

Design and Technology Curriculum Intent at Moulton Primary School

Principles of Instruction:

Teaching at Moulton Primary school incorporates Barak Rosenshine's Principles of Instruction as the vehicle for high quality teaching for all. We have adopted these principles within and across lessons in all subjects as research indicates they have a substantially positive impact on pupil progress. In the Design and Technology curriculum, they are not a tick list for every lesson but will be apparent within a sequence of lessons.

Rosenshine's Principles of Instruction	Implementation in Design and Technology
1.Begin a lesson with a short review of previous learning	Lessons build cumulatively and coherently beginning with prior learning through the use of quizzes, questions, two things, give one and get one routines. These activities help to embed learning into the long term memory and prepares the pupils to link new learning to existing schemas, building their cognitive load gradually.
2.Present new material in small steps with student practice after each new step	Lessons follow the Teach-Task cumulative model (teach-task-teach-task)which draws on the six phases of a lesson and supports coherent and effective creation of knowledge in the long-term memory. Teachers use a variety of activities and tasks to embed skills and knowledge using this format.
3.Ask a large number of questions and check responses of all pupils	Direct/ 'no hands-up' and open ended questions are used for formative assessment. Assessment questions are interwoven into the Design and Technology curriculum to check understanding. Additional open ended 'big idea' questions are offered to all children so that they can retrieve information from prior learning.
4.Provide models	We use knowledge organisers, carefully constructed knowledge notes, worked examples, full or partially completed diagrams, high quality resources and specific vocabulary to support children with their learning. The Teach Task model ensures that alongside these worked-examples, high quality teacher modelling gives a clear understanding of key conceptions.
5.Guide Pupil Practice	Following teacher instruction, pupils are given frequent opportunities to rephrase, summarise using 'I know and I think' statements, explain, and elaborate on their work and work of artists to ensure they can master the knowledge or skill. This is the stage that will allow for techniques to be improved and feedback to be given at the point of learning.

<p>6.Check for pupil understanding</p>	<p>Teachers check on individual understanding and application of skills using a range of strategies in which children display their understanding through their practical work and their discussions. Teachers will offer appropriate support to enhance their skill. For example, modelling how to knead dough correctly. Once children have trialled and developed key skills they will then have the opportunity to apply and master these skills appropriately.</p>
<p>7.Obtain a high success rate</p>	<p>Lessons follow a clear structure to allow for a high rate of success for all.</p> <ol style="list-style-type: none"> 1. Connect (retrieval of prior learning) 2. Explain and Example (Instruction using Teach Talk Model) 3. Attempt (deliberate practise and addressing of misconceptions) 4. Apply (guided or independent practise of knowledge and skills) 5. Challenge (to summarise, 'I know' and 'I think' statements and quiz)
<p>8.Scaffolding</p>	<p>The use of carefully constructed knowledge notes, worked examples, full or partially completed diagrams, exemplifications, high quality resources and specific vocabulary assist learning and help pupils strive for aspirational targets.</p>
<p>9.Independent practice</p>	<p>Lessons include opportunities for pupils to showcase their understanding of lesson content and appropriate vocabulary to reflect on their work. Across each block of learning the children will have opportunities to independently apply taught skills through a combination of teacher modelling and child practising.</p>
<p>10.Engage in review weekly/ monthly</p>	<p>Lessons are carefully planned and sequenced to enable constant rehearsal and review of information of knowledge and skills, both within year groups and across the whole of the Design and Technology Curriculum.</p> <p>Questions for assessments are planned throughout the learning sequence to check understanding. This will be reviewed at the end of the learning sequence. Targets will be set and revisited again. This will embed knowledge into long term memory.</p>

The subject content for each year group is as follows:

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 1	Mechanisms Sliders and levers	Structures Freestanding structures	Food and Nutrition Exploring food senses	Understanding Materials Selecting materials	Textiles Joining techniques	Food and Nutrition Vitamins in food
Year 2	Textiles Exploring shape using a template	Food and Nutrition Nutrients and the body	Mechanisms Axles and wheels	Understanding Materials Manipulating materials	Food and Nutrition Processed food	Structures Developing strength in structures
Year 3	Textiles Stiffening and strengthening fabric	Food and Nutrition Individual diets	Mechanisms Levers and linkages -	Food and Nutrition Food as medicine	Systems How things are powered	Structures Spanning gaps

			mechanical advantage			
Year 4	Food and Nutrition Ultra- processed food	Mechanisms Hinges	Textiles Fixing and fastenings	Structures Designing structures using a frame to make them stronger and sturdier.	Electrical Systems Switches and circuits revisited	Food and Nutrition Benefits of fresh food
Year 5	Food and Nutrition Food choices	Systems Using technology to design and control	Textiles Durability of fabric	Mechanisms Pulleys and gears - transferring rotational force	Structures Developing structures that are fit for purpose	Food and Nutrition Cultural influences on diet.
Year 6	Food and Nutrition Multicultural influences on food	Mechanisms Pulleys and gears - rotary and linear movement	Food and Nutrition Food and mood	Structures Designing structures revisited - combining skill and knowledge	Electrical Systems Complex switches and circuits	Textiles Sustainable materials

Impact:

Assessment and Expected Outcomes

Teachers assess pupil's attainment weekly during Design and Technology lessons. Immediate feedback will be given during the application task of the learning sequence to address challenging skills and techniques.

Insight will be used for teachers to keep track of children's attainment, using their ongoing teacher assessment using the exemplification materials. Statements will be used to identify if a child is working at age related expectation. Ongoing tracking will identify gaps and will inform future planning.

Expectations for each block are made explicit e.g. being able to identify the parts of a needle and why particular stitches are used on clothing.

The Point of Reflection section specifies the expected outcome for each lesson. The Questions for Assessment section in each block provides specific questions to be used with pupils to elicit their level of understanding of tools, techniques and effects, e.g. Which fabrics are likely to be hardwearing? How do you know?

The Oracy and Vocabulary tasks provide ample opportunities for teachers to evaluate pupils' ability to:

- use subject specific language effectively;
- explain design techniques and processes;
- evaluate their own and others' work.
- The vocabulary quiz provides an opportunity for teachers to assess pupils' deeper understanding and application of subject specific vocabulary covered in the block.
- The exemplifications demonstrate the expected standard against which teachers can assess pupils work.

Summative data is collected three times a year and is used to inform us of the progress and attainment of each individual and of particular groups of children across the school e.g. SEND and PPG.

Moulton Primary sets challenging targets for all pupils' achievement based on prior attainment and in line with the aspirations of the school. We expect that 80% of our children will be working at Age Related Expectations in Design and Technology and a growing percentage to achieve Greater Depth.

DT Progression of Skills

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Mechanisms		<p>Mechanisms</p> <p>Know common uses of sliders</p> <p>Know different methods to create card sliders</p> <p>Know how sliders can create simple mechanisms</p> <p>Be able to design and make a slider product</p> <p>Be able to evaluate the success of their outcomes and recommend improvements</p>	<p>Mechanisms</p> <p>Know how wheels and axles work together</p> <p>Know how the size and position of wheels affects how they move</p> <p>Be able to create simple wheel mechanism</p> <p>Be able to use wheel mechanisms to propel a simple vehicle</p>	<p>Mechanisms</p> <p>Know types of levers and linkages</p> <p>Know key terminology relating to levers and linkages</p> <p>know how levers and linkages can change the direction of movement</p> <p>Be able to design and make simplistic lever and linkage products</p> <p>Be able to evaluate the success of outcomes and recommend improvements</p>	<p>Mechanisms</p> <p>Know types of hinges and the related terminology</p> <p>Know common uses for hinges</p> <p>Be able to make a variety of model hinges</p> <p>Be able to make and evaluate hinged products using modelling materials</p>	<p>Mechanisms</p> <p>Know types of gears and terminology relating to gears.</p> <p>Know common uses of pulleys and gears</p> <p>Know how pulleys and gears can change the direction of movement</p> <p>be able to design and make products that use pulleys and gears to lift loads</p> <p>Be able to evaluate the success of outcomes and recommend improvements.</p>	<p>Mechanisms</p> <p>Know types of pulley systems and gears</p> <p>Know common uses of pulleys and gears</p> <p>Know how pulleys and gears can create simple mechanisms and change direction of movement</p> <p>Be able to design and make a model Ferris wheel powered by gears</p> <p>Be able to evaluate the success of their outcomes and recommend improvements</p>

Textiles		<p>Textiles</p> <p>Know fabric can be joined together using a running stitch</p> <p>Know the types and names of tools needed for sewing</p> <p>Be able to create a running stitch</p> <p>Be able to select tools for sewing</p> <p>Be able to thread a needle</p>	<p>Textiles</p> <p>Know how to cut out shapes which have been created using a template</p> <p>Know how to use a range of basic sewing skills</p> <p>Be able to use a template to transfer a pattern</p> <p>Be able to cut and join fabric shapes using a template</p>	<p>Textiles</p> <p>Know how fabric can be stiffened</p> <p>Know stiffened fabric can hold a form</p> <p>Be able to select and apply solutions to stiffen fabric</p> <p>Be able to make a box using stiffened fabric</p>	<p>Textiles</p> <p>Know how fastenings have different functions</p> <p>Know a shank provides a small amount of space between the button and fabric</p> <p>Be able to select appropriate fastenings and attach them to fabric</p> <p>Be able to make a shank for a button</p>	<p>Textiles</p> <p>Know how to waterproof cotton fabric</p> <p>Know which fabrics are both functional and hardwearing</p> <p>Be able to use beeswax to waterproof cotton fabric</p> <p>Be able to repurpose a pair of jeans</p>	<p>Textiles</p> <p>Know plastic waste can be recycled and repurposed into practical, useful items</p> <p>Be able to make a crochet hook out of a chopstick</p> <p>Be able to use plastic bags and snack packets to create practical items</p>
Food and Nutrition		<p>Exploring food senses</p> <p>Know why colourful food can be healthier</p> <p>Know how different foods</p>	<p>Nutrients in the body</p> <p>Know why vegetables are so important to our health</p> <p>Know what processed</p>	<p>Individual diets</p> <p>Know what is meant by the term balanced</p> <p>Know why fresh foods are better</p>	<p>Ultra-processed food</p> <p>Know processed foods have many added ingredients</p> <p>Be able to</p>	<p>Food choices</p> <p>Know some foods and key ingredients from other cultures</p> <p>Know how other cultures'</p>	<p>Multicultural influences on food</p> <p>Know what street foods are</p> <p>Know how snacks can be good foods to</p>

		<p>can affect our senses</p> <p>Be able to peel, chop and grate a selection of vegetables</p> <p>Be able to modify food to suit food senses</p> <p>Vitamin in food</p> <p>Know the importance of including a range of vegetables in a diet</p> <p>Be able to peel, grate season and breadcrumb a range of vegetables</p>	<p>foods are</p> <p>Be able to prepare a range of salad vegetables</p> <p>Be able to shape and season a bread snack</p> <p>Processed food</p> <p>Know the difference between fresh food and ultra-processed foods</p> <p>Be able to shape and form ingredients to make delicious food</p> <p>Be able to use a range of culinary techniques</p>	<p>Be able to make a fruit and yoghurt dessert</p> <p>Be able to make a variety of model hinges</p> <p>Be able to make homemade chips</p> <p>Be able to flavour foods to increase their sensory quality</p> <p>Food as medicine</p> <p>Know food can help the body and mind</p> <p>Know how to cook and prepare a range of vegetables</p> <p>Be able to peel and grate a range of vegetables</p> <p>Be to able to</p>	<p>make, roll and shape bread dough</p> <p>Be able to make soup</p> <p>Food as medicine</p> <p>Know food can help body and mind</p> <p>Know how to prepare and cook a range of vegetables</p> <p>Be able to peel and grate a range of vegetables</p> <p>Be able to add flavour and texture to foods</p>	<p>food can be nutritious</p> <p>Be able to make, roll and cook flatbread</p> <p>Be able to prepare a range of vegetables</p> <p>Be able to present food to a high standard</p> <p>Cultural influences on diet</p> <p>Know how foods can be used as medicines</p> <p>Know how eating food from different countries can help us be healthy</p> <p>Be able to roll and shape ingredients</p> <p>Be able to slice</p>	<p>eat</p> <p>Be able to make a burrito</p> <p>Be able to make and roll bread dough</p> <p>Be able to make savoury pastry</p> <p>Food and mood</p> <p>Know the difference between slow release and quick release carbohydrates</p> <p>Know how foods can improve mood and energy levels</p> <p>Be able to dice, slice, peel, grate and cook a range of vegetables</p> <p>Be able to make a sauce and stock</p>
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				add flavour and texture to foods		and ribbon a range of vegetables. Be able to stir-fry vegetables	Be able to use height and colour to improve the visual appeal of food
Structures	Structures	Structures Know a freestanding structure is a structure that stands on its own foundation or base without attachment to anything else. Be able to build structures that are freestanding using a range of different materials.	Structures Know a paper becomes stronger when it is folded. Know a load is the amount of weight a structure must carry. Be able to test and record how much weight paper can hold.	Structures Know bridges are structures that allow people and vehicles to cross over an open space. Know towers, piers and arches provide strength to a bridge. Be able to design and build a beam bridge that can hold the weight of 100 pennies. Be able to identify and name parts of a bridge.	Structures Know triangles provide stability in structure. Know structural engineers work with architects to ensure structures withstand forces. Be able to make triangles to form and join trusses. Be able to identify forces that affect structures	Structures Know engineers use a range of methods to strengthen and reinforce structures. Be able to identify and describe ways that frames are strengthened and reinforced.	Structures Know structures can be supported with guy lines and flying buttresses Know the shorter the piece of spaghetti, the stronger it will be. Be able to construct a flying buttress to support a tower. Be able to use appropriate lengths of spaghetti to increase strength and stability.
Systems	Systems	Systems	Systems	Systems Know different	Electrical Systems	Systems Know	Electrical Systems

				<p>types of energy</p> <p>Know why designers need to carefully consider energy sources</p> <p>Be able to identify how things are powered</p> <p>Be able to suggest appropriate energy sources for design problems.</p>	<p>Know a switch is an interruption in a circuit.</p> <p>Know switches are widely used in a range of products</p> <p>Be able to incorporate different types of switches into circuits to perform a function.</p>	<p>technology can be used to program and control a product.</p> <p>Be able to combine elements of their design knowledge to fulfil a brief.</p>	<p>Know more than one switch can be used to change the functionality of a product.</p> <p>Be able to use switches to adapt a product in response to a design brief.</p>
Understanding Materials		<p>Understanding Materials</p> <p>Know building materials have different properties which enable them to be used for different purposes.</p> <p>Be able to identify, sort and select materials that can be used in</p>	<p>Understanding Materials</p> <p>Know building materials have different properties which enable them to be used for different purposes.</p> <p>Be able to identify, sort and select materials that can be used in</p>				

		construction. Be able to combine materials.	construction. Be able to combine materials.				
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National Curriculum Programme of Study – Design and Technology

	By the end of EYFS	By the end of Year 1	By the end of Year 2
<p>Design purposeful, functional, appealing products for themselves and other users based on design criteria</p> <p>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</p>		<p>Evident across all blocks</p> <p>Year 1 - Teach Computing Digital painting</p>	
<p>Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</p> <p>Select from and use a wide range of materials and components, including construction</p>		<p>Understanding materials – Block D</p> <p>Can you build with bread?</p> <p>Textiles – Block E</p> <p>How can two squares of fabric keep you warm?</p>	<p>Mechanisms – Block C</p> <p>Are bigger wheels always better?</p> <p>Textiles – Block A</p> <p>How can you repurpose an item of clothing?</p>

materials, textiles and ingredients, according to their characteristics			
Explore and evaluate a range of existing products Evaluate their ideas and products against design criteria		Evident in all blocks	
Build structures, exploring how they can be made stronger, stiffer and more stable Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.		Structures – Block B How can you stop a tower from toppling over? Mechanisms – Block A How can you make a picture move?	Structures – Block F How strong is a piece of paper? Mechanisms – Block C Are bigger wheels always better?
Use the basic principles of a healthy and varied diet to prepare dishes Understand where food comes from.		Food and Nutrition– Block C How does food affect your senses? Food and Nutrition – Block F Why are vegetables the best?	Food and Nutrition – Block E How healthy is your food? Food and Nutrition – Block B What does healthy mean?

	By the end of Year 3	By the end of Year 4	By the end of Year 5	By the end of Year 6
<p>Design</p> <p>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</p> <p>generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p>	<p>Structures - Block F</p> <p>What makes a bridge strong?</p>	<p>Structures - Block D</p> <p>Which shapes will give a structure stability?</p>	<p>Systems - Block B</p> <p>How can we keep ourselves safe on the road?</p> <p>Teach Computing - Vector Drawings</p>	<p>Mechanisms- Block B</p> <p>How do pulleys and gears let you see the world?</p>

<p>Make</p> <p>select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</p> <p>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</p>	<p>Structures – Block F</p> <p>What makes a bridge strong?</p> <p>Mechanisms – Block C</p> <p>How can you do a lot of work with little effort?</p> <p>Textiles - Block A</p> <p>How can you make a box out of cloth?</p>	<p>Structures – Block D</p> <p>Which shapes will give a structure stability?</p> <p>Mechanisms – Block B</p> <p>How many ways are there to open a door?</p> <p>Textiles - Block C</p> <p>How do you keep a tea towel from slipping off a hook?</p>	<p>Structures – Block E</p> <p>How are frames strengthened, reinforced and made rigid?</p> <p>Mechanisms – Block F</p> <p>How can you lift a car onto a roof?</p> <p>Textiles - Block C</p> <p>Which fabric is ideal for creating a functional hardwearing lunch bag?</p>	<p>Structures – Block D</p> <p>How strong is a piece of spaghetti?</p> <p>Mechanisms – Block B</p> <p>How do pulleys and gears let you see the world?</p> <p>Textiles - Block F</p> <p>How can we reduce, recycle and repurpose?</p>
<p>Evaluate</p> <p>investigate and analyse a range of existing products</p>	<p>Evident in all blocks</p>			

evaluate their ideas and products against their own design criteria and consider the views of others to improve their work

understand how key events and individuals in design and technology have helped shape the world

Technical knowledge

apply their understanding of how to strengthen, stiffen and reinforce more complex structures

understand and use mechanical systems in their products [for example, gears, pulleys, cams,

Structures - Block F

What makes a bridge strong?

Mechanisms - Block C

How can you do a lot of work with little effort?

Structures - Block D

Which shapes will give a structure stability?

Mechanism - Block B

How many ways are there to open a door?

Electrical Systems - Block E

How useful are switches?

Structures - Block E

How are frames strengthened, reinforced and made rigid?

Mechanisms - Block F

How can you lift a car onto a roof?

Systems - Block B

How can we keep ourselves safe on the road?

Structures - Block D

How strong is a piece of spaghetti?

Mechanisms- Block B

How do pulleys and gears let you see the world?

Electrical Systems - Block E

Can switches perform more than one function?

<p>levers and linkages]</p> <p>understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]</p> <p>apply their understanding of computing to program, monitor and control their products.</p>				
<p>Cooking and Nutrition</p> <p>understand and apply the principles of a healthy and varied diet</p> <p>prepare and cook a variety of predominantly savoury dishes using a range</p>	<p>Food and Nutrition – Block B What do we mean by a balanced diet? (seasonality)</p> <p>Food and Nutrition – Block D How does food affect your body and mind?</p>	<p>Food and Nutrition – Block A What's really in your food?</p> <p>Food and Nutrition – Block F Is cheap food always worse for you?</p>	<p>Food and Nutrition – Block A Why are our diets so different?</p> <p>Food and Nutrition – Block D What can you learn from different cultures' diets?</p>	<p>Food and Nutrition – Block A Can street foods save us?</p> <p>Food and Nutrition – Block C Does food affect the way you feel?</p>

<p>of cooking techniques</p> <p>understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</p>				
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Progression and Sequence of Art and Design

	Unit title and substantive focus	Previous Learning	Learning focus	Tier 2 Vocabulary (Multiple Meaning or High Frequency)	Tier 3 Vocabulary (Subject Specific)
Year 1	<p>Mechanisms – Block A</p> <p>How can you make a picture move?</p>	<ul style="list-style-type: none"> • manipulate fabric and yarns by poking, pulling, threading and weaving • draw around a template • use scissors to cut along straight and curved lines and around shapes 	<p>Exploring sliders and their applications</p> <p>Developing practical skills</p> <p>Experimenting with different slider systems</p> <p>Developing designing and problem-solving skills</p> <p>Evaluating Outcomes</p> <p>Know: Common uses of sliders</p> <p>Different methods to create card sliders</p> <p>How sliders can create simple mechanisms</p> <p>Be able to: Design and make a slider product</p> <p>Evaluate the success of their outcomes and recommend improvements</p>	<p>slider slot bridge</p>	<p>push pull rigid</p>

<p>Year 1</p>	<p>Structures – Block B</p> <p>How can you stop a tower from toppling over?</p>	<ul style="list-style-type: none"> • use scissors • identify different types of building blocks 	<p>Identification of the problem</p> <p>Exploring materials</p> <p>Explicit teaching of skills relating to the brief</p> <p>Application of skills</p> <p>Evaluation and adaptation</p> <p>Know: A freestanding structure is a structure that stands on its own foundation or base without attachment to anything else</p> <p>Be able to: Build structures that are freestanding using a range of different materials</p>	<p>tower topple lean</p>	<p>foundation balance perpendicular</p>
<p>Year 1</p>	<p>Food and Nutrition– Block C</p> <p>How does food affect your senses?</p>	<ul style="list-style-type: none"> • distinguish between fruit and vegetables • name a range of vegetables • identify the five senses 	<p>Exploring sensory qualities of food</p> <p>Experimenting with new flavours and textures</p> <p>Explicit teaching of culinary skills and techniques</p> <p>Evaluating outcomes</p> <p>Applying skills</p> <p>Know:</p>	<p>senses vitamins sensory</p>	<p>ribboning caramelise marinade</p>

			<p>Why colourful food can be healthier</p> <p>How different foods can affect their senses</p> <p>Be able to: Peel, chop and grate a selection of vegetables</p> <p>Modify food to suit their food senses</p>		
Year 1	<p>Understanding materials – Block D</p> <p>Can you build with bread?</p>	<ul style="list-style-type: none"> • sort objects according to size, shape and colour • use a ruler accurately to draw and measure lines • identify that objects are made from different materials 	<p>Exploring materials</p> <p>Explicit teaching of skills relating to the brief</p> <p>Application of skills</p> <p>Evaluation and adaptation</p> <p>Know: Building materials have different properties which enable them to be used for different purposes</p> <p>Be able to: Identify, sort and select materials that can be used in construction</p> <p>Combine materials</p>	<p>construction properties architect</p>	<p>modify cement solidify</p>
Year 1	Textiles – Block E	<ul style="list-style-type: none"> • identify materials such as cardboard, string and polystyrene 	<p>Identification of the problem</p>	<p>Binca sewing felt</p>	<p>running stitch attach pouch</p>

	<p>How can two squares of fabric keep you warm?</p>	<ul style="list-style-type: none"> • manipulate fabrics and yarns by poking, pulling, threading and weaving 	<p>Exploring materials</p> <p>Explicit teaching of skills relating to the brief</p> <p>Application of skills</p> <p>Evaluation and adaptation</p> <p>Know: Fabric can be joined together using a running stitch</p> <p>The types and names of tools needed for sewing</p> <p>Be able to: Create a running stitch Select tools for sewing</p> <p>Thread a needle</p>		
Year 1	<p>Food and Nutrition – Block F</p> <p>Why are vegetables the best?</p>	<ul style="list-style-type: none"> • explain that vegetables contain vitamins and minerals that the body needs • peel, chop and grate a selection of vegetables • identify what makes food appealing to all our senses 	<p>Exploring tastes and textures of a range of vegetables</p> <p>Demonstrating knife skills</p> <p>Evaluating outcomes</p> <p>Explicit teaching and revisiting of culinary skills and techniques</p> <p>Exploring the nutritional value of food</p>	<p>function variety texture</p>	<p>vitamins nutritious pane</p>

			<p>Applying culinary skills and techniques</p> <p>Know: The importance of including a range of vegetables in a diet</p> <p>Be able to: Peel, grate, season and breadcrumb a range of vegetables</p>		
Year 2	<p>Textiles – Block A</p> <p>How can you repurpose an item of clothing?</p>	<ul style="list-style-type: none"> • identify parts of a needle and explain the meaning of words such as yarn and thread • thread a needle independently • use a running stitch to attach pieces of fabric 	<p>Exploring materials and techniques</p> <p>Explicit teaching of skills</p> <p>Evaluation</p> <p>Application of skills</p> <p>Evaluation and adaptation</p> <p>Know: How to cut out shapes which have been created by using a template</p> <p>How to use a range of basic sewing skills</p> <p>Be able to: Use a template to transfer a pattern</p> <p>Cut out and join fabric shapes using a template</p>	<p>patchwork</p> <p>overstitch</p> <p>repurpose</p>	<p>template</p> <p>applique</p> <p>quilt</p>

<p>Year 2</p>	<p>Food and Nutrition – Block B</p> <p>What does healthy mean?</p>	<ul style="list-style-type: none"> • name a range of vegetables • explain why eating vegetables is good for us • explain what vitamins are • use the techniques of grating and ribboning 	<p>Exploring nutrition</p> <p>Explicit teaching of culinary skills and techniques</p> <p>Evaluating outcomes</p> <p>Know: Why vegetables are so important to our health</p> <p>What processed foods are</p> <p>Be able to: Prepare a range of salad vegetables</p> <p>Shape and season a bread snack</p>	<p>free-range processed coagulate</p>	<p>vitamins protein wholemeal</p>
<p>Year 2</p>	<p>Mechanisms – Block C</p> <p>Are bigger wheels always better?</p>	<ul style="list-style-type: none"> • use modelling materials and equipment safely • use rulers and scissors accurately • name types of transport 	<p>Understanding how wheels and axles works</p> <p>Exploring the size of wheels and positioning of axles</p> <p>Building and testing a simple vehicle</p> <p>Know: How wheels and axles work together</p> <p>The size and position of wheels affects how they move</p> <p>Be able to:</p>	<p>wheel axle axle holder chassis</p>	<p>rotate position centre</p>

			<p>Create a simple wheel mechanism</p> <p>Use wheel mechanisms to propel a simple vehicle</p>		
Year 2	<p>Understanding materials – Block D</p> <p>How can you waterproof a hat?</p>	<ul style="list-style-type: none"> • identify properties of materials • sort materials according to their properties 	<p>Exploration and testing of materials</p> <p>Reference to other designers</p> <p>Exploration of materials and properties</p> <p>Application of knowledge and skills to fulfil a brief</p> <p>Evaluation</p> <p>Know: Materials can be modified to become waterproof</p> <p>Origami comes from the Japanese words: ori – folding and kami – paper</p> <p>Be able to: Make paper waterproof</p> <p>Transform flat paper by folding and creasing to form a hat</p>	<p>manipulate flexible barrier</p>	<p>waterproof</p> <p>resist</p> <p>absorbent</p>
Year 2	<p>Food and Nutrition – Block E</p>	<ul style="list-style-type: none"> • use a knife safely and accurately with control 	<p>Explicit teaching and revisiting of culinary skills and techniques</p>	<p>ingredients</p> <p>fibre</p> <p>protein</p>	<p>processed</p> <p>vitamins</p> <p>starch</p>

	How healthy is your food?	<ul style="list-style-type: none"> • explain that vegetables contain vitamins and minerals that the body needs • use appropriate vocabulary to describe flavours and textures and explain preferences • use the techniques of grating and ribboning safely and with control 	<p>Exploring the nutritional value of food</p> <p>Evaluating outcomes</p> <p>Applying culinary skills and techniques</p> <p>Know: The difference between fresh food and ultra-processed foods</p> <p>Be able to: Shape and form ingredients to make delicious food</p> <p>Use a range of culinary techniques</p>		
Year 2	Structures – Block F How strong is a piece of paper?	<ul style="list-style-type: none"> • build structures that are freestanding using a range of different materials • identify different types of building blocks • explain that a wide base or foundation provides greater stability to a structure 	<p>Explicit teaching of skills</p> <p>Exploring materials</p> <p>Application of skills</p> <p>Evaluation and adaptation</p> <p>Know: Paper becomes stronger when it is folded</p> <p>A load is the amount of weight a structure must carry</p> <p>Be able to:</p>	paper crease corrugated	pillar storey load

			<p>Fold paper to increase strength and stability</p> <p>Test and record how much weight paper can hold</p>		
Year 3	<p>Textiles - Block A</p> <p>How can you make a box out of cloth?</p>	<ul style="list-style-type: none"> • use a template to cut shapes accurately from fabric • fold and attach fabric to a paper template accurately • mould and manipulate paper to create 3D forms • use a range of methods to join materials 	<p>Identification of the problem</p> <p>Exploring materials</p> <p>Explicit teaching of skills relating to the brief</p> <p>Application of skills</p> <p>Evaluation and adaptation</p> <p>Know: Fabric can be stiffened</p> <p>Stiffened fabric can hold a form</p> <p>Be able to: Select and apply solutions to stiffen fabric</p> <p>Make a box using stiffened fabric</p>	<p>starch</p> <p>PVA glue</p> <p>gelatin</p>	<p>stiffen</p> <p>interfacing</p> <p>cloth</p>
Year 3	<p>Food and Nutrition- Block B</p> <p>What do we mean by a balanced diet?</p>	<ul style="list-style-type: none"> • use knife skills with increasing confidence and accuracy • identify examples of processed food 	<p>Exploring nutrition</p> <p>Explicit teaching of culinary skills and techniques</p> <p>Evaluating outcomes</p>	<p>seasonal</p> <p>balance</p> <p>preserve</p>	<p>stew</p> <p>pressure</p> <p>seasoning</p>

		<ul style="list-style-type: none"> • identify some key nutrients found in fresh food • know the importance of fibre and carbohydrates in a balanced diet 	<p>Exploring the healing qualities of food</p> <p>Applying knowledge</p> <p>Modifying and improving</p> <p>Exploring the sensory qualities of food</p> <p>Know: What is meant by the term balanced</p> <p>Why fresh foods are better</p> <p>Be able to: Make a fruit and yoghurt dessert</p> <p>Make homemade chips</p> <p>Flavour foods to increase their sensory qualities</p>		
Year 3	<p>Mechanisms - Block C</p> <p>How can you do a lot of work with little effort?</p>	<ul style="list-style-type: none"> • identify simple mechanisms and their uses 	<p>Exploring levers and their applications</p> <p>Developing practical skills</p> <p>Developing design skills</p> <p>Exploring linkages and their applications</p> <p>Making a linkages and levers product</p>	<p>lever linkage mechanism</p>	<p>force load effort</p>

			<p>Evaluating outcomes</p> <p>Know: Types of levers and linkages</p> <p>Key terminology relating to levers and linkages</p> <p>How levers and linkages can change the direction of movement</p> <p>Be able to: Design and make simplistic lever and linkage products</p> <p>Evaluate the success of their outcomes and recommend improvements</p>		
Year 3	<p>Food and Nutrition - Block D</p> <p>How does food affect your body and mind?</p>	<ul style="list-style-type: none"> • use the bridge method to cut food safely • identify and describe key flavours • peel, chop and grate a selection of vegetables • describe how food can affect the senses 	<p>Exploring nutrition</p> <p>Explicit teaching of culinary skills and techniques</p> <p>Evaluating outcomes</p> <p>Exploring healing qualities of food</p> <p>Exploring sensory qualities of food</p> <p>Applying skills</p> <p>Modifying and improving</p>	<p>nutrition</p> <p>fibre</p> <p>minerals</p>	<p>seasoning</p> <p>claw</p> <p>bridge</p>

			<p>Know: How food can help their body and mind</p> <p>How to prepare and cook a range of vegetables</p> <p>Be able to: Peel and grate a range of vegetables</p> <p>Add flavour and texture to foods</p>		
Year 3	<p>Systems - Block E</p> <p>How are things powered?</p>	<ul style="list-style-type: none"> • identify mechanisms that are powered by hand • identify some appliances that use electricity • use relevant vocabulary to describe weather • explain what humans and animals need to survive 	<p>Understand what energy is and why we need it</p> <p>Identify types of energy</p> <p>Understand how types of energy influence design choices</p> <p>Explore energy in the context of design choices</p> <p>Know: Different types of energy</p> <p>Why designers need to carefully consider energy sources</p> <p>Be able to: Identify how things are powered</p>	<p>energy</p> <p>energy source</p> <p>types of energy</p>	<p>turbine</p> <p>source (noun)</p> <p>source(verb)</p> <p>intermittent</p> <p>renewable (noun)</p> <p>renewable (verb)</p>

			Suggest appropriate energy sources for design problems		
Year 3	Structures - Block F What makes a bridge strong?	<ul style="list-style-type: none"> • build structures using a range of different materials • make a structure in accordance with a set of criteria • recognise that a cylindrical pillar is stronger than a rectangular one 	<p>Identifying features of bridges</p> <p>Exploring ways to stabilise a simple structure</p> <p>Introducing a design and make challenge</p> <p>Identifying ways to stabilise a structure</p> <p>Application of skills</p> <p>Evaluation and adaptation</p> <p>Know: Bridges are structures that allow people and vehicles to cross over an open space</p> <p>Towers, piers and arches provide strength to a bridge</p> <p>Be able to: Design and build a beam bridge that can hold the weight of 100 pennies '</p> <p>Identify and name parts of a bridge</p>	gap deck pier	suspension arch bascule

<p>Year 4</p>	<p>Food and Nutrition - Block A</p> <p>What's really in your food?</p>	<ul style="list-style-type: none"> • identify some of the nutrients in a range of foods • dice, slice, chop and grate vegetables • explain the benefits of fresh food, compared to processed food 	<p>Exploring nutrition</p> <p>Explicit teaching of culinary skills and techniques</p> <p>Evaluating outcomes</p> <p>Exploring bread making</p> <p>Exploring how to make soup</p> <p>Modifying and improving</p> <p>Know: Processed foods have many added ingredients</p> <p>Be able to: Make, roll and shape bread dough Make a soup</p>	<p>ingredients processed bread</p>	<p>gluten knead ferment</p>
<p>Year 4</p>	<p>Mechanism - Block B</p> <p>How many ways are there to open a door?</p>	<ul style="list-style-type: none"> • use cutting and joining techniques with a range of materials including card, plastic and wood • show an understanding of how to strengthen and stiffen structures • identify and make simple mechanisms 	<p>Exploring types of hinges</p> <p>Developing practical skills</p> <p>Evaluating outcomes</p> <p>Know: Types of hinges and the related terminology</p> <p>Common uses for hinges</p> <p>Be able to Make a variety of model hinges</p>	<p>hinge knuckle leaf pin barrel</p>	<p>butt hinge concealed hinge net</p>

			Make and evaluate hinged products using modelling materials:		
Year 4	Textiles - Block C How do you keep a tea towel from slipping off a hook?	<ul style="list-style-type: none"> • use running stitch to attach fabrics • describe the properties of materials • use scissors to cut accurately 	<p>Identification of the problem</p> <p>Exploring fasteners</p> <p>Explicit teaching of skills</p> <p>Application of skills</p> <p>Evaluation and adaptation</p> <p>Know: Fastenings have different functions</p> <p>A shank provides a small amount of space between the button and fabric</p> <p>Be able to: Select appropriate fastenings and attach them to fabric</p> <p>Make a shank for a button</p>	shank burr hoop and loop	buckle fastener raw edges
Year 4	Structures - Block D Which shapes will give a structure stability?	<ul style="list-style-type: none"> • increase the rigidity and strength of paper by folding and creasing • name the properties of 	<p>Exploration of the key question</p> <p>Exploration of materials and techniques</p> <p>Conducting investigations relating to the key question</p>	structural engineer geodesic gravity	truss compression tension

		<p>2D and 3D shapes</p> <ul style="list-style-type: none"> • explain the difference between 2D and 3D shapes 	<p>Application of knowledge and skills Evaluating and modifying</p> <p>Know: Triangles provide stability in a structure</p> <p>Structural engineers work with architects to ensure structures withstand forces</p> <p>Be able to: Make triangles to form and join trusses</p> <p>Identify the forces that affect structures</p>		
Year 4	<p>Electrical Systems - Block E</p> <p>How useful are switches?</p>	<ul style="list-style-type: none"> • name sources of electrical energy: batteries, mains power, rechargeable batteries • identify common appliances that use electricity • name the basic components of an electrical circuit: bulb, battery, motor, buzzer 	<p>Revisit switches and circuits and the associated vocabulary</p> <p>Explore different types of switches and how they are used</p> <p>Create a simple game involving an interruption in a circuit</p> <p>Know: A switch is an interruption in a circuit</p> <p>Switches are widely used in a range of products</p>	<p>switch circuit component current</p>	<p>interruption unbroken conductor multi-purpose</p>

			<p>Be able to: Incorporate different types of switches into circuits to perform a function</p>		
Year 4	<p>Food and Nutrition-Block F</p> <p>Is cheap food always worse for you?</p>	<ul style="list-style-type: none"> • recognise that good nutrition keeps the body healthy, provides energy and helps the body to repair • use the claw and bridge methods to cut food safely • explain why ultra-processed food is unhealthy 	<p>Explicit teaching of culinary techniques</p> <p>Evaluating outcomes</p> <p>Know: That cheap processed food often contains additives, salt and sugar, which makes it less healthy than unprocessed food</p> <p>Be able to: Peel, grate and chop vegetables to make economical, tasty and healthy food</p>	<p>cheap fusion texture</p>	<p>shallow-fry shortening fragrant</p>
Year 5	<p>Food and Nutrition - Block A</p> <p>Why are our diets so different?</p>	<ul style="list-style-type: none"> • use knife skills safely to prepare a range of vegetables • knead, roll and shape dough • use the claw and bridge techniques confidently • foods to a high standard 	<p>Exploring nutrition</p> <p>Explicit teaching of culinary skills and techniques</p> <p>Evaluating outcomes</p> <p>Exploring diets from different cultures</p> <p>Exploring diets from different cultures</p> <p>Applying skills Modifying and improving</p>	<p>culture presentation variety smorrebrod flatbread mezze</p>	<p>fibre knead unleavened</p>

			<p>Know: Some foods and key ingredients from other cultures How other cultures' food can be nutritious</p> <p>Be able to: Make, roll and cook a flatbread Prepare a range of vegetables Present</p>		
Year 5	<p>Systems - Block B</p> <p>How can we keep ourselves safe on the road?</p>	<ul style="list-style-type: none"> describe the properties of materials identify and attach fastenings understand and use simple algorithms design and debug simple programs 	<p>Understanding and selecting materials</p> <p>Using fixings and fastenings</p> <p>Using knowledge of programming to control a product</p> <p>Know: Technology can be used to program and control a product</p> <p>Be able to: Combine elements of their design knowledge to fulfil a brief</p>	<p>properties fastener algorithm</p>	<p>fluorescent reflective attachment point debug programming</p>
Year 5	<p>Textiles - Block C</p> <p>Which fabric is ideal for creating a functional hardwearing lunch bag?</p>	<ul style="list-style-type: none"> use a range of stitches to join fabric make simple fastenings explain the concept of wax resist identify properties of 	<p>Identification of problem</p> <p>Exploring materials</p> <p>Specific teaching of skills relating to the brief</p> <p>Application of skills</p> <p>Evaluation and adaptation</p>	<p>durability repurpose functional</p>	<p>beeswax swatch insulate</p>

		<p>everyday materials</p>	<p>Know: How to waterproof cotton fabric</p> <p>Which fabrics are both functional and hardwearing</p> <p>Be able to: Use beeswax to waterproof cotton fabric</p> <p>Repurpose a pair of jeans</p>		
<p>Year 5</p>	<p>Food and Nutrition - Block D</p> <p>What can you learn from different cultures' diets?</p>	<ul style="list-style-type: none"> • use a range of techniques to prepare and cook vegetables with accuracy and confidence • recognise that good nutrition keeps the body healthy, provides energy and helps the body to repair • identify some advantages and disadvantages of eating pre-prepared food 	<p>Exploring diets from different cultures</p> <p>Explicit teaching of culinary skills and techniques</p> <p>Evaluating outcomes</p> <p>Exploring how a stir-fry is nutritious</p> <p>Exploring health qualities of spices</p> <p>Applying skills</p> <p>Know: How foods can be used as medicines</p> <p>How eating food from different countries can help us be healthy</p>	<p>culture migration spices</p>	<p>medicinal fragrant sti-fry</p>

		<ul style="list-style-type: none"> • use appropriate vocabulary to explain processes and describe aromas, flavours and textures 	<p>Be able to: Roll and shape ingredients</p> <p>Slice and ribbon a range of vegetables</p> <p>Stir-fry vegetables</p>		
Year 5	<p>Structures - Block E</p> <p>How are frames strengthened, reinforced and made rigid?</p>	<ul style="list-style-type: none"> • identify shapes suitable for adding strength to a structure • identify some methods used to provide structural stability 	<p>Identification of the problem</p> <p>Exploring materials</p> <p>Explicit teaching of skills relating to the brief</p> <p>Application of skills</p> <p>Evaluation and adaptation</p> <p>Know: Engineers use a range of methods to strengthen and reinforce structures</p> <p>Be able to: Identify and describe ways that frames are strengthened and reinforced</p>	<p>frame i-beam struts</p>	<p>brace mitre gussets</p>
Year 5	<p>Mechanisms - Block F</p> <p>How can you lift a car onto a roof?</p>	<ul style="list-style-type: none"> • give examples of simple mechanisms such as levers and linkages 	<p>Exploring pulleys and gears and their applications</p> <p>Developing practical skills</p>	<p>gear pulley mechanism</p>	<p>gear train driver gear idler</p>

		<ul style="list-style-type: none"> • cut and join a range of materials • identify ways in which to make a structure more stable and rigid 	<p>Developing designing and problem-solving skills</p> <p>Evaluating outcomes</p> <p>Know: Types of gears and terminology relating to gears</p> <p>Common uses of pulleys and gears</p> <p>How pulleys and gears can change the direction of movement</p> <p>Be able to: Design and make products that use pulleys and gears to lift loads</p> <p>Evaluate the success of their outcomes and recommend improvement</p>		
Year 6	<p>Food and Nutrition - Block A</p> <p>Can street foods save us?</p>	<ul style="list-style-type: none"> • identify some traditional dishes and ingredients of different cultures • make, roll and cook flatbread • prepare a range of vegetables 	<p>Exploring nutrition</p> <p>Explicit teaching of culinary skills and techniques</p> <p>Evaluating outcomes</p> <p>Know: What street foods are</p>	street food culture snack	nutrient prove fry

		<ul style="list-style-type: none"> • present food to a high standard • explain the nutritional value of a range of foods 	<p>How snacks can be good foods to eat</p> <p>Be able to: Make a burrito</p> <p>Make and roll bread dough</p> <p>Make a savoury pastry</p>		
Year 6	<p>Mechanisms- Block B</p> <p>How do pulleys and gears let you see the world?</p>	<ul style="list-style-type: none"> • explain what a gear is and how it works • identify different types of gears and their applications • explore how direction and speed of movement is changed by using a system of gears and / or pulleys • construct a simple pulley system to lift a load 	<p>Exploring pulleys and their applications</p> <p>Experimenting with different pulley systems</p> <p>Developing design and problem solving skills</p> <p>Developing practical skills</p> <p>Evaluating outcomes</p> <p>Know: Types of pulley systems and gears</p> <p>Common uses of pulleys and gears</p> <p>How pulleys and gears can create simple mechanisms and change direction of movement</p> <p>Be able to:</p>	<p>pulley</p> <p>moveable pulley</p> <p>fixed pulley</p>	<p>block and tackle</p> <p>rack and pinion</p> <p>driver gear</p> <p>driven gear</p>

			<p>Design and make a model Ferris wheel powered by gears</p> <p>Evaluate the success of their outcomes and recommend improvements</p>		
Year 6	<p>Food and Nutrition - Block C</p> <p>Does food affect the way you feel?</p>	<ul style="list-style-type: none"> • explain what humans need to stay healthy • identify the main food groups • hold and use utensils correctly 	<p>Exploring nutrition</p> <p>Explicit teaching of culinary skills and techniques</p> <p>Evaluating outcomes</p> <p>Know: The difference between slow release and quick release carbohydrates</p> <p>How food can improve their mood and energy levels</p> <p>Be able to: Dice, slice, peel, grate and cook a range of vegetables</p> <p>Make a sauce and a stock</p> <p>Use height and colour to improve the visual appeal of food</p>	<p>carbohydrates</p> <p>staple nutrient</p>	<p>saute</p> <p>translucent dice</p>
Year 6	Structures - Block D	<ul style="list-style-type: none"> • identify 2D shapes that 	<p>Identification of the problem</p>	<p>guyed mast</p> <p>flying buttress</p>	<p>aesthetic edifice</p>

	How strong is a piece of spaghetti?	<p>have strength and stability, such as triangles</p> <ul style="list-style-type: none"> • explain why cylinders are capable of bearing weight • create a truss, using a series of triangles 	<p>Testing materials</p> <p>Explicit teaching of skills relating to the brief</p> <p>Application of skills</p> <p>Evaluation and adaptation</p> <p>Know: Structures can be supported with guy lines and flying buttresses</p> <p>The shorter the piece of spaghetti, the stronger it will be</p> <p>Be able to: Construct a flying buttress to support a tower</p> <p>Use appropriate lengths of spaghetti to increase strength and stability</p>	load	constraints
Year 6	<p>Electrical Systems - Block E</p> <p>Can switches perform more than one function?</p>	<ul style="list-style-type: none"> • construct simple electrical circuits and name the components • recognise that a switch opens and closes a circuit 	<p>Revisit switches and circuits and the associated vocabulary</p> <p>Explore how multiple switches and components can be included in a circuit</p> <p>Incorporate multiple switches and components</p>	<p>switch</p> <p>parallel circuit</p> <p>series circuit</p> <p>component</p>	<p>functionality</p> <p>multi-function</p> <p>brief</p> <p>simultaneous</p>

		<ul style="list-style-type: none"> • give reasons for variations in how components function in a circuit • use recognised symbols when representing a simple circuit 	<p>into a product to meet a design brief</p> <p>Know: More than one switch can be used to change the functionality of a product</p> <p>Be able: Use switches to adapt a product in response to a design brief</p>		
Year 6	<p>Textiles - Block F</p> <p>How can we reduce, recycle and repurpose?</p>	<ul style="list-style-type: none"> • make a chain from yarn • identify properties of materials • explore the different properties of a range of fabrics and how these determine their uses 	<p>Identification of the problem</p> <p>Explicit teaching of skills Exploring materials</p> <p>Explicit teaching of skills Application of skills</p> <p>Evaluation and adaptation</p> <p>Know: Plastic waste can be recycled and repurposed into practical, useful items</p> <p>Be able to: Make a crochet hook out of a chopstick</p> <p>Use plastic bags and snack packets to create practical items</p>	<p>recycle repurpose reduce</p>	<p>chain seal skein</p>