

## St Michaels First School Design and Technology Whole School Curriculum Map

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Autumn/ Animals/ colours/ Nursery Rhymes	Festivals/ Families/ Nursery Rhymes	Winter/ Chinese New Year	Spring/ growing things/Easter/ Farm animals	Traditional Stories/ Nursery Rhyme	Seaside & Holidays
Nursery	*designing a fruit basket * healthy eating (fruit and vegetables)	<ul> <li>Rice crispy cakes</li> <li>Hanukkah candle sticks</li> </ul>	<ul><li>Lanterns</li><li>Dragon masks</li><li>Food tasting</li></ul>	<ul><li>Animal masks</li><li>Design a farm</li><li>Build a caterpillar</li></ul>	<ul> <li>Making sandwiches</li> <li>Construction role play</li> <li>Building houses</li> </ul>	<ul> <li>Scissor skills</li> <li>Seaside collage</li> <li>Junk modelling</li> <li>Water/ sand play</li> </ul>
Reception (ongoing development of cutting, joining, collage skills)	Marvellous me and my family tree	Celebrations	People who help us	Nocturnal animals	Growing and hatching	Shiver me timbers!
	Scissor control Colour mixing	Fireworks Biscuit making Diwali clay lamps	Junk model Vehicle Chinese lanterns Chinese dragons	Mask making Easter egg cakes (cooking)	Design a seed packet Fruit kebabs (cooking)	Octopus – paper folding Junk model boats
Year1	Fun on the Farm	Let's Celebrate! Christmas, Diwali, Hanukah	Polar places	Once upon a time Knights, Castles and Dragons	Where in the World Safari Explorer's	Fun at the Seaside
	Soup tasting Soup making (cooking)	Sewing Christmas stocking	Build an igloo	Making a bird feeder	Making smoothies (cooking)	Minibeast house
Year 2	The Great Fire of London	Blast from the Past	Fabulous Fairy tales	Crazy Crayons	Awesome Authors	Animal Antics
	Building a fire Truck (axils)		Puppets		sandwiches (cooking) sandwich packaging	
Year 3	Prehistoric Britain	European Adventure	The Romans in Britain		Maps	Rivers Go With The Flow
		Structures	Pizza		Lego Design challenge (including coding)	
Year 4	Anglo-Saxons & Vikings					Ancient Egyptians
		Christmas Card with a moving part Diwali sewn designs	Bread	Lego Design challenge (including coding)		

#### **Purpose of Study (National Curriculum)**

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.

### **Aims (National Curriculum)**

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.

### **Early Years Foundation Stage Curriculum**

### **Expressive Arts and Design**

Creating with Materials ELG

\_Children at the expected level of development will:

- -Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form, and function;
- -Share their creations, explaining the process they have used;
- -Make use of props and materials when role playing characters in narratives and stories.

	Key Stage 1	Key Stage 2
Skills and		
Content	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	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 computeraided design
	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	<ul> <li>Make</li> <li>select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</li> <li>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</li> </ul>
		Evaluate
	<ul> <li>Technical knowledge</li> <li>build structures, exploring how they can be made stronger, stiffer and more stable</li> </ul>	<ul> <li>investigate and analyse a range of existing products</li> <li>evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</li> </ul>

<ul> <li>explore and use mechanisms [for example, levers, sliders,</li></ul>	<ul> <li>understand how key events and individuals in design and</li></ul>
wheels and axles], in their products.	technology have helped shape the world
	<ul> <li>Technical knowledge</li> <li>apply their understanding of how to strengthen, stiffen and reinforce more complex structures</li> <li>understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]</li> <li>understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]</li> <li>apply their understanding of computing to program, monitor and control their products.</li> </ul>

# Cooking and Nutrition

#### **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:

#### Key stage 1

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

#### Key stage 2

- 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.

### **Assessment & Attainment Targets**

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

At St Michael's we assess Design and Technology at the end of each topic.

## **Design and Technology in the Early Years**

	Nursery and Reception
Construction	Paying with everyday objects such as empty boxes. blocks and construction materials.  Learning to construct with a purpose in mind, e.g. using scissors, glue, string and a hole-punch to make a bag to store items collected during a Forest School session.  Producing items that look and function more like purposeful objects. Children may begin to want to make bags for their shop, create signs for their library, put a lighting system into their cardboard house or explore ways of channelling water.
Structure and Joins	Making use of fixing and joining materials such as sellotape, masking tape, string, pipe cleaners.  Producing items which represent other objects, early efforts at making things, as with drawings, are often quite ambiguous. The box covered in glue with scraps of paper, paint and fabric stuck to it might be a house or a car - or a trap for monsters.  Observing closely and replicating a structure.
Using a Range of Tools	Learning about planning and adapting initial ideas to make them better, e.g. a child might choose to use scissors, a stapler, elastic bands and glue to join bits together to make a toy vehicle. But they might then modify their initial idea by using masking tape. Children should use a range of tools including scissors, hole punch, stapler, glue spreader, rolling pin, cutter and grater.
Cooking	Beginning to understand some of the tools, techniques and processes involved in food preparation. E.g. taking turns stirring the mixture for a cake and then watching it rise while cooking. Children should practise stirring, mixing, pouring and blending ingredients during cookery activities  Early interest in playing with dough (or even pastry) (during free choice) may become more focused on producing something which can
Exploration	actually be eaten.  Open-ended play enables children to explore materials, to work with tools and to observe and play with natural and manufactured objects.  Learning about how everyday objects work by dismantling things and looking closely at their component parts.
Discussion	Opportunities to discuss reasons that make activities safe or unsafe e.g. hygiene and electrical awareness. Opportunities to discuss appropriate use of senses e.g. when tasting different foods. Opportunities to use the language of designing and making, e.g. words such as 'join', 'build' and 'shape' as well as evaluative and comparative language - 'longer', 'shorter', 'lighter', 'heavier' and 'stronger'. Children should also learn to record their experiences by, for example, drawing, writing, voice recording or modelling.

## Progression of skills and knowledge in Design and Technology

	Technical knowledge Materials/structures	Technical knowledge - Mechanisms	Technical knowledge - Textiles	Technical knowledge – Food and nutrition	Technical knowledge – Electrical systems	Possible Enquiry Questions (The question will lead to an authentic outcome.)
Year 1 Let's Celebrate!  Polar places Once upon a time Knights, Castles and Dragons Fun at the Seaside	*begin to measure and join materials, with some support *describe differences in materials *suggest ways to make material/product stronger  Building an igloo	begin to use levers or slides	*measure, cut and join textiles to make a product, with some support *choose suitable textiles Christmas Stocking	*describe textures  *wash hands & clean surfaces  *think of interesting ways to decorate food  *say where some foods come from, (i.e. plant or animal)  *describe differences between some food groups (i.e. sweet, vegetable etc.)  *discuss how fruit and vegetables are healthy  *cut, peel and grate safely, with support  Soup tasting and making Smoothie making  Forest school		How could an igloo be built for a person to live in?  What makes a soup delicious?  What favour smoothie would you like?
Year 2 The Great Fire of London Blast from the Past Animal Antics	*measure materials *describe some different characteristics of materials *join materials in different ways *use joining, rolling or folding to make it stronger *use own ideas to try to make product stronger  Hand puppets	*use levers or slides *begin to understand how to use wheels and axles Fire truck (axels)	*measure textiles *join textiles together to make a product, and explain how I did it *carefully cut textiles to produce accurate pieces *explain choices of textile *understand that a 3D textile structure can be made from two identical fabric shapes.  Hand Puppets	*explain hygiene and keep a hygienic kitchen *describe properties of ingredients and importance of varied diet *say where food comes from (animal, underground etc.) *describe how food is farmed, home-grown, caught *draw eat well plate; explain there are groups of food *describe "five a day" *cut, peel and grate with increasing confidence  Sandwich making  Forest School		How can I make a fire truck that moves on its own?  How can I make my sandwich look good enough to eat?

Year 3	use appropriate materials *work accurately to make cuts and holes * join materials *begin to make strong structures  Structures – Towers	*select appropriate tools / techniques *alter product after checking, to make it better *begin to try new/different ideas		*carefully select ingredients *use equipment safely *make product look attractive *think about how to grow plants to use in cooking *begin to understand food comes from UK and wider world *describe how healthy diet= variety/balance of food/drinks *explain how food and drink are needed for active/healthy bodies. *prepare and cook some dishes safely and hygienically *grow in confidence using some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking Pizza  • Links to Forest School	use simple circuit in product *learn about how to program a computer to control product.  Lego Challenge	How can I make my building stand tall?  What pizza would you serve in your pizza café?
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Year 4	*measure carefully to	*select most	*join different textiles in	*explain how to be	*use number of
	avoid mistakes	appropriate tools /	different ways	safe/hygienic	components in circuit
Lego Challenge	*attempt to make	techniques	*choose textiles	*think about presenting	*program a computer to
	product strong	*explain alterations	considering appearance	product in interesting/	control product
	*continue working on	to product after	and functionality	attractive ways	Lego Challenge
	product even if original	checking it	*begin to understand	*understand ingredients can	
	didn't work	*grow in	that a simple fabric	be fresh, pre-cooked or	
	*make a strong, stiff	confidence about	shape can be used to	processed	
	structure	trying new /	make a 3D textiles	*begin to understand about	
	Christmas card with	different ideas.	project	food being grown, reared or	
	moving part	*use levers and		caught in the UK or wider	
		linkages to create		world	
	Diwali design	movement		*describe eat well plate and	
				how a healthy diet=variety /	
		Christmas card with		balance of food and drinks	
		moving part		*explain importance of food	
				and drink for active, healthy	
				bodies	
				*prepare and cook some	
				dishes safely and hygienically	
				*use some of the following	
				techniques: peeling,	
				chopping, slicing, grating,	
				mixing, spreading, kneading	
				and baking	
				Bread (savoury and sweet)	
				* Links to Forest School	

## Progression of Skills and Knowledge Nursery, EYs and Key Stage 1

	Nursery	Early Years	Year 1	Year 2
Aspects				
Design	*Select appropriate resources from a given selection *Use gestures, talking and arrangements of materials and components to show design	*Select appropriate resources *Use gestures, talking and arrangements of materials and components to show design * Use contexts set by the teacher and themselves	* have own ideas  * explain what I want to do  *explain what my product is for, and how it will work  * use pictures and words to plan, begin to use models	* have own ideas and plan what to do next * explain what I want to do and describe how I may do it

		*Use language of designing and making (join, build, shape, longer, shorter, heavier etc.)	* design a product for myself following design criteria *research similar existing products	* explain purpose of product, how it will work and how it will be suitable for the user  * describe design using pictures, words, models, diagrams, begin to use ICT  * design products for myself and others following design criteria  * choose best tools and materials, and explain choices  * use knowledge of existing products to produce ideas
Make	Construct with purpose and explain what they have made     Use simple tools to cut and join     Explain their makes	*Construct with a purpose, using a variety of resources *Use simple tools and techniques *Build / construct with a wide range of objects *Select tools & techniques to shape, assemble and join *Replicate structures with materials / components *Discuss how to make an activity safe and hygienic *Record experiences by drawing, writing, voice recording *Understand different media can be combined for a purpose	*explain what I'm making and why  *consider what I need to do next  *select tools/equipment to cut, shape, join, finish and explain choices  *measure, mark out, cut and shape, with support  *choose suitable materials and explain choices  *try to use finishing techniques to make product look good  *work in a safe and hygienic manner	*explain what I am making and why it fits the purpose *make suggestions as to what I need to do next. *join materials/components together in different ways *measure, mark out, cut and shape materials and components, with support. *describe which tools I'm using and why *choose suitable materials and explain choices depending on characteristics. *use finishing techniques to make product look good *work safely and hygienically
Evaluate		*Discuss how they would adapt their work *Dismantle, examine, talk about existing objects/structures *Consider and manage some risks	*talk about my work, linking it to what I was asked to do * talk about existing products considering: use, materials, how they work, audience, where they might be used	* describe what went well, thinking about design criteria * talk about existing products considering: use, materials, how they work, audience,

	*Practise some appropriate safety measures independently *Talk about how things work *Look at similarities and differences between existing objects / materials / tools *Show an interest in technological toys *Describe textures	*talk about existing products, and say what is and isn't good * talk about things that other people have made *begin to talk about what could make product better	where they might be used; express personal opinion *evaluate how good existing products are *talk about what I would do differently if I were to do it again and why
Making, construction and structure  Textiles  Food and healthy eating		planning, investigating design, evaluate, make, user, purpose, ideas, product, cut, fold, join, fix structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved, metal, wood, plastic circle, triangle, square, rectangle, cuboid, cube, cylinder	investigating, planning, design, make, evaluate, user, purpose, ideas, design criteria, product, function cut, fold, join, fix structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved, metal, wood, plastic circle, triangle, square, rectangle, cuboid, cube, cylinder
		stitch, fabric, material, thread, cotton, needle, joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish fruit and vegetable names, names of equipment and utensils, sensory vocabulary e.g. soft,	stitch, fabric, material, thread, cotton, needle, joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish fruit and vegetable names, names of equipment and

	juicy, crunchy, sweet, sticky,	utensils, sensory vocabulary
	smooth, sharp, crisp, sour, hard,	e.g. soft,
	flesh, skin, seed, pip, core, slicing,	juicy, crunchy, sweet, sticky,
	peeling, cutting, squeezing,	smooth, sharp, crisp, sour,
	healthy diet, choosing,	hard, flesh, skin, seed, pip,
	ingredients	core, slicing, peeling, cutting,
		squeezing, healthy diet,
		choosing, ingredients

## Progression of Skills and Knowledge Nursery, EYs and Key Stage 1

	Year 3	Year 4
Aspects		
Design	*begin to research others' needs	* use research for design ideas
	* show design meets a range of requirements	* show design meets a range of requirements and is fit for purpose
	* describe purpose of product	*begin to create own design criteria
	* follow a given design criteria	*have at least one idea about how to create product and suggest
	* have at least one idea about how to create product	improvements for design.
	* create a plan which shows order, equipment and tools	* produce a plan and explain it to others
	*describe design using an accurately labelled sketch and words	*say how realistic plan is.
	* make design decisions	*include an annotated sketch
	*explain how product will work	*make and explain design decisions considering availability of
	* make a prototype	resources
	* begin to use computers to show design	*explain how product will work
		* make a prototype
		*begin to use computers to show design.
Make	*select suitable tools/equipment, explain choices; begin to use them	* select suitable tools and equipment, explain choices in relation
	accurately	to required techniques and use accurately
	* select appropriate materials, fit for purpose.	*select appropriate materials, fit for purpose; explain choices
	* work through plan in order	* work through plan in order.
	*consider how good product will be	* realise if product is going to be good quality
	* begin to measure, mark out, cut and shape materials/components with	* measure, mark out, cut and shape materials/components with
	some accuracy	some accuracy
	* begin to assemble, join and combine materials and components with some	*assemble, join and combine materials and components with
	accuracy	some accuracy
	* begin to apply a range of finishing techniques with some accuracy	*apply a range of finishing techniques with some accuracy
Evaluate	* look at design criteria while designing and making	*refer to design criteria while designing and making
	*use design criteria to evaluate finished product	*use criteria to evaluate product
	* say what I would change to make design better	* begin to explain how I could improve original design

	*begin to evaluate existing products, considering: how well they have been made, materials, whether they work, how they have been made, fit for purpose  * begin to understand by whom, when and where products were designed  * learn about some inventors/designers/ engineers/chefs/ manufacturers of ground-breaking products	*evaluate existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose  * discuss by whom, when and where products were designed  * research whether products can be recycled or reused  * know about some inventors/designers/ engineers/chefs/manufacturers of ground-breaking products
Key Vocabulary  Making, construction and structure  Textiles	user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, function, planning, design criteria, annotated sketch, appealing shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision,	evaluating, design brief design criteria, innovative, prototype, user, purpose, function, prototype, design criteria, innovative, appealing, design brief, planning, annotated sketch, sensory evaluations, shell structure, three dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision,
	Running stitch, back stitch, over stitch, fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance  name of products, names of equipment, utensils, techniques and ingredients, texture, taste, sweet, sour, hot, spicy,	Running stitch, back stitch, over stitch, fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance
	appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested, healthy/varied diet dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied,	name of products, names of equipment, utensils, techniques and ingredients, texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested, healthy/varied diet, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied,