Design Technology Curriculum

Blackmore Primary School

	Curriculum Intent At Blackmore Primary School we aim to provide an engaging and balanced curriculum which nurtures and embraces children's interests and potential. We inspire them to become life-long learners with the skills to prepare them for their futures.	**Key Resources & Provision** Kapow Primary's topics are based on the D&T Association's Projects on a Page themes, with pupils' skills and knowledge being developed across six key areas: structures, mechanisms, electrical systems, cooking and nutrition, digital world and textiles. Units can be taught in any order within the year group, as progression builds upon learning from the previous year.	**Subject Leader** Miss Mann
Our Place In Our World	• Broaden Horizons • Explore Diversity • Positive Change		
Life Skills & Attitudes	• Communication • Self-directed, engaged • Making Connections		
Ambition & Possibilities	• Future Aspirations • Opportunities and Careers • Everything Is Possible		

Design Technology Overview

DT is taught alternately with art and design across the year.
Cooking and nutrition units are taught in all year groups – all unit details are at the end of this overview

Year Group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	Art and design	**Junk modelling**	Art and design	**Seasonal projects**	Art and design	**Bookmarks**
		Structures In this unit, pupils explore and learn about various types of permanent and temporary join. They are encouraged to tinker using a combination of materials and joining techniques in the junk modelling area.		A series of seasonal projects to choose from to deliver across the year – covering Autumn, Christmas, Easter, Spring and Summer.		Textiles In this unit, pupils develop and practise threading and weaving techniques using various materials and objects. They look at the history of the bookmark from Victorian times versus modern-day styles. The pupils apply their knowledge and skills to design and sew their own bookmarks.
Early Learning Goals	• Use a range of small tools, including scissors, paint brushes and cutlery. • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Plan and select the correct resources needed to make a model. • Explore, use and refine a variety of artistic effects to express ideas and feelings. • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Create collaboratively, sharing ideas, resources and skills. • Explore different ways to temporarily join materials together. • Develop threading and weaving skills. • Use threading or sewing to design a product. • Share their creations, explaining the process they have used.					
Year 1	Art and design	**Puppets**	Art and design	**Making a moving storybook**	Art and design	**Constructing a windmill**
		Textiles		Mechanisms		Structures

		In this unit, pupils explore methods of joining fabric. Design and make a character-based hand puppet using a preferred joining technique, before decorating.		This unit focuses on exploring slider mechanisms and the movement they output to design, make and evaluate a moving storybook from a range of templates.		In this unit, pupils explore various types of windmill, how they work and their key features, before designing a windmill for a specific user of the product.
Pupils who are secure will be able to:	• Identify whether a mechanism is a side-to-side slider or an up-and-down slider and determine what movement the mechanism will make. • Clearly label drawings to show which parts of their design will move and in which direction. • Make a picture that meets the design criteria, with parts that move purposefully as planned. • Evaluate the main strengths and weaknesses of their design and suggest alterations.		• Follow design criteria to meet the needs of a user. • Make a stable structure. • Make functioning sails/blades that attach to the supporting structure. • Improve their windmill.		• Join fabrics together using pins, staples or glue. • Design a puppet and use a template. • Join their two puppets' faces together as one. • Decorate a puppet to match their design.	
Year 2	Art and design	**Baby Bear's chair**	Art and design	**Pouches**	Art and design	**Making a moving monster**
		Structures In this unit, pupils explore stability and methods to strengthen structures, to understand Baby Bear's chair weaknesses and develop an improved solution for him to use.		Textiles In this unit, pupils learn how to sew a running stitch ready to design, make and decorate a pouch using a template.		Mechanisms This unit focuses on the design and creation of a functional Ferris wheel, learning how different components fit together so that the wheel rotates and the structure stands freely.

Pupils who are secure will be able to:	• Identify man-made and natural structures. • Identify stable and unstable structural shapes. • Contribute to discussions. • Identify features that make a chair stable. • Work independently to make a stable structure, following a demonstration. • Explain how their ideas would be suitable for Baby Bear. • Produce a model that supports a teddy, using the appropriate materials and construction techniques. • Explain how they made their model strong, stiff and stable.		• Sew a running stitch with regular-sized stitches and understand that both ends must be knotted. • Prepare and cut fabric to make a pouch from a template. • Use a running stitch to join the two pieces of fabric together. • Decorate their pouch using the materials provided.		• Identify the correct term for levers, linkages and pivots. • Analyse popular toys with the correct terminology. • Create functional linkages that produce the desired input and output motions. • Design monsters suitable for children, which satisfy most design criteria. • Evaluate their two designs against the design criteria, using information and feedback of the peers to choose their best design. • Select and assemble materials to create their planned monster features. • Assemble the monster to their linkage without affecting their functionality.	
Year 3	Art and design	**Pneumatic toys**	Art and design	**Constructing a castle**	Art and design	**Electric poster**
		Mechanical systems In this unit, pupils explore pneumatic systems, then apply this understanding to design and make a pneumatic toy including thumbnail sketches and exploded diagrams.		Structures This unit focuses on identifying and learning about the key features of a castle, before designing and making a recycled-material castle (structure).		Electrical systems This unit introduces children to various forms of 'Information design' before they are briefed to develop an electric museum display based on the Romans.
Pupils who are secure will be able to:	• Draw accurate diagrams with correct labels, arrows and explanations. • Correctly identify definitions for key terms. • Identify five appropriate design criteria.		• Draw and label a simple castle that includes the most common features. • Recognise that a castle is made up of multiple 3D shapes. • Design a castle with key features which satisfy a given purpose.		• Explain what 'information design' is and understand its impact, considering what could happen if we had no signage, posters, or written communication in public places of interest.	

	• Communicate two ideas using thumbnail sketches. • Communicate and develop one idea using an exploded diagram. • Select appropriate equipment and materials to build a working pneumatic system. • Assemble their pneumatic system within the housing to create the desired motion. • Create a finished pneumatic toy that fulfils the design brief.		• Score or cut along lines on the net of a 2D shape. • Use glue to securely assemble geometric shapes. • Utilise skills to build a complex structure from simple geometric shapes. • Evaluate their work by answering simple questions.		• Research and choose a specific Ancient Roman topic on which to base their initial poster ideas. • Complete design criteria based on a client's request. • Roughly sketch four initial poster ideas, indicating where a bulb will be located for each. • Review their initial ideas against the design criteria and peer feedback, developing a final design. • Assemble an electric poster, including a functional simple circuit with a bulb, following a demonstration. • Acknowledge, with a brief explanation, the need to mount the poster using corrugated card. • Test that the simple circuit works by adding a battery. • Evaluate their electric posters in a letter to a client.	
Year 4	Art and design	**Mechanical cars**	Art and design	**Pavilions**	Art and design	**Fastenings**
		Mechanical systems In this unit, the pupils will build prototype car chassis including a inclined plane, a slingshot car and a wind-up car before designing their mechanised toy car.		Structures This unit focuses on investigating and model framing structures to improve their stability, then applying this research to design and create a stable, decorated pavilion.		Textiles In this unit, the pupils analyse and evaluate a range of existing fastenings, then devise a list of design criteria to design, generate templates and make a fabric book sleeve.
Pupils who are secure will be able to:	• Describe key design improvements in the history of the automobile.		• Produce a range of free-standing frame structures of different shapes and sizes.		• Identify the features, benefits and disadvantages of a range of fastening types.	

	• Measure and compare the distance travelled by different mechanical cars. • Draw exploded diagrams and annotated sketches of different mechanical cars. • Use a problem statement to identify the design criteria. • Assess the product against the design criteria. • Conduct market research into existing products. • Provide specific feedback and adjust designs to incorporate customer feedback.		• Design a pavilion that is strong, stable and aesthetically pleasing. • Select appropriate materials and construction techniques to create a stable, free-standing frame structure. • Select appropriate materials and techniques to add cladding to their pavilion.		• Write design criteria and design a sleeve that satisfies the criteria. • Make a template for their book sleeve. • Assemble their case using any stitch they are comfortable with.	
Year 5	Art and Design	**Monitoring devices**	Art and Design	**Stuffed toys**	Art and Design	**Bridges**
		Digital world In this unit, pupils apply computing knowledge and understanding to program a Micro: bit animal monitoring device. Develop 3D CAD skills by learning how to navigate the Tinkercad interface and essential tools to combine multiple objects.		Textiles In this unit, pupils will design a stuffed toy. Learn how to sew a blanket stitch. To assemble the components of a stuffed toy, before creating and adding decorations to the fabric.		Structures This unit focuses on testing and analysing various types of bridges to determine their strength and stability. Explore material properties and sources, before marking, sawing and assembling a wooden truss bridge.
Pupils who are secure will be able to:	• Describe what is meant by monitoring devices and provide an example. • Explain briefly the development of thermometers from thermoscopes to digital thermometers.		• Design a stuffed toy, considering the main component shapes of their toy. • Create an appropriate template for their stuffed toy.		• Identify stronger and weaker shapes. • Recognise that supporting shapes can help increase the strength of a bridge, allowing it to hold more weight.	

	• Research a chosen animal's key information to develop a list of design criteria for an animal monitoring device. • Write a program that monitors the ambient temperature and alerts someone when the temperature moves from a specified range. • Identify errors (bugs) in the code and ways to fix (debug) them. • State one or two facts about the history and development of plastic, including how it is now affecting planet Earth. • Build a variety of brick models to invent Micro:bit case, housing and stand ideas, evaluating the success of their favourite model. • Explain key pros and cons of virtual modelling vs physical modelling. • Recall and describe the name and use of key tools used in Tinkercad (CAD) software.		• Join two pieces of fabric using a blanket stitch. • Neatly cut out their fabric. • Use appliqué or decorative stitching to decorate the front of their stuffed toy. • Use blanket stitch to assemble their stuffed toy, repairing when needed. • Identify what worked well and areas for improvement.		• Identify beam, arch and truss bridges and describe their differences. • Use triangles to create simple truss bridges that support a load (weight). • Cut beams to the correct size, using a cutting mat. • Smooth down any rough cut edges with sandpaper. • Follow each stage of the truss bridge creation as instructed by their teacher. • Complete a bridge, with varying ranges of accuracy and finish, supported by the teacher. • Identify some areas for improvement, reinforcing their bridges as necessary.	
Year 6	Art and design	**Waistcoats**	Art and design	**Playgrounds**	Art and design	**Automata toys**
		Textiles In this unit pupils learn to use a combination of textiles skills such as attaching fastenings, appliqué and decorative stitches, children design, assemble and decorate a waistcoat for a chosen purpose.		Structures In this unit pupils research existing playground equipment and their different forms, before designing and developing a range of apparatus to meet a list of specified design criteria.		Mechanical systems In this unit the pupils discover the problems facing high-street shops and how window displays are important in attracting customers. They develop design criteria to meet a design brief by creating items for

						an interactive display. Using technical knowledge they build a mechanical system of cams, followers and axles to create an automata toy.
Pupils who are secure will be able to:	• Consider a range of factors in their design criteria and use this to create a waistcoat design. • Use a template to mark and cut out a design. • Use a running stitch to join fabric to make a functional waistcoat. • Attach a secure fastening, as well as decorative objects. • Evaluate their final product.		• Create five apparatus designs, applying the design criteria to their work. • Make suitable changes to their work after peer evaluation. • Make roughly three different structures from their plans using the materials available. • Complete their structures, improving the quality of their rough versions and applying some cladding to a few areas. • Secure their apparatus to a base. • Make a range of landscape features using a variety of materials which will enhance their apparatus.		• Mark, saw and cut out the components and supports of their toy with varying degrees of accuracy to the intended measurements. • Follow health and safety rules, taking care with the equipment. • Attempt a partial assembly of their toys using an exploded diagram following a teacher's demonstration. • Develop a design idea with some descriptive notes. • Explore different cam profiles and choose three for their follower toppers with an explanation of their choices. • Create neat, decorated follower toppers with some accuracy. • Measure and cut panels that fit with some inaccuracies to conceal the inner workings of the automata. • Decorate and finish the automata to meet the design criteria and brief. • Evaluate their finished product, making descriptive and reflective points on function and form.	

# Cooking and Nutrition Overview	Reception: **Soup** In this unit, children explore the differences between fruits and vegetables using their senses (taste, texture, smell etc.). They listen to the story 'The best pumpkin soup' and discuss the key ingredients the characters used before developing a class-based vegetable soup recipe.		
Early Learning Goals	• Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. • Manage their own basic hygiene and personal needs, including understanding the importance of healthy food choices. • Explore the natural world around them, making observations and drawing pictures of animals and plants.		
	Year 1: **Smoothies** In this unit, pupil prepare foods by cutting and juicing and selecting fruits and vegetables to create a smoothie to meet a design brief.	Year 2: **Balanced diet** In this unit, pupils explore the importance of a balanced diet and create a tasty, balanced wrap to meet a design brief.	Year 3: **Eating seasonally** This cooking and nutrition unit includes opportunities for children to learn about seasonal foods and create a seasonal food tart.
Pupils who are secure will be able to:	• Describe fruits and vegetables and explain how to identify fruits. • Name a range of places that fruits and vegetables grow. • Describe basic characteristics of fruit and vegetables. • Prepare fruits and vegetables to make a smoothie.	• Name the main food groups and identify foods that belong to each group. • Describe the taste, feel and smell of a given food. • Think of three different wrap ideas, considering flavour combinations. • Construct a wrap that meets the design brief and their plan.	• Explain that fruits and vegetables grow in different countries based on their climates. • Understand that seasonal fruits and vegetables grow in a given season. • Understand that eating seasonal fruit and vegetables positively affects the environment. • Design a tart recipe using seasonal ingredients.
	Year 4: **Adapting a recipe** In this unit, children learn a basic biscuits recipe and adapt it to suit a target audience.	Year 5: **Developing a recipe** In this unit, pupil learn a simple bolognese recipe and developing it.	Year 6: **Come dine with me** This cooking and nutrition unit is a 'Come dine with me' project, learning about the basic tastes and complementary flavours, before selecting three recipes to create a three course meal.
Pupils who are secure will be able to:	• Describe features of biscuits using taste, texture and appearance. • Follow a recipe with support. • Use a budget to plan a recipe.	• Describe the process of beef production. • Research a traditional recipe and make changes to it.	• Find a suitable recipe for their course. • Record the relevant ingredients and equipment needed.

	• Adapt a recipe using additional ingredients.	• Add nutritional value to a recipe by selecting ingredients. • Prepare and cook a version of bolognese sauce.	• Follow a recipe, including using the correct quantities of each ingredient. • Explain where certain key foods come from before they appear on the supermarket shelf.