design brief</p> <p>To use a range of tools and techniques to make a product</p> <p>To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p>



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	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
<p>Cooking and nutrition</p>  <p>Appraise and analyse</p> <p>Technical knowledge</p> <p>Practice</p> <p>Generate ideas and design</p> <p>Design and make</p> <p>Evaluate</p>	<p>Cooking & Nutrition To identify healthy foods.</p>	<p>To identify where our fruit and vegetables come from to make a healthy product (smoothie)</p> <p>To identify different techniques used to prepare and create a healthy product (mushing, chopping, blending)</p> <p>To practise a range of different techniques to prepare and create a healthy product (mushing, chopping, blending)</p> <p>To design a product using pictures and words</p> <p>To use a range of technical knowledge and skills to create a finished product (mushing, chopping, blending)</p> <p>To evaluate their healthy product in terms of design and the taste</p>	<p>To identify ingredients from different food groups to create a healthy and balanced product (wrap pizza)</p> <p>To identify different techniques to prepare a healthy and balanced product (peeling, chopping, grating, spreading, cooking)</p> <p>To practise a range of techniques to prepare a balanced product (peeling, chopping, grating, spreading, cooking)</p> <p>To design a healthy, balanced product using simple drawings and labels (food groups)</p> <p>To use a range of technical knowledge to create a finished product (peeling, chopping, grating, spreading, cooking)</p> <p>To evaluate their product against their original design and a design criteria</p>	<p>To identify seasonal ingredients used in an existing product</p> <p>To identify techniques used and to write a method to create an existing product.</p> <p>To practise a range of different techniques to prepare and create a seasonal product (grating, chopping, slicing, rolling, folding, pinching, egg washing)</p> <p>To design a seasonal dish using exploded diagrams.</p> <p>To use a wider range of technical skills and tools to create a finished product</p> <p>To evaluate their finished product against their original design and a design criteria</p>		<p>To appraise and analyse a range of predominantly savoury dishes within a three course meal</p> <p>To identify how the different cooking techniques can be used to create a range of healthy and balanced dishes.</p> <p>To practise a range of different cooking techniques to decide which is the most appropriate method</p> <p>To work collaboratively to design a three course menu.</p> <p>To use a range of tools and cooking methods to prepare and make a three course meal.</p> <p>To evaluate their finished product against their original design, a design criteria and consider the views of others.</p>	



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Second Order Concepts

Second order concepts are fundamental knowledge and skills which are transferable across a range of curriculum subjects. For example, we introduce pupils to the concept of ‘similarity and difference’ early in their education, developing the observational skills and language needed to make comparisons. This is developed and applied as pupils move through the school so they can confidently apply this in all areas of the curriculum by upper Key Stage Two.

A summary of the second order concepts and how they apply to Design Technology are provided in the table below.

Curriculum subject	Significance	Similarity and difference	Cause and consequence	Continuity and change	Responsibility	Communication (Oracy & Written)	Enquiry
D&T	Significant designers and designs, real world examples of effective and successful products and designs	Making comparisons between products and designs to inform own plans, noting differences, drawing conclusions	Identifying how things work, how an action can cause change or movement/ strengthen	How design has changed over time	Working safely with different materials, responsibilities to customers to ensure quality products, healthy eating	Using correct terminology, evaluating, communicating designs accurately, labelling and annotating, explaining processes, presenting	



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