



# Design and Technology Medium Term Planning

Year 5



## Key Concept Overview

Key Concepts	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Design</b> 	<p>-I am beginning to design products using pictures and words based on a design criteria.</p> <p>-I use pictures, words and models to convey what I want to design.</p>	<p>-I use simple drawings and labels to record my ideas.</p> <p>-I design products that have a clear purpose based on my own design criteria.</p>	<p>-I can research similar products to develop my own design ideas.</p> <p>-I am able to develop a design through discussion and annotated sketches to add detail to my design.</p>	<p>-I generate and develop ideas using exploding diagrams and prototypes.</p> <p>-I use different ways to creatively record and present my designs to show they are fit for purpose.</p>	<p>-I can generate and develop ideas using pattern pieces and computer aided design.</p>	<p>-I generate and develop ideas using a variety of design techniques.</p> <p>-I justify my plans in a convincing way.</p> <p>-I use research and develop design criteria to design innovative functional and appealing products aimed at a specific group.</p>
<b>Make</b> 	<p>-I can choose appropriate resources and tools to make a product.</p> <p>-I can use a range of materials to make a product, including construction materials, textiles and ingredients.</p>	<p>-I can select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing.)</p> <p>-I use a range of materials to make a product, including construction materials, textiles and ingredients and explain why the</p>	<p>-I can choose a material for both its suitability and its appearance and explain why it has been selected.</p> <p>-I can think ahead about the order of my work, select tools needed for a given task and give reasons for my choices.</p>	<p>-I can choose and use appropriate tools from a wider range to perform practical tasks.</p> <p>-I can choose suitable materials from a wider range and explain its suitability.</p>	<p>-I use a range of appropriate tools competently.</p> <p>-I can join and combine a range of materials competently.</p>	<p>-I select and use specialist tools and equipment to perform practical tasks accurately.</p> <p>-I can select from and use a wider range of materials and components according to their functional qualities and aesthetic qualities.</p>
<b>Evaluate</b> 	<p>-I am beginning to explore and evaluate a range of existing products by evaluating the product against the purpose</p> <p>-I can evaluate my designs and products by saying how well they do the job they were designed for.</p>	<p>-I can explore and evaluate a range of existing products by looking at function and materials.</p> <p>-I can evaluate my ideas and products against set design criteria.</p>	<p>-I can investigate and analyse an existing product by identifying whether it is fit for purpose and how easy it is to use.</p> <p>-I can prove that my design meets some set criteria and evaluate how well it works.</p>	<p>-I can explain why certain materials were used to make existing products.</p> <p>-I can evaluate and suggest improvements for my design.</p>	<p>-I can evaluate appearance and function against original criteria.</p> <p>-I am able to justify decisions made during the design process.</p>	<p>-I can critically evaluate the quality of the design, manufacture and fitness for purpose by comparing existing products</p> <p>-I can evaluate my ideas and products against my own design criteria and consider the views of others to improve my work.</p>
<b>Technical Knowledge</b> 	<p>-I can explore and use simple mechanisms in my products.</p>	<p>-I can build structures, exploring how they can be made stronger, stiffer and more stable.</p>	<p>-I can apply my understanding of how to strengthen, stiffen and reinforce more complex structures.</p>	<p>-I am able to understand and use mechanical systems in my products.</p>	<p>-I can understand and use electrical systems in my products.</p>	<p>-I am able to control and model using an ICT control programme.</p>
<b>Cooking and nutrition</b> 	<p>I can tell you where my food comes from.</p>	<p>I can use a range of ingredients to prepare a healthy dish.</p>	<p>-I can make healthy eating choices from an understanding of a balanced diet.</p> <p>-I can use a range of ingredients to prepare a healthy dish, explain why the ingredients were chosen and the effects on the body.</p> <p>-I can use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading or kneading.</p>	<p>-I can explore a range of cooking techniques to produce a healthy balanced dish.</p> <p>-I can measure out ingredients accurately and use ratios to scale up or down a recipe.</p> <p>-I understand seasonality and know when and how a variety of ingredients are grown, reared, caught and processed.</p>		

## DT Whole School Overview





	Autumn		Spring		Summer	
<b>Year 1</b>	Textiles puppets	Food & Nutrition Fruit and Vegetables.	Mechanisms Moving storybook		Structures windmills	Mechanisms Wheels and axels
<b>Year 2</b>	Mechanisms Fairground wheels	Structures Victorian houses	Textiles Easter pouches		Mechanisms Moving monster	Food and nutrition Healthy wraps
<b>Year 3</b>	Mechanical systems Pneumatic toys		Food and nutrition Eating seasonally– vegetable tart		Textiles Cushions	Structures Constructing a castle
<b>Year 4</b>	Electrical systems torches	Textiles Book sleeve	Structures pavilions	Mechanical systems Slingshot chariot	Food and nutrition Adapting a recipe– biscuits *enterprise opportunity	
<b>Year 5</b>	Food and nutrition What could be healthier?	Electrical systems Electronic Christmas cards	Digital world Monitoring device		Structures Bridges	Mechanical systems Making a pop-up book.
<b>Year 6</b>	Structures playground	Mechanical systems Automata toys	Digital world Navigating the world		Food Come dine with me	Electrical systems Steady hand game


Autumn

Year 5

Electrical systems: Electronic greeting card

[Electrical systems: Electronic greetings cards - Kapow Primary](#)

<b>Prior Learning</b> Do I know what an electronic system is?					
<b>Vocabulary</b> Battery, buzzer, circuit, coin cell battery, component, conductor , copper, design, design criteria, function, innovative, insulator, LED, modify, series circuit, switch, target audience, test, wire					
<b>End Point</b> The children will have designed, made and evaluated an electronic greeting card.					
Key Concept	Second order concept	Lesson Sequence	Learning Objectives	Suggested teaching sequence	Resources
<b>Technical knowledge</b> 	Significance Cause and consequence Similarity and difference	(Omit Lesson 1) Lesson 2	OO: To be able to understand and use electrical systems in my products. LO– I understand how to use electrical systems.	Check the children’s prior knowledge of electrical systems. Lesson 2 <a href="#">KS2, Y5, DT, Lesson 2: Series circuits - Kapow Primary</a> Circuits that can fit paper—suitable for greetings cards (Christmas ).	Electrical circuit equipment.
<b>Design</b> 	Responsibility Written and oral expression	Lesson 3	OO-I can generate and develop ideas using pattern pieces and computer aided design. LO– I can create a mood board to design an electronic Christmas card.	Lesson 3 <a href="#">KS2, Y5, DT, Lesson 3: Inspired design - Kapow Primary</a> Children design their electronic Christmas card.	Printed resources
<b>Make Technical knowledge</b>  	Responsibility Cause and consequence	Lesson 4	OO-I can join and combine a range of materials competently. I understand and use electrical systems in my products. LO– I can make an electronic Christmas card.	Lesson 4 <a href="#">KS2, Y5, DT, Lesson 4: Electronic greeting card - Kapow Primary</a> Children make their electronic Christmas cards. Photographs for evidence	Resources from the children’s designs. Electrical components.

Key Concept	Second order concept	Lesson sequence	Learning Objectives	Suggested teaching sequence	Resources
<p><b>Evaluate</b></p> 	Written and oral expression	Lesson 5	-OO: To be able to evaluate appearance and function against original criteria. To be able to justify decisions made during the design process.	Children to evaluate their electronic Christmas cards in DT books.	Written evaluation in DT books.


End of unit assessment quiz: [Assessment Resources and Quiz D&T KS2: Electronic Greeting Cards \(kapowprimary.com\)](https://www.kapowprimary.com/resources/assessment-resources-and-quiz-dt-ks2-electronic-greeting-cards/)


Autumn

Year 5

*Cooking and nutrition: What could be healthier?*

[Food: What could be healthier? - Kapow Primary](#)

<b>Prior Learning</b>	Can I identify what makes different food healthy or unhealthy?				
<b>Vocabulary</b>	Beef, cross-contamination, diet, ethical issues, farm, healthy, ingredients, method, nutrients, packaging, reared, recipe, research, substitute, supermarket, vegan, vegetarian, welfare				
<b>End point</b>	The children will have worked in groups to design and produce a healthy alternative Bolognese sauce.				
Key Concept	Second order concept	Lesson Sequence	Learning Objectives	Suggested teaching sequence	Resources
<b>Cooking and Nutrition</b> 	Cause and consequence	Lesson 1	OO: I understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.  LO: I can explain how food gets from the farm to the table.	Lesson 1 <a href="#">KS2, Y5, Lesson 1: From farm to fork- Kapow Primary</a>  Children will explore the origins of their food.  Today's lesson is centred around beef and the importance of safe cattle farming.	Printed resources
	Significance	Lesson 2	OO: I can explore a range of cooking techniques to produce a healthy balanced dish.  LO: I can suggest a healthy alternative recipe for a cooking sauce.	Lesson 2 <a href="#">KS2, Y5, Lesson 2: What does healthy look like?- Kapow Primary</a>  What does healthy look like?  Children taste test sauces to compare nutritional values.  Research variations of recipe.  Work in teams to find a healthier alternative.	Ingredients /sauces to taste (depending on allergies.)

Key Concept	Second order concept	Lesson Sequence	Learning Objectives	Suggested teaching sequence	Resources
<b>Cooking and Nutrition</b> 	Cause and consequence  Written and oral expression	Lesson 3	OO-To be able to explore a range of cooking techniques to produce a healthy balanced dish.  LO- I can design a healthy Bolognese recipe.	Recap prior learning  Lesson 3 <a href="#">KS2, Y5, Lesson 3: Adapting and improving a recipe - Kapow Primary</a>  The children will work in teams to decide on ingredients for a healthier alternative to the bolognese recipe.	Ingredients  Cooking equipment
	Responsibility	Lesson 4	OO-To be able to explore a range of cooking techniques to produce a healthy balanced dish. I understand the importance of correct storage and handling of ingredients.  LO- I can make a healthy Bolo-	Recap the last lesson.  Lesson 4 <a href="#">Lesson 4: Mamma mia! What a tasty, healthy bolognese! - Kapow Primary</a>  Children to work together to make their very own bolognese sauces, following the recipe methods that they wrote last lesson and designing packaging that promotes it as a healthy and ethical choice.	Ingredients  Cooking equipment
<b>End of unit assessment:</b> <a href="#">Assessment Resources and Quiz D&amp;T KS2: What could be healthier? (kapowprimary.com)</a>					




Spring

Year 5


Digital world: monitoring devices

[KS2 Year 5: D&T: Digital World: Monitoring devices - Kapow Primary](#)

<b>Prior Learning</b>	Do I know how to use coding software?
<b>Vocabulary</b>	Alert, ambient, Boolean, consumables , decompose, development, device, duplicate, durable, electronic, inventor, lightweight, man-made, manipulate, manoeuvre , microplastics , model, monitor, monitoring device, moulded, plastic, plastic pollution, programming comment, programming loop, reformed, replica, research sensor strong, sustainability, synthetic, thermometer, thermoscope. Value. Variable, versatile. water-resistant, workplane
<b>End point</b>	Children will be able to use 'Tinkercad' computer aided design software competently.

Key Concept	Second order concept	Lesson Sequence	Learning Objectives	Suggested teaching sequence	Resources
<b>Design</b> 	Significance	Lesson 1	OO: To be able to generate and develop ideas using pattern pieces and computer aided design.  LO– I can tell you what a monitoring device is and what it is used for.	New concept. Recap prior knowledge: Do you know what digital monitoring device is?  Lesson 1 <a href="#">D&amp;T Y5 Digital World: Monitoring Devices - Kapow Primary</a>  Children will learn about digital monitoring devices in preparation to design their own.	Computers Printed resources
<b>Design</b> 	Written and oral expression	Lesson 2	OO: To be able to generate and develop ideas using pattern pieces and computer aided design.  LO– I can programme an animal monitoring device.	Cross curricular– Computing.  Lesson 2- <a href="#">D&amp;T Y5 Digital World: Programming an animal monitor - Kapow Primary</a>  Programming a micro-bit.  <b>Please note: A physical micro bit is not necessary the activity can be completed on a computer or an iPad.</b>	Computers, laptops or iPads.  Physical micro: bit if available
<b>Make</b> 	Responsibility Cause and consequence	<b>Omit lesson 3</b> Lesson 4	OO: To be able to generate and develop ideas using pattern pieces and computer aided design.  LO: I can use computer aided design software 'Tinkercad.'	Lesson 4 <a href="#">D&amp;T Y5 Digital World: 3D CAD skills - Kapow Primary</a>  Children to use computer aided design to create a stand for the virtual micro-bit.  Children to explore using Tinkercad further and practise designing different useful objects . Children to generate their own ideas first then attempt to design them using the software	Computers, laptops or iPads.  Physical micro: bit if available



Key Concept	Second order concept	Lesson sequence	Learning Objectives	Suggested teaching sequence	Resources
<p><b>Evaluate</b></p> 	Written and oral expression	Lesson 5	<p>OO: To be able to evaluate appearance and function against original criteria.</p> <p>LO: I can evaluate how well my digital monitoring device works depending on my design.</p>	<p>Children to evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</p> <p>Children to write evaluations in their DT books.</p>	In DT books



**End of unit assessment quiz:** [Assessment Resources and Quiz D&T KS2: Monitoring devices \(kapowprimary.com\)](https://www.kapowprimary.com/resources/assessment-resources/assessment-resources-and-quiz-dt-ks2-monitoring-devices)



Summer

Year 5

Mechanical systems: Making a pop-up book.

[D&T Year 5 Mechanical Systems KS2 - Kapow Primary](#)

<b>Prior Learning</b>	Can I make a mechanism? Do I know how to design products that will appeal to younger children?				
<b>Vocabulary</b>	Aesthetic, computer-aided design (CAD) , caption, design, design brief , design criteria, exploded-diagram, function, input, linkage, mechanism, motion, output, pivot , prototype, slider, structure. template				
<b>End point</b>	The children will have designed, made and evaluated their own pop-up book with one or more mechanisms to make the book appealing to a younger reader.				
Key Concept	Second order concept	Lesson Sequence	Learning Objectives	Suggested teaching sequence	Resources
<b>Design</b> 	Significance responsibility	Lesson 1	OO: To be able to generate and develop ideas using pattern pieces and computer aided design.  LO: can design a pop up book.	Recap prior knowledge of mechanisms. Look at pop up books. <a href="#">KS2, DT, Lesson 1: Pop-up book page design - Kapow Primary</a> The children will design a pop-up book for younger children. Choose an appropriate story to base their pop-up book on. Children draw out the pages, write the captions and specify the mechanisms they will use and the resulting movement they envisage. Children will create their own pattern pieces to use as a template for parts of their mechanisms.	Printed resources.
<b>Make</b> 	Responsibility Cause and consequence	Lesson 2  Lesson 3	OO: To be able to use a range of appropriate tools competently.  LO: I can make a pop-up book.  OO: I use a range of appropriate tools competently.  LO: I can make a pop up book.	Lesson 2 <a href="#">KS2, DT, Lesson 2: Making my pop-up book- Kapow Primary</a> Children to make their pop up book to resemble their design.  Lesson 3- <a href="#">KS2, DT, Lesson 3: Using layers and spacers - Kapow Primary</a> Children will secure the mechanisms to their pages. Children to include layers and spacers to restrict movements and hide mechanisms.	Card Paper Scissors Pencils Rulers Other resources depending on the children's designs.

Key Concept	Second order concept	Lesson sequence	Learning Objectives	Suggested teaching sequence	Resources
<b>Make</b> 	Responsibility Cause and consequence	Lesson 4	OO- I use a range of appropriate tools competently. LO- I can make a pop up book.	<a href="#">KS2, DT, Lesson 4: Writing and illustrating- Kapow Primary</a> Children to add the finishing touches to their books to make sure it is fit for purpose– writing, illustrations and colour.  Teachers to take photographs for evidence.	Pens Pencils Coloured pencils or paints.
<b>Evaluate</b> 	Written and oral expression  Similarity and difference		OO-I can evaluate appearance and function against original criteria. LO- I can evaluate my pop up book against my design criteria.	Children to test out (present to their target audience) and evaluate their pop up books. Does the mechanism work how I wanted it to? Am I happy with the overall appearance? What would I change if I made the pop up book again?	Written evaluation in DT book.




**End of unit assessment quiz:** [Assessment Resources and Quiz D&T KS2: Mechanisms: Pop-up book \(kapowprimary.com\)](#)


## Summer

### Year 5

#### Structures: Bridges

[D&T KS2 Structure: Bridges - Kapow Primary](#)

<b>Prior Learning</b>	Do I know what a structure is? Do I know ways to make a structure strong and sturdy?				
<b>Vocabulary</b>	Abutment, accurate, arched bridge, beam bridge, coping saw, evaluation. File, mark out, material properties., measure, predict, reinforce, research, sandpaper, set square, suspension bridge, tenon saw . Test. truss bridge, wood				
<b>End Point</b>	Children will build bridges and consider the best type of bridge, material. They will also consider the shapes they use to reinforce and strengthen their structures.				
Key Concept	Second order concept	Lesson Sequence	Learning Objectives	Suggested teaching sequence	Resources
<b>Make</b> 	Cause and consequence  Significance  Responsibility	Lesson 1        Lesson 2	OO-I use a range of appropriate tools competently.  LO-I can join and combine a range of materials competently.    OO-I use a range of appropriate tools competently.  LO-I can join and combine a range of materials competently.	Recap prior knowledge of structures. Learn about different types of bridges.  Children will develop their understanding of structures by investigating how different shapes affect their strength.  Lesson 1- <a href="#">KS2, Y5, DT, Lesson 1: Arch and Beam BridgesKapow Primary</a>  Explore <b>arch and beam</b> bridges.  Lesson 2- <a href="#">KS2, Y5, DT, Lesson 2: Spaghetti Truss BridgeKapow Primary</a>  Explore <b>spaghetti truss</b> bridges.	
<b>Design</b>  <b>Make</b>  	Written and oral expression   Cause And consequence   Responsibility	Lesson 3 lesson 4 <b>(may need to use more time for these lessons.)</b>	OO-To be able to generate and develop ideas using pattern pieces and computer aided design.  OO-I use a range of appropriate tools competently and I can join and combine a range of materials competently.   LO-I Can design and make a truss bridge structure.	<b>Suggested Design and Technology day.</b>  Recap prior knowledge of woodwork and Safety. Children to practise using simple woodwork / saw skills.  Design brief: Children to create a wooden truss bridge that can hold at least 3 toy cars. Use their understanding of bridge structures and their cutting, measuring and gluing skills.  Children to work in pairs and design and label their bridge.  Lesson 3 <a href="#">KS2, Y5, DT, Lesson 3: Building bridges - Kapow Primary</a>  Lesson 4 <a href="#">KS2, Y5, DT, Lesson 4: Finalising bridges - Kapow Primary</a>  photographs for evidence.	Saws  Wood  Clamps.  Rulers  Set squares  Glue guns  sandpaper

Key Concept	Second order concept	Lesson sequence	Learning Objectives	Suggested teaching sequence	Resources
<p><b>Evaluate</b></p> 	<p>Written and oral expression</p> <p>Similarity and difference</p>	<p>Lesson 5</p>	<p>OO-I am able to justify decisions made during the design process.</p> <p>Lo- I can evaluate my pop up book.</p>	<p>Children to evaluate their wooden bridges and say why they made the choices they did when designing and making their bridge structure.</p> <p>Why did they use those materials and tools?</p> <p>Would they change anything?</p> <p>Did the structure turn out as they expected?</p>	<p>Evaluation in DT books.</p>

**End of unit assessment quiz:** [Assessment Resources and Quiz KS2 D&T: Structures: Bridges \(kapowprimary.com\)](https://www.kapowprimary.com/assessment-resources/quiz-ks2-dt-structures-bridges/)