

South View Community Primary School

Our Design and Technology curriculum



Kiera Holland

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Contents

1. The BASIC PRINCIPLES OF OUR CURRICULUM - PAGE 3
2. OUR CURRICULUM INTENT - PAGE 3
3. DESIGN AND TECHNOLOGY INTENT - PAGE 4
4. MEETING THE NEEDS OF ALL CHILDREN IN ART - PAGE 5
5. ART AND DT LONG TERM PLAN - PAGE 10
6. DESIGN AND TECHNOLOGY IMPLEMENTATION - PAGE 11
7. DESIGN AND TECHNOLOGY IMPACT - PAGE 11
8. DESIGN AND TECHNOLOGY PROGRESSION - PAGE 13
9. VOCABULARY - PAGE 35

1. THE BASIC PRINCIPLES OF OUR CURRICULUM

Learning is a change to long term memory.

Our aims are to ensure that our children experience a wide breadth of study and have, by the end of each Key Stage, long -term memory of an ambitious body of procedural and semantic knowledge.

2. OUR CURRICULUM INTENT

Curriculum Drivers shape our curriculum breadth. They are derived from an exploration of the backgrounds of our children, our beliefs about high quality education and our values. They are used to ensure we give our children appropriate and ambitious curriculum opportunities. Our curriculum drivers, enabling us to ensure OUR children get what THEY need from us are that:

- ❖ Our children will develop vocabulary so that they are able to speak and understand spoken language, access more complex texts and write with eloquence.
- ❖ Our children will leave South View as successful readers. They will 'learn to read' and consequently 'read to learn'.
- ❖ Our children will explore their own cultures, surroundings and emotions and those of others, to gain a wider understanding of the world and their place within it.

3. DESIGN AND TECHNOLOGY INTENT

South View's Design and Technology curriculum aims to inspire pupils to be innovative and creative thinkers who have an appreciation for the product design cycle through ideation, creation, and evaluation. We want children to have the confidence to take risks, through drafting design concepts, modelling and testing and to be reflective learners who evaluate the work of others.

Our curriculum follows the National curriculum targets set under four subheadings:

- Design
- Make
- Evaluate
- Technical knowledge

4. MEETING THE NEEDS OF ALL CHILDREN IN D&T

Special Educational Needs and Disabilities (SEND)

Children with SEND are categorised into one of the four broad areas of need. These common areas of support are written below with the strategies outlined.

Cognition and Learning		Communication and Interaction	
<u>Subject Challenges for SEND</u>	<u>Provision for SEND</u>	<u>Subject Challenges for SEND</u>	<u>Provision for SEND</u>
<p>Accessing learning due to poor literacy skills</p> <p>Children may struggle to understand key concepts/recall previous learning</p>	<ul style="list-style-type: none"> • Writing frames, stem sentences • 1:1 or small group support • Key words displayed and on knowledge organisers – dual coded • Use of shorter/less complex sentences in resources given • Lots of retrieval opportunities and reinforcement • Pre-teaching of key vocab • Lots of visual and opportunities to explore physical resources 	<p>Children may struggle to communicate and express opinions in DT</p> <p>Language difficulties may make children unable to access learning</p>	<ul style="list-style-type: none"> • Visual words/ phrases – dual coding • Differentiated questioning • Consider mixed ability pairing • Provide different ways for children to record or express their views • Lots of reinforcement/ repetition • Use of simple instructions – small steps • Careful and appropriate modelling to support understanding • Videos of examples and practice
Physical and sensory		Social Emotional and Mental Health	
<u>Subject Challenges for SEND</u>	<u>Provision for SEND</u>	<u>Subject Challenges for SEND</u>	<u>Provision for SEND</u>
<p>Children with visual impairment may find it difficult to see images/resources</p>	<ul style="list-style-type: none"> • Ensure images are enlarged and accessible – use of audio description if needed • Ensure chn are close to whiteboard/ front of class • Use of non-reflective paper/photos/sources 	<p>Children may struggle to regulate their emotions when facing a challenging activity in DT</p>	<ul style="list-style-type: none"> • Opportunities to work in smaller groups • Provide lots of opportunities for praise

<p>Recording information may be difficult</p> <p>Children with fine motor difficulties may find it difficult to use specific subject based equipment</p> <p>Children with physical needs may not be able to handle equipment or resources</p>	<ul style="list-style-type: none"> • Provide additional ways to record info (video/ICT etc) • Ensure resources and equipment are appropriate – may require specialised equipment e.g. when cutting – use of double hole scissors • Addressing individual needs when planning – if children are unable to access, ensure alternative resources or equipment are sourced in advanced 	<p>Children may become frustrated/withdraw/ aggressive</p>	<ul style="list-style-type: none"> • Children provided with a role which may not involve active participation • Providing appropriate resources so that children can access the lesson e.g. fiddle toys to help with focus. Ensure children have learning/sensory breaks as part of the lesson.
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Non-Negotiables that need to be in place in all lessons/classrooms when teaching DT:

1. Displays (where necessary) and resources available to all pupils
2. Ensure outcomes are either open ended or pupils have a choice of how to present their work within that objective
3. All pupils given a means of expressing their view and opinions whether written, recorded, drawn etc.

Challenging and extending children to achieve greater depth

In this document, there is a selection of criteria presented that staff need to aim to provide for children during Design Technology lessons. This will assist pupils in getting to greater depth or show that they are performing at greater depth.

D&T gives children the opportunity to develop skills, knowledge and understanding of designing and making functional products. We feel it is vital to nurture creativity and innovation through design, and by exploring the designed and made world in which we all live and work.

D&T Association 2020

Creating the opportunity for greater depth in Design Technology involves allowing pupils the independence to apply their learning at a deeper level. They are the pupils who take an idea or a new skill and adapt it or develop it further independently. This means that pupils working at Greater Depth will be able to:

- GD pupils will work independently
- GD pupils will demonstrate a creative response to the problem
- GD pupils will stick tightly to the brief and consider the end user's needs and preferences throughout the process
- GD pupils will think critically about and comment on other products and their own product
- GD pupils will likely amend their product to improve its outcome
- GD pupils will display high quality presentation and precision throughout the process of design and make

Good achievement and challenge are evident when pupils:

- demonstrate a secure understanding of who they are designing and making for, the purpose of the product and how it would work, and the specific criteria their product must meet to be successful

- communicate their innovative ideas and plans clearly and modify their designs and prototypes in light of their testing and evaluation
- develop technical competence, applying measurement and using tools and components with increasing accuracy to safely make well-finished products
 - draw effectively upon their scientific understanding and their knowledge of mechanisms to create and explain how their products work
- use an increasingly technical vocabulary when talking or writing about what they might change as their work develops.

The UK is struggling with an annual shortfall of 59,000 engineers. So we need more young people to choose a future in engineering. We believe the solution is to engage young people at an early age with exciting, industry relevant Design and Technology lessons.

The James Dyson Foundation, 2020

The Kapow Scheme offers advice to support and challenge pupils in differentiation (if needed) and through assessments of learning criteria as shown below:

Differentiation

Pupils needing extra support:

Consider keeping slide 15 of the presentation on the board to support their drawing.

Use the *Activity: Cut and glue castle* (with or without the supporting placement map) at the example on slide 15 or by assembling a design from their own imagination.

Pupils working at greater depth:

Can label their castle drawing with the key castle features and explain which of the 3D strong and stable based on their previous Structures unit knowledge and/or can justify as to why this might be.

Assessing pupils' progress and understanding

Pupils with secure understanding indicated by: Drawing a simple castle that includes the most common features. Labelling the drawing. Recognising that a castle is made up of multiple 3D shapes.

Pupils working at greater depth indicated by: Drawing a comprehensive castle with all of the features of the castle included. Labelling the drawing with keywords and definitions of each feature. Suggesting and/or explaining how each of the features they have included help to make the castle strong and stable and why this is important.

The Kapow Scheme also offers examples of completed work at an expected and a greater depth level. As well as this, teachers are encouraged to upload greater depth examples of work to a shared folder that will allow for comparisons in future assessments as shown below:

Examples of completed work



Garswood Primary School,
Garswood



Roby Park Primary School,
Liverpool



Roby Park Primary School,
Liverpool

Taken from a Kapow Unit.

Greater depth
example work taken
from a Year 6
Kapow unit.



5. ART / D&T LONG TERM PLAN

Art and design Design and technology	Autumn		Spring		Summer	
EYFS	Structures: Junk modelling	Drawing: Marvellous masks	Textiles: Bookmarks	Structures: Boats	Painting and mixed media: Paint my world	Sculpture and 3D: Creation station
Year 1	Textiles: Puppets	Drawing: Make your mark	Structures: Constructing windmills	Sculpture and 3D: Paper play	Food: Fruit and vegetables	Painting: Colour splash
Year 2	Craft and design: Map it out	Structures: Baby bear's chair	Painting and mixed media: Life in colour	Mechanisms: Fairground wheel	Sculpture and 3D: Clay houses	Mechanisms: Making a moving monster
Year 3	Food: Eating seasonally	Drawing: Growing artists	Digital world: Electronic charm	Craft and design: Ancient Egyptian scrolls	Structures: Constructing a castle	Sculpture and 3D: Abstract shape and space
Year 4	Drawing: Power prints	Structure: Pavilions	Painting and mixed media: Light and dark	Mechanical systems: Making a slingshot car	Craft and design: Fabric of nature	Electrical systems: Torches
Year 5	Electrical systems: Doodlers	Sculpture and 3D: Interactive installation	Mechanical systems: Making a pop-up book	Drawing: I need space	Food: What could be healthier?	Painting and mixed media: Portraits
Year 6	Craft and design: Photo opportunity	Textiles: Waistcoats	Drawing: Make my voice heard	Structure: Playgrounds	Sculpture and 3D: Making memories!	Digital world: Navigating the world

6. DESIGN AND TECHNOLOGY IMPLEMENTATION

Our lessons are sequential, allowing children to build their skills and knowledge, applying them to a range of outcomes. Key skills are revisited again and again with increasing complexity in a spiral curriculum model. This allows pupils to revise and build on their previous learning. Lessons incorporate a range of teaching strategies from independent tasks, paired and group work including practical hands-on, computer-based and inventive tasks.

Throughout primary school children will revisit the following areas of the Design and Technology curriculum:

- Cooking and Nutrition
- Textiles
- Structures
- Mechanisms/ mechanical systems
- Electrical systems (KS2 only)
- Digital world (KS2 only)

7. DESIGN AND TECHNOLOGY IMPACT

The expected impact of our Design and Technology curriculum is that children will leave South View being able to:

- Understand how to use and combine tools to carry out different processes for shaping, decorating, and manufacturing products.
- Build and apply a repertoire of skills, knowledge and understanding to produce high quality, innovative outcomes, including models, prototypes, CAD, and products to fulfil the needs of users, clients, and scenarios.
- Understand and apply the principles of healthy eating, diets, and recipes, including key processes, food groups and cooking equipment.
- Have an appreciation for key individuals, inventions, and events in history and of today that impact our world.
- Recognise where our decisions can impact the wider world in terms of community, social and environmental issues.
- Self-evaluate and reflect on learning at different stages and identify areas to improve.
- Meet the end of key stage expectations outlined in the National curriculum for Design and technology.
- Meet the end of key stage expectations outlined in the National curriculum for Computing.

8. DESIGN AND TECHNOLOGY PROGRESSION

Structures							
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Junk Modelling <ul style="list-style-type: none"> • Making verbal plans and material choices. • Developing a junk model. Boats <ul style="list-style-type: none"> • Designing a junk model boat. • Using knowledge from exploration to inform design. 	Windmills <ul style="list-style-type: none"> • Learning the importance of a clear design criteria. • Including individual preferences and requirements in a design. 	Baby bear's chair <ul style="list-style-type: none"> • Generating and communicating ideas using sketching and modelling. • Learning about different types of structures, found in the natural world and in everyday objects. 	Constructing a castle <ul style="list-style-type: none"> • Designing a castle with key features to appeal to a specific person/purpose. • Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours. • Designing and/or decorating a castle tower on CAD software. 	Pavilions <ul style="list-style-type: none"> • Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. • Building frame structures designed to support weight. Making a slingshot car. <ul style="list-style-type: none"> • Designing a shape that reduces air resistance. • Drawing a net to create a structure from. • Choosing shapes that increase or decrease speed as a result of air resistance. • Personalising a design. 		Playgrounds <ul style="list-style-type: none"> • Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.
Make	Junk Modelling	Windmills	Baby bear's chair	Constructing a castle	Pavilions		Playgrounds

	<ul style="list-style-type: none"> • Improving fine motor/scissor skills with a variety of materials. • Joining materials in a variety of ways (temporary and permanent). • Joining different materials together. • Describing their junk model, and how they intend to put it together. <p>Boats</p> <ul style="list-style-type: none"> • Making a boat that floats and is waterproof, considering material choices. 	<ul style="list-style-type: none"> • Making stable structures from card, tape and glue. • Learning how to turn 2D nets into 3D structures. • Following instructions to cut and assemble the supporting structure of a windmill. • Making functioning turbines and axles which are assembled into a main supporting structure. 	<ul style="list-style-type: none"> • Making a structure according to design criteria. • Creating joints and structures from paper/card and tape. • Building a strong and stiff structure by folding paper. 	<ul style="list-style-type: none"> • Constructing a range of 3D geometric shapes using nets. • Creating special features for individual designs. • Making facades from a range of recycled materials. 	<ul style="list-style-type: none"> • Creating a range of different shaped frame structures. • Making a variety of free standing frame structures of different shapes and sizes. • Selecting appropriate materials to build a strong structure and cladding. • Reinforcing corners to strengthen a structure. • Creating a design in accordance with a plan. • Learning to create different textural effects with materials. <p>Making a slingshot car.</p> <ul style="list-style-type: none"> • Measuring, marking, cutting and assembling with increasing accuracy. • Making a model based on a chosen design. 		<ul style="list-style-type: none"> • Building a range of play apparatus structures drawing upon new and prior knowledge of structures. • Measuring, marking and cutting wood to create a range of structures. • Using a range of materials to reinforce and add decoration to structures.
Evaluate	<p>Junk Modelling</p> <ul style="list-style-type: none"> • Giving a verbal evaluation of their own and others' junk models with adult support. 	<p>Windmills</p> <ul style="list-style-type: none"> • Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't 	<p>Baby bear's chair</p> <ul style="list-style-type: none"> • Exploring the features of structures. • Comparing the stability of different shapes. 	<p>Constructing a castle</p> <ul style="list-style-type: none"> • Evaluating own work and the work of others based on the aesthetic of the 	<p>Pavilions</p> <ul style="list-style-type: none"> • Evaluating structures made by the class. • Describing what characteristics of a design and 		<p>Playgrounds</p> <ul style="list-style-type: none"> • Improving a design plan based on peer evaluation. • Testing and adapting a design

	<ul style="list-style-type: none"> • Checking to see if their model matches their plan. • Considering what they would do differently if they were to do it again. • Describing their favourite and least favourite part of their model. <p>Boats</p> <ul style="list-style-type: none"> • Making predictions about, and evaluating different materials to see if they are waterproof. • Making predictions about, and evaluating existing boats to see which floats best. • Testing their design and reflecting on what could have been done differently. • Investigating the how the shapes and structure of a boat affect the way it moves. 	<ul style="list-style-type: none"> • Suggest points for improvements 	<ul style="list-style-type: none"> • Testing the strength of own structures. • Identifying the weakest part of a structure. • Evaluating the strength, stiffness and stability of own structure. 	<p>finished product and in comparison to the original design.</p> <ul style="list-style-type: none"> • Suggesting points for modification of the individual designs. 	<p>construction made it the most effective.</p> <ul style="list-style-type: none"> • Considering effective and ineffective designs. 		<p>to improve it as it is developed.</p> <ul style="list-style-type: none"> • Identifying what makes a successful structure.
Knowledge							
Technical	<p>Junk Modelling</p> <ul style="list-style-type: none"> • To know there are a range to different 	<p>Windmills</p> <ul style="list-style-type: none"> • To understand that the shape of materials can be 	<p>Baby bear's chair</p> <ul style="list-style-type: none"> • To know that shapes and structures with wide, 	<p>Constructing a castle</p> <ul style="list-style-type: none"> • To understand that wide and flat based 	<p>Pavilions</p> <ul style="list-style-type: none"> • To understand what a frame structure is. 		<p>Playgrounds</p> <ul style="list-style-type: none"> • To know that structures can be strengthened by

	<p>materials that can be used to make a model and that they are all slightly different.</p> <ul style="list-style-type: none"> • Making simple suggestions to fix their junk model. <p>Boats</p> <ul style="list-style-type: none"> • To know that 'waterproof' materials are those which do not absorb water. 	<p>changed to improve the strength and stiffness of structures.</p> <ul style="list-style-type: none"> • To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses). • To understand that axles are used in structures and mechanisms to make parts turn in a circle. • To begin to understand that different structures are used for different purposes. • To know that a structure is something that has been made and put together. 	<p>flat bases or legs are the most stable.</p> <ul style="list-style-type: none"> • To understand that the shape of a structure affects its strength. • To know that materials can be manipulated to improve strength and stiffness. • To know that a structure is something which has been formed or made from parts. • To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move. • To know that a 'strong' structure is one which does not break easily. • To know that a 'stiff' structure or material is one which does not bend easily. 	<p>objects are more stable.</p> <ul style="list-style-type: none"> • To understand the importance of strength and stiffness in structures. 	<ul style="list-style-type: none"> • To know that a 'free-standing' structure is one which can stand on its own. 		<p>manipulating materials and shapes.</p>
Additional	<p>Boats</p> <ul style="list-style-type: none"> • To know that some objects float and others sink. • To know the different parts of a boat. 	<p>Windmills</p> <ul style="list-style-type: none"> • To know that a client is the person I am designing for. • To know that design criteria is a list of points to ensure the product meets 	<p>Baby bear's chair</p> <ul style="list-style-type: none"> • To know that natural structures are those found in nature. • To know that man-made structures are 	<p>Constructing a castle</p> <ul style="list-style-type: none"> • To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge 	<p>Pavilions</p> <ul style="list-style-type: none"> • To know that a pavilion is a decorative building or structure for leisure activities. • To know that cladding can be 		<p>Playgrounds</p> <ul style="list-style-type: none"> • To understand what a 'footprint plan' is. • To understand that in the real world, design ,

		<p>the clients needs and wants.</p> <ul style="list-style-type: none"> • To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity. • To know that windmill turbines use wind to turn and make the machines inside work. • To know that a windmill is a structure with sails that are moved by the wind. • To know the three main parts of a windmill are the turbine, axle and structure. 	<p>those made by people.</p>	<p>and gatehouse - and their purpose.</p> <ul style="list-style-type: none"> • To know that a façade is the front of a structure. • To understand that a castle needed to be strong and stable to withstand enemy attack. • To know that a paper net is a flat 2D shape that can become a 3D shape once assembled. • To know that a design specification is a list of success criteria for a product. 	<p>applied to structures for different effects.</p> <ul style="list-style-type: none"> • To know that aesthetics are how a product looks. • To know that a product's function means its purpose. • To understand that the target audience means the person or group of people a product is designed for. • To know that architects consider light, shadow and patterns when designing. 		<p>can impact users in positive and negative ways.</p> <ul style="list-style-type: none"> • To know that a prototype is a cheap model to test a design idea.
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Mechanisms/ mechanical systems							
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design			Fairground Wheel <ul style="list-style-type: none"> • Selecting a suitable linkage system to produce the desired motion. • Designing a wheel. Making a moving monster <ul style="list-style-type: none"> • Creating a class design criteria for a moving monster. • Designing a moving monster for a specific audience in accordance with a design criteria. 		Making a slingshot car. <ul style="list-style-type: none"> • Designing a shape that reduces air resistance. • Drawing a net to create a structure from. • Choosing shapes that increase or decrease speed as a result of air resistance. • Personalising a design. 	Pop-up book. <ul style="list-style-type: none"> • Designing a pop-up book which uses a mixture of structures and mechanisms. • Naming each mechanism, input and output accurately. • Storyboarding ideas for a book. 	
Make			Fairground Wheel <ul style="list-style-type: none"> • Selecting materials according to their characteristics. • Following a design brief. 		Making a slingshot car. <ul style="list-style-type: none"> • Measuring, marking, cutting and assembling with increasing accuracy. 	Pop-up book. <ul style="list-style-type: none"> • Following a design brief to make a pop up book, neatly and with focus on accuracy. • Making mechanisms and/or 	

			Making a moving monster <ul style="list-style-type: none"> • Making linkages using card for levers and split pins for pivots. • Experimenting with linkages adjusting the widths, lengths and thicknesses of card used. • Cutting and assembling components neatly. 		<ul style="list-style-type: none"> • Making a model based on a chosen design. 	structures using sliders, pivots and folds to produce movement. <ul style="list-style-type: none"> • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result. 	
Evaluate			Fairground Wheel <ul style="list-style-type: none"> • Evaluating different designs. • Testing and adapting a design. Making a moving monster <ul style="list-style-type: none"> • Evaluating own designs against design criteria. • Using peer feedback to modify a final design. 		Making a slingshot car. <ul style="list-style-type: none"> • Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance. 	Pop-up book. <ul style="list-style-type: none"> • Evaluating the work of others and receiving feedback on own work. • Suggesting points for improvement. 	
Knowledge							

Technical			<p>Fairground Wheel</p> <ul style="list-style-type: none"> • To know that different materials have different properties and are therefore suitable for different uses. <p>Making a moving monster</p> <ul style="list-style-type: none"> • To know that mechanisms are a collection of moving parts that work together as a machine to produce movement. • To know that there is always an input and output in a mechanism. • To know that an input is the energy that is used to start something working. • To know that an output is the movement that happens as a result of the input. • To know that a lever is something that turns on a pivot. • To know that a linkage mechanism 		<p>Making a slingshot car.</p> <ul style="list-style-type: none"> • To understand that all moving things have kinetic energy. • To understand that kinetic energy is the energy that something (object/person) has by being in motion. • To know that air resistance is the level of drag on an object as it is forced through the air. • To understand that the shape of a moving object will affect how it moves due to air resistance. 	<p>Pop-up book.</p> <ul style="list-style-type: none"> • To know that mechanisms control movement. • To understand that mechanisms can be used to change one kind of motion into another. • To understand how to use sliders, pivots and folds to create paper-based mechanisms. 	
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			is made up of a series of levers.				
Additional			<p>Fairground Wheel</p> <ul style="list-style-type: none"> • To know the features of a ferris wheel include the wheel, frame, pods, a base an axle and an axle holder. • To know that it is important to test my design as I go along so that I can solve any problems that may occur. <p>Making a moving monster</p> <ul style="list-style-type: none"> • To know some real-life objects that contain mechanisms. 		<p>Making a slingshot car.</p> <ul style="list-style-type: none"> • To understand that products change and evolve over time. • To know that aesthetics means how an object or product looks in design and technology. • To know that a template is a stencil you can use to help you draw the same shape accurately. • To know that a birds-eye view means a view from a high angle (as if a bird in flight). • To know that graphics are images which are designed to explain or advertise something. • To know that it is important to assess and evaluate design ideas and models against a list of design criteria. 	<p>Pop-up book.</p> <ul style="list-style-type: none"> • To know that a design brief is a description of what I am going to design and make. • To know that designers often want to hide mechanisms to make a product more aesthetically pleasing. 	

Electrical systems (KS2 only)							
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design					Torches <ul style="list-style-type: none"> • Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. 	Doodlers <ul style="list-style-type: none"> • Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product. • Developing design criteria based on findings from investigating existing products. • Developing design criteria that clarifies the target user. 	
Make					Torches <ul style="list-style-type: none"> • Making a torch with a working electrical circuit and switch. • Using appropriate equipment to cut and attach materials. • Assembling a torch according to the design and success criteria. 	Doodlers <ul style="list-style-type: none"> • Altering a product's form and function by tinkering with its configuration. • Making a functional series circuit, incorporating a motor. • Constructing a product with consideration for the design criteria. • Breaking down the construction process into steps so that others can make the 	

						product.	
Evaluate					Torches <ul style="list-style-type: none"> • Evaluating electrical products. • Testing and evaluating the success of a final product. 	Doodlers <ul style="list-style-type: none"> • Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. • Determining which parts of a product affect its function and which parts affect its form. • Analysing whether changes in configuration positively or negatively affect an existing product. • Peer evaluating a set of instructions to build a product. 	
Knowledge							
Technical					Torches <ul style="list-style-type: none"> • To understand that electrical conductors are materials which electricity can pass through. • To understand that electrical insulators are materials which electricity cannot pass through. • To know that a battery contains stored electricity that can be used to power 	Doodlers <ul style="list-style-type: none"> • To know that series circuits only have one direction for the electricity to flow. • To know when there is a break in a series circuit, all components turn off. • To know that an electric motor converts electrical energy into rotational 	

					<p>products.</p> <ul style="list-style-type: none"> • To know that an electrical circuit must be complete for electricity to flow. • To know that a switch can be used to complete and break an electrical circuit. 	<p>movement, causing the motor's axle to spin.</p> <ul style="list-style-type: none"> • To know a motorised product is one which uses a motor to function. 	
Additional					<p>Torches</p> <ul style="list-style-type: none"> • To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens. • To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison. 	<p>Doodlers</p> <ul style="list-style-type: none"> • To know that product analysis is critiquing the strengths and weaknesses of a product. • To know that 'configuration' means how the parts of a product are arranged. 	

Cooking and nutrition							
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design		Fruit and vegetables Designing smoothie carton packaging by-hand or on ICT software.		Eating seasonally <ul style="list-style-type: none"> • Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish. 		What could be healthier? <ul style="list-style-type: none"> • Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Writing an amended method for a recipe to incorporate the relevant changes to ingredients. • Designing appealing packaging to reflect a recipe. 	
Make		Fruit and vegetables <ul style="list-style-type: none"> • Chopping fruit and vegetables safely to make a smoothie. • Identifying if a food is a fruit or a vegetable. 		Eating seasonally <ul style="list-style-type: none"> • Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. 		What could be healthier? <ul style="list-style-type: none"> • Cutting and preparing vegetables safely. • Using equipment safely, including knives, hot pans and hobs. 	

		<ul style="list-style-type: none"> • Learning where and how fruits and vegetables grow. 		<ul style="list-style-type: none"> • Following the instructions within a recipe. 		<ul style="list-style-type: none"> • Knowing how to avoid cross-contamination. • Following a step by step method carefully to make a recipe. 	
Evaluate		Fruit and vegetables <ul style="list-style-type: none"> • Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging. 		Eating seasonally <ul style="list-style-type: none"> • Establishing and using design criteria to help test and review dishes. • Describing the benefits of seasonal fruits and vegetables and the impact on the environment. • Suggesting points for improvement when making a seasonal tart. 		What could be healthier? <ul style="list-style-type: none"> • Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups. 	
Knowledge							
Cooking and nutrition		Fruit and vegetables <ul style="list-style-type: none"> • Understanding the difference between fruits and vegetables. • To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber). • To know that a blender is a machine which mixes 		Eating seasonally <ul style="list-style-type: none"> • To know that not all fruits and vegetables can be grown in the UK. • To know that climate affects food growth. • To know that vegetables and fruit grow in certain seasons. • To know that cooking instructions 		What could be healthier? <ul style="list-style-type: none"> • To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues. • To know that I can adapt a recipe to 	

		<p>ingredients together into a smooth liquid.</p> <ul style="list-style-type: none"> • To know that a fruit has seeds and a vegetable does not. • To know that fruits grow on trees or vines. • To know that vegetables can grow either above or below ground. • To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber). • 		<p>are known as a 'recipe'.</p> <ul style="list-style-type: none"> • To know that imported food is food which has been brought into the country. • To know that exported food is food which has been sent to another country.. • To understand that imported foods travel from far away and this can negatively impact the environment. • To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre. • To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health. • To know safety rules for using, storing and cleaning a knife safely. • To know that similar coloured fruits and vegetables often have similar nutritional benefits. 		<p>make it healthier by substituting ingredients.</p> <ul style="list-style-type: none"> • To know that I can use a nutritional calculator to see how healthy a food option is. • To understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects. 	
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Textiles							
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Bookmarks <ul style="list-style-type: none"> • Discussing what a good design needs. • Designing a simple pattern with paper. • Designing a bookmark. • Choosing from available materials. 	Puppets <ul style="list-style-type: none"> • Using a template to create a design for a puppet. 					Waistcoats <ul style="list-style-type: none"> • Designing a waistcoat in accordance to a specification linked to set of design criteria. • Annotating designs, to explain their decisions.
Make	Bookmarks <ul style="list-style-type: none"> • Developing fine motor/cutting skills with scissors. • Exploring fine motor/threading and weaving (under, over technique) with a variety of materials. • Using a prepared needle and wool to practise threading. 	Puppets <ul style="list-style-type: none"> • Cutting fabric neatly with scissors. • Using joining methods to decorate a puppet. • Sequencing the steps taken during construction. 					Waistcoats <ul style="list-style-type: none"> • Using a template when cutting fabric to ensure they achieve the correct shape. • Using pins effectively to secure a template to fabric without creases or bulges. • Marking and cutting fabric accurately, in accordance with their design. • Sewing a strong running stitch, making small, neat stitches

							and following the edge. • Tying strong knots. • Decorating a waistcoat, attaching features (such as appliqué) using thread. • Finishing the waistcoat with a secure fastening (such as buttons). • Learning different decorative stitches. • Sewing accurately with evenly spaced, neat stitches.
Evaluate	Bookmarks • Reflecting on a finished product and comparing to their design.	Puppets • Reflecting on a finished product, explaining likes and dislikes.					Waistcoats • Reflecting on their work continually throughout the design, make and evaluate process.
Knowledge							
Technical	Bookmarks • To know that a design is a way of planning our idea before we start. • To know that threading is putting one	Puppets • To know that 'joining technique' means connecting two pieces of material together.					Waistcoats • To understand that it is important to design clothing with the client/ target customer in mind.

	material through an object.	<ul style="list-style-type: none"> • To know that there are various temporary methods of joining fabric by using staples, glue or pins. • To understand that different techniques for joining materials can be used for different purposes. • To understand that a template (or fabric pattern) is used to cut out the same shape multiple times. • To know that drawing a design idea is useful to see how an idea will look. 					<ul style="list-style-type: none"> • To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric. • To understand the importance of consistently sized stitches.
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Digital World (KS2 only)							
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design				Electronic charm <ul style="list-style-type: none"> • Problem solving by suggesting potential features on a Micro: bit and justifying my ideas • Developing design ideas for a technology pouch • Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge 			Navigating the world <ul style="list-style-type: none"> • Writing a design brief from information submitted by a client • Developing design criteria to fulfil the client's request • Considering and suggesting additional functions for my navigation tool • Developing a product idea through annotated sketches • Placing and manoeuvring 3D objects, using CAD • Changing the properties of, or combine one or more 3D objects, using CAD
Make				Electronic charm <ul style="list-style-type: none"> • Using a template when cutting and 			Navigating the world <ul style="list-style-type: none"> • Considering materials and

				assembling the pouch <ul style="list-style-type: none"> • Following a list of design requirements • Selecting and using the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch • Applying functional features such as using foam to create soft buttons 			their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo) <ul style="list-style-type: none"> • Explaining material choices and why they were chosen as part of a product concept • Programming an N,E, S,W cardinal compass
Evaluate				Electronic charm <ul style="list-style-type: none"> • Analysing and evaluating an existing product • Identifying the key features of a pouch 			Navigating the world <ul style="list-style-type: none"> • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool • Developing an awareness of sustainable design • Identifying key industries that utilise 3D CAD modelling and explain why • Describing how the product concept fits the client's request and how it will

							benefit the customers <ul style="list-style-type: none"> • Explaining the key functions in my program, including any additions • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool • Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch • Demonstrating a functional program as part of a product concept
Knowledge							
Technical				Electronic charm <ul style="list-style-type: none"> • To understand that in programming a 'loop' is code that repeats something again and again until stopped • To know that a Micro:bit is a pocket-sized, codeable computer 			Navigating the world <ul style="list-style-type: none"> • To know that accelerometers can detect movement • To understand that sensors can be useful in products as they mean the product

				<ul style="list-style-type: none"> • Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm 			can function without human input
Additional				<p>Electronic charm</p> <ul style="list-style-type: none"> • To know what the 'Digital Revolution' is and features of some of the products that have evolved as a result • To know that in Design and technology the term 'smart' means a programmed product • To know the difference between analogue and digital technologies • To understand what is meant by 'point of sale display' • To know that CAD stands for Computer-aided design 			<p>Navigating the world</p> <ul style="list-style-type: none"> • To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request • To know that 'multifunctional' means an object or product has more than one function • To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing

9. VOCABULARY

	Structures	Mechanisms/ Mechanical systems	Electrical systems (KS2 only)	Cooking and nutrition	Textiles	Digital world (KS2 only)
EYFS	<p>Junk Modelling</p> <p>Join • Stick • Cut • Bend • Slot • Scissors • Measure • Materials • Fix</p> <p>Boats</p> <p>• Waterproof • Absorb • Prediction • Variable • Experiment • Investigation • Float • Sink • Junk</p>			<p>• Fruit • Vegetables • Safety • Knife • Blade • Tool • Edge • Handle • Chop • Slice • Cut • Saucepan</p> <p>• Blender • Chopping board • Hob • Boil • Blend • Mix • Packaging • Recyclable • Metal • Plastic • Reusable</p>	<p>Thread • Weave • Pattern • Sew • Sewing needle • Embroider • Design • Evaluate</p>	
Year 1	<p>Client • Design • Evaluation • Net • Stable • Strong • Test • Weak • Windmill</p>			<p>Blender • Carton • Fruit • Healthy • Ingredients • Peel • Peeler • Recipe • Slice • Smoothie • Stencil • Template • Vegetable</p>	<p>Decorate • Design • Fabric • Glue • Model • Hand puppet • Safety pin • Staple • Stencil • Template</p>	
Year 2	<p>• Function • Man- made • Mould • Natural • Stable • Stiff • Strong • Structure • Test • Weak</p>	<p>Evaluation • Input • Lever • Linear motion • Linkage • Mechanical • Mechanism • Motion • Oscillating motion • Output • Pivot •</p>				

	Structures	Mechanisms/ Mechanical systems	Electrical systems (KS2 only)	Cooking and nutrition	Textiles	Digital world (KS2 only)
		Reciprocating motion • Rotary motion • Survey Fair ground Axle • Decorate • Evaluation • Ferris wheel • Mechanism • Stable • Strong • Test • Waterproof • Weak				
Year 3	2D shapes • 3D shapes • Castle • Design criteria • Evaluate • Facade • Feature • Flag • Net • Recyclable • Scoring • Stable • Strong • Structure • Tab • Weak			Climate • Dry climate • Exported • Imported • Mediterranean climate • Nationality • Nutrients • Polar climate • Recipe • Seasonal food • Seasons • Temperate climate • Tropical climate		Analogue • Badge • CAD • Control • Design requirements • Develop • Digital • Digital revolution • Digital world • Display • Electronic • Electronic products • Fasten • Feature • Function • Initiate • Key features • Layers • Loops • Micro: bit Monitor • Net • Point of sale • Product • Product design • Program • Sense • Simulator •

	Structures	Mechanisms/ Mechanical systems	Electrical systems (KS2 only)	Cooking and nutrition	Textiles	Digital world (KS2 only)
						Smart wearables • Stand • Technology • Template • Test • User
Year 4	Aesthetic • Cladding • Design criteria • Evaluation • Frame structure • Function • Inspiration • Pavilion • Reinforce • Stable • Structure • Target audience • Target customer • Texture • Theme	Aesthetic • Air resistance • Chassis • Design • Design criteria • Function • Graphics • Kinetic energy • Mechanism • Net • Structure		Adapt • Budget • Cooling rack • Creaming • Equipment • Evaluation • Flavour • Ingredients • Method • Net • Packaging • Prototype • Quantity • Recipe • Rubbing • Sieving • Target audience • Unit of measurement • Utilities		
Year 5		Aesthetic • Computer- aided design (CAD) • Caption • Design • Design brief • Design criteria • Exploded- diagram • Function • Input • Linkage • Mechanism • Motion • Output • Pivot • Prototype • Slider • Structure • Template		Beef • Cross- contamination • Diet • Ethical issues • Farm • Healthy • Ingredients • Method • Nutrients • Packaging • Reared • Recipe • Research • Substitute • Supermarket • Vegan • Vegetarian • Welfare		Circuit component • Configuration • Current • Develop • DIY • Investigate • Motor • Motorised • Problem solve • Product analysis • Series circuit • Stable • Target user

	Structures	Mechanisms/ Mechanical systems	Electrical systems (KS2 only)	Cooking and nutrition	Textiles	Digital world (KS2 only)
Year 6	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				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	3D CAD • Application (apps) • Biodegradable • Boolean • Cardinal compass • Client • Compass • Concept • Convince • Corrode • Duplicate • Environmentally friendly • Equipment • Feature • Finite • Function • Functional • GPS tracker • If statement • Infinite Investment • Lightweight • Loop • Manufacture • Materials (wood, metal, plastic etc.) • Mouldable • Navigation • Non-recyclable • Product lifecycle • Product lifespan • Program •

	Structures	Mechanisms/ Mechanical systems	Electrical systems (KS2 only)	Cooking and nutrition	Textiles	Digital world (KS2 only)
						Recyclable ● Smart ● Sustainable ● Sustainable design ● Unsustainable design ● Variable ● Workplane