



Design and Technology Overview



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The Curriculum – our approach

Appleton Primary School strives to drive the curriculum through a love of reading. We are creating opportunities for our children to become aspirational in all areas of their lives through a structured build-up of knowledge and skills. We are committed to meeting the needs of all the children in our school. We offer a curriculum which remove barriers to learning by being broad and balanced and building on the knowledge, understanding and skills of the children, whatever their starting points, as they progress through our Foundation Unit and each Key Stage. Our aim is for children to be successful, resilient, independent and motivated learners in readiness for their next stage of education and beyond.

Using the children's interests through talking to pupils, their families and the local community we ensure we capture the enthusiasm of the children to take their development forward. We have a two-year programme of 6 themes across the year groups which captures the children's imagination and interests and ensures that there is a progressive sequence of skills and knowledge based on the National Curriculum. Each theme is supported by an appropriate text to nurture the children's love of reading and quest for knowledge. Our teaching sequences ensure that we teach skills and knowledge and provide sufficient opportunities for pupils to apply these independently. Through the consistent use of assessment, we can identify and address misconceptions to ensure learning is securely embedded and children can remember what they have learned.

At Appleton, we believe that all children are entitled to a broad, balanced and relevant curriculum through which we support children with additional needs. All children are encouraged to achieve their full potential and to be included in the social and academic life of the school. We aim to provide educational experiences that reflect the individual needs of children, appropriate to their level of ability. For some pupils with additional needs, there are times when the curriculum will need to be adapted to best meet their needs.

We will ensure our pupils have a wide range of cultural experiences and develop an understanding of opportunities available to them, so they leave us with high aspirations. We endeavour to introduce our whole community to the rich and diverse world in which we live in. To achieve this we promote tolerance and respect towards others in our both community and society as a whole using our PSHE programme, which runs throughout the school. Successes are celebrated and children are taught respect, empathy and fundamental British values and how they can contribute to our “Appleton family” and the wider world in which we live.

Our Curriculum Drivers

Reading is the key for learning

PSHE through developing resilience and promoting wellbeing our pupils can learn

Vocabulary we aim to extend pupils' language to enable them to learn from a wide range of experiences in our language rich curriculum

Fundamental Values promoting empathy and British values are at the core of our “Appleton family” approach.

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. Fundamental to our model is "grow what you know" and retrieval of prior learning.



A Broad and Balanced Curriculum at Key Stage 2

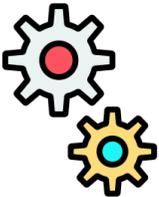
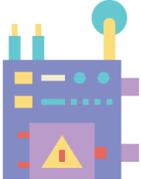
We ensure that we celebrate the talents of all pupils and provide everyone with opportunities to shine.

Reading, Writing and Maths are taught daily. Pupils who need phonic support continue on the Read Write Inc. and Fresh Start programmes. Science and PE are taught for 2 hours each week. RE and PSHE are taught for 1 hour each week. Foundation subjects are blocked over half term units. Y4 and 5 have Wider Opportunities for Music taught by a brass specialist. PE specialists and sport organisations regularly visit the school to teach pupils in lessons.

Key Concepts (Big Ideas)

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. Thus they will have opportunities to link new learning to prior knowledge within a key concept to build a rich and deep knowledge of the big ideas in each subject. Knowledge is empowering and provides a foundation for success. We accept that the more children know, the more they can learn.

Design and Technology

				
Mechanics	Textiles	Structures	Electric and digital	Cooking and nutrition

KEY CONCEPTS YEAR GROUP MAPPING

KEY CONCEPTS YEAR GROUP MAPPING			
	Autumn	Spring	Summer
EYFS	In EYFS pupils are taught Design and Technology through the strands of Expressive Arts and Physical Development. Throughout the year pupils will be taught Structures and Cooking and Nutrition.		
			
Year 1	 Constructing a windmill	 Fruit and vegetables	 Wheels and axles
Year 2	 Pouches	 A balanced diet	 Baby Bear's chair
Year 3	 Castles	 Eating seasonally	 Cushions
Year 4	 Slingshot car	 Electrical - torches	 Digital – mindful moments timer
Year 5 (Or Y56 cycle 1)	 Digital – monitoring devices	 Pop-up book	 Stuffed toys
Year 6 (Or Y56 cycle 2)	 Bridges	 Come dine with me	 Steady hand game

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.

Knowledge and skills sequencing		DESIGN AND TECHNOLOGY					
	EYFS	Y1	Y2	Y3	Y4	Y5/6 cycle 1	Y5/6 cycle 2
<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 (making a plane)</p> <p>To identify how mechanisms work in existing products e.g. 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 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 – pop- up books/cards</p> <p>To understand how to use sliders, pivots and folds to create paper-based mechanisms.</p> <p>To use a range of materials, tools and techniques to create a prototype – sliders and levers</p> <p>To design a product that meets the design brief – pop-up book</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>	<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 wider 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>

	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 pouches</p> <p>To identify techniques used to create a pouch (sewing, threading etc)</p> <p>To practise a range of techniques used to make a pouch (sewing, threading etc)</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 pouch 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>	

	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 develop an awareness of different structures</p> <p>To practise using range of materials to make a structure (windmill)</p> <p>To design a windmill using words and pictures based on a design criteria</p> <p>To make and join together a windmill</p> <p>To evaluate my windmill according to the design criteria</p>	<p>To appraise and analyse how a structure is made</p> <p>To practise making stable structures (bed for the meerkat)</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 (bed for a meerkat)</p> <p>To evaluate my structure in terms of design</p>	<p>To research castles and consider how these structures work</p> <p>To identify the structure of a castle and analyse the support techniques to make the structure strong</p> <p>To explore suitable materials to create a strong structure (castle)</p> <p>To generate ideas and design a structure including strengthening techniques</p> <p>To use appropriate tools and construction materials to make a structure</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 I can 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>

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
<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>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 explore different mindfulness strategies and using this research to inform my design criteria.</p> <p>To analyse a range of timers by comparing their</p>	<p>Digital To research a particular animals needs and use this to inform a design criteria</p> <p>To know how to use Makecode to program a monitoring device</p> <p>To repurpose plastic building bricks to develop creative and unique models for Micro:bit case, housing or stand solutions.</p> <p>To create a design for a monitoring device based on design criteria</p> <p>To use Microbit and TinkerCAD to create an advanced program for a monitoring device 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>

					<p>advantages and disadvantages.</p> <p>To know how to program a Micro:bit to time a set number of seconds/minutes upon button press.</p> <p>To design a mindful moments timer based on a design criteria.</p> <p>To make a mindful moments timer based on a design criteria.</p> <p>To test and evaluate my product against the original design criteria and suggest improvements</p>		
	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
<p>Cooking and nutrition</p>  <p>Appraise and analyse</p>	<p>Cooking & Nutrition</p> <p>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 identify ingredients from different food groups to create a healthy and balanced product (wrap)</p> <p>To identify different techniques to prepare a healthy and balanced product (peeling, chopping, grating, spreading, cooking)</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</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>Technical knowledge</p> <p>Practice</p> <p>Generate ideas and design</p> <p>Design and make</p> <p>Evaluate</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 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>(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 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 second order concepts and how these apply to D&T is provided below.

Curriculum subject	Significance	Similarity and difference	Cause and consequence	Continuity and change	Responsibility	Written and oral expression	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	