

## DT at St Alban's CE Aided Primary (v06/23)

### Intention

At St Alban's CE Primary, we aim to prepare children for participation in tomorrow's rapidly changing technologies. Design and technology will provide children with the tools to deal with the challenges they meet in everyday life. Design and Technology are fundamental to our creative expression and have shaped societies, continuing to do so as we face the ever shifting challenges of modern times. At St Alban's we are passionate about sending our children out in to the world with a depth of knowledge and skills which allows them to critically analyse the design and technology around them and be confident to try out creative, original ideas of their own. We provide an environment where trial and error, persistence and creative originality are encouraged and celebrated.

### Pupil approach: Working as a designer pupils will...

- Communicate ideas and designs
- Understand the purpose and identify the users of products they design
- Plan
- Test, evaluate and modify plans
- Work to a criteria the product must meet to be successful
- Measure and use tools and components safely and accurately
- Make products that are well-finished
- Apply scientific knowledge and understanding to create and explain how products work
- Use technical vocabulary

### Learning journey structure/steps

#### 6 step enquiry

1. Discover (hook, designer, visual culture etc)
2. Collect examples
3. Explore style/technique
4. Experiment with a new skill or material
5. Produce product (after teacher modeling)
6. Evaluate

### Teaching approach: non-negotiables for teachers

- Research and teacher trial prior to lessons in order for teacher to experience possible challenges/resource requirements first hand.
- Lessons build firmly on pupils' earlier learning and ensure progressive challenge, breadth and depth to their designing and making.
- Use existing products to inspire pupils and to support their investigations, testing and analysis.
- Planning has a well-defined and consistent focus on finding out how products work, how well they fit their purpose and how well they meet the needs of users.

- Use focused tasks and demonstrations effectively to show pupils different methods of manufacture.
- Use teachers' own work to model ideas, and to explain the methods they used to identify the problem or to tackle a task (focused tasks, demonstrations using film or photographs all support pupils' understanding of the mechanisms and construction required to design and make products safely and accurately).
- Allow children to pursue creative, original ideas and experiment with and discuss techniques, materials and equipment prior to attempting a first finished piece.
- Opportunity to peer review helps support children with SEND and those below ARE. Teachers have access to information regarding the barriers for these children.
- Use questioning to encourage classes to contribute to the development of success criteria for design briefs, to prompt pupils to think through the problems they might encounter and to share strategies to solve them.
- Model and use technical language and subject-specific terms accurately.
- Structure learning effectively to encourage the pooling of ideas and findings to support pupils critically evaluating and extending or improving the ideas.
- Ensure D&T is relevant by linking activity to pupils' interests, establishing real contexts for their work, and building upon their knowledge and skills in other subjects.
- Provide D&T activities which have sufficient depth and breadth to enable pupils to learn practical skills and provide them with the knowledge to make products that move/ light up/ are structurally sound and don't collapse/ are safe and healthy.
- Ensure ample time for children to test, refine and develop the products they design and make to check that they work and improve them if they don't.
- Ensure children enjoy developing practical skills and make swift progress to develop knowledge and understanding about the properties of materials when they have specific problems or challenges to solve that fire their enthusiasm.

**Key resources/documents  
for planning**

Kapow Primary -follow this hyperlink [\\*](#)

## LT Plan/Overview

	Aut 1	Aut 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	x	<b>Mechanisms:</b> Making a Moving Story Book	x	<b>Textiles:</b> Puppets	x	<b>Food:</b> Fruit and Vegetables
Year 2	x	<b>Textiles:</b> Pouches	x	<b>Structures:</b> Baby Bear's Chair	x	<b>Food:</b> A Balanced Diet
Year 3	x	<b>Mechanical Systems:</b> Pneumatic Toys	x	<b>Structures:</b> Constructing a Castle	x	<b>Food:</b> Eating Seasonally
Year 4	x	<b>Electrical Systems:</b> Torches	x	<b>Digital World:</b> Mindful Moments Timer	x	<b>Food:</b> Adapting a Recipe
Year 5	x	<b>Digital World:</b> Monitoring Devices	x	<b>Textiles:</b> Stuffed Toys	x	<b>Food:</b> What Could Be Healthier?
Year 6	<b>Digital World:</b> Navigating the World	x	<b>Structure:</b> Playgrounds	x	<b>Food:</b> Come Dine with Me	x

# MT Plan Overview

## Year 1

Unit: Making a Moving Story Book (4 lessons)		Key Knowledge	Core resources to be used - Kapow
	<b>In this unit of work, pupils learn....</b> <ul style="list-style-type: none"> <li>Identify whether a mechanism is a side-to-side slider or an up-and-down slider and determine what movement the mechanism will make.</li> <li>Clearly label drawings to show which parts of their design will move and in which direction.</li> <li>Make a picture, which meets the design criteria, with parts that move purposefully as planned.</li> <li>Evaluate the main strengths and weaknesses of their design and suggest alterations.</li> </ul>	<ul style="list-style-type: none"> <li>To understand the difference between fruits and vegetables</li> <li>To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber).</li> <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 and a vegetable does not.</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 can come from different parts of the plant.</li> </ul>	<a href="#">Kapow Hyperlink</a> *
Unit: Puppets (4 lessons)		Key Knowledge	Core resources to be used
	<b>In this unit of work, pupils learn....</b> <ul style="list-style-type: none"> <li>Join fabrics together using pins, staples or glue.</li> <li>Design a puppet and use a template.</li> <li>Join their two puppets' faces together as one.</li> <li>Decorate a puppet to match their design.</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.</li> <li>To know that drawing a design idea is useful to see how an idea will look.</li> </ul>	Kapow Hyperlink *

Unit: Fruit and Vegetables(4 Lessons)		Key Knowledge	Core resources to be used
	<ul style="list-style-type: none"> <li>Describe fruits and vegetables and explain why they are a fruit or a vegetable.</li> <li>Name a range of places that fruits and vegetables grow.</li> <li>Describe basic characteristics of fruit and vegetables.</li> <li>Prepare fruits and vegetables to make a smoothie.</li> </ul>	<ul style="list-style-type: none"> <li>To understand the difference between fruits and vegetables.</li> <li>To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber).</li> <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 and a vegetable does not.</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 can come from different parts of the plant.</li> </ul>	Kapow Link <a href="#">*</a>

## Year 2

Unit: Pouches (4 lessons)		Key Knowledge	Core resources to be used - Kapow
	<b>In this unit of work, pupils learn....</b> <ul style="list-style-type: none"> <li>Sew a running stitch with regular-sized stitches and understand that both ends must be knotted.</li> <li>Prepare and cut fabric to make a pouch from a template.</li> <li>Use a running stitch to join the two pieces of fabric together.</li> <li>Decorate their pouch using the materials provided.</li> </ul>	<ul style="list-style-type: none"> <li>To know that sewing is a method of joining fabric.</li> <li>To know that different stitches can be used when sewing.</li> <li>To understand the importance of tying a knot after sewing the final stitch.</li> <li>To know that a thimble can be used to protect my fingers when sewing.</li> </ul>	<a href="#">Kapow Hyperlink</a> <a href="#">*</a>
Unit: Baby Bear's Chair (4 lessons)		Key Knowledge	Core resources to be used
	<b>In this unit of work, pupils learn....</b> <ul style="list-style-type: none"> <li>Identify man-made and natural structures.</li> <li>Identify stable and unstable structural shapes.</li> </ul>	<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> </ul>	Kapow Hyperlink <a href="#">*</a>

	<ul style="list-style-type: none"> <li>Contribute to discussions.</li> <li>Identify features that make a chair stable.</li> <li>Work independently to make a stable structure, following a demonstration.</li> <li>Explain how their ideas would be suitable for Baby Bear.</li> <li>Produce a model that supports a teddy, using the appropriate materials and construction techniques.</li> <li>Explain how they made their model strong, stiff and stable.</li> </ul>	<ul style="list-style-type: none"> <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>	
<b>Unit: A Balanced Diet (4 Lessons)</b>		<b>Key Knowledge</b>	<b>Core resources to be used</b>
	<p><b>In this unit of work, pupils learn....</b></p> <ul style="list-style-type: none"> <li>Name the main food groups and identify foods that belong to each group.</li> <li>Describe the taste, texture and smell of a given food.</li> <li>Think of four different wrap ideas, considering flavour combinations.</li> <li>Construct a wrap that meets the design brief and their plan.</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 where to find the nutritional information on packaging.</li> <li>To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugars.</li> <li>To understand that I should eat a range of different foods from each food group, and roughly how much of each food group.</li> <li>To know that nutrients are substances in food that all living things need to make energy, grow and develop.</li> <li>To know that 'ingredients' means the items in a mixture or recipe.</li> <li>To know that I should only have a maximum of five teaspoons of sugar a day to stay healthy.</li> <li>To know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars'.</li> </ul>	Kapow Link <a href="#">*</a>

## Year 3

Unit: Pneumatic Toys (4 lessons)		Key Knowledge	Core resources to be used - Kapow
	<p><b>In this unit of work, pupils learn....</b></p> <ul style="list-style-type: none"> <li>• Draw accurate diagrams with correct labels, arrows and explanations.</li> <li>• Correctly identify definitions for key terms.</li> <li>• Identify five appropriate design criteria.</li> <li>• Communicate two ideas using thumbnail sketches.</li> <li>• Communicate and develop one idea using an exploded diagram.</li> <li>• Select appropriate equipment and materials to build a working pneumatic system.</li> <li>• Assemble their pneumatic system within the housing to create the desired motion.</li> <li>• Create a finished pneumatic toy that fulfils the design brief.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand how pneumatic systems work.</li> <li>• To understand that pneumatic systems can be used as part of a mechanism.</li> <li>• To know that pneumatic systems operate by drawing in, releasing and compressing air.</li> </ul>	<a href="#">Kapow Hyperlink *</a>
Unit: : Constructing a Castle(4 lessons)		Key Knowledge	Core resources to be used
	<p><b>In this unit of work, pupils learn....</b></p> <ul style="list-style-type: none"> <li>• Draw and label a simple castle that includes the most common features.</li> <li>• Recognise that a castle is made up of multiple 3D shapes.</li> <li>• Design a castle with key features which satisfy a given purpose.</li> <li>• Score or cut along lines on the net of a 2D shape.</li> <li>• Use glue to securely assemble geometric shapes.</li> <li>• Utilise skills to build a complex structure from simple geometric shapes.</li> <li>• Evaluate their work by answering simple questions.</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> </ul>	<a href="#">Kapow Hyperlink *</a>
Unit:Eating Seasonally (4 Lessons)		Key Knowledge	Core resources to be used
	<ul style="list-style-type: none"> <li>• Explain that fruits and vegetables grow in different countries based on their climates.</li> <li>• Understand that ‘seasonal’ fruits and vegetables are those that grow in a given season and taste best then.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that not all fruits and vegetables can be grown in the UK.</li> <li>• To know that climate affects food growth.</li> </ul>	<a href="#">Kapow Link *</a>

	<ul style="list-style-type: none"> <li>• Know that eating seasonal fruit and vegetables has a positive effect on the environment.</li> <li>• Design their own tart recipe using seasonal ingredients.</li> <li>• Understand the basic rules of food hygiene and safety.</li> <li>• Follow the instructions within a recipe.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that vegetables and fruit grow in certain seasons.</li> <li>• To know that cooking instructions are known as a 'recipe'.</li> <li>• To know that imported food is food that has been brought into the country.</li> </ul>	
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## Year 4

Unit: Torches (4 lessons)		Key knowledge	Core resources to be used - Kapow
	<b>In this unit of work, pupils learn....</b> <ul style="list-style-type: none"> <li>• Identify electrical products and explain why they are useful.</li> <li>• Help to make a working switch.</li> <li>• Identify the features of a torch and how it works.</li> <li>• Describe what makes a torch successful.</li> <li>• Create suitable designs that fit the success criteria and their own design criteria.</li> <li>• Create a functioning torch with a switch according to their design criteria.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand that electrical conductors are materials which electricity can pass through.</li> <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>	<a href="#">Kapow Hyperlink *</a>
Unit: : Mindful Moments Timer		Key Knowledge	Core resources to be used
	<b>In this unit of work, pupils learn....</b> <ul style="list-style-type: none"> <li>• State and/or describe the advantages and disadvantages of existing products (timers).</li> <li>• Understand how Micro:bit features could be used as part of a design idea.</li> <li>• Write a program that displays a timer on the Micro:bit based on their chosen seconds/minutes.</li> <li>• Suggest where the errors are, if testing is unsuccessful, by comparing the correct code to their own.</li> <li>• State key functions in the program editor (e.g. loops).</li> <li>• Cut out a box net carefully, assembling it securely into a box using tape or</li> </ul>	<ul style="list-style-type: none"> <li>• To understand what variables are in programming</li> <li>• To know some of the features of a Micro:bit.</li> <li>• To know that an algorithm is a set of instructions to be followed by the computer.</li> <li>• To know that it is important to check my code for errors (bugs).</li> </ul>	Kapow Hyperlink <a href="#">*</a>



	glue and tabs and ensuring it has a slot for the Micro:bit display. <ul style="list-style-type: none"> <li>Evaluate the immediate appeal of the Micro:bit timer and how it might function.</li> <li>Express which stages of the project they enjoyed or found more challenging.</li> <li>Explain the need for a company to stand out against competition and/or state the importance of logos in business.</li> <li>Recall and describe the name and use of key tools used in Sketchup (CAD) software.</li> <li>Fulfill the design requirements of the logo.</li> </ul>	To know that a simulator can be used as a way of checking that your code works before installing it onto an electronic device.	
<b>Unit: Adapting a Recipe (4 lessons)</b>		<b>Key Knowledge</b>	<b>Core resources to be used</b>
	<ul style="list-style-type: none"> <li>Follow a recipe, with some support.</li> <li>Describe some of the features of a biscuit based on taste, smell, texture and appearance.</li> <li>Adapt a recipe by adding extra ingredients to it.</li> <li>Plan a biscuit recipe within a budget.</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> <li>To know that it is important to use oven gloves when removing hot food from an oven.</li> <li>To know the following cooking techniques: sieving, creaming, rubbing method, cooling.</li> <li>To understand the importance of budgeting while planning ingredients for biscuits.</li> </ul>	Kapow Link <a href="#">*</a>

## Year 5

<b>Unit: Monitoring Devices (4 Lessons)</b>		<b>Key Knowledge</b>	<b>Core resources to be used - Kapow</b>
	<b>In this unit of work, pupils learn....</b> <ul style="list-style-type: none"> <li>Describe what is meant by monitoring devices and provide an example.</li> <li>Explain briefly the development of thermometers from thermoscopes to digital thermometers.</li> <li>Research a chosen animal's key information to develop a list of design criteria for an animal monitoring device.</li> <li>Write a program that monitors the ambient temperature and alerts someone when the temperature moves from a specified range.</li> <li>Identify errors (bugs) in the code and ways to fix (debug) them.</li> </ul>	<ul style="list-style-type: none"> <li>To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record.</li> <li>To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose.</li> <li>To understand that conditional statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met.</li> </ul>	<a href="#">Kapow Hyperlink</a> <a href="#">*</a>

	<ul style="list-style-type: none"> <li>State one or two facts about the history and development of plastic, including how it is now affecting planet Earth.</li> <li>Build a variety of brick models to invent Micro:bit case, housing and stand ideas, evaluating the success of their favourite model.</li> <li>Explain key pros and cons of virtual modelling vs physical modelling.</li> <li>Recall and describe the name and use of key tools used in Tinkercad (CAD) software.</li> </ul>		
<b>Unit: : Stuffed Toys (4 Lessons)</b>		<b>Key Knowledge</b>	<b>Core resources to be used</b>
	<p><b>In this unit of work, pupils learn....</b></p> <ul style="list-style-type: none"> <li>Design a stuffed toy, considering the main component shapes of their toy.</li> <li>Create an appropriate template for their stuffed toy.</li> <li>Join two pieces of fabric using a blanket stitch.</li> <li>Neatly cut out their fabric.</li> <li>Use appliqué or decorative stitching to decorate the front of their stuffed toy.</li> <li>Use blanket stitch to assemble their stuffed toy, repairing when needed.</li> <li>Identify what worked well and areas for improvement.</li> </ul>	<ul style="list-style-type: none"> <li>To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric.</li> <li>To understand that it is easier to finish simpler designs to a high standard.</li> <li>To know that soft toys are often made by creating appendages separately and then attaching them to the main body.</li> <li>To know that small, neat stitches which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely.</li> </ul>	<p>Kapow Hyperlink <a href="#">*</a></p>
<b>Unit: What Could Be Healthier? (4 Lessons)</b>		<b>Key Knowledge</b>	<b>Core resources to be used</b>
	<ul style="list-style-type: none"> <li>Understand how beef gets from the farm to our plates.</li> <li>Present a subject as a poster with clear information in an easy to read format.</li> <li>Contribute ideas as to what a 'healthy meal' means.</li> <li>Notice the nutritional differences between different products and recipes.</li> <li>Recognise nutritional differences between two similar recipes and give some justification as to why this is.</li> <li>Work as a team to amend a bolognese recipe with healthy adaptations.</li> <li>Follow a recipe to produce a healthy bolognese sauce.</li> <li>Design packaging that promotes the ingredients of the bolognese.</li> <li></li> </ul>	<ul style="list-style-type: none"> <li>To understand where meat comes from – learning that beef is from cattle and how beef is reared and processed, including key welfare issues.</li> <li>To know that I can adapt a recipe to make it healthier by substituting ingredients.</li> <li>To know that I can use a nutritional calculator to see how healthy a food option is.</li> <li>To understand 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.</li> </ul>	<p>Kapow Link <a href="#">*</a></p>

## Year 6

Unit: Navigating the World (4 Lessons)	Key Knowledge	Core resources to be used - Kapow
<p><b>In this unit of work, pupils learn....</b></p> <ul style="list-style-type: none"> <li>• Incorporate key information from a client's design request such as 'multifunctional' and 'compact' in their design brief.</li> <li>• Write a program that displays an arrow to indicate cardinal compass directions with an 'On start' loading screen.</li> <li>• Identify errors (bugs) in the code and suggest ways to fix (debug) them.</li> <li>• Self and peer evaluate a product concept against a list of design criteria with basic statements.</li> <li>• Identify key industries that use 3D CAD modelling and why.</li> <li>• Recall and describe the name and use of key tools used in Tinkercad (CAD) software.</li> <li>• Combine more than one object to develop a finished 3D CAD model in Tinkercad.</li> <li>• Complete a product pitch plan that includes key information.</li> <li>• </li> </ul>	<ul style="list-style-type: none"> <li>• To know that accelerometers can detect movement.</li> <li>• To understand that sensors can be useful in products as they mean the product can function without human input.</li> <li>• To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request.</li> <li>• To know that 'multifunctional' means an object or product has more than one function.</li> <li>• To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing.</li> </ul>	<p><a href="#">Kapow Hyperlink *</a></p>
Unit: : Playgrounds (4 lessons)	Key Knowledge	Core resources to be used
<p><b>In this unit of work, pupils learn....</b></p> <ul style="list-style-type: none"> <li>• Create five apparatus designs, applying the design criteria to their work.</li> <li>• Make suitable changes to their work after peer evaluation.</li> <li>• Make roughly three different structures from their plans using the materials available.</li> <li>• Complete their structures, improving the quality of their rough versions and applying some cladding to a few areas.</li> <li>• Secure their apparatus to a base.</li> <li>• Make a range of landscape features using a variety of materials which will enhance their apparatus.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that structures can be strengthened by manipulating materials and shapes.</li> <li>• To understand what a 'footprint plan' is.</li> <li>• To understand that in the real world, design can impact users in positive and negative ways.</li> <li>• To know that a prototype is a cheap model to test a design idea.</li> </ul>	<p>Kapow Hyperlink <a href="#">*</a></p>

Unit: Come Dine with Me (4 lessons)	Key Knowledge	Core resources to be used
<ul style="list-style-type: none"> <li>Find a suitable recipe for their course.</li> <li>Record the relevant ingredients and equipment needed.</li> <li>Follow a recipe, including using the correct quantities of each ingredient.</li> <li>Write a recipe, explaining the process taken.</li> <li>Explain where certain key foods come from before they appear on the supermarket shelf.</li> </ul>	<ul style="list-style-type: none"> <li>To know that 'flavour' is how a food or drink tastes.</li> <li>To know that many countries have 'national dishes' which are recipes associated with that country.</li> <li>To know that 'processed food' means food that has been put through multiple changes in a factory.</li> <li>To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides.</li> <li>To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork).</li> </ul>	Kapow Link <a href="#">*</a>

**For Progression of Skills and Knowledge follow hyperlink [\\*](#)**