St Michael's C.E Primary School

Design & Technology Curriculum 2025-2026

Design & Technology gives young people an opportunity to combine different skills, such as, logical, creative and practical skills. They also use elements that they have learnt in Maths and Science to understand how products work and to then use this knowledge to create their own products, using a variety of resources, to solve real-life problems.
At St Michaels, we believe that Design and Technology is an important part of our broad and balanced curriculum as it gives children the opportunity to become critical thinkers and to apply problem solving techniques. Design and Technology enables children to work creatively both individually and as part of a group, to solve real life problems in order to create a purposeful product fit for a specific user.
A Design Technologist uses their evaluation skills to look at existing products and to identify improvements that could be made. They then use their creative skills to design a product, for a specific user. Problem solving skills are then implemented when making and improving a product through a series of protypes. Design Technologists are reflective in their practise.

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Spirituality Across the Curriculum

Our definition of spirituality at St Michael's CE Primary School:

To talk about spirituality is to talk about something which is ***beyond words.***
Spirituality is linked to big ***questions*** *about the* ***meaning and purpose of life;*** *it includes ideas* ***relating to oneself, others, the natural world and the transcendent.***
We refer to this as:
The stillness of the mind
The settling of the soul
The uplifting of the spirit
Being at one in the world and finding meaning and purpose in life.
For some, but not all, this will be experienced, expressed or explained through faith or belief.

When discussing this with our pupils, we refer to spirituality as:

The way WOWS, OWS and NOWS shape me into the person that I am and will become.

Spiritual development contains many facets and it is concerned with a number of areas of an individual's life. Therefore, when developing spirituality in pupils and adults, we, in line with our distinctively Christian vision and our school's definition for spirituality, look at four key areas: self, others, transcendence (beyond), and nature.

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Spirituality Opportunities

Self

Opportunities

- Opportunities to feel you're fully in the moment and doing something with care, can make you feel peaceful and calm.
- DT can help you feel connected to yourself and what you're doing in a mindful way.
- Have students design and create personal items that reflect their values, beliefs, and goals.
- Introduce activities that promote mindfulness and self-awareness.
- Encourage students to design and build projects that express their individuality.

Potential Question Prompts

- Reflect on the sources of inspiration in your life. How do these influences shape your designs and projects?
- Consider the ethical implications of your materials and processes. How do your personal values guide your decisions in DT?
- Reflect on what success means to you personally. Is it about functionality, aesthetics, or the impact on others?
- Consider the obstacles you encounter while designing. How do these experiences contribute to your growth and resilience?
- Reflect on the emotions you experience during the design process. What does creating mean to you on a personal level?
- Reflect on your attitudes toward mistakes in the design process. How can viewing failure as a learning opportunity help you grow?

Others

Opportunities

- Children being respectful of others creation, however remembering to give feedback is purposeful.
- Engage students in designing and creating items for community service.
- Organize group projects where students work together to solve a problem or create something meaningful that has an impact on others.
- Have students explore and create designs inspired by different cultures and religions, promoting understanding and respect for diversity.

Potential Question Prompts

- Reflect on how your creations address the needs or challenges faced by specific individuals or communities. What considerations do you take into account to ensure your designs are beneficial?
- Consider how your designs can be accessible to diverse groups of people. How can you ensure that your creations are welcoming and usable for everyone?
- Reflect on the importance of collaboration and input from peers or users. How do you incorporate their perspectives into your work?
- Consider the broader implications of your design choices. How can you create products that are sustainable and positively affect the community?
- Reflect on how your design capabilities can contribute to solving problems such as poverty, inequality, or health. What projects can you undertake that align with these goals?
- Consider how your creations can bring people together or enhance relationships. How can you design products that encourage collaboration and interaction among users.

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Transcendence

Opportunities

- To explore the belief that this connects to something bigger than us.
- How creating is similar feeling to meditate or pray.
- To create or admire something that is well-designed and beautiful, it can make you feel connected to something greater, like the beauty of the world or even the creativity of others.
- Have students design models of spiritual spaces, such as meditation gardens or quiet reflection areas, to understand the importance of space in spiritual practices.
- Encourage students to design and create art pieces featuring inspirational quotes from various spiritual traditions, fostering a sense of connection to something greater.

Potential Question Prompts

- Reflect on the potential of your creations to challenge perceptions and provoke thought. What innovative ideas can you integrate to inspire change?
- Consider how your designs can address societal challenges or promote well-being. How can you ensure that your projects serve a higher purpose beyond personal gain?
- Think about the broader concepts your work might embody, such as love, justice, or sustainability. How can you incorporate these themes into your design process?
- Reflect on the long-term impact of your creations. How do you want your work to be remembered, and what values do you hope to pass on?
- Consider how your design process can serve as a medium for exploring deeper questions about existence, purpose, or the human experience. What themes resonate with you?
- Consider how you can create an experience through your work that invites reflection and connection. What elements can you incorporate to evoke emotions and thoughts?

Nature

Opportunities

- An understanding of where things come from and the impact this can have on the world. Eg paper from trees.
- Junk modelling to think about how we can reuse materials to create something new.
- Engage students in designing and building projects using recycled or natural materials, emphasizing the importance of sustainability and care for the environment.
- Involve students in designing and building elements for a school garden, such as planters, bird feeders, or compost bins, to connect with nature and learn about environmental stewardship.

Potential Question Prompts

- Could you be more environmentally friendly with the materials you have used?
- How can we use recycled or natural materials in our projects to show respect for the environment?
- What lessons can we learn from nature that can be applied to our design projects?
- How can we design projects that help protect and preserve natural habitats?
- In what ways can observing nature inspire your creativity and design ideas?
- What are some ways we can design products that reduce waste and promote sustainability?
- What role does nature play in different cultural and spiritual practices, and how can we reflect this in our designs?

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St Michael's CE Primary DT Curriculum

2025-2026

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	DT Knowledge and Skills - See Nursery Curriculum for more detailed information					
Reception	**Cooking and Nutrition:** Soup		**Textiles:** Bookmarks		**Structures:** Boats	
Year 1	**Food:** Fruit and Veg **Mechanisms:** Moving Story Book		**Structures:** Constructing a windmill	**Mechanisms:** Wheels and Axels	**Textiles:** Puppets	
Year 2		**Mechanisms:** Fairground		**Food:** A balanced diet **Structures:** Big Bears chair		**Textiles:** Pouches **Mechanisms:** Moving Monsters
Year 3	**Structures:** Constructing a castle **Digital World:** Electronic Charm		**Mechanical Systems:** Pneumatic Toys	**Food:** Eating Seasonally		**Textiles:** Cushions
Year 4		**Structures:** Pavilions **Electrical Systems:** Torches		**Mechanical Systems:** Making a slingshot car	**Food:** Adapting a recipe **Textiles:** Fasterings	
Year 5		**Structures:** Bridges **Digital World:** Monitoring devices		**Electrical Systems:** Doodlers **Mechanical Systems:** Making a pop-up book	**Food:** What could be healthier?	
Year 6		**Structures:** Playgrounds **Mechanical Systems:** Automated toys		**Digital World:** Navigating the world		**Food:** Come dine with me **Electrical Systems:** Steady hand game

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Early Years Foundation Stage - Educational Programmes

Expressive Arts and Design

The development of children's artistic and cultural awareness supports their imagination and creativity. It is important that children have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. The quality and variety of what children see, hear and participate in is crucial for developing their understanding, self-expression, vocabulary and ability to communicate through the arts. The frequency, repetition and depth of their experiences are fundamental to their progress in interpreting and appreciating what they hear; respond to and observe.

National Curriculum - Aims and Purpose

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

National Curriculum - Key stage 1

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment]. When designing and making, pupils should be taught to:

Design

- design purposeful, functional, appealing products for themselves and other users based on design criteria
- generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

Make

- select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

Evaluate

- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria

Technical knowledge

- 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.

Cooking and nutrition

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

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Pupils should be taught to:
- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from.

National Curriculum - Key stage 2 - Years 3, 4, 5 and 6

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to:

Design
- 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
- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

Make
- select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- 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

Evaluate
- investigate and analyse a range of existing products
- 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, levers and linkages]
- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
- apply their understanding of computing to program, monitor and control their products.

Cooking and nutrition

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Pupils should be taught to:
- understand and apply the principles of a healthy and varied diet
- prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Design & Technology - Early Years

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	Nursery	Reception
	Skills **Design** - To tell an adult how I would like my food to look (e.g biscuit decorating) - To tell an adult what I would like to make. - To tell an adult what I am going to make **Make** - To work with an adult to follow a simple recipe. - To use junk modelling materials to create something that I have planned - To use junk modelling to create 3D models **Evaluate** - To taste and share my thoughts with an adults - To talk about what I have made. - To tell an adult what I like about my work and how I could adapt it **Knowledge** - To know that adults needs to use the oven. - To know I need to wash my hands when making food. - To know that a biscuit is a sweet treat and unhealthy to eat often. - To know that I can attach objects with split pins to allow my model to move. - To know that I can attach materials using tape and split pins to create a structure. - To know how to thread beads onto pipe cleaners and string.	**Skills** **Design** - To be able to design soup and packaging. - To suggest information to be included on packaging - To think about what I want to make in the junk modelling area. - To design a boat. **Make** - To follow a recipe to make soup. - To use a knife safely to cut playdough and chop vegetables. - To use junk modelling materials to create something that I have planned. - To use a blunt ended sewing needle to thread. - To make a bookmark - To use other materials to decorate bookmark. **Evaluate** - To taste and evaluate soup. - To use adjectives to describe how fruits and vegetables look, feel, smell and taste. - To describe appearance, smell and taste - To talk about what I have made and think about how it could be adapted. - To evaluate whether the boat was waterproof and could float. - To evaluate which materials are waterproof. - To discuss any problems which arise. - To evaluate the bookmark. **Knowledge** - To learn how to use a knife safely. - To know I need to wash my hands when making food. - To know the difference between fruits and vegetables. - To know that a blender is a machine which mixes ingredients together into a smooth liquid - To know that I can attach objects with split pins to allow my model to move. - To think about what a boat needs to work (waterproof/float) - To make a boat based on own design. - To know what waterproof means. - To know that materials have different purposes. - To identify which materials are waterproof. - To know what a bookmark is. - To know what weaving and sewing is.

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Design & Technology

	Autumn	Spring	Summer
Year 1	Food: Fruit and Vegetables	Structures: Constructing a Windmill	Textiles: Puppets
	Skills **Design** To design smoothie carton packaging by-hand or on ICT software **Make** · To chop fruit and vegetables safely to make a smoothie · To identify if a food is a fruit or a vegetable · To learn where and how fruits and vegetables grow **Evaluate** · To taste and evaluate different food combinations · To describe appearance, smell and taste · To suggest information to be included on packaging **Knowledge** · To know the difference between fruits and vegetables · To know that some foods typically known as vegetables are actually fruits (e.g. cucumber) · To know that a blender is a machine which mixes ingredients together into a smooth liquid · To know what a smoothie is · 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)	**Skills** **Design** · To understand the importance of a clear design criteria · To include individual preferences and requirements in a design **Make** · To make stable structures from card, tape and glue To turn 2D nets into 3D structures ·To follow instructions to cut and assemble the supporting structure of a windmill ·To make functioning turbines and axles which are assembled into a main supporting structure **Evaluate** · To evaluate a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't · To suggest points for improvements **Knowledge** · To know that the shape of materials can be changed to improve the strength and stiffness of structures · To know that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses) · To know that axles are used in structures and mechanisms to make parts turn in a circle · To begin to know that different structures are used for different purposes · To know that a structure is something that has been made and put together · 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 the clients needs and wants · 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	**Skills** **Design** · To use a template to create a design for a puppet **Make** · To cut fabric neatly with scissors · To use joining methods to decorate a puppet · To sequence steps for construction **Evaluate** · To reflect on a finished product, explaining likes and dislikes **Knowledge** · To know that 'joining technique' means connecting two pieces of material together · To know that there are various temporary methods of joining fabric by using staples, glue or pins · To know that different techniques for joining materials can be used for different purposes · To know 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

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		Mechanisms: Moving story book	Mechanisms: Wheels and Axels	
		Skills **Design** · To explain how to adapt mechanisms, using bridges or guides to control the movement · To design a moving story book for a given audience **Make** · To follow a design to create moving models that use levers and sliders **Evaluate** · To test a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed **Knowledge** · To know that a mechanism is the parts of an object that move together ·To know that a slider mechanism moves an object from side to side · To know that a slider mechanism has a slider, slots , guides and an object · To know that bridges and guides are bits of card that purposefully restrict the movement of the slider · To know that in Design and technology we call a plan a 'design'	**Skills** **Design** · To design a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move · To create clearly labelled drawings which illustrate movement **Make** · To adapt mechanisms **Evaluate** · To test mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move **Knowledge** · To know that wheels need to be round to rotate and move · To know that for a wheel to move it must be attached to a rotating axle · To know that an axle moves within an axle holder which is fixed to the vehicle or toy · To know that the frame of a vehicle (chassis) needs to be balanced · To know some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles	

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Year 2	Mechanisms: Fairground	Food: A balanced Diet	Textiles: Pouches
	Skills **Design** · To select a suitable linkage system to produce the desired motions · To design a wheel selecting appropriate materials based on their properties **Make** · To select materials according to their characteristics · To follow a design brief **Evaluate** · To evaluate different designs · To test and adapt a design **Knowledge** · To know that different materials have different properties and are therefore suitable for different uses · 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	**Skills** **Design** · To design a healthy wrap based on a food combination which work well together **Make** · To slice food safely using the bridge or claw grip · To construct a wrap that meets a design brief **Evaluate** · To describe the taste, texture and smell of fruit and vegetables · To taste test food combinations and final products · To describe the information that should be included on a label · To evaluate which grip was most effective **Knowledge** · To know that 'diet' means the food and drink that a person or animal usually eats · To know what makes a balanced diet · To know where to find the nutritional information on packaging · To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar · To know that I should eat a range of different foods from each food group, and roughly how much of each food group · To know that nutrients are substances in food that all living things need to make energy, grow and develop · To know that 'ingredients' means the items in a mixture or recipe · To know that I should only have a maximum of five teaspoons of sugar a day to stay healthy · To know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars' · To know how to use bear and claw grips	**Skills** **Design** · To design a pouch **Make** · To select and cut fabrics for sewing · To thread a needle · To sew running stitch, with evenly spaced, neat, even stitches to join fabric · To neatly pin and cut fabric using a template **Evaluate** · To troubleshoot scenarios posed by teacher **Knowledge** · To know that sewing is a method of joining fabric · To know that different stitches can be used when sewing · To know the importance of tying a knot after sewing the final stitch · To know that a thimble can be used to protect my fingers when sewing

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			Structures: Baby Bear's Chair	Mechanisms: Moving Monsters
			Skills **Design** · To generate and communicate ideas using sketching and modelling **Make** · To make a structure according to design criteria · To create joints and structures from paper/card and tape · To build a strong and stiff structure by folding paper **Evaluate** · To test the strength of own structures · To identify the weakest part of a structure · To evaluate the strength, stiffness and stability of own structure **Knowledge** · 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	**Skills** **Design** · To create a class design criteria for a moving monster · To design a moving monster for a specific audience in accordance with a design criteria **Make** · To make linkages using card for levers and split pins for pivots · To experiment with linkages adjusting the widths, lengths and thicknesses of card used · To cut and assemble components neatly **Evaluate** · To evaluate own designs against design criteria · To use peer feedback to modify a final design **Knowledge** · 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 is made up of a series of levers · To know some real-life objects that contain mechanisms

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Lower Key Stage 2

Year 3	Structures: Constructing a castle	Mechanical systems: Pneumatic toys	Textiles: Cushions
	Skills **Design** · To design a castle with key features to appeal to a specific person/purpose · To draw a castle design using 2D shapes ·To label the 3D shapes that will create the features, the materials needed and the colours · To design and/or decorate a castle tower on CAD software **Make** · To construct a range of 3D geometric shapes using nets · To create special features for individual designs · To make facades from a range of recycled materials **Evaluate** · To evaluate own work and the work of others based on the aesthetic of the finished product and in comparison to the original design · To suggest points for modification of the individual designs **Knowledge** · To know that wide and flat based objects are more stable · To know the importance of strength and stiffness in structures · To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse - and their purpose · To know that a façade is the front of a structure · To know 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	**Skills** **Design** · To design a toy which uses a pneumatic system · To develop design criteria from a design brief · To generate ideas using thumbnail sketches and exploded diagrams · To learn that different types of drawings are used in design to explain ideas clearly **Make** · To create a pneumatic system to create a desired motion · To build secure housing for a pneumatic system · To use syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy · To select materials due to their functional and aesthetic characteristics · To manipulate materials to create different effects by cutting, creasing, folding, weaving **Evaluate** · To use the views of others to improve designs · To test and modify the outcome, suggesting improvements · To understand the purpose of exploded-diagrams through the eyes of a designer and their client **Knowledge** · To know how pneumatic systems work · To know that pneumatic systems can be used as part of a mechanism · To know that pneumatic systems operate by drawing in, releasing and compressing air · To know different ways to manipulate materials · To know how sketches, drawings and diagrams can be used to communicate design ideas · To know that exploded-diagrams are used to show how different parts of a product fit together · To know that thumbnail sketches are small drawings to get ideas down on paper quickly	**Skills** **Design** · To design and make a template from an existing cushion and applying individual design criteria **Make** · To follow a design criteria to create a cushion · To select and cut fabrics with ease using fabric scissors · To thread needles with greater independence · To tie knots with greater independence · To sew cross stitch to join fabric · To decorate fabric using appliqué · To complete design ideas with stuffing and sewing the edges **Evaluate** · To evaluate an end product and thinking of other ways in which to create similar items **Knowledge** ·To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric ·To know what a cross stitch is ·To know that when two edges of fabric have been joined together it is called a seam ·To know that it is important to leave space on the fabric for the seam ·To know that some products are turned inside out after sewing so the stitching is hidden

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		Digital World: Electronic Charm	Food: Eating Seasonally	
		Skills **Design** · To problem solve by suggesting potential features on a Micro: bit and justifying my ideas · To develop design ideas for a technology pouch · To draw and manipulate 2D shapes, using computer-aided design, to produce a point of sale badge **Make** · To use a template when cutting and assembling the pouch · To follow a list of design requirements · To select and using the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch · To apply functional features such as using foam to create soft buttons **Evaluate** · To analyse and evaluating an existing product · To identify the key features of a pouch **Knowledge** · To know 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 · To know how to write a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm ·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 know what is meant by 'point of sale display' · To know that CAD stands for Computer-aided design	**Skills** **Design** · To create a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish **Make** · To know how to prepare themselves and a work space to cook safely in · To learn the basic rules to avoid food contamination · To follow the instructions within a recipe **Evaluate** · To establish and using design criteria to help test and review dishes · To describe the benefits of seasonal fruits and vegetables and the impact on the environment · To suggest points for improvement when making a seasonal tart **Knowledge** · 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 are known as a 'recipe' · 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 know 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 know 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 fruit and veg often have similar nutritional benefits	

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Year 4	Structures: Pavilions	Mechanical Systems: Making a slingshot car	Food: Adapting a recipe
	Skills **Design** · To design a stable pavilion structure that is aesthetically pleasing · To select materials to create a desired effect · To build frame structures designed to support weight **Make** · To create a range of different shaped frame structures · To make a variety of free-standing frame structures of different shapes and sizes · To select appropriate materials to build a strong structure and for the cladding · To reinforce corners to strengthen a structure · To create a design in accordance with a plan · To learn to create different textural effects with materials **Evaluate** · Evaluating structures made by the class · Describing what characteristics of a design and construction made it the most effective · Considering effective and ineffective designs **Knowledge** · To know what a frame structure is · To know that a 'free-standing' structure is one which can stand on its own · To know that a pavilions is a decorative building or structure for leisure activities · To know that cladding can be applied to structures for different effects. · To know that aesthetics are how a product looks · To know that a product's function means its purpose · To know 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	**Skills** **Design** · To design a shape that reduces air resistance · To draw a net to create a structure from · To choose shapes that increase or decrease speed as a result of air resistance · To personalise a design **Make** · To measure, mark, cut and assemble with increasing accuracy · To make a model based on a chosen design **Evaluate** · To evaluate the speed of a final product based on the effect of shape on speed ·To evaluate the speed of a final product based on the accuracy of workmanship on performance **Knowledge** · To know that air resistance is the level of drag on an object as it is forced through the air · To know that the shape of a moving object will affect how it moves due to air resistance. · 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.	**Skills** **Design** · To design a biscuit within a given budget, drawing upon previous taste testing **Make** · To follow a baking recipe · To cook safely, following basic hygiene rules · To adapt a recipe **Evaluate** · To evaluate a recipe, considering: taste, smell, texture and appearance · To describe the impact of the budget on the selection of ingredients · To evaluate and compare a range of products · To suggest modifications **Knowledge** · To know that the amount of an ingredient in a recipe is known as the 'quantity' · To know that it is important to use oven gloves when removing hot food from an oven · To know the following cooking techniques: sieving, creaming, rubbing method, cooling ·To know the importance of budgeting while planning ingredients for biscuits

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		Electrical systems: Torches		Textiles: Fastenings
		<u>Skills</u> Design • To design a torch, giving consideration to the target audience • To create both design and success criteria focusing on features of individual design ideas Make • To make a torch with a working electrical circuit and switch • To use appropriate equipment to cut and attach materials • To assemble a torch according to the design and success criteria Evaluate • To test and evaluate the success of a final product <u>Knowledge</u> • 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 • 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		<u>Skills</u> Design • To write design criteria for a product, articulating decisions made • To design a personalised book sleeve Make • To make and test a paper template with accuracy and in keeping with the design criteria • To measure, mark and cut fabric using a paper template • To select a stitch style to join fabric, working neatly sewing small neat stitches • To incorporate a fastening into a design Evaluate • To test and evaluate an end product against the original design criteria • To decide how many of the criteria should be met for the product to be considered successful • To suggest modifications for improvement • To articulate the advantages and disadvantages of different fastening types <u>Knowledge</u> • To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro • To know that different fastening types are useful for different purposes • To know that creating a mock up (prototype) of their design is useful for checking ideas and proportions

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Upper Key Stage 2

Year 5	Structures: Bridges	Mechanical systems: Making a pop-up book	Food: What could be healthier?
	Skills **Design** · To design a stable structure that is able to support weight · To create frame structure with focus on triangulation **Make** · To make a range of different shaped beam bridges · To use triangles to create truss bridges that span a given distance and supports a load · To build a wooden bridge structure · To independently measure and mark wood accurately · To select appropriate tools and equipment for particular tasks · To use the correct techniques to saw safely · To identify where a structure needs reinforcement and using card corners for support · To explain why selecting appropriating materials is an important part of the design process · To understand basic wood functional properties **Evaluate** · To adapt and improve own bridge structure by identifying points of weakness and reinforcing them as necessary · To suggest points for improvements for own bridges and those designed by others **Knowledge** · To know some different ways to reinforce structures · To know how triangles can be used to reinforce bridges · To know that properties are words that describe the form and function of materials · To know why material selection is important based on their properties · To know the material (functional and aesthetic) properties of wood · To know the difference between arch, beam, truss and suspension bridges · To know how to carry and use a saw safe	**Skills** **Design** · To design a pop-up book which uses a mixture of structures and mechanisms · To name each mechanism, input and output accurately · To storyboard ideas for a book **Make** · To follow a design brief to make a pop up book, neatly and with focus on accuracy · To make mechanisms and/or structures using sliders, pivots and folds to produce movement · To use layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result **Evaluate** N/A **Knowledge** · To know that mechanisms control movement · To know that mechanisms that can be used to change one kind of motion into another · To know how to use sliders, pivots and folds to create paper-based mechanisms · 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 · To know how to use layers and spacers to hide mechanisms	**Skills** **Design** · To adapt a traditional recipe · To understand that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients · To write an amended method for a recipe to incorporate the relevant changes to ingredients · To design appealing packaging to reflect a recipe **Make** · To cut and prepare vegetables safely · To use equipment safely, including knives, hot pans and hobs · To know how to avoid cross-contamination · To follow a step by step method carefully to make a recipe **Evaluate** · To identify the nutritional differences between different products and recipes · To identify and describe healthy benefits of food groups **Knowledge** · To know where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues · To know that a recipe can be adapted to make it healthier by substituting ingredients · To know that a nutritional calculator can be used to see how healthy a food option is · To know that 'cross-contamination' means that 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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		Digital world: Monitoring Devices	Electrical Systems: Doodlers	
		Skills **Design** · To research (books, internet) for a particular (user's) animal's needs · To develop design criteria based on research · To generate multiple housing ideas using building bricks · To understand what a virtual model is and the pros and cons of traditional and CAD modelling · To place and manoeuvre 3D objects, using CAD · To change the properties of, or combine one or more 3D objects, using CAD **Make** · To understand the functional and aesthetic properties of plastics · To programme to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range **Evaluate** · To state an event or fact from the last 100 years of plastic history · To explain how plastic is affecting planet Earth and suggesting ways to make more sustainable choices · To explain key functions in my program (audible alert, visuals) · To explain how my product would be useful for an animal carer including programmed features **Knowledge** · To know the functional and aesthetic properties of plastics · To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record · To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose · To know that conditional statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met · To know key developments in thermometer history · To know events or facts that took place over the last 100 years in the history of plastic, and how this is changing our outlook on the future · To know the 6Rs of sustainability · To know what CAD is and how to use it · To know what a virtual model is and the pros and cons of traditional vs CAD modelling	**Skills** **Design** · To identify factors that could be changed on existing products · To explain how these would alter the form and function of the product · To develop design criteria based on finding from investigating existing products · To develop design criteria that clarifies the target user **Make** · To alter a product's form and function by tinkering with its configuration. · To make a functional series circuit, incorporating a motor · To construct a product with consideration for the design criteria **Evaluate** · To carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses · To determine which parts of a product affect its function and which parts affect its form · To analyse whether changes in configuration positively or negatively affect an existing product **Knowledge** · 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 movement, causing the motor's axle to spin · To know a motorised product is one which uses a motor to function · 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	

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Year 6	Structures: Playgrounds	Digital World: Navigating the World	Food: Come Dine with Me
	Skills **Design** • To design a playground featuring a variety of different structures • To give careful consideration to how the structures will be used, considering effective and ineffective designs **Make** • To build a range of play apparatus structures drawing upon new and prior knowledge of structures • To measure, mark and cut wood to create a range of structures • To use a range of materials to reinforce and add decoration to structures **Evaluate** • To improve a design plan based on peer evaluation • To test and adapt a design to improve it as it is developed • To identify what makes a successful structure **Knowledge** • To know that structures can be strengthened by manipulating materials and shapes • To know what a 'footprint plan' is • To know that in the real world, design , can impact users in positive and negative ways • To know that a prototype is a cheap model to test a design idea • To know how to measure, mark and cut wood safely	**Skills** **Design** • To write a design brief from information submitted by a client • To develop design criteria to fulfil the client's request • To consider and suggest additional functions for my navigation tool • To develop a product idea through annotated sketches • To place and manoeuvre 3D objects, using CAD • To change the properties of, or combine one or more 3D objects, using CAD **Make** • To consider materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo) • To explain material choices and why they were chosen as part of a product concept • To programme an N,E, S,W cardinal compass **Evaluate** • To explain how my program fits the design criteria and how it would be useful as part of a navigation tool • To develop an awareness of sustainable design • To identify key industries that utilise 3D CAD modelling and explain why • To describe how the product concept fits the client's request and how it will benefit the customers • To explain the key functions in my program, including any additions • To explain how my program fits the design criteria and how it would be useful as part of a navigation tool • To explain the key functions and features of my navigation tool to the client as part of a product concept pitch • To demonstrate a functional program as part of a product concept **Knowledge** • To know that accelerometers can detect movement • To know that sensors can be useful in products as they mean the product can function without human input • 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	**Skills** **Design** • To write a recipe, explaining the key steps, method and ingredients • To include facts and drawings from research undertaken **Make** • To follow a recipe, including using the correct quantities of each ingredient • To adapt a recipe based on research • To work to a given timescale • To work safely and hygienically with independence **Evaluate** • To evaluate a recipe, considering: taste, smell, texture and origin of the food group • To taste test and score final products • To suggest and write up points of improvements in productions • To evaluate health and safety in production to minimise cross contamination **Knowledge** • To know that 'flavour' is how a food or drink tastes • To know that many countries have 'national dishes' which are recipes associated with that country • To know that 'processed food' means food that has been put through multiple changes in a factory • To know that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides • To know what happens to a certain food before it appears on the supermarket shelf (Farm to Fork)

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		Mechanical Systems: Automated toys		Electrical Systems: Steady, Hand game
		Skills **Design** · To experiment with a range of cams · To create a design for an automata toy based on a choice of cam to create a desired movement · To understand how linkages change the direction of a force · To make things move at the same time · To understand and draw cross-sectional diagrams to show the inner-working **Make** · To measure, mark and check the accuracy of the jelutong and dowel pieces required · To measure, mark and cut components accurately using a ruler and scissors · To assemble components accurately to make a stable frame · To understand that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles · To select appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set **Evaluate** · To evaluate the work of others and receive feedback on own work · To apply points of improvements · To describe changes they would make/do if they were to do the project again **Knowledge** · To know how linkages change the direction of a force · To know how to draw cross-sectional diagrams to show the inner-working · To know that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles · To know that the mechanism in an automata uses a system of cams, axles and followers · To know that different shaped cams produce different outputs · To know that an automata is a hand powered mechanical toy · To know that a cross-sectional diagram shows the inner workings of a product · To know how to use a bench hook and saw safely · To know that a set square can be used to help mark 90° angles		**Skills** **Design** · To design a steady hand game - identifying and naming the components required · To draw a design from three different perspectives · To generate ideas through sketching and discussion · To model ideas through prototypes **Make** · To construct a stable base for a game · To accurately cut, fold and assemble a net · Decorate the base of the game to a high quality finish · To make and test a circuit incorporating a circuit into a base **Evaluate** · To test own and others finished games · To identify what went well and making suggestions for improvement **Knowledge** · To know that batteries contain acid, which can be dangerous if they leak · To know the names of the components in a basic series circuit including a buzzer · To know the diagram perspectives 'top view', 'side view' and 'back · To know how to construct a net accurately

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Progression in Design & Technology Vocabulary

	Structures	Mechanisms and Mechanical Systems		Textiles	Food
Year 1	**Constructing a windmill** ● Client ● Design ● Evaluation ● Net ● Stable ● Strong ● Test ● Weak ● Windmill	**Making a moving story book** ●Assemble ● Design ● Evaluation ● Mechanism ● Model ● Sliders ● Stencil ● Target audience ● Template ● Test	**Wheels and Axels** ● Axle ● Axle holder ● Chassis ● Design ● Evaluation ● Fix ● Mechanic ● Mechanism ● Model ● Test ● Wheel	**Puppets** ● Decorate ● Design ● Fabric ● Glue ● Model ● Hand puppet ● Safety pin ● Staple ● Stencil ●Template	**Fruit and Vegetables** ●Blender ● Carton ● Fruit ● Healthy ● Ingredients ● Peel ● Peeler ● Recipe ● Slice ● Smoothie ● Stencil ● Template ● Vegetable
Year 2	**Baby Bears chair** ● Function ● Man-made ● Mould ● Natural ● Stable ● Stiff ● Strong ● Structure ● Test ● Weak	**Making a moving monster** ● Evaluation ● Input ● Lever ● Linear motion ● Linkage ● Mechanical ● Mechanism ● Motion ● Oscillating motion ● Output ● Pivot ●Reciprocating motion ● Rotary motion ● Survey	**Fairground Wheel** ● Axle ● Decorate ● Evaluation ● Ferris wheel ● Mechanism ● Stable ● Strong ● Test ● Waterproof ● Weak	**Pouches** ● Accurate ● Fabric ● Knot ● Pouch ● Running-stitch ● Sew ● Shape ● Stencil ● Template ● Thimble	**A balanced diet** ● Alternative ● Diet ● Balanced diet ● Evaluation ● Expensive ● Healthy ● Ingredients ● Nutrients ● Packaging ● Refrigerator ● Sugar ● Substitute

	Structures	Mechanisms and Mechanical Systems	Digital World		Electrical systems	Textiles	Food
Year 3	**Constructing a castle** ● 2D shapes ● 3D shapes ● Castle ● Design criteria ● Evaluate ● Facade ● Feature	**Pneumatic Toys** ● Exploded-diagram ● Function ● Input ● Lever ● Linkage ● Mechanism ● Motion	**Electric Charms** ● Analogue ● Badge ● CAD ● Control ● Design requirements	● Layers ● Loops ● Micro: bit ● Monitor ● Net ● Point of sale ● Product		**Cushions** ● Accurate ● Applique ● Cross-stitch ● Cushion ● Decorate ● Detail ● Fabric	**Eating Seasonally** ● Climate ● Dry climate ● Exported ● Imported ● Mediterranean climate ● Nationality ● Nutrients

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	• Flag • Net • Recyclable • Scoring • Stable • Strong • Structure • Tab • Weak	• Net • Output • Pivot • Pneumatic system • Thumbnail sketch	• Develop • Digital • Digital revolution • Digital world • Display • Electronic • Electronic products • Fasten • Feature • Function • Initiate • Key features	• Product design • Program • Sense • Simulator • Smart wearables • Stand • Technology • Template • Test • User		• Patch • Running-stitch • Seam • Stencil • Stuffing • Target audience • Target customer • Template	• Polar climate • Recipe • Seasonal food • Seasons • Temperate climate • Tropical climate
Year 4	**Pavilions** Aesthetic • Cladding • Design criteria • Evaluation • Frame structure • Function • Inspiration • Pavilion • Reinforce • Stable • Structure • Target audience • Target customer • Texture • Theme	**Making a slingshot car** • Aesthetic • Air resistance • Chassis • Design • Design criteria • Function • Graphics • Kinetic energy • Mechanism • Net • Structure			**Torches** • Battery • Bulb • Buzzer • Cell • Component • Conductor • Copper • Design criteria • Electrical item • Electricity • Electronic item • Function • Insulator • Series circuit • Switch • Test • Torch • Wire	**Fastenings** • Aesthetic • Assemble • Book sleeve • Design criteria • Evaluation • Fabric • Fastening • Mock-up • Net • Running-stitch • Stencil • Target audience • Target customer • Template	**Adapting a recipe** • 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	**Bridges** • Abutment • Accurate • Arched bridge • Beam bridge • Coping saw	**Making a pop up book** • Aesthetic • Computer-aided design (CAD) • Caption • Design	**Monitoring Devices** • Alert • Ambient • Boolean	• Monitoring device • Moulded Plastic • Plastic pollution	**Doodlers** • Circuit component • Configuration • Current • Develop • DIY		**What could be healthier?** • Beef • Cross-contamination • Diet • Ethical issues • Farm

	• Evaluation • File • Mark out • Material properties • Measure • Predict • Reinforce • Research • Sandpaper • Set square • Suspension bridge • Tenon saw • Test • Truss bridge • Wood	• Design brief • Design criteria • Exploded-diagram • Function • Input • Linkage • Mechanism • Motion • Output • Pivot • Prototype • Slider • Structure • Template	• Consumables • Decompose • Development • Device • Duplicate • Durable • Electronic • Inventor • Lightweight • Man-made • Manipulate • Manoeuvre • Microplastics • Model • Monitor	• Programming comment • Programming loop • Reformed • Replica • Research • Sensor • Strong • Sustainability • Synthetic • Thermometer • Thermoscope • Value • Variable • Versatile • Water-resistant • Workplane	• Investigate • Motor • Motorised • Problem solve • Product analysis • Series circuit • Stable • Target user		• Healthy • Ingredients • Method • Nutrients • Packaging • Reared • Recipe • Research • Substitute • Supermarket • Vegan • Vegetarian • Welfare
Year 6	<u>Playgrounds</u> 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	<u>Automata toys</u> • Accurate • Assembly-diagram • Automata • Axle • Bench hook • Cam • Clamp • Component • Cutting list • Diagram • Dowel • Drill bits • Exploded-diagram • Finish • Follower • Frame • Function • Hand drill • Jelutong • Linkage • Mark out • Measure	<u>Navigating the world</u> • 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 • Infinte • Investment • Lightweight	<u>Steady hand game</u> • Assemble • Battery • Battery pack • Benefit • Bulb • Bulb holder • Buzzer • Circuit • Circuit symbol • Component • Conductor • Copper • Design • Design criteria • Evaluation • Fine motor skills • Fit for purpose • Form • Function • Gross motor skills • Insulator • LED		<u>Come dine with me</u> • Accompaniment • Collaboration • Cookbook • Cross-contamination • Equipment • Farm • Flavour • Illustration • Imperative-verb • Ingredients • Method • Nationality • Preparation • Processed • Reared • Recipe • Research • Storyboard • Target audience • Top tips • Unit of measurement

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	• Structure • Tenon saw • Texture • User • Vice • Weak	• Mechanism • Model • Research • Right-angle • Set square • Tenon saw	• Loop • Manufacture • Materials (wood, metal, plastic etc.) • Mouldable • Navigation • Non-recyclable • Product lifecycle • Product lifespan • Program • Recyclable • Smart • Sustainable • Sustainable design • Unsustainable design • Variable • Workplane	• User		