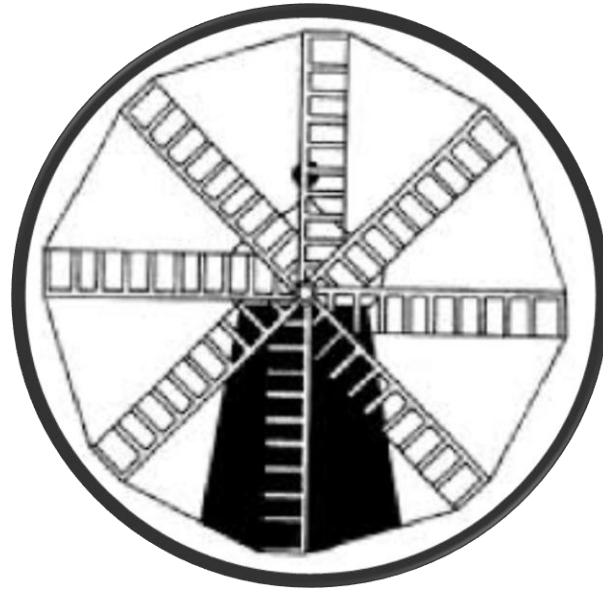


HECKINGTON ST. ANDREW'S
C OF E PRIMARY SCHOOL



DESIGN TECHNOLOGY
CURRICULUM AND PROGRESSION
DOCUMENTS



Intent

The **National Curriculum** is used to underpin our Design and Technology curriculum, which is taught in discrete blocks within each year group. Our curriculum progression is focussed on **developing skills** that allow our pupils to be **creative** in their thinking, manipulate essential tools and materials, and to evaluate the form and function of items in **everyday use** and meals that are nutritious. Through the cycle of technical **knowledge**, design, make and evaluate the pupils **understand** how ideas are tested and refined. The **progression documents** detail the core language of design and technology that pupils will learn as they progress through the curriculum.

Implementation

Teachers use Kapow Primary to help with planning and delivery and to ensure good subject knowledge. Class teachers use the progression documents to underpin their planning. They have flexibility in the product or meal used to provide the context for learning, whilst maintaining the focus on the progression in skills required. Teachers plan at least three discrete blocks of Design and Technology across the year including an element of food technology and allow sufficient curriculum time to develop the balance of creative thinking, making and evaluating. Teachers provide feedback to the pupils based on accuracy of their applied skills, offering support and guidance on what is needed to improve further. Teachers routinely check whether pupils are developing the core knowledge through, for example, low stakes quizzes.

The following pages set out the content of the design and technology curriculum at our school including our progression documents for key knowledge, process knowledge (skills) and vocabulary.



EYFS - EXPRESSIVE ARTS & DESIGN

YEAR 1

YEAR 2

EYFS

CREATING WITH MATERIALS

KS1

STRUCTURES: CONSTRUCTING WINDMILLS

TEXTILES: PUPPETS

FOOD: FRUIT AND VEGETABLES

STRUCTURES: BABY BEAR'S CHAIR

MECHANISMS: FAIRGROUND WHEEL

MECHANISMS: MAKING A MOVING MONSTER

LKS2

YEAR 4

YEAR 3

ELECTRICAL SYSTEMS: TORCHES

MECHANICAL SYSTEMS: SLINGSHOT CAR

STRUCTURES: PAVILIONS

STRUCTURES: CONSTRUCTING A CASTLE

TEXTILES: CUSHIONS

FOOD: EATING SEASONALLY

UKS2

YEAR 6

DESIGN TECHNOLOGY CURRICULUM ROAD MAP

ELECTRICAL SYSTEMS: ELECTRONIC GREETINGS CARDS

MECHANICAL SYSTEMS: POP UP BOOKS

FOOD: WHAT COULD BE HEALTHIER?

TEXTILES: WAISTCOATS

STRUCTURES: PLAYGROUNDS

ELECTRICAL SYSTEMS: STEADY HAND GAME

YEAR 7



Our design technology curriculum is based on the Kapow Primary schemes of work and is split into five key strands:



Each unit contains five lessons which are taught in sequential order, to ensure that knowledge and process knowledge builds across a unit and across year groups.

KS1 National Curriculum Design Technology subject content Pupils should be taught to:	DT areas	Units of Work	
		Y1	Y2
Design purposeful, functional, appealing products for themselves and other users based on design criteria.	Design	Windmills Puppets	Moving Monsters Baby bear's chair Ferris Wheels
Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.	Design		
Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing).	Make	Windmills Puppets Fruit and Vegetable Smoothies	
Select from and use a wide range materials and components, including construction materials, textiles, and ingredients, according to their characteristics.	Make		
Explore and evaluate a range of existing products.	Evaluate	Windmills Fruit and Vegetable Smoothies	Baby bear's chair Ferris Wheels
Evaluate their ideas and products against design criteria	Evaluate	Windmills Puppets	Moving Monsters Baby bear's chair Ferris Wheels

Build structures, exploring how they can be made stronger, stiffer and more stable.	Technical	Windmills	Baby bear's chair Ferris Wheels
Explore and use mechanisms (for example levers, sliders, wheels and axles), in their products.	Technical		Moving Monsters Ferris Wheels
Use basic principles of a healthy and varied diet to prepare dishes.	Food and Nutrition	Fruit and Vegetable Smoothies	
Understand where food comes from	Food and Nutrition		

KS2 National Curriculum Design Technology subject content Pupils should be taught to:	DT areas	Units of Work			
		Y3	Y4	Y5	Y6
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.	Design	Eating Seasonally Cushions Castles	Pavilions Slingshot Cars Torches	Electronic Greetings Cards Pop-up Books What could be healthier?	Waistcoats Playgrounds Steady Hand Game
Generate, develop model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.	Design				
Select from and use a wider range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing) accurately.	Make			Pop-up Books What could be healthier?	
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.	Make			Electronic Greetings Cards Pop-up Books	

				What could be healthier?	
Investigate and analyse a range of existing products.	Evaluate	Cushions Castles	Pavilions Slingshot Cars Torches	Electronic Greetings Cards Pop-up Books	Waistcoats Playgrounds Steady hand game
Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.	Evaluate			Electronic Greetings Cards What could be healthier?	
Understand how key events and individuals in design and technology have helped shape the world.	Evaluate		Slingshot Cars Torches	Electronic Greetings Cards What could be healthier?	
Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.	Technical	Castles	Pavilions		Playgrounds
Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages).	Technical		Slingshot Cars	Pop-up Books	
Understand and use electrical systems in their products (for example, series circuits incorporating switches, bulbs, buzzers and motors).	Technical		Torches	Electronic Greetings Cards	Steady hand game
Apply their understanding of computing to program, monitor and control their products.	Technical				
Understand and apply principles of a healthy and varied diet.	Food and Nutrition	Eating Seasonally		What could be healthier?	
Prepare and cook variety of predominantly savoury dishes using a range of cooking techniques.	Food and Nutrition				
Understanding seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.	Food and Nutrition			What could be healthier?	

Golden Threads for Design and Technology

Relationships	Respect	Responsibility	Resilience	Reverence
<ul style="list-style-type: none"> • We are helpful • We work as a team • We are kind and caring • We are good communicators 	<ul style="list-style-type: none"> • We are active listeners • We show good manners • We care for our environment • We show consideration for others 	<ul style="list-style-type: none"> • We own our actions • We are self-motivated • We are good role models • We are in control of our learning 	<ul style="list-style-type: none"> • We keep going • We believe in ourselves • We have a go • We persevere 	<ul style="list-style-type: none"> • We show empathy • We are reflective • We experience awe and wonder • We practice stillness



Overview of Units by Year Group

Year 1

Year 1		
<p>Autumn 1: Structures: Constructing Windmills Pupils will design and create their own structure and functioning windmill.</p>	<p>Spring 1: Textiles: Puppets Pupils will learn the different ways they can join fabrics together through the creation of a puppet.</p>	<p>Summer 1: Food: Fruit and Vegetable Smoothies Pupils will learn how to identify fruits and vegetables. Then apply this knowledge to design and make a smoothie.</p>
<p>Lesson 1: Designing the structure Learning what a windmill is and constructing a model windmill by reference to design criteria created for the client, Mouse, who lives in the windmill in Old Amsterdam.</p> <p>Lesson 2: Assembling the structure Having decorated their templates, pupils construct the main part of their structure, making sure it stands freely and holds together.</p> <p>Lesson 3: Assembling the structure Children complete their turbines, through careful cutting and folding, and attach them to their structure, testing its strength and stability.</p> <p>Lesson 4: Testing After adding the finishing touches to their windmills, children test their structures to check that they would make a suitable home for the mouse.</p> <p>Lesson 5: Evaluation and Assessment</p>	<p>Lesson 1: Joining Fabrics Pupils explore and evaluate different ways to join fabrics together, including gluing, pinning and stapling.</p> <p>Lesson 2: Designing my Puppet After deciding on which character their puppet will be based, children use a simple template to cut out their felt.</p> <p>Lesson 3: Making and joining my puppet Children join their pieces of fabric for their puppet, using their preferred technique of pinning, stapling or gluing.</p> <p>Lesson 4: Technical Knowledge Children decorate their hand puppet in keeping with their chosen storybook character using a variety of carefully selected materials.</p> <p>Lesson 5: Evaluation and Assessment</p>	<p>Lesson 1: Fruit or Vegetable? Learning to distinguish fruits from vegetables, and putting this knowledge into practice, handling and categorising a selection of fruits and vegetables.</p> <p>Lesson 2: Where fruit and vegetables grow Having learned to sort fruits from vegetables by looking for seeds, pupils learn another clue to classification is where the edible part of the plant grows, on trees, or vines, above the ground or under the soil; and explore which part of these plants we eat.</p> <p>Lesson 3: Smoothie ingredients tasting Tasting a selection of potential fruit and vegetable smoothie ingredients, describing their appearance, smell and taste and deciding which to include in a smoothie.</p> <p>Lesson 4: Making smoothies Children blend chosen fruits and vegetables to make smoothies and design packaging for their drinks, to reflect the ingredients.</p> <p>Lesson 5: Evaluation and Assessment</p>

Year 2

<p>Autumn 2: Structures: Baby Bear's Chair Pupils will experiment with different shapes and manipulate materials to explore and evaluate a range of structural properties. They apply this knowledge to their own design, make and test task.</p>	<p>Spring 2: Mechanisms: Fairground Wheel Pupils will explore existing mechanisms in order to design, test and make their own big wheel style ride.</p>	<p>Summer 2: Mechanisms: Making a Moving Monster Pupils will analyse existing levers and linkage systems to identify components that they can use to plan, design and develop a mechanical monster.</p>
<p>Lesson 1: Exploring stability Using a scientific approach, children test the stability of 3D shapes that they have moulded themselves and explore man-made and natural structures.</p> <p>Lesson 2: Strengthening materials While reinforcing their mathematical vocabulary, children build different paper structures and then test them to destruction!</p> <p>Lesson 3: Making baby bear's chair Considering what kind of chair baby bear would like, pupils develop a design criteria which uses all their knowledge of building strong and stable structures and begin to make their chairs.</p> <p>Lesson 4: Fixing and Testing baby bear's chair When baby bear's chair is complete, pupils test its strength and stability, and use their problem-solving skills to adapt their structure as necessary.</p> <p>Lesson 5: Evaluation and Assessment</p>	<p>Lesson 1: Design a Ferris wheel Children recap how wheels work, evaluate exiting big wheels and create a design for their own fairground wheel.</p> <p>Lesson 2: Planning the build Through exploration and experimentation, children work out the most suitable materials and techniques for creating their wheels.</p> <p>Lesson 3: Building the frame and wheels Using their knowledge of structures, children build their frames and wheels before assembling their fairground rides, adapting their designs as necessary.</p> <p>Lesson 4: Adding pods and decorations Taking care that their Ferris wheel can still rotate freely, children add their pods and final decorative touches.</p> <p>Lesson 5: Evaluation and Assessment</p>	<p>Lesson 1: Pivots, levers and linkages Looking at everyday objects, children learn that a lever is something that turns on a pivot and that a linkage is a system of levers that are connected by pivots.</p> <p>Lesson 2: Making linkages Children experiment with making the linkages that will enable their monsters to move, varying the width, length and thicknesses of the card they use and demonstrating to the class the success of these adaptations.</p> <p>Lesson 3: Designing my monster With levers, pivots and linkages in mind, children design two possible moving monster ideas against a design criteria and then carry out a tally survey to see which is favoured by their peers.</p> <p>Lesson 4: Making my monster Children construct and assemble their moving monsters, decorating them as specified in their original designs from Lesson 2.</p> <p>Lesson 5: Evaluation and Assessment</p>

Year 3

<p style="text-align: center;">Autumn 1: Food: Eating Seasonally</p> <p>Pupils will learn about seasonality and how the climate a food is grown in can alter the way it tastes and make a crumble tart using seasonal ingredients.</p>	<p style="text-align: center;">Spring 1: Textiles: Cushions</p> <p>Pupils will learn to sew cross stitch and applique and then apply this to the design and creation of a cushion</p>	<p style="text-align: center;">Summer 1: Structures: Constructing a castle</p> <p>Pupils will learn more advanced construction techniques and plan for complex arrangements of structures with continual emphasis on evaluating throughout.</p>
<p>Lesson 1: Where in the world? Children identify the different climates in which fruits and vegetables grow and follow a recipe to make Japanese fruit skewers with plum sauce.</p> <p>Lesson 2: British seasonal foods Children learn that we have to import some foods from other countries, then the children bake a fruit crumble using seasonal British fruits.</p> <p>Lesson 3: Rainbow food Children learn that fruits and vegetables of the same colour have similar health benefits and design a seasonal tart using a variety of local seasonal vegetables to provide a range of nutrients.</p> <p>Lesson 4: Making tarts Children bring together the lessons from this unit to make their seasonal tart.</p> <p>Lesson 5: Evaluation and Assessment</p>	<p>Lesson 1: Cross stitch and applique The children are introduced to cross stitch and the decorative sewing technique applique and experiment with trying these stitches independently.</p> <p>Lesson 2: Cushion Design Pupils design their own cushions, adhering to set design criteria, which includes the use of cross stitch and applique.</p> <p>Lesson 3: Decorating my cushion Using applique and cross stitch, pupils decorate their cushions in accordance with their design.</p> <p>Lesson 4: Assembling my cushion Children complete their cushions, sewing the edges, stuffing them and using the decorate pieces of materials from the previous lesson.</p> <p>Lesson 5: Evaluation and Assessment</p>	<p>Lesson 1: Features of a castle After learning the features of a castle, children design one of their own, deciding which 3D shapes they need to create it.</p> <p>Lesson 2: Designing a castle Children follow a design specification to create a castle, labelling their drawings with the shapes and subsequent nets and recycled materials they will use to make it.</p> <p>Lesson 3: Nets and structures Children construct their nets to make 3D shapes to use in the construction of their castles in Lesson 4.</p> <p>Lesson 4: Building a castle After creating the curtain walls of their castles, children make and attach the specific features of their designs, decorating and adding facades to complete the project.</p> <p>Lesson 5: Evaluation and Assessment</p>

Year 4

Year 4		
<p>Autumn 2: Structures: Pavilions Pupils will be introduced to pavilion architecture, pupils experiment with frame structures before designing their own landscape and pavilion, using a wider range of materials and construction techniques.</p>	<p>Spring 2: Mechanical systems: Making a slingshot Pupils will use kinetic energy to power slingshot cars, designing and making their own and then testing their effectiveness in time trials.</p>	<p>Summer 2: Electrical systems: Torches Pupils will be introduced to electricity and electrical safety before making a simple electric circuit to create a functioning torch.</p>
<p>Lesson 1: Exploring frame structures Using toothpicks and sweets, pupils explore different frame structures to test which are the most stable.</p> <p>Lesson 2: Designing a pavilion Using their knowledge from Lesson 1, the children design their pavilion structures.</p> <p>Lesson 3: Pavilion Frames Using their designs and a range of materials, children build a strong frame structure for their pavilion.</p> <p>Lesson 4: Pavilion cladding Experimenting with different decorative techniques, pupils use paper and other materials to clad their pavilions.</p> <p>Lesson 5: Evaluation and Assessment</p>	<p>Lesson 1: Chassis and launch mechanism Using a range of materials, children follow instructions to make the chassis of their car and the slingshot launch mechanism, learning that their slingshot cars work by storing kinetic energy in the elastic band before it launches.</p> <p>Lesson 2: Designing the car body Understanding that the shape of a car body can either increase or decrease the speed it travels, children design car bodies to cover their chassis from Lesson 1.</p> <p>Lesson 3: Making the car body Children make the nets for their car bodies based on their designs, adding the graphics and the tabs that will attach to the chassis.</p> <p>Lesson 4: Assembly and testing After attaching the nets that they made in Lesson 3, children carry out time trials and other competitions to test and compare their cars.</p> <p>Lesson 5: Evaluation and Assessment</p>	<p>Lesson 1: Electrical products Pupils explore the difference between 'electrical' and 'electronic' and revisit how to make a simple circuit.</p> <p>Lesson 2: Evaluating torches Pupils evaluate a range of different torches and identify the features of a torch: housing, reflector, circuit and switch.</p> <p>Lesson 3: Torch design Pupils create torch design, building on their understanding from and incorporating features they have identified in previous lessons.</p> <p>Lesson 4: Torch assembly The children build the circuit and housing for their torches, closely following their designs from the previous lesson.</p> <p>Lesson 5: Evaluation and Assessment</p>

Year 5

<p>Autumn 1: Electrical Systems: Electronic greetings cards Pupils will explore electric circuits and apply this knowledge to design and make their own electric greetings cards.</p>	<p>Spring 1: Mechanical systems: Pop-up Book Pupils will utilise a range of mechanisms and construction techniques to create a pop-up story book for younger children.</p>	<p>Summer 1: Food: What could be healthier? Pupils will adapt a Bolognese recipe by adding or altering ingredients and learn about the ethical and hygienic issues of food.</p>
<p>Lesson 1: Greeting card The children look at the history and development of exchanging greetings and receive a design brief to create an electronic greeting card.</p> <p>Lesson 2: Series circuits Children learn about series circuits, circuit diagrams and how to integrate a series circuit into a greeting card.</p> <p>Lesson 3: Inspired design Children learn about inspiration for design and create a mood board to inform their electronic card design ideas.</p> <p>Lesson 4: Electronic greeting card Children combine everything they have learnt across the unit to complete an electronic greeting card. They analyse and evaluate the final design against the design criteria.</p> <p>Lesson 5: Evaluation and Assessment</p>	<p>Lesson 1: Pop-up Book page design Children create the structure of their books, including the pop-up features, and begin to make their mechanisms.</p> <p>Lesson 2: Making my pop-up book Children create the structure of their books, including the pop-up features, and begin to make their mechanisms.</p> <p>Lesson 3: Using layers and spacers Children secure their mechanisms onto the pages and give their books a professional finish, using layers and spacers to hide the mechanisms.</p> <p>Lesson 4: Writing and illustrating Children add the finishing touches to their books, adding illustrations, colour and writing captions.</p> <p>Lesson 5: Evaluation and Assessment</p>	<p>Lesson 1: From farm to fork Children learn how beef, the main ingredient of Bolognese sauce, is farmed and are made aware of key welfare issues surrounding the rearing of cattle.</p> <p>Lesson 2: What does healthy look like? Children taste test two Bolognese sauces to compare their nutritional values. Then after researching variations of the recipe, they work in teams to decide on ingredients for a healthier alternative.</p> <p>Lesson 3: Adapting and improving a recipe The children work in teams to decide on ingredients for a healthier alternative to a Bolognese recipe.</p> <p>Lesson 4: Mamma Mia! What a tasty, healthy Bolognese Children work together to make their very own Bolognese sauces, following the recipe methods that they wrote last lesson and designing packaging that promotes it as a healthy and ethical choice.</p> <p>Lesson 5: Evaluation and Assessment</p>

Year 6

<p style="text-align: center;">Autumn 2: Textiles: Waistcoats</p> <p>Pupils will learn to measure, cut and assemble fabric to create a waistcoat. They will draw a design in accordance with their own design criteria.</p>	<p style="text-align: center;">Spring 2: Structures: playgrounds</p> <p>Pupils will have the opportunity to be creative and experiment with a wide range of materials and equipment, applying prior knowledge of net and frame structures as well as bracing and cladding to design and make a playground.</p>	<p style="text-align: center;">Summer 2: Electrical Systems: Steady hand game</p> <p>Pupils will create electromagnetic toys and more complex electronic circuits to create a steady hand game.</p>
<p>Lesson 1: Waistcoat design Drawing inspiration from famous waistcoat wearers, children design a waistcoat based on a theme of your choice.</p> <p>Lesson 2: Preparing fabric Using a template, pupils mark the outline their waistcoat panels on fabric before cutting and pinning them.</p> <p>Lesson 3: Assembling my waistcoat Pupils sew the panels of their waistcoat together using a simple running stitch.</p> <p>Lesson 4: Decorating my waistcoat After assembling their waistcoat, children add decoration in the form of applique, beads, buttons or decorative stitching.</p> <p>Lesson 5: Evaluation and Assessment</p>	<p>Lesson 1: Design a new playground After identifying various pieces of playground equipment, pupils explore the structures they comprise before designing five pieces of playground apparatus using three different structures.</p> <p>Lesson 2: Building structures Pupils build the structures for their playground apparatus as designed in the previous lesson.</p> <p>Lesson 3: Perfecting structures Pupils complete the remaining structures for their playground apparatus, developing and testing them as they work and adding the cladding.</p> <p>Lesson 4: Playground landscapes Pupils secure their structures to bases and create landscape features from a range of materials to complete their playgrounds.</p> <p>Lesson 5: Evaluation and Assessment</p>	<p>Lesson 1: Developing through Play Pupils explore what is meant by fit for purpose design and apply this to their own research on children's toys to evaluate their form and function.</p> <p>Lesson 2: Game Plan Children identify components of a 'steady hand game', design their own game and create perspective drawings of their design.</p> <p>Lesson 3: Base Building Children use nets to create the base blocks of their steady hand games, and decorate them in line with their design criteria.</p> <p>Lesson 4: Electronics and assembly Pupils make and test their circuits and incorporate them into the bases of their games.</p> <p>Lesson 5: Product Pitch Celebrating the completion of the project by supporting the pupils through a pitch to share and "sell" the final product concepts.</p> <p>Lesson 6: Evaluation and Assessment</p>

PROGRESSION OF KNOWLEDGE AND PROCESS KNOWLEDGE (SKILLS)

STRUCTURES

EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 6
Design					
<ul style="list-style-type: none"> I can design a structure thinking about colour, texture and function. 	<ul style="list-style-type: none"> I know the importance of a clear design criteria. I can include my own preferences and requirements in a design. 	<ul style="list-style-type: none"> I can generate and communicate ideas using sketching and modelling. I know about different types of structures, found in the natural world and in everyday objects. 	<ul style="list-style-type: none"> I can design a castle with key features to appeal to a specific person/purpose I can draw and label a castle design using 2D shapes, labelling: <ul style="list-style-type: none"> -the 3D shapes that will create the features - materials need and colours I can design and/or decorate a castle tower on CAD software 	<ul style="list-style-type: none"> I can design a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect I can build frame structures designed to support weight. 	<ul style="list-style-type: none"> I can design a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.
Make					
<ul style="list-style-type: none"> I can safely use tools to join materials together. 	<ul style="list-style-type: none"> I can make a stable structure from card, tape and glue I can follow instructions to cut and assemble the supporting structure of a windmill I can make functioning 	<ul style="list-style-type: none"> I can make a structure according to design criteria I can create joints and structures from paper/card and tape. 	<ul style="list-style-type: none"> I can construct a range of 3D geometric shapes using nets I can create special features for individual designs I can make facades from a range of recycled 	<ul style="list-style-type: none"> I can create a range of different shaped frame structures I can make a variety of free-standing frame structures of different shapes and sizes I can select 	<ul style="list-style-type: none"> I can build a range of play apparatus structures drawing upon new and prior knowledge of structures I can measure, mark and cut wood to create a range of structures I can use a range of

	turbines and axles which are assembled into a main supporting structure.		materials.	<p>appropriate materials to build a strong structure and for the cladding</p> <ul style="list-style-type: none"> • I can reinforce corners to strengthen a structure • I can create a design in accordance with a plan • I am learning to create different textural effects with materials. 	materials to reinforce and add decoration to structures.
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Evaluation

<ul style="list-style-type: none"> • I can say what I like / don't like about my creation. 	<ul style="list-style-type: none"> • I can evaluate a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't • I can suggest points for improvements. 	<ul style="list-style-type: none"> • I can explore the features of structures • I can compare the stability of different shapes • I can test the strength of my own structures • I can identify the weakest part of a structure • I can evaluate the strength, stiffness and stability of own structure. 	<ul style="list-style-type: none"> • I can evaluate my own work and the work of others based on the aesthetic of the finished product and in comparison, to the original design • I can suggest points for modification of the individual designs. 	<ul style="list-style-type: none"> • I can evaluate structures made by the class • I can describe what characteristics of a design and construction made it the most effective • I can consider effective and ineffective designs. 	<ul style="list-style-type: none"> • I can improve a design plan based on peer evaluation • I can test and adapt a design to improve it as it is developed • I can identify what makes a successful structure.
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Technical Knowledge

<ul style="list-style-type: none"> • I can explain what I have made. • I can talk about how I made it. 	<ul style="list-style-type: none"> • I can describe the purpose of structures, including windmills • I know how to turn 2D nets into 3D structures • I know that the shape of materials can be changed to improve the strength and stiffness of structures • I know that cylinders are a strong type of structure that are often used for windmills and lighthouses • I know that windmill turbines use wind to turn and make the machines inside work • I know that axles are used in structures and mechanisms to make parts turn in a circle • I am developing my awareness of different structures for different purposes. 	<ul style="list-style-type: none"> • I can identify natural and man-made structures • I can identify when a structure is more or less stable than another • I know that shapes and structures with wide, flat bases or legs are the most stable • I know that the shape of a structure affects its strength • I can use the vocabulary: strength, stiffness, and stability • I know that materials can be manipulated to improve strength and stiffness • I can build a strong and stiff structure by folding paper. 	<ul style="list-style-type: none"> • I can identify the features of a castle • I can identify suitable materials to be selected and used for a castle, considering weight, compression, tension • I am extending my knowledge that wide and flat based objects are more stable • I know the terminology of strut, tie, span, beam • I know the difference between frame and shell structure. 	<ul style="list-style-type: none"> • I know what pavilions are and their purpose • I can building on my prior knowledge of net structures and I am broadening my knowledge of frame structures • I know that architects consider light, shadow and patterns when designing • I can implement my knowledge of frame and shell structures. • I can consider effective and ineffective designs. 	<ul style="list-style-type: none"> • I know that structures can be strengthened by manipulating materials and shapes • I can identify the shell structure in everyday life (cars, aeroplanes, tins, cans) • I can identify man made and natural structures.
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MECHANISMS / MECHANICAL STRUCTURES

YEAR 2	YEAR 4	YEAR 5	YEAR 6
Design			
<ul style="list-style-type: none"> • I can create a class design criteria for a moving monster • I can design a moving monster for a specific audience in accordance with a design criteria • I can select a suitable linkage system to produce the desired motions • I can design a wheel I can select appropriate materials based on their properties. 	<ul style="list-style-type: none"> • I can design a shape that reduces air resistance • I can draw a net to create a structure from • I can choose shapes that increase or decrease speed as a result of air resistance • I can personalise a design. 	<ul style="list-style-type: none"> • I can design a pop-up book which uses a mixture of structures and mechanisms • I can name each mechanism, input and output accurately • I can storyboard ideas for a book. 	<ul style="list-style-type: none"> • I can experiment with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement • I understand how linkages change the direction of a force • I can make things move at the same time • I understand and can draw cross-sectional diagrams to show the inner workings of the automata.
Make			
<ul style="list-style-type: none"> • I can make linkages using card for levers and split pins for pivots • I can experiment with linkages adjusting the widths, lengths and thicknesses of card used • I can cut and assemble components neatly • I can select materials according to their characteristics • I can follow a design brief. 	<ul style="list-style-type: none"> • I can measure, mark, cut and assemble with increasing accuracy • I can make a model based on a chosen design. 	<ul style="list-style-type: none"> • I can follow a design brief to make a pop-up book, neatly and with focus on accuracy • I can make mechanisms and/or structures using sliders, pivots, and folds to produce movement • I can use layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result. 	<ul style="list-style-type: none"> • I can measure, mark, and check the accuracy of the jelutong, and dowel pieces required • I can measure, mark, and cut components accurately using a ruler and scissors • I can assemble components accurately to make a stable frame • I understand that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles • I can select appropriate materials based on the

			materials being joined and the speed at which the glue needs to dry/set.
Evaluation			
<ul style="list-style-type: none"> • I can evaluate my own designs against design criteria • I can use peer feedback to modify a final design • I can evaluate different design • I can test and adapting a design. 	<ul style="list-style-type: none"> • I can evaluate the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance. 	<ul style="list-style-type: none"> • I can evaluate the work of others and receiving feedback on own work • I can suggest points for improvement. 	<ul style="list-style-type: none"> • I can evaluate the work of others and receiving feedback on own work • I can apply points of improvements • I can describe changes I would make/do if they were to do the project again.
Technical Knowledge			
<ul style="list-style-type: none"> • I know that mechanisms are a collection of moving parts that work together in a machine • I know that there is an input and output in a mechanism • I can identify mechanisms in everyday objects • I know that a lever is something that turns on a pivot • I know that a linkage is a system of levers that are connected by pivots • I can explore wheel mechanisms • I know how axels help wheels to move a vehicle. 	<ul style="list-style-type: none"> • I know that products change and evolve over time • I know that all moving things have kinetic energy • I understand that kinetic energy is the energy that something (object person) has by being in motion. 	<ul style="list-style-type: none"> • I know that an input is the motion used to start a mechanism • I know that output is the motion that happens as a result of starting the input • I know that mechanisms control movement • I can describe mechanisms that can be used to change one kind of motion into another. 	<ul style="list-style-type: none"> • I can use a bench hook to saw safely and effectively • I can explore cams, learning that different shaped cams produce different follower movements • I can explore types of motions and direction of a motion.

ELECTRICAL SYSTEMS (KS2 only)

YEAR 4	YEAR 5	YEAR 6
Design		
<ul style="list-style-type: none"> I can design a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. 	<ul style="list-style-type: none"> I can design an electronic greetings card with a copper track circuit and components I can create a labelled circuit diagram showing positive and negative parts in relation to the LED and the battery I can write design criteria for an electronic greeting card I can compile a moodboard relevant to my chosen theme, purpose, and recipient 	<ul style="list-style-type: none"> I can design a steady hand game - identifying and naming the components required I can draw a design from three different perspectives I can generate ideas through sketching and discussion I can model ideas through prototypes I understand the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'
Make		
<ul style="list-style-type: none"> I can make a torch with a working electrical circuit and switch I can use appropriate equipment to cut and attach materials I can assemble a torch according to the design and success criteria. 	<ul style="list-style-type: none"> I can make a functional series circuit I can create electronics greeting card, referring to a design criteria. I can map out where different components of the circuit will go. 	<ul style="list-style-type: none"> I can construct a stable base for a game I can accurately cut, fold, and assemble a net I can decorate the base of the game to a high-quality finish I can make and test a circuit Incorporating a circuit into a base
Evaluation		
<ul style="list-style-type: none"> I can evaluate electrical products I can test and evaluate the success of a final product and taking inspiration from the work of peers. 	<ul style="list-style-type: none"> I can evaluate a peer's product against design criteria and suggesting modifications that could be made to improve the reliability or aesthetics of it or to incorporate another type of circuit component I know what Sir Rowland Hill invented and why it was important for greeting cards I can analyse and evaluate a range of existing greeting cards. 	<ul style="list-style-type: none"> I can test my own and others finished games, identifying what went well and making suggestions for improvement I can gather images and information about existing children's toys I can analyse a selection of existing children's toys

Technical Knowledge

- I know how electrical items work
- I can identify electrical products
- I know what electrical conductors and insulators are
- I understand that a battery contains stored electricity and can be used to power products
- I can identify the features of a torch
- I know how a torch works
- I can articulate the positives and negatives about different torches.

- I know the key components used to create a functioning circuit
- I know that copper is a conductor and can be used as part of a circuit
- I understand that breaks in a circuit will stop it from working
- I can explain how a series circuit will work in my card
- I can identify the negative and positive leg of an LED
- I can draw a series circuit diagram and symbols.

- I know that batteries contain acid, which can be dangerous if they leak
- I can identify and name the circuit components in a steady hand game

COOKING AND NUTRITION

EYFS	YEAR 1	YEAR 3	YEAR 5
Design			
<ul style="list-style-type: none"> • I can talk about what I am going to make and think about how I might make it. 	<ul style="list-style-type: none"> • I can design smoothie carton packaging by-hand or on ICT software. 	<ul style="list-style-type: none"> • I can create a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish. 	<ul style="list-style-type: none"> • I can adapt a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute, or add additional ingredients • I can write an amended method for a recipe to incorporate the relevant changes to ingredients • I can design appealing packaging to reflect a recipe.
Make			
<ul style="list-style-type: none"> • I can use a range of tools safely when cooking or baking. • I can follow a simple recipe with adult support. 	<ul style="list-style-type: none"> • I can chop fruit and vegetables safely to make a smoothie • I can identify if a food is a fruit or a vegetable • I know where and how fruits 	<ul style="list-style-type: none"> • I know how to prepare myself and a workspace to cook safely in, learning the basic rules to avoid food contamination 	<ul style="list-style-type: none"> • I can cut and prepare vegetables safely • I can use equipment safely, including knives, hot pans and hobs

	and vegetables grow.	<ul style="list-style-type: none"> • I can follow the instructions within a recipe 	<ul style="list-style-type: none"> • I know how to avoid cross-contamination • I can follow a step-by-step method carefully to make a recipe.
Evaluation			
<ul style="list-style-type: none"> • I can talk about what I like / dislike about my product. • I can suggest improvements or changes I would make next time. 	<ul style="list-style-type: none"> • I can taste and evaluate different food combinations • I can describe appearance, smell, and taste • I can suggest information to be included on packaging. 	<ul style="list-style-type: none"> • I can establish and use design criteria to help test and review dishes • I can describe the benefits of seasonal fruits and vegetables and the impact on the environment • I can suggest points for improvement when making a seasonal tart. 	<ul style="list-style-type: none"> • I can identify the nutritional differences between different products and recipes • I can identify and describe healthy benefits of food groups.
Technical Knowledge			
<ul style="list-style-type: none"> • I can name different ingredients. • I can describe the taste and look of a product. 	<ul style="list-style-type: none"> • I know the difference between fruits and vegetables • I can describe and group fruits by texture and taste. 	<ul style="list-style-type: none"> • I know that climate affects food growth • I can work with cooking equipment safely and hygienically • I know that imported foods travel from far away and this can negatively impact the environment • I know that vegetables and fruit grow in certain seasons • I know that each fruit and vegetable give us nutritional benefits • I know how to use, store and clean a knife safely. 	<ul style="list-style-type: none"> • I know where food comes from – I know that beef is from cattle and how beef is reared and processed • I understand what constitutes a balanced diet • I know how to adapt a recipe to make it healthier • I can compare two adapted recipes using a nutritional calculator and then identifying the healthier option.

TEXTILES

EYFS	YEAR 1	YEAR 3	YEAR 6
Design			
<ul style="list-style-type: none"> I can talk about what I am going to make. 	<ul style="list-style-type: none"> I can use a template to create a design for a puppet 	<ul style="list-style-type: none"> I can design and make a template from an existing cushion and applying individual design criteria 	<ul style="list-style-type: none"> I can design a waistcoat in accordance to specification linked to set of design criteria to fit a specific theme I can annotate designs.
Make			
<ul style="list-style-type: none"> I can create using various materials. 	<ul style="list-style-type: none"> I can cut fabric neatly with scissors I can use joining methods to decorate a puppet I can sequence steps for construction. 	<ul style="list-style-type: none"> I can follow a design criteria to create a cushion I can select and cut fabrics with ease using fabric scissors I can sew cross stitch to join fabric I can decorate fabric using appliqué I can complete design ideas with stuffing and sewing the edges 	<ul style="list-style-type: none"> I can use a template when pinning panels onto fabric I can mark and cut fabric accurately, in accordance with a design I can sew a strong running stitch, making small, neat stitches and following the edge # I can tie strong knots I can decorate a waistcoat - attaching objects using thread and adding a secure fastening.
Evaluation			
<ul style="list-style-type: none"> I can tell you the best parts of my finished product. 	<ul style="list-style-type: none"> I can reflect on a finished product, explaining likes and dislikes. 	<ul style="list-style-type: none"> I can evaluate an end product and think of other ways in which to create similar items 	<ul style="list-style-type: none"> I can evaluate work continually as it is created.
Technical Knowledge			
<ul style="list-style-type: none"> I can name different materials, tools and equipment. 	<ul style="list-style-type: none"> I know different ways in which to join fabrics together: pinning, stapling, gluing. 	<ul style="list-style-type: none"> I can thread needles with greater independence I can tie knots with greater independence I can sew cross stitch and appliqué I understand the need to 	<ul style="list-style-type: none"> I know different decorative stitches I know how to apply an individual technique I know how to sew accurately with even regularity of stitches.

		count the thread on a piece of even weave fabric in each direction to create uniform size and appearance <ul style="list-style-type: none"> • I understand that fabrics can be layered for affect 	
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KEY VOCABULARY

Year 1					
Structures: Windmills		Textiles: Puppets		Food: Fruit and Vegetables	
<ul style="list-style-type: none"> • Client • Design • Evaluation • Net • Stable 	<ul style="list-style-type: none"> • Strong • Test • Weak • Windmill 	<ul style="list-style-type: none"> • Decorate • Design • Fabric • Glue • Model 	<ul style="list-style-type: none"> • Hand puppet • Safety pin • Staple • Stencil • Template 	<ul style="list-style-type: none"> • Blender • Carton • Fruit • Healthy • Ingredients • Peel • Peeler 	<ul style="list-style-type: none"> • Recipe • Slice • Smoothie • Stencil • Template • Vegetable
Year 2					
Structures: Baby Bear's Chair		Mechanisms: Fairground Wheel		Mechanisms: Making a Moving Monster	
<ul style="list-style-type: none"> • Function • Man-made • Mould • Natural • Stable 	<ul style="list-style-type: none"> • Stiff • Strong • Structure • Test • Weak 	<ul style="list-style-type: none"> • Axle • Decorate • Evaluation • Ferris wheel • Mechanism 	<ul style="list-style-type: none"> • Stable • Strong • Test • Waterproof • Weak 	<ul style="list-style-type: none"> • Evaluation • Input • Lever • Linear motion • Linkage • Mechanical • Mechanism • Motion 	<ul style="list-style-type: none"> • Oscillating motion • Output • Pivot • Reciprocating motion • Rotary motion • Survey
Year 3					
Food: Eating seasonally		Textiles: Cushions		Structures: Castles	
<ul style="list-style-type: none"> • Climate 	<ul style="list-style-type: none"> • Polar 	<ul style="list-style-type: none"> • Accurate 	<ul style="list-style-type: none"> • Seam 	<ul style="list-style-type: none"> • 2D shapes 	<ul style="list-style-type: none"> • Net

<ul style="list-style-type: none"> • Dry climate • Exported • Imported • Mediterranean climate • Nationality • Nutrients 	<ul style="list-style-type: none"> • climate • Recipe • Seasonal food • Seasons • Temperate climate • Tropical climate 	<ul style="list-style-type: none"> • Applique • Cross-stitch • Cushion • Decorate • Detail • Fabric • Patch • Running stitch 	<ul style="list-style-type: none"> • Stencil • Stuffing • Target audience • Target customer • Template 	<ul style="list-style-type: none"> • 3D shapes • Castle • Design criteria • Evaluate • Façade • Feature • Flag 	<ul style="list-style-type: none"> • Recyclable • Scoring • Stable • Strong • Structure • Tab • Weak
Year 4					
Structure: Pavilions		Mechanical Systems: Making a slingshot car		Electrical systems: torches	
<ul style="list-style-type: none"> • Aesthetic • Cladding • Design criteria • Evaluation • Frame structure • Function • Inspiration • Pavilion 	<ul style="list-style-type: none"> • Reinforce • Stable • Structure • Target audience • Target customer • Texture • Theme 	<ul style="list-style-type: none"> • Aesthetic • Air resistance • Chassis • Design • Design criteria • Function 	<ul style="list-style-type: none"> • Graphics • Kinetic energy • Mechanism • Net • Structure 	<ul style="list-style-type: none"> • Battery • Bulb • Buzzer • Cell • Component • Conductor • Copper • Design criteria • Electrical item 	<ul style="list-style-type: none"> • Electricity • Electronic item • Function • Insulator • Series circuit • Switch • Test • Torch • Wire
Year 5					
Electrical systems: electronic greetings cards		Mechanical systems: making a pop-up book		Food: What could be healthier?	
<ul style="list-style-type: none"> • Battery • Buzzer • Circuit • Coin cell battery • Component • Conductor • Copper • Design • Design criteria • Function 	<ul style="list-style-type: none"> • Innovative • Insulator • LED • Modify • Series circuit • Switch • Target audience • Test • Wire 	<ul style="list-style-type: none"> • Aesthetic • Computer-aided design (CAD) • Caption • Design • Design brief • Design criteria • Exploded-diagram 	<ul style="list-style-type: none"> • Linkage • Mechanism • Motion • Output • Pivot • Prototype • Slider • Structure • Template 	<ul style="list-style-type: none"> • Beef • Cross-contamination • Diet • Ethical issues • Farm • Healthy • Ingredients • Method • Nutrients 	<ul style="list-style-type: none"> • Packaging • Reared • Recipe • Research • Substitute • Supermarket • Vegan • Vegetarian • Welfare

	<ul style="list-style-type: none"> • Function • Input 	
Year 6		
Textiles: Waistcoats	Structures: Playgrounds	Electrical Systems: Steady Hand Game
<ul style="list-style-type: none"> • Accurate • Adapt • Annotate • Design • Design criteria • Detail • Fabric • Fastening • Knot • Properties • Running-stitch • Seam • Sew • Shape • Target audience • Target customer • Template • Thread • Unique • Waistcoat • Waterproof 	<ul style="list-style-type: none"> • Adapt • Apparatus • Bench hook • Cladding • Coping saw • Design • Dowel • Evaluation • Feedback • Idea • Jelutong • Landscape • Mark out • Measure • Modify • Natural materials • Plan view • Playground • Prototype • Reinforce • Sketch • Strong • Structure • Tenon saw • Texture • User • Vice • Weak 	<ul style="list-style-type: none"> • Assemble • Battery • Battery Pack • Benefit • Bulb • Bulb Holder • Buzzer • Circuit • Circuit symbol • Component • Conductor • Copper • Design • Design criteria • Evaluation • Fine Motor Skills • Fit for purpose • Form • Function • Gross motor skills • Insulator • LED • User

ASSESSMENT

Pre-assessment

We use a range of strategies to elicit pre and misconceptions of a unit which will enable teachers to adapt short term planning to include time to address areas of need. Examples of tasks include discussion, low stakes quizzes (including use of end of unit quiz at the start to demonstrate progress) and knowledge capture activities.

Ongoing formative assessment and feedback

Teachers observe and respond to pupils during a lesson, offering verbal feedback and prompting of deeper thinking using questioning for mastery. Children are supported to use knowledge organisers, teaching materials on interactive whiteboards, working walls, sentence stems and key vocabulary to explain their thinking and develop understanding. Ongoing teacher observation identifies pupil progress and attainment during lessons and enables learners to be challenged through response and feedback. At Heckington St Andrew's we recognise the value of teacher observation and of a dialogic, language rich learning environment.

Retrieval practice

Evidence (classroom) based research informed strategies are adopted by class teachers to promote metacognition. Pupils are offered carefully planned tasks to promote knowledge retrieval bringing core knowledge and skills into long term and working memory. Children are explicitly taught these skills and they are reinforced in UKS2 where preparation for KS3 study is considered. We recognise the underpinning cognitive processes of these tasks, and the application of literacy skills, in developing good revision strategies and skills for life beyond primary school.

End of unit assessments

An end of unit quiz will be completed by each pupil. Teachers will also present a knowledge capture activity which, along with the end of unit quiz, will inform teacher assessment of the unit. If these have also been used at the start of the unit then they will also be used to assess progress.