

# Design & Technology

## Long Term Plan 2024 - 25

### Archbishop Runcie CE First School



#### Our original Mission

“A school for the education of children only of the labouring mining and manufacturing and other poorer classes in the Parish of Gosforth and for no other purpose.”

The school first existed as a force for social change and we remember this within our historic original mission as we continue to inspire and transform the minds and hearts of everyone we serve today and, thus, the wider world.

In light of our ever changing community, we seek to develop [love and determination](#) and, in doing so, enable everyone associated with our school to experience life in all its fullness, as promised by Jesus.

#### Current Mission

Inspired by the parable of the lost sheep, our mission is to enable everyone within our school community to flourish through our unconditional [love and determination](#), as demonstrated by the good shepherd. We are reminded that every single member of our school community is equally valued and loved in the image of God.



#### Vision

In 1 Corinthians 16:13-14, Paul urged the church in Corinth to:

**Be courageous; be strong.  
Do everything in love.**

This epistle helps us understand;

- that God's love sets self aside, over and over, endlessly, for the good of others.
- that our thoughts and deeds should spring from, and be done, in [love](#) and with strength and courage – referred to as [determination](#).

#### Values

Rooted in the epistle above, the Christian values of [love and determination](#) are at the core of teaching and culture within the school.

## Design and Technology

### Intent

At Archbishop Runcie CE First School, we aim to inspire the next generation of engineers, architects, designers, chefs and technologists. We use the Kapow scheme of work to support the delivery of DT across the school.

The Kapow Design and technology scheme of work 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 pupils to develop the confidence to take risks, through drafting design concepts, modelling, and testing and to be reflective learners who evaluate their work and the work of others.

DT is part of children's cultural capital entitlement. It enables children to use their God-given capabilities to shape the world that is to come for the better, in line with our school vision and values.

Through our scheme of work, we aim to build an awareness of the impact of design and technology on our lives and encourage pupils to become resourceful, enterprising citizens who will have the skills to contribute to future design advancements. EYFS units provide opportunities for pupils' to work towards the Development matters statements and the Early Learning Goals.

Our Design and technology scheme of work enables pupils to meet the end of key stage attainment targets in the National curriculum and the aims also align with those in the National curriculum.

It is multi-disciplinary, thus deepening children's knowledge within other subjects e.g. Maths, Science, Art, Computing. However, we teach DT as a discrete subject explicitly as its application and utility goes beyond how it benefits other subjects and is worth study in its own right.

### Implementation

The school uses Kapow for Design and Technology planning support – this supports teachers to put the ambitious intent statement into action. This scheme ensures that units are sequential, with the core areas being revisited, increasing in complexity through a spiral curriculum model, alongside National Curriculum coverage.

Kapow's system scaffolds children to ensure that they can all access appropriate outcomes and content independently alongside the technical elements. It also supplements staff knowledge and expertise, ensuring that non-subject specialists can still lead lessons that have high degrees of challenge (e.g. using videos to demonstrate worked examples modelled by experts).

In line with the National Curriculum, DT is grouped under four key areas:

- Design
- Make
- Evaluate
- Technical knowledge

The scheme has a clear progression of skills and knowledge within these strands and key areas across each year group. The progression of skills is mapped out for each year group and how these skills develop to ensure that attainment targets are securely met by the end of each key stage:

Cooking and nutrition
Mechanisms/ Mechanical systems
Structures
Textiles
Electrical systems (KS2 only)
Digital world (KS2 only)

Cooking and nutrition is given a particular focus in the National Curriculum and we have made this one of our six key areas that pupils revisit (across a Key Stage) throughout their time in our school.

Through Kapow Primary's Design and technology scheme, pupils respond to design briefs and scenarios that require consideration of the needs of others, developing their skills in the six key areas.

Each of our key areas follows the design process (design, make and evaluate) and has a particular theme and focus from the technical knowledge or cooking and nutrition section of the curriculum. The Kapow Primary scheme is a spiral curriculum, with key areas revisited again and again with increasing complexity, allowing pupils to revisit 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. This variety means that lessons are engaging and appeal to those with a variety of learning styles. Guidance is available for every lesson to ensure that lessons can be accessed by all pupils and opportunities to stretch pupils' learning are available when required. Knowledge organisers for each unit support pupils in building a foundation of factual knowledge by encouraging recall of key facts and vocabulary.

Strong subject knowledge is vital for staff to be able to deliver a highly effective and robust Design and technology curriculum. Each unit of lessons includes multiple teacher videos to develop subject knowledge and support ongoing CPD. Kapow Primary has been created with the understanding that many teachers do not feel confident delivering the full Design and technology curriculum and every effort has been made to ensure that they feel supported to deliver lessons of a high standard that ensure pupil progression.

General resources are available in all class rooms (e.g. scissors, rulers) and more specialist resources (e.g. textiles resources) are held centrally. There are dedicated food technology areas in EYFS and KS2 (available for KS1 & KS2), equipped with necessary resources.

DT is timetabled to occur half-termly to consolidate knowledge and allow appropriate amounts of time to be dedicated to the subject (alternating with Art), whilst keeping the subject discrete and explicitly taught.

Because children work independently and as part of a group in DT, class books (not individual books) are maintained to allow children to showcase their learning during their time in school and allow them to make links between previous and current learning.

## Impact and Next Steps

The impact of Kapow Primary's scheme can be constantly monitored through both formative and summative assessment opportunities. Each unit has a 'knowledge catcher' which can be used at the end of the unit to inform assessments which are then recorded on Insight tracker.

After the implementation of Kapow Primary Design and technology, pupils leave school equipped with a range of skills to enable them to succeed in their middle school education and be innovative and resourceful members of society.

The expected impact of following the Kapow Primary Design and technology scheme of work is that children will:

- Understand the functional and aesthetic properties of a range of materials and resources.
- 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.

<b>*Sp</b>	Opportunity for spiritual development
<b>*Mo</b>	Opportunity for moral development
<b>*So</b>	Opportunity for social development
<b>*Cu</b>	Opportunity for cultural development

# EYFS

Nursery	Autumn Term		Spring Term		Summer Term	
<b>Topic Title Cycle 1</b>	Once upon a time...	Dark Nights, Bright Lights	Long ago, Dinosaur Roar!	All Creatures Great and Small	What a wonderful world!	We're off on a Journey
<b>Texts – Cycle 1</b>	<b>Goldilocks Baby Bear's Birthday</b>	<b>Pinecone &amp; Penguin Dear Santa</b>	<b>The Gingerbread Man Dinosaur Roar</b>	<b>Dear Zoo Driving my tractor</b>	<b>The Very Hungry Caterpillar Jasper's Beanstalk</b>	<b>The Train Ride Penguin on Holiday</b>
<b>Design and Technology within topic</b>	Baking cakes	Apple crumble	Baking Gingerbread men	3D Jungle animals	Caterpillar egg box craft	Vehicle Junk Modelling
	Building a new chair for baby bear	Salt dough Hedgehogs	Dinosaur World	Tractors and wheels	Smoothies	Add wheels to my vehicle
	Building a new chair for baby bear	Christmas Crafts using materials	Fossils using art straws		Playdough beanstalks	Flying aeroplanes
<b>Topic Title Cycle 2</b>	Once upon a time...	Dark nights, bright lights	Helpful Heroes	Animals Near and Far	Journey to Space	All at Sea and Shore
<b>Texts – Cycle 2</b>	<b>Goldilocks Baby Bear's Birthday</b>	<b>Pinecone &amp; Penguin Dear Santa</b>	<b>Supertato A superhero like you</b>	<b>Rumble in the Jungle What Pet to Get?</b>	<b>Whatever Next Goodnight Spaceman</b>	<b>Commotion in the Ocean Pirate Pete</b>
<b>Design and Technology within topic</b>	Same as above (No rising threes)	Same as above (No rising threes)	Design a vegetable superhero	Easter baskets	Space rocket building	Junk Modelling Sea creatures
			Emergency vehicle junk modelling	Split pin animals	Baking rock cakes	Building a pirate ship

Reception	Autumn Term	Spring Term	Summer Term
<b>Unit title</b>	Cooking and nutrition: Pumpkin soup	Textiles: Bookmarks	Structures: Boats
<b>Vocabulary</b>	Tier 2 – flavour, pumpkin, packaging Tier 3 – equipment, ingredients	Tier 2 – thread, weave, needle, sew Tier 3 – Embroider	Tier 2 – waterproof, float, sink Tier 3 – prediction, variable
<b>Why this, why now</b>	Autumn links to text	Celebrates reading and is progressively more challenging than prior unit	Links to Science learning and is progressively more challenging than first Reception unit.
<b>Disciplinary knowledge (skills)</b>	<p><b>Design:</b></p> <ul style="list-style-type: none"> <li>• Designing a soup recipe as a class.</li> <li>• Designing soup packaging.</li> </ul> <p><b>Make:</b></p> <ul style="list-style-type: none"> <li>• Chopping plasticine safely.</li> <li>• Chopping vegetables with support</li> </ul> <p><b>Evaluate:</b></p> <ul style="list-style-type: none"> <li>• Tasting the soup and giving opinions.</li> <li>• Describing some of the following when tasting food: look, feel, smell and taste.</li> <li>• Choosing their favourite packaging design and explaining why.</li> </ul>	<p><b>Design:</b></p> <ul style="list-style-type: none"> <li>• Discussing what a good design needs.</li> <li>• Designing a simple pattern with paper.</li> <li>• Designing a bookmark.</li> <li>• Choosing from available materials.</li> </ul> <p><b>Make:</b></p> <ul style="list-style-type: none"> <li>• Developing fine motor/cutting skills with scissors.</li> <li>• Exploring fine motor/threading and weaving (under, over technique) with a variety of materials.</li> <li>• Using a prepared needle and wool to practise threading.</li> </ul> <p><b>Evaluate:</b></p> <ul style="list-style-type: none"> <li>• Reflecting on a finished product and comparing to their design.</li> </ul>	<p><b>Design:</b></p> <ul style="list-style-type: none"> <li>• Designing a junk model boat.</li> <li>• Using knowledge from exploration to inform design.</li> </ul> <p><b>Make:</b></p> <ul style="list-style-type: none"> <li>• Making a boat that floats and is waterproof, considering material choices.</li> </ul> <p><b>Evaluate:</b></p> <ul style="list-style-type: none"> <li>• Making predictions about, and evaluating different materials to see if they are waterproof.</li> <li>• Making predictions about, and evaluating existing boats to see which floats best.</li> <li>• Testing their design and reflecting on what could have been done differently.</li> <li>• Investigating the how the shapes and structure of a boat affect the way it moves.</li> </ul>
<b>Substantive knowledge (Technical knowledge)</b>	<ul style="list-style-type: none"> <li>• To know that soup is ingredients (usually vegetables and liquid) blended together.</li> <li>• To know that vegetables are grown.</li> <li>• To recognise and name some common vegetables.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that a design is a way of planning our idea before we start.</li> <li>• To know that threading is putting one material through an object.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that ‘waterproof’ materials are those which do not absorb water.</li> </ul>

	<ul style="list-style-type: none"> <li>• To know that different vegetables taste different.</li> <li>• To know that eating vegetables is good for us.</li> <li>• To discuss why different packages might be used for different foods.</li> </ul>		
<b>Lesson sequence</b>	<ol style="list-style-type: none"> <li>1. <b>Fantastic Fruits and vegetables</b> – to explore fruits and vegetables and the differences between them.</li> <li>2. <b>Pumpkin Soup</b> – To explore a pumpkin and describe it using the five senses.</li> <li>3. <b>Designing soup</b> – To design a fruit and vegetable soup recipe.</li> <li>4. <b>Fine motor skills</b> – To learn how to use a knife safely.</li> <li>5. <b>Making soup</b> – To safely use tools to prepare ingredients.</li> <li>6. <b>Designing soup packaging</b> – To design food packaging.</li> </ol>	<ol style="list-style-type: none"> <li>1. <b>Exploring threading and weaving</b> – To develop threading and weaving skills.</li> <li>2. <b>Paper weaving</b> – To practise and apply weaving skills to a specific material e.g. paper.</li> <li>3. <b>Sewing with hessian</b> – To practise and apply threading skills with specific materials e.g. hessian and wool.</li> <li>4. <b>Designing bookmarks</b> – To use threading or sewing to design a product (bookmark).</li> <li>5. <b>Creating bookmarks</b> – To create a textile product (bookmark) following their own design.</li> <li>6. <b>Evaluating bookmarks</b> – To reflect with children on how they have achieved their aims.</li> </ol>	<ol style="list-style-type: none"> <li>1. <b>Waterproof materials</b> – To understand what waterproof means and to test whether materials are waterproof.</li> <li>2. <b>Floating and sinking</b> – To test and make predictions for which materials float or sink.</li> <li>3. <b>Boats</b> – To compare the uses of boats.</li> <li>4. <b>Investigating boats</b> – To investigate how the shape and structure of boats affect the way they move.</li> <li>5. <b>Designing boats</b> – To design a boat.</li> <li>6. <b>Creating and testing boats</b> – To create a boat based upon their own design.</li> </ol>

# Key Stage 1

Year 1	Weeks 1 - 6	Weeks 14 - 19	Weeks 27 - 32
<b>Unit title</b>	Structures: Constructing a windmill (4 lessons)	Textiles: Puppets	Cooking and nutrition: Smoothies
<b>Vocabulary</b>	<p><b>Tier 2:</b> Strong Test Weak Windmill</p> <p><b>Tier 3:</b> Axle Turbine Client Design Evaluation Net Stable</p>	<p><b>Tier 2:</b> Fabric Glue Model Hand puppet Decorate Safety pin Staple Design</p> <p><b>Tier 3:</b> Stencil Template</p>	<p><b>Tier 2:</b> Vegetable Smoothie Fruit Healthy Slice Peel Ingredients</p> <p><b>Tier 3:</b> Blender Carton Peeler Recipe Stencil Template</p>
<b>Why this, why now?</b>	Builds on previous unit in Reception.	Progressively more challenging than Reception textiles including more difficult techniques.	Multimedia design and links to PSHE healthy choices.
<b>Disciplinary knowledge (skills)</b>	<p><b>Design:</b></p> <ul style="list-style-type: none"> <li>Learning the importance of a clear design criteria</li> <li>Including individual preferences and requirements in a design.</li> </ul> <p><b>Make:</b></p> <ul style="list-style-type: none"> <li>Making stable structures from card.</li> <li>Following instructions to cut and assemble the supporting structure of a windmill.</li> </ul>	<p><b>Design:</b></p> <ul style="list-style-type: none"> <li>Using a template to create a design for a puppet.</li> </ul> <p><b>Make:</b></p> <ul style="list-style-type: none"> <li>Cutting fabric neatly with scissors.</li> <li>Using joining methods to decorate a puppet.</li> <li>Sequencing steps for construction.</li> </ul> <p><b>Evaluate:</b></p> <ul style="list-style-type: none"> <li>Reflecting on a finished product, explaining likes and dislikes.</li> </ul>	<p><b>Design:</b></p> <ul style="list-style-type: none"> <li>Designing smoothie carton packaging by-hand</li> </ul> <p><b>Make:</b></p> <ul style="list-style-type: none"> <li>Chopping fruit and vegetables safely to make a smoothie.</li> <li>Juicing fruits safely to make a smoothie.</li> </ul> <p><b>Evaluate:</b></p> <ul style="list-style-type: none"> <li>Tasting and evaluating different food combinations.</li> </ul>



	<ul style="list-style-type: none"> <li>• Making functioning turbines and axles which are assembled into a main supporting structure.</li> <li>• Finding the middle of an object.</li> <li>• Puncturing holes.</li> <li>• Adding weight to structures.</li> <li>• Creating supporting structures.</li> <li>• Cutting evenly and carefully.</li> </ul> <p><b>Evaluate:</b></p> <ul style="list-style-type: none"> <li>• Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't.</li> <li>• Suggest points for improvements.</li> </ul>		<ul style="list-style-type: none"> <li>• Describing appearance, smell and taste.</li> <li>• Suggesting information to be included on packaging.</li> <li>• Comparing their own smoothie with someone else's.</li> </ul>
<p><b>Substantive knowledge (Technical knowledge)</b></p>	<ul style="list-style-type: none"> <li>• To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses).</li> <li>• 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.</li> <li>• To know that a structure is something that has been made and put together.</li> <li>• To know that the sails or blades of a windmill are moved by the wind.</li> <li>• To know that a structure is something built for a reason.</li> <li>• To know that stable structures do not topple.</li> <li>• To know that adding weight to the base of a structure can make it more stable.</li> <li>• To understand that axles are used in structures and mechanisms to make parts turn in a circle.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that 'joining technique' means connecting two pieces of material together.</li> <li>• To know that there are various temporary methods of joining fabric by using staples, glue or pins.</li> <li>• To understand that different techniques for joining materials can be used for different purposes.</li> <li>• 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.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that a blender is a machine which mixes ingredients together into a smooth liquid.</li> <li>• To know that a fruit has seeds.</li> <li>• To know that fruits grow on trees or vines.</li> <li>• To know that vegetables can grow either above or below ground.</li> <li>• To know that vegetables is any edible part of a plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).</li> </ul>

	<ul style="list-style-type: none"> <li>• To begin to understand that different structures are used for different purposes.</li> <li>• To know that a structure is something that has been made and put together.</li> </ul>		
<b>Lesson sequence</b>	<ol style="list-style-type: none"> <li>1. <b>Windmills</b> - To create a stable structure.</li> <li>2. <b>Making the sails</b> -To use tools and equipment accurately to make part of a structure.</li> <li>3. <b>Attaching the sails</b> - to join parts of a structure.</li> <li>4. <b>Evaluating windmills</b> - To evaluate a structure.</li> </ol> <p>*Sp *Mo *So *Cu</p>	<ol style="list-style-type: none"> <li>1. <b>Joining fabrics</b> - To join fabrics together using different methods.</li> <li>2. <b>Designing my puppet</b> - To use a template to create my design.</li> <li>3. <b>Making and joining my puppet</b> - To join two fabrics together accurately.</li> <li>4. <b>Decorating my puppet</b> - To embellish my design using joining methods.</li> </ol> <p>*Sp</p>	<ol style="list-style-type: none"> <li>1. <b>Fruits</b> - To identify fruits.</li> <li>2. <b>Growing</b> - To describe where fruits and vegetables grow.</li> <li>3. <b>Cutting and juicing</b> - To practise food preparation skills.</li> <li>4. <b>Testing ingredients</b> - To select ingredients for a recipe.</li> <li>5. <b>Testing ingredients</b> - To select ingredients for a recipe</li> <li>6. <b>Evaluating</b> – To evaluate against a design brief</li> </ol> <p>*Sp</p>

Year 2	Weeks 1 - 6	Weeks 14 - 19	Weeks 27 - 32
<b>Unit title</b>	Structures: Baby bear's chair (4 lessons)	Mechanisms: Fairground wheel (4 lessons)	Cooking and nutrition: Balanced diet
<b>Vocabulary</b>	<p><b>Tier 2:</b> shape model test man-made natural</p> <p><b>Tier 3:</b> design criteria properties structure stable</p>	<p><b>Tier 2:</b> frame model opinion</p> <p><b>Tier 3:</b> design brief design criteria evaluate rotate survey</p>	<p><b>Tier 2:</b> menu balanced diet fruit ingredients chopping board taste vegetables</p> <p><b>Tier 3:</b> carbohydrates combination dairy design design brief evaluate oils proteins review table knife</p>
<b>Why this, why now</b>	More challenging design elements and also linked to Science learning.	Introduction to mechanisms building on prior structures.	Important children have an awareness of healthy diets before moving to KS2 when many children opt to bring packed lunches.
<b>Disciplinary knowledge (skills)</b>	<p><b>Design:</b> • Generating and communicating ideas using sketching and modelling. • Learning about different types of structures, found in the natural world and in everyday objects.</p> <p><b>Make:</b> Making a structure according to design</p>	<p><b>Design:</b> Selecting a suitable linkage system to produce the desired motions. Designing a wheel.</p> <p><b>Make:</b> Selecting appropriate materials based on their properties.</p>	<p><b>Design:</b> • Designing three wrap ideas based on a food combination which work well together.</p> <p><b>Make:</b> • Chopping foods safely to make a wrap. • Constructing a wrap that meets a design brief. •</p>

	<p>criteria. • Creating joints and structures from paper/card and tape. • Building a strong and stiff structure by folding paper..</p> <p><b>Evaluate:</b></p> <ul style="list-style-type: none"> <li>• Exploring the features of structures. • Comparing the stability of different shapes. • Testing the strength of own structures. • Identifying the weakest part of a structure. • Evaluating the strength, stiffness and stability of own structure.</li> </ul>	<p>Selecting materials according to their characteristics. Following a design brief.</p> <p><b>Evaluate:</b></p> <p>Evaluating different designs. Testing and adapting a design.</p>	<p>Grating foods to make a wrap. • Snipping smaller foods instead of cutting.</p> <p><b>Evaluate:</b></p> <ul style="list-style-type: none"> <li>• Describing the taste, texture and smell of fruit and vegetables. • Taste testing food combinations and final products. • Describing the information that should be included on a label. •Evaluating food by giving a score.</li> </ul>
<p><b>Substantive knowledge (Technical knowledge)</b></p>	<ul style="list-style-type: none"> <li>• To know that shapes and structures with wide, flat bases or legs are the most stable.</li> <li>• To understand that the shape of a structure affects its strength.</li> <li>• To know that materials can be manipulated to improve strength and stiffness.</li> <li>• To know that a structure is something which has been formed or made from parts.</li> <li>• To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move.</li> <li>• To know that a 'strong' structure is one which does not break easily.</li> <li>• To know that a 'stiff' structure or material is one which does not bend easily.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that different materials have different properties and are therefore suitable for different uses.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that 'diet' means the food and drink that a person or animal usually eats.</li> <li>• To understand what makes a balanced diet.</li> <li>• To know that the five main food groups are: carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar.</li> <li>• To understand that I should eat a range of different foods</li> <li>• from each food group, and roughly how much of each food group.</li> <li>• To know that 'ingredients' means the items in a mixture or recipe.</li> </ul>

<p><b>Lesson Progression</b></p>	<p><b>Lesson 1: Exploring stability</b> - To explore the concept and features of structures and the stability of different shapes.</p> <p><b>Lesson 2: Strengthening materials</b> - To understand that the shape of the structure affects its strength.</p> <p><b>Lesson 3: Making Baby Bear's chair</b> - To make a structure according to design criteria.</p> <p><b>Lesson 4: Fixing and testing Baby Bear's chair</b> - To produce a finished structure and evaluate its strength, stiffness and stability.</p> <p>*Sp *So</p>	<p><b>Lesson 1: Design a fairground wheel</b> - To explore wheel mechanisms and design a fairground wheel.</p> <p><b>Lesson 2: Planning the build</b> - To select materials with appropriate properties.</p> <p><b>Lesson 3: Building the frame and wheels</b> - To build and test a moving wheel.</p> <p><b>Lesson 4: Surveying design opinions</b> - To conduct a simple survey to gather opinions.</p> <p><b>Lesson 5: Adding pods and decoration</b> - To finish and evaluate a structure with a rotating wheel.</p> <p>*Sp *So *Cu</p>	<p><b>Lesson 1: Food groups</b> - To recognise foods and their food groups.</p> <p><b>Lesson 2: Balanced meals</b> - To identify the balance of food groups in a meal.</p> <p><b>Lesson 3: Preparing ingredients</b> - To identify an appropriate piece of equipment to prepare a given food.</p> <p><b>Lesson 4: Taste testing ingredients</b> - To select balanced combinations of ingredients.</p> <p><b>Lesson 5: Planning recipes</b> - To design based on criteria.</p> <p><b>Lesson 6: Creating and evaluating wraps</b> - To evaluate a dish based on design criteria</p> <p>*Sp *Mo *So</p>
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## Key Stage 2

Year 3	Weeks 1 - 6	Weeks 14 - 19	Weeks 27 - 32
<b>DT Unit (Kapow)</b>	Digital world: Wearable technology (6 lessons)	Textiles: Cross-stitch and applique (5 lessons) Cushion - Mother's day gift	Mechanisms: Pneumatic toys
<b>Vocabulary</b>	<p><b>Tier 2:</b> badge annotate control test user product fastening feature feedback form electronic smart technology function program display</p> <p><b>Tier 3:</b> analogue analyse computer-aided design (CAD) design criteria digital digital revolution digital world electronic products initiate point of sale product design simulator</p>	<p><b>Tier 2:</b> symmetrical fabric patch cotton silk symmetrical template unique</p> <p><b>Tier 3:</b> appliqué cross-stitch embellish pinking polyester running stitch thread</p>	<p><b>Tier 2:</b> Research lever input output adapt properties</p> <p><b>Tier 3:</b> mechanism pivot linkage system pneumatic system component thumbnail sketch reinforce motion</p>

<b>Why this, why now</b>		Builds on skills developed in Year 1 textile unit.	
<b>Disciplinary knowledge (skills)</b>	<p><b>Design:</b></p> <ul style="list-style-type: none"> <li>• Problem solving by suggesting which features on a Micro:bit might be useful and justifying my ideas.</li> <li>• Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge.</li> <li>• Developing design ideas through annotated sketches to create a product concept.</li> <li>• Developing design criteria to respond to a design brief</li> </ul> <p><b>Make:</b></p> <ul style="list-style-type: none"> <li>• Following a list of design requirements.</li> <li>• Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm.</li> </ul> <p><b>Evaluate:</b></p> <ul style="list-style-type: none"> <li>• Using feedback from peers to improve design.</li> <li>• Analysing and evaluating wearable technology.</li> </ul>	<p><b>Design:</b></p> <ul style="list-style-type: none"> <li>• Designing and making a template from an existing cushion and applying individual design criteria.</li> </ul> <p><b>Make:</b></p> <ul style="list-style-type: none"> <li>• Following design criteria to create a cushion or Egyptian collar.</li> <li>• Selecting and cutting fabrics with ease using fabric scissors.</li> <li>• Threading needles with greater independence.</li> <li>• Tying knots with greater independence.</li> <li>• Sewing cross stitch to join fabric.</li> <li>• Decorating fabric using appliqué.</li> <li>• Completing design ideas with stuffing and sewing the edges (Cushions) or embellishing the collars based on design ideas (Egyptian collars).</li> </ul> <p><b>Evaluate:</b></p> <ul style="list-style-type: none"> <li>• Evaluating an end product and thinking of other ways in which to create similar items.</li> </ul>	<p><b>Design:</b></p> <ul style="list-style-type: none"> <li>• Designing a toy which uses a pneumatic system.</li> <li>• Developing design criteria from a design brief.</li> <li>• Generating ideas using thumbnail sketches and exploded diagrams.</li> <li>• Learning that different types of drawings are used in design to explain ideas clearly.</li> </ul> <p><b>Make:</b></p> <ul style="list-style-type: none"> <li>• Creating a pneumatic system to create a desired motion.</li> <li>• Building secure housing for a pneumatic system.</li> <li>• Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy.</li> <li>• Selecting materials due to their functional and aesthetic characteristics.</li> <li>• Manipulating materials to create different effects by cutting, creasing, folding and weaving</li> </ul> <p><b>Evaluate:</b></p> <ul style="list-style-type: none"> <li>• Using the views of others to improve designs.</li> <li>• Testing and modifying the outcome, suggesting improvements.</li> <li>• Understanding the purpose of exploded-diagrams through the eyes of a designer and their client.□</li> </ul>

<p><b>Substantive knowledge (Technical knowledge)</b></p>	<ul style="list-style-type: none"> <li>• To understand that, in programming, a 'loop' is code that repeats something again and again until stopped.</li> <li>• To know that a Micro:bit is a pocket-sized, codeable computer.</li> <li>• To know that a simulator is able to replicate the functions of an existing piece of technology.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces.</li> <li>• To know that when two edges of fabric have been joined together it is called a seam.</li> <li>• To know that it is important to leave space on the fabric for the seam.</li> <li>• To understand that some products are turned inside out after sewing so the stitching is hidden.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand that wide and flat-based objects are more stable.</li> <li>• To understand the importance of strength and stiffness in structures.</li> <li>• To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse - and their purpose.</li> <li>• To know that a façade is the front of a structure.</li> <li>• To understand that a castle needed to be strong and stable to withstand enemy attack.</li> <li>• To know that a paper net is a flat 2D shape that can become a 3D shape once assembled.</li> <li>• To know that a design specification is a list of success criteria for a product. To know that a façade is the front of a structure.</li> <li>• To understand that a castle needed to be strong and stable to withstand enemy attack.</li> <li>• To know that a paper net is a flat 2D shape that can become a 3D shape once assembled.</li> <li>• To know that a design specification is a list of success criteria for a product.</li> </ul>
<p><b>Lesson sequence</b></p>	<p><b>Lesson 1: Evaluating wearable technology</b> - To research and evaluate existing products.</p> <p><b>Lesson 2: Light-up wearables</b> - To develop design criteria.</p> <p><b>Lesson 3: Programming wearable</b></p>	<p><b>Lesson 1: Cross-stitch and appliqué</b> - To learn how to sew cross-stitch and appliqué.</p> <p><b>Lesson 2: Egyptian collars</b> - To develop and use a template.</p> <p><b>Lesson 3: Developing the collars</b> - To assemble fabric parts into a fabric product.</p>	<p><b>Lesson 1: Exploring pneumatics</b> - To understand how pneumatic systems work.</p> <p><b>Lesson 2: Designing a pneumatic toy</b> - To design a toy that uses a pneumatic system.</p> <p><b>Lesson 3: Making pneumatic toys</b> - To create a pneumatic system.</p>



	<p><b>technology</b> - To use code to program and control a product.</p> <p><b>Lesson 4: Product concept</b> - To develop and communicate ideas.</p> <p><b>Lesson 5: Point of sale displays</b> - To develop ideas through computer-aided design.</p> <p><b>Lesson 6: Focus groups</b> - To improve a design based on feedback.</p> <p>*Sp *Mo *So *Cu</p>	<p><b>Lesson 4: Finishing their collars</b> - To decorate fabric using appliqué and cross-stitch.</p> <p>*Sp *Cu</p>	<p><b>Lesson 4: Decorating and assembling my toy</b> - To test and finalise ideas against design criteria.</p>
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Year 4	Weeks 1 - 6	Weeks 14 - 19	Weeks 27 - 32
<b>Unit Title</b>	Structure: Pavilions	Cooking & nutrition: Adapting a recipe (6 lessons) Easter biscuits	Electrical systems: Torches
<b>Vocabulary</b>	<p><b>Tier 2:</b>  Function  Theme  Inspiration  Texture  Evaluation  Stable  Structure</p> <p><b>Tier 3:</b>  Aesthetic  Cladding  Design criteria  Frame structure  Pavilion  Reinforce  Target audience  Target customer</p>	<p><b>Tier 2:</b>  adapt  addition  appearance  budget  buttery  combine  comment  compare  construct  crunchy  cuboid  design  evaluate  hygiene  ingredients  layout  modify  multiplication  opinion  pounds  sieve  sift  taste  texture  unique  wooden spoon</p> <p><b>Tier 3:</b>  target audience  market research</p>	<p><b>Tier 2:</b>  Battery  Bulb  Buzzer  Cell  Copper  Design criteria  Electrical item  Electricity  Function  Switch  Test  Torch  Wire</p> <p><b>Tier 3:</b>  Insulator  Series circuit  Electronic item  Component  Conductor</p>

<b>Why this, why now</b>	Complex unit combining structural integrity with design appropriate to older age group.	Recap importance of healthy diets prior to children moving to middle school where they will make independent lunch and snack choices.	Links with Science unit.
<b>Disciplinary knowledge (skills)</b>	<p><b>Design:</b></p> <ul style="list-style-type: none"> <li>• Building frame structures designed to support weight.</li> <li>• Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect.</li> </ul> <p><b>Make:</b> Making a variety of free standing frame structures of different shapes and sizes.</p> <ul style="list-style-type: none"> <li>• Creating a range of different shaped frame structures.</li> <li>• Selecting appropriate materials to build a strong structure and cladding.</li> <li>• Reinforcing corners to strengthen a structure.</li> <li>• Creating a design in accordance with a plan.</li> <li>• Learning to create different textural effects with materials.</li> </ul> <p><b>Evaluate:</b></p> <ul style="list-style-type: none"> <li>• Evaluating structures made by the class.</li> <li>• Describing what characteristics of a design and construction made it the most effective.</li> <li>• Considering effective and ineffective designs.</li> </ul>	<p><b>Design:</b> Designing packaging for a biscuit that targets a specific group.</p> <ul style="list-style-type: none"> <li>• Designing a biscuit within a given budget, drawing upon previous taste testing judgements.</li> </ul> <p><b>Make:</b></p> <ul style="list-style-type: none"> <li>• Following a baking recipe, including the preparation of ingredients.</li> <li>• Cooking safely, following basic hygiene rules.</li> <li>• Adapting a recipe to meet the requirements of a target audience.</li> <li>• Using a cuboid net to create packaging.</li> </ul> <p><b>Evaluate:</b></p> <ul style="list-style-type: none"> <li>• Describing the impact of the budget on the selection of ingredients.</li> <li>• Evaluating a recipe, considering: taste, smell, texture and appearance.</li> <li>• Evaluating and comparing a range of food products.</li> <li>• Suggesting modifications to a recipe (e.g. This biscuit has too many raisins, and it is falling apart, so next time I will use less raisins).</li> </ul>	<p><b>Design:</b></p> <ul style="list-style-type: none"> <li>• Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.</li> </ul> <p><b>Make:</b></p> <ul style="list-style-type: none"> <li>• Making a torch with a working electrical circuit and switch.</li> <li>• Using appropriate equipment to cut and attach materials.</li> <li>• Assembling a torch according to the design and success criteria.</li> </ul> <p><b>Evaluate:</b></p> <ul style="list-style-type: none"> <li>• Evaluating electrical products.</li> <li>• Testing and evaluating the success of a final product</li> </ul>
<b>Substantive knowledge (Technical knowledge)</b>	<ul style="list-style-type: none"> <li>• To understand what a frame structure is.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that the amount of an ingredient in a recipe is known as the 'quantity.'</li> </ul>	<ul style="list-style-type: none"> <li>• To understand that electrical conductors are materials which electricity can pass through.</li> </ul>

	<ul style="list-style-type: none"> <li>• To know that a 'free-standing' structure is one that can stand on its own.</li> <li>• To know that a pavilion is a decorative building or structure for leisure activities.</li> <li>• To know that cladding can be applied to structures for different effects.</li> <li>• To know that aesthetics are how a product looks.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that safety and hygiene are important when cooking.</li> <li>• To know the following cooking techniques: sieving, measuring, stirring, cutting out and shaping.</li> <li>• To understand the importance of budgeting while planning ingredients for biscuits.</li> <li>• To know that products often have a target audience.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand that electrical insulators are materials which electricity cannot pass through.</li> <li>• To know that a battery contains stored electricity that can be used to power products.</li> <li>• To know that an electrical circuit must be complete for electricity to flow.</li> <li>• To know that a switch can be used to complete and break an electrical circuit.</li> </ul>
<b>Lesson sequence</b>	<p><b>Lesson 1: Exploring frame structures</b> - To create a range of different shaped frame structures</p> <p><b>Lesson 2: Designing a pavilion</b> - To design a structure.</p> <p><b>Lesson 3: Pavilion frame</b> - To build a frame structure.</p> <p><b>Lesson 4: Pavilion cladding</b> - To add cladding to a frame structure.</p> <p>*Sp</p>	<p><b>Lesson 1: Existing biscuits</b> - To evaluate existing biscuit products.</p> <p><b>Lesson 2: Basic biscuits</b> - To prepare and cook a dish.</p> <p><b>Lesson 3: Budgeting</b> – To select ingredients and follow a budget.</p> <p><b>Lesson 4: Packaging</b> - To take inspiration from existing products.</p> <p><b>Lesson 5: Market research</b> - To make and test a prototype biscuit.</p> <p><b>Lesson 6: Evaluating biscuits</b> - To evaluate a final product.</p> <p>*Sp *So *Cu</p>	<p><b>Lesson 1: Electrical products</b> - To learn about electrical items and how they work.</p> <p><b>Lesson 2: Evaluating torches</b> - To analyse and evaluate electrical products</p> <p><b>Lesson 3: Torch design</b> - To design a product to fit a set of specific user needs.</p> <p><b>Lesson 4: Torch assembly</b> - To make and evaluate a torch.</p> <p>*Sp *So</p>