



Design and Technology

Intent

INTENT

At Abbots Green, we truly believe in ensuring our children grow as individuals. This is at the heart of our school rainbow values which filter through our Design and Technology (DT) lessons. Children learn to become inspired individuals who are reflective learners. We consider that having a broad, balanced curriculum inspires and ignites children's curiosity but also contextualises learning, enabling children to develop a passion for learning. By providing first hand experiences, children revisit prior knowledge and build upon this and their understanding across a wide range of subjects.

We believe in an active teaching approach which inspires and motivates not only children but also teachers. DT is an ideal forum to enrich and support other areas of the curriculum, particularly, science, maths and art and design (art). Whilst we understand that topical links and connections are key, we also recognise the need for depth and revisiting within our themes at Abbots Green.

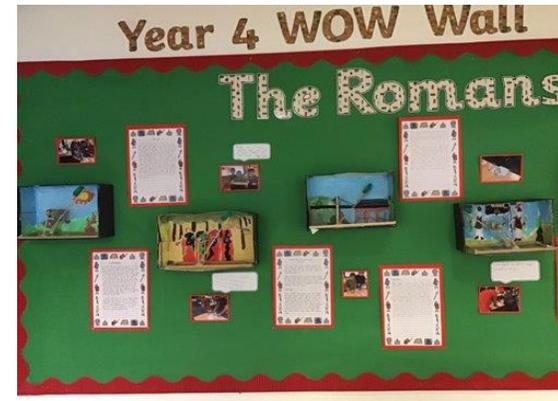
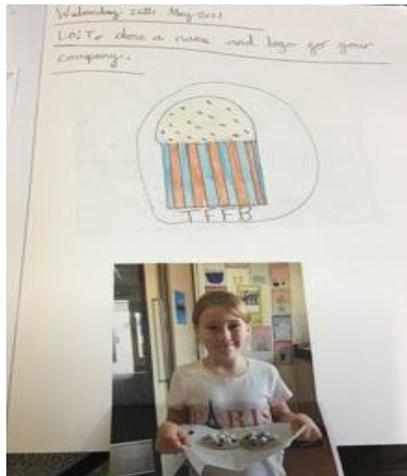
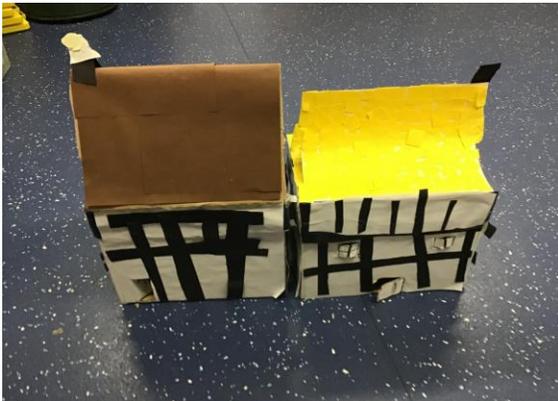
We consider DT and art are closely linked and therefore should be closely planned together. DT enables children to explore a range of different scientific and design concepts in a practical context deepening their understanding of the world around them. We use the National Curriculum 2014 and the Early Years Foundation Stage Early Learning Goals as well as Kapow resources to plan our curriculum. In the Early Years and Key Stage 1, DT drives these topic areas. We believe by using the cross curricular approach, children can apply their learning in different contexts. In Key Stage 2 (KS2), DT is taught as a block of standalone lessons. By teaching Art/DT weekly, it enables children to build upon their prior knowledge, vocabulary, understanding and skills. Our long term curriculum has been carefully mapped out to ensure the coverage is met but also that each year group has a balance of Art and DT over the year.

Aims of teaching DT:

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.

Three significant evidence-informed components underpin our ambition at Abbots Green: cognitive load theory, principles of instruction and tasks that support pupils to generate learning and make sense of the content. These are realised in the long-term teaching sequence, our teaching practice, and the tasks we set for children to think hard and thrive.



Early Years

In Early Years, children are encouraged to become designers. As part of the continuous provision the children are exposed to a creative task each week; varying in focus including textiles and structures. In 'discover and do' sessions in the afternoon the children use a range of authentic large scale construction resources in the outside area to build and create without the support of an adult. Spread out within the curriculum are opportunities for the children to work with food in small groups including baking and making fruit salads. With following the Early Years Framework and our curriculum having been designed carefully, children are able to make links to their previous learning and previously taught skills.

INTENT

Children will:

- Use a wide variety of materials
- Use a wide variety of techniques
- Use a wide range of authentic tools.
- Experiment with colour, texture, design, form and function.
- Talk about and describe what they are doing and why
- Explain their understanding and share their own knowledge
- Recognise and explain a range of technology.
- Select and use technology for a particular purpose.

Text	Planting a Rainbow Louis Elhert	A Seed is Sleepy Diana Hutts Aston	Oliver's Fruit Salad Vivian French	Grow Your Own Esther Hall	Supertato Sue Hendra	Summer Sharing a Shell Julia Donaldson
						

Design and Technology	Cutting skills – make a 3D rainbow using paper, a ruler and scissors.	Using sticks and natural materials create a natural paintbrush.	Natural weaving (Welly Wednesday)	Create a Mr potato head using real vegetables or cutting skills.	Using a range of materials and joining techniques make a face mask.	Create lollipop stick puppets to retell the story
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Below is a grid which highlights the 5 main areas of DT and which unit covers this in each year group. Electrical systems is only taught in Key Stage Two.

INTENT

	Cooking and Nutrition	Mechanisms	Structures	Textiles	Electrical Systems
Y1	Fruit and Vegetable Smoothie	Moving Storybook: Sliders Wheels and Axles	Windmills	Puppets	
Y2	A Balanced Diet	Moving Monsters Ferris Wheels	Baby Bear's Chair	Pouches	
Y3	Eating Seasonally	Pneumatic Toys	Castles	Cushions	Static Electricity
Y4	Adapting a Recipe	Slingshot Cars	Pavilions	Fastenings	Torches
Y5	What Could Be Healthier?	Pop-up Books	Bridges	Stuffed Toys	Electric Greetings Cards
Y6	Come Dine With Me	Automata Toys	Playgrounds	Waistcoats	Steady Hand Games

This grid outlines how each of the national curriculum objectives are met in KS1 in each unit. The three key skills of DT (design, make and evaluate) are found in multiple units to enable retrieval practise.

The technical knowledge taught is different in each unit to develop a wide variety of skills across the year. Each technical skills is taught each year to enable retrieval and extension of skill level from year group to year group.

Key stage 1 National Curriculum D&T subject content	D&T Strands	Kapow Topics	
Pupils should be taught to:		Year 1	Year 2
Design purposeful, functional, appealing products for themselves and other users based on design criteria	Design	Moving Story Books Windmills Puppets Wheels and Axles	Moving Monsters Baby Bear's Chair Pouches Ferris Wheels
Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology	Design	Moving Story Books Windmills, Puppets Wheels and Axles	Moving Monsters Baby Bear's Chair Pouches Ferris Wheels
Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]	Make	Moving Story Books Windmills Puppets Wheels and Axles	Moving Monsters Baby Bear's Chair Pouches Ferris Wheels
Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics	Make	Moving Books Windmills Puppets Wheels and Axles Smoothies	Moving Monsters Baby Bear's Chair Pouches Ferris Wheels A Balanced Diet
Explore and evaluate a range of existing products	Evaluate	Moving Story Books Windmills Wheels and Axles Smoothies	Moving Monsters Pouches Ferris Wheels A Balanced Diet
Evaluate their ideas and products against design criteria	Evaluate	Moving Story Books Windmills Puppets Wheels and Axles	Moving Monsters Baby Bear's Chair Pouches Ferris Wheels
Build structures, exploring how they can be made stronger, stiffer and more stable	Technical Knowledge	Windmills	Baby Bear's Chair Ferris Wheels
Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.	Technical Knowledge	Moving Story Books Wheels and Axles	Moving Monsters Ferris Wheels
Cooking and Nutrition: Use basic principles of a healthy and varied diet to prepare dishes	Technical Knowledge	Fruit and Vegetable Smoothie	A Balanced Diet
Cooking and Nutrition: Understand where food comes from	Technical Knowledge	Fruit and Vegetable Smoothie	A Balanced Diet

This grid outlines how each of the national curriculum objectives are met in KS2 in each unit. The three key skills of DT (design, make and evaluate) are found in multiple units to enable retrieval practise.

The technical knowledge taught is different in each unit to develop a wide variety of skills across the year. Each technical skills is taught each year to enable retrieval and extension of skill level from year group to year group.

Key stage 2 National Curriculum Computing subject content	D&T Strands	Kapow Topics			
Pupils should be taught to:		Y3	Y4	Y5	Y6
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	Design	Eating Seasonally Pneumatic Toys Castles Cushions Static Electricity	Slingshot Cars Torches Pavilions Fastenings Adapting a Recipe	Bridges Pop-Up Books Greetings Cards What Could Be Healthier? Stuffed Toys	Playgrounds Automata Toys Come Dine With Me Waistcoats Steady Hand Game
Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design	Design	Pneumatic Toys Castles Cushions Static Electricity	Slingshot Cars Torches Pavilions Fastenings	Bridges Pop-Up Books Greetings Cards What Could Be Healthier? Stuffed Toys	Playgrounds Automata Toys Waistcoats Steady Hand Game
Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately	Make	Pneumatic Toys Castles Cushions Static Electricity	Slingshot Cars Torches Pavilions Fastenings	Bridges Pop-Up Books Greetings Cards Stuffed Toys	Playgrounds Automata Toys Waistcoats Steady Hand Game
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	Make	Eating Seasonally Pneumatic Toys Castles Cushions Static Electricity	Slingshot Cars Torches Pavilions Fastenings Adapting a Recipe	Bridges Pop-Up Books Greetings Cards What Could Be Healthier? Stuffed Toys	Playgrounds Come Dine With Me Waistcoats Steady Hand Game
Investigate and analyse a range of existing products	Evaluate	Pneumatic Toys Castles Cushions Static Electricity	Slingshot Cars Torches Pavilions Fastenings Adapting a Recipe	Bridges Pop-Up Books Greetings Cards Stuffed Toys	Playgrounds Automata Toys Waistcoats Steady Hand Game
Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	Evaluate	Pneumatic Toys Castles Cushions Static Electricity	Slingshot Cars Torches Pavilions Fastenings Adapting a Recipe	Bridges Pop-Up Books Greetings Cards Stuffed Toys	Playgrounds Automata Toys Waistcoats Steady Hand Game
Understand how key events and individuals in design and technology have helped shape the world	Evaluate	Pneumatic Toys	Slingshot Cars Torches	What Could Be Healthier?	Come Dine With Me

KS2 continued

INTENT

Key stage 2 National Curriculum Computing subject content	D&T Strands	Kapow Topics			
Pupils should be taught to:		Y3	Y4	Y5	Y6
Apply their understanding of how to strengthen, stiffen and reinforce more complex structures	Technical Knowledge	Castles	Pavilions	Bridges	Playgrounds
Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]	Technical Knowledge	Pneumatic Toys	Slingshot Cars	Pop-Up Books	Automata Toys
Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]	Technical Knowledge	Static Electricity	Torches	Greetings Cards	Steady Hand Game
Apply their understanding of computing to program, monitor and control their products	Technical Knowledge	Pneumatic Toys	Torches	Computing > Mars Rover 2* , Computing > Micro:bit**	Computing > Bletchley Park 2***
Cooking and Nutrition: Understand and apply principles of a healthy and varied diet	Technical Knowledge	Eating Seasonally	Adapting a Recipe	What Could Be Healthier?	Come Dine With Me
Cooking and Nutrition: Prepare and cook variety of predominantly savoury dishes using a range of cooking techniques	Make	Eating Seasonally	Adapting a Recipe	What Could Be Healthier?	Come Dine With Me
Cooking and Nutrition: Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed	Technical Knowledge	Eating Seasonally	Adapting a Recipe	What Could Be Healthier?	Come Dine With Me

Below is a grid highlighting when each unit is taught at Abbots Green. Our curriculum has been designed in this way to enable teachers to sequence their lessons in a way that relates to other subjects. Another consideration was seasonality for food units.

INTENT

Year Group	Autumn Term	Spring Term	Summer term
1	Axles and Wheels (4 lessons)	Food: Fruit and Vegetables (4 lessons) Mechanisms: Making a moving book (3 lessons)	Textiles- Puppets (4 lessons) Structures (3 lessons)
2	Structures (3 lessons) - <i>bridges link?</i> Mechanisms (4 lessons) <i>adapted to be London eye</i>	Food: a balanced diet (4 lessons) Textiles (3 lessons) - <i>Superhero capes link</i>	Mechanisms (4 lessons)- <i>adapted to making a moving African animal</i>
3	Textiles (4 lessons) Electrical systems (3 lessons) Structural systems (3 lessons)	Mechanisms (4 lessons)	Food: eating seasonally (4 lessons)
4	Textiles (4 lessons) Structures (4 lessons)	Food (4 lessons)	Electric systems (3 lessons) Mechanical toys (3 lessons)
5	Food (4 lessons) Electrical systems (3 lessons)	Structures (4 lessons)	Mechanical systems (3 lessons) Textiles (4 lessons)
6	Electrical systems: steady hand game/World war electrical quiz board (4 lessons)	Textiles: making a pencil case (4 lessons)	Mechanical systems: automata toys (4 lessons)

Below is an example grid outlining the skills progression. This one relates to the design stage.

INTENT

Kapow Primary		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design Make Evaluation Technical knowledge	Structures	<ul style="list-style-type: none"> Learning the importance of a clear design criteria Including individual preferences and requirements in a design 	<ul style="list-style-type: none"> Generating and communicating ideas using sketching and modelling Learning about different types of structures, found in the natural world and in everyday objects 	<ul style="list-style-type: none"> Designing a castle with key features to appeal to a specific person/purpose Drawing and labelling a castle design using 2D shapes, labelling: - the 3D shapes that will create the features - materials need and colours 	<ul style="list-style-type: none"> Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect Building frame structures designed to support weight 	<ul style="list-style-type: none"> Designing a stable structure that is able to support weight Creating frame structure with focus on triangulation 	<ul style="list-style-type: none"> Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs
	Mechanisms	<ul style="list-style-type: none"> Explaining how to adapt mechanisms, using bridges or guides to control the movement Designing a moving story book for a given audience Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move Creating clearly labelled drawings which illustrate movement 	<ul style="list-style-type: none"> Creating a class design criteria for a moving monster Designing a moving monster for a specific audience in accordance with a design criteria Selecting a suitable linkage system to produce the desired motions Designing a wheel Selecting appropriate materials based on their properties 	<ul style="list-style-type: none"> Designing a toy which uses a pneumatic system Developing design criteria from a design brief Generating ideas using thumbnail sketches and exploded diagrams Learning that different types of drawings are used in design to explain ideas clearly 	<ul style="list-style-type: none"> Designing a shape that reduces air resistance Drawing a net to create a structure from Choosing shapes that increase or decrease speed as a result of air resistance Personalising a design 	<ul style="list-style-type: none"> Designing a pop-up book which uses a mixture of structures and mechanisms Naming each mechanism, input and output accurately Storyboarding ideas for a book 	<ul style="list-style-type: none"> After experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement Understanding how linkages change the direction of a force Making things move at the same time

The design strand continued: electrical systems and cooking/nutrition.

INTENT

Kapow Primary		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design Make Evaluation Technical knowledge	Electrical Systems	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Designing a game that works using static electricity, including the instructions for playing the game Identifying a design criteria and a target audience 	<ul style="list-style-type: none"> Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas 	<ul style="list-style-type: none"> Designing an electronic greetings card with a simple electrical control circuit Creating a labelled design showing positive and negative parts in relation to the LED and the battery 	<ul style="list-style-type: none"> Designing a steady hand game - identifying and naming the components required Drawing a design from three different perspectives Generating ideas through sketching and discussion Modelling ideas through prototypes
	Cooking and Nutrition	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Designing a healthy wrap based on a food combination which work well together 	<ul style="list-style-type: none"> Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish 	<ul style="list-style-type: none"> Designing a biscuit within a given budget, drawing upon previous taste testing 	<ul style="list-style-type: none"> Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients Writing an amended method for a recipe to incorporate the relevant changes to ingredients Designing appealing packaging to reflect a recipe 	<ul style="list-style-type: none"> Writing a recipe, explaining the key steps, method and ingredients Including facts and drawings from research undertaken

The design strand continued: textiles.

INTENT

Kapow Primary		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Textiles	<ul style="list-style-type: none"> Using a template to create a design for a puppet 	<ul style="list-style-type: none"> Designing a pouch 	<ul style="list-style-type: none"> Designing and making a template from an existing cushion and applying individual design criteria 	<ul style="list-style-type: none"> Writing design criteria for a product, articulating decisions made Designing a personalised Book sleeve 	<ul style="list-style-type: none"> Designing a stuffed toy considering the main component shapes required and creating an appropriate template Considering proportions of individual components 	<ul style="list-style-type: none"> Designing a pencil case in accordance to specification linked to set of design criteria to fit a specific theme. Annotating designs
Make							
Evaluation							
Technical knowledge							

INTENT

Below is a grid outlining the skills progression for each strand.

Kapow Primary		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Structures	<ul style="list-style-type: none"> • Making stable structures from card, tape and glue 	<ul style="list-style-type: none"> • Making a structure according to design criteria 	<ul style="list-style-type: none"> • Constructing a range of 3D geometric shapes using nets 	<ul style="list-style-type: none"> • Creating a range of different shaped frame structures 	<ul style="list-style-type: none"> • Making a range of different shaped beam bridges 	<ul style="list-style-type: none"> • Building a range of play apparatus structures drawing upon new and prior knowledge of structures
Make		<ul style="list-style-type: none"> • Following instructions to cut and assemble the supporting structure of a windmill 	<ul style="list-style-type: none"> • Creating joints and structures from paper/card and tape 	<ul style="list-style-type: none"> • Creating special features for individual designs • Making facades from a range of recycled materials 	<ul style="list-style-type: none"> • Making a variety of free standing frame structures of different shapes and sizes 	<ul style="list-style-type: none"> • Using triangles to create truss bridges that span a given distance and supports a load 	<ul style="list-style-type: none"> • Measuring, marking and cutting wood to create a range of structures
Evaluation		<ul style="list-style-type: none"> • Making functioning turbines and axles which are assembled into a main supporting structure 			<ul style="list-style-type: none"> • Selecting appropriate materials to build a strong structure and for the cladding • Reinforcing corners to strengthen a structure • Creating a design in accordance with a plan • Learning to create different textural effects with materials 	<ul style="list-style-type: none"> • Building a wooden bridge structure • Independently measuring and marking wood accurately • Selecting appropriate tools and equipment for particular tasks • Using the correct techniques to saws safely • Identifying where a structure needs reinforcement and using card corners for support 	<ul style="list-style-type: none"> • Using a range of materials to reinforce and add decoration to structures
Technical knowledge							

INTENT

Below is a grid outlining the skills progression for each strand.

Kapow Primary		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Mechanisms	<ul style="list-style-type: none"> Following a design to create moving models that use levers and sliders 	<ul style="list-style-type: none"> Making linkages using card for levers and split pins for pivots 	<ul style="list-style-type: none"> Creating a pneumatic system to create a desired motion 	<ul style="list-style-type: none"> Measuring, marking, cutting and assembling with increasing accuracy 	<ul style="list-style-type: none"> Following a design brief to make a pop up book, neatly and with focus on accuracy 	<ul style="list-style-type: none"> Measuring, marking and checking the accuracy of the jelutong and dowel pieces required
Make		<ul style="list-style-type: none"> Adapting mechanisms 	<ul style="list-style-type: none"> Experimenting with linkages adjusting the widths, lengths and thicknesses of card used 	<ul style="list-style-type: none"> Building secure housing for a pneumatic system 	<ul style="list-style-type: none"> Making a model based on a chosen design 	<ul style="list-style-type: none"> Making mechanisms and/or structures using sliders, pivots and folds to produce movement 	<ul style="list-style-type: none"> Measuring, marking and cutting components accurately using a ruler and scissors
Evaluation				<ul style="list-style-type: none"> Cutting and assembling components neatly Selecting materials according to their characteristics Following a design brief 	<ul style="list-style-type: none"> Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy Selecting materials due to their functional and aesthetic characteristics Manipulating materials to create different effects by cutting, creasing, folding, weaving 		<ul style="list-style-type: none"> Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result
Technical knowledge							

INTENT

Below is a grid outlining the skills progression for each strand.

Kapow Primary		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Textiles	<ul style="list-style-type: none"> Cutting fabric neatly with scissors Using joining methods to decorate a puppet Sequencing steps for construction 	<ul style="list-style-type: none"> Selecting and cutting fabrics for sewing Decorating a pouch using fabric glue or running stitch 	<ul style="list-style-type: none"> Following design criteria to create a cushion Selecting and cutting fabrics with ease using fabric scissors Sewing cross stitch to join fabric Decorating fabric using appliqué Completing design ideas with stuffing and sewing the edges 	<ul style="list-style-type: none"> Making and testing a paper template with accuracy and in keeping with the design criteria Measuring, marking and cutting fabric using a paper template Selecting a stitch style to join fabric, working neatly sewing small neat stitches Incorporating fastening to a design 	<ul style="list-style-type: none"> Creating a 3D stuffed toy from a 2D design Measuring, marking and cutting fabric accurately and independently Creating strong and secure blanket stitches when joining fabric Using applique to attach pieces of fabric decoration 	<ul style="list-style-type: none"> Using template pinning panels onto fabric Marking and cutting fabric accurately, in accordance with a design Sewing a strong running stitch, making small, neat stitches and following the edge Tying strong knots Decorating a Pencil case attaching objects using thread and adding a secure fastening
Make							
Evaluation							
Technical knowledge							

INTENT

Below is a grid outlining the skills progression for each strand.

Kapow Primary		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design Make Evaluation Technical knowledge	Structures	<ul style="list-style-type: none"> Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't Suggest points for improvements 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design Suggesting points for modification of the individual designs 	<ul style="list-style-type: none"> Evaluating structures made by the class Describing what characteristics of a design and construction made it the most effective Considering effective and ineffective designs 	<ul style="list-style-type: none"> Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary Suggesting points for improvements for own bridges and those designed by others 	<ul style="list-style-type: none"> Improving a design plan based on peer evaluation Testing and adapting a design to improve it as it is developed Identifying what makes a successful structure
	Food	<ul style="list-style-type: none"> Tasting and evaluating different food combinations Describing appearance, smell and taste Suggesting information to be included on packaging 	<ul style="list-style-type: none"> 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 which grip was most effective 	<ul style="list-style-type: none"> Establishing and using design criteria to help test and review dishes Describing the benefits of seasonal fruits and vegetables and the impact on the environment Suggesting points for improvement when making a seasonal tart 	<ul style="list-style-type: none"> Evaluating a recipe, considering: taste, smell, texture and appearance Describing the impact of the budget on the selection of ingredients Evaluating and comparing a range of products Suggesting modifications 	<ul style="list-style-type: none"> Identifying the nutritional differences between different products and recipes Identifying and describing healthy benefits of food groups 	<ul style="list-style-type: none"> Evaluating a recipe, considering: taste, smell, texture and origin of the food group Taste testing and scoring final products Suggesting and writing up points of improvements in productions Evaluating health and safety in production to minimise cross contamination

INTENT

Below is a grid outlining the skills progression for each strand.

Kapow Primary		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design Make Evaluation Technical knowledge	Mechanisms	<ul style="list-style-type: none"> Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed Reviewing the success of a product by testing it with its intended audience Testing mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move 	<ul style="list-style-type: none"> Evaluating own designs against design criteria Using peer feedback to modify a final design Evaluating different designs Testing and adapting a design 	<ul style="list-style-type: none"> Using the views of others to improve designs Testing and modifying the outcome, suggesting improvements 	<ul style="list-style-type: none"> Evaluating the speed of a final product based on: the affect of shape on speed and the accuracy of workmanship on performance 	<ul style="list-style-type: none"> Evaluating the work of others and receiving feedback on own work Suggesting points for improvement 	<ul style="list-style-type: none"> Evaluating the work of others and receiving feedback on own work Applying points of improvements Describing changes they would make/ do if they were to do the project again
	Electrical systems	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Learning to give constructive criticism on own work and the work of others Testing the success of a product against the original design criteria and justifying opinions 	<ul style="list-style-type: none"> Evaluating electrical products Testing and evaluating the success of a final product and taking inspiration from the work of peers 	<ul style="list-style-type: none"> Evaluating a completed product against the original design sheet and looking at modifications that could be made to improve the reliability or aesthetics of it or to incorporate another type of electronic device, eg: buzzer 	<ul style="list-style-type: none"> Testing own and others finished games, identifying what went well and making suggestions for improvement

INTENT

Below is a grid outlining the skills progression for each strand.

Kapow Primary™		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Textiles	<ul style="list-style-type: none"> Reflecting on a finished product, explaining likes and dislikes 	<ul style="list-style-type: none"> Troubleshooting scenarios posed by teacher Evaluating the quality of the stitching on others' work Discussing as a class, the success of their stitching against the success criteria Identifying aspects of their peers' work that they particularly like and why 	<ul style="list-style-type: none"> Evaluating an end product and thinking of other ways in which to create similar items 	<ul style="list-style-type: none"> Testing and evaluating an end product against the original design criteria Deciding how many of the criteria should be met for the product to be considered successful Suggesting modifications for improvement 	<ul style="list-style-type: none"> Testing and evaluating an end product and giving point for further improvements 	<ul style="list-style-type: none"> Evaluating work continually as it is created
Make							
Evaluation							
Technical knowledge							

INTENT

Below is a grid outlining the skills progression for each strand.

Kapow Primary		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Food	<ul style="list-style-type: none"> Understanding the difference between fruits and vegetables Describing and grouping fruits by texture and taste 	<ul style="list-style-type: none"> Understanding what makes a balanced diet Knowing where to find the nutritional information on packaging Knowing the five food groups 	<ul style="list-style-type: none"> Learning that climate affects food growth Working with cooking equipment safely and hygienically Learning that imported foods travel from far away and this can negatively impact the environment Learning that vegetables and fruit grow in certain seasons Learning that each fruit and vegetable gives us nutritional benefits Learning to use, store and clean a knife safely 	<ul style="list-style-type: none"> Understanding the impact of the cost and importance of budgeting while planning ingredients for biscuits Understanding the environmental impact on future product and cost of production 	<ul style="list-style-type: none"> Understanding where food comes from - learning that beef is from cattle and how beef is reared and processed Understanding what constitutes a balanced diet Learning to adapt a recipe to make it healthier Comparing two adapted recipes using a nutritional calculator and then identifying the healthier option 	<ul style="list-style-type: none"> Learning how to research a recipe by ingredient Recording the relevant ingredients and equipment needed for a recipe Understanding the combinations of food that will complement one another Understanding where food comes from, describing the process of 'Farm to Fork' for a given ingredient
Make							
Evaluation							
Technical knowledge							

INTENT

Below is a grid outlining the skills progression for each strand.

Kapow Primary		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Mechanisms	<ul style="list-style-type: none"> Learning that levers and sliders are mechanisms and can make things move Identifying whether a mechanism is a lever or slider and determining what movement the mechanism will make Using the vocabulary: up, down, left, right, vertical and horizontal to describe movement Identifying what mechanism makes a toy or vehicle roll forwards Learning that for a wheel to move it must be attached to an axle 	<ul style="list-style-type: none"> Learning that mechanisms are a collection of moving parts that work together in a machine Learning that there is an input and output in a mechanism Identifying mechanisms in everyday objects Learning that a lever is something that turns on a pivot Learning that a linkage is a system of levers that are connected by pivots Exploring wheel mechanisms Learning how axels help wheels to move a vehicle 	<ul style="list-style-type: none"> Understanding how pneumatic systems work Learning that mechanisms are a system of parts that work together to create motion Understanding that pneumatic systems can be used as part of a mechanism Learning that pneumatic systems force air over a distance to create movement 	<ul style="list-style-type: none"> Learning that products change and evolve over time Learning that all moving things have kinetic energy Understanding that kinetic energy is the energy that something (object person) has by being in motion 	<ul style="list-style-type: none"> Knowing that an input is the motion used to start a mechanism Knowing that output is the motion that happens as a result of starting the input Knowing that mechanisms control movement Describing mechanisms that can be used to change one kind of motion into another 	<ul style="list-style-type: none"> Using a bench hook to saw safely and effectively Exploring cams, learning that different shaped cams produce different follower movements Exploring types of motions and direction of a motion
Make							
Evaluation							
Technical knowledge							

INTENT

Below is a grid outlining the skills progression for each strand.



Kapow Primary		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Structures	<ul style="list-style-type: none"> Describing the purpose of structures, including windmills 	<ul style="list-style-type: none"> Identifying natural and man-made structures 	<ul style="list-style-type: none"> Identifying features of a castle 	<ul style="list-style-type: none"> Learning what pavilions are and their purpose 	<ul style="list-style-type: none"> Exploring how to create a strong beam 	<ul style="list-style-type: none"> Knowing that structures can be strengthened by manipulating materials and shapes
Make		<ul style="list-style-type: none"> Learning how to turn 2D nets into 3D structures 	<ul style="list-style-type: none"> Identifying when a structure is more or less stable than another 	<ul style="list-style-type: none"> Identifying suitable materials to be selected and used for a castle, considering weight, compression, tension 	<ul style="list-style-type: none"> Building on prior knowledge of net structures and broadening knowledge of frame structures 	<ul style="list-style-type: none"> Identifying arch and beam bridges and understanding the terms: compression and tension 	<ul style="list-style-type: none"> Identifying the shell structure in everyday life (cars, aeroplanes, tins, cans)
Evaluation		<ul style="list-style-type: none"> Learning that the shape of materials can be changed to improve the strength and stiffness of structures 	<ul style="list-style-type: none"> Knowing that shapes and structures with wide, flat bases or legs are the most stable 	<ul style="list-style-type: none"> Extending the knowledge of wide and flat based objects are more stable 	<ul style="list-style-type: none"> Learning that architects consider light, shadow and patterns when designing 	<ul style="list-style-type: none"> Identifying stronger and weaker structures 	<ul style="list-style-type: none"> Understanding man made and natural structures
Technical knowledge		<ul style="list-style-type: none"> Understanding that cylinders are a strong type of structure that are often used for windmills and lighthouses Understanding that windmill turbines use wind to turn and make the machines inside work Understanding that axles are used in structures and mechanisms to make parts turn in a circle Developing awareness of different structures for different purposes 	<ul style="list-style-type: none"> Understanding that the shape of a structure affects its strength Using the vocabulary: strength, stiffness and stability Knowing that materials can be manipulated to improve strength and stiffness Building a strong and stiff structure by folding paper 	<ul style="list-style-type: none"> Understanding the terminology of strut, tie, span, beam Understanding the difference between frame and shell structure 	<ul style="list-style-type: none"> Implementing frame and shell structure knowledge Considering effective and ineffective designs 	<ul style="list-style-type: none"> Finding different ways to reinforce structures Understanding how triangles can be used to reinforce bridges Articulating the difference between beam, arch, truss and suspension bridges 	

INTENT

Below is a grid outlining the skills progression for each strand.

Kapow Primary™		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Textiles	<ul style="list-style-type: none"> • Learning different ways in which to join fabrics together: pinning, stapling, gluing 	<ul style="list-style-type: none"> • Joining items using fabric glue or stitching • Identifying benefits of these techniques • Threading a needle • Sewing running stitch, with evenly spaced, neat, even stitches to join fabric • Neatly pinning and cutting fabric using a template 	<ul style="list-style-type: none"> • Threading needles with greater independence • Tying knots with greater independence • Sewing cross stitch and appliqué • Understanding the need to count the thread on a piece of even weave fabric in each direction to create uniform size and appearance • Understanding that fabrics can be layered for affect 	<ul style="list-style-type: none"> • Understanding that there are different types of fastenings and what they are • Articulating the benefits and disadvantages of different fastening types 	<ul style="list-style-type: none"> • Learning to sew blanket stitch to join fabric • Applying blanket stitch so the space between the stitches are even and regular • Threading needles independently 	<ul style="list-style-type: none"> • Learning different decorative stitches • Application and outcome of the individual technique • Sewing accurately with even regularity of stiches
Make							
Evaluation							
Technical knowledge							

INTENT

Below is a grid outlining the skills progression for each strand.

Kapow Primary™		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Electrical systems	• N/A	• N/A	<ul style="list-style-type: none"> • Understanding what static electricity is and how it moves objects through attraction or repulsion • Generating static electricity independently • Using static electricity to make objects move in a desired way 	<ul style="list-style-type: none"> • Learning how electrical items work • Identifying electrical products • Learning what electrical conductors and insulators are • Understanding that a battery contains stored electricity and can be used to power products • Identifying the features of a torch • Understanding how a torch works • Articulating the positives and negatives about different torches 	<ul style="list-style-type: none"> • Learning the key components used to create a functioning circuit • Learning that graphite is a conductor and can be used as part of a circuit • Learning the difference between series and parallel circuits • Understanding that breaks in a circuit will stop it from working 	<ul style="list-style-type: none"> • Understanding how electromagnetic motors work • Learning that batteries contain acid, which can be dangerous if they leak • Learning that when electricity enters a magnetic field it can make a motor
Make							
Evaluation							
Technical knowledge							



**ABBOTS
GREEN**
ACADEMY

Design and Technology
Implementation



At Abbots Green, we ensure children's enquiry skills develop as well as their understanding by using a progression of skills grid. Our DT skills progression grid has been developed with five overarching topic headings which are taught and built upon each year, these are; cooking and nutrition, mechanisms, structures, textiles and electrical systems (KS2 only). Each DT topic is underpinned by the four core concepts for the DT curriculum: design, make, evaluate and technical knowledge. The grid enables children to build upon a prior skill and improve it, whilst developing a new skill. Ultimately by Year 6, children will have experienced each skill in a number of different contexts, i.e.: to evaluate a prototype against a set of criteria. Knowledge and skills provision in the Early Years Foundation Stage strategically supports learning in Year 1 through careful mapping of content in both phases of the school. At Abbots Green vocabulary development is a driving force within our curriculum. We believe the use of the correct technical language is vital and therefore is set out in our skills progression under the core concept of technical knowledge.



We believe that children learn best when they are enthused and inspired by a real purpose. Therefore, medium term plans are often based around a key question or theme and each lesson will lend itself to the overarching question. Throughout the topic, there are amazing opportunities for involvement of parents, governors and the wider community in the children's learning, such as designing and building dens, taking a trip to the local museum or getting parents in to help with certain projects.

In DT knowledge organisers are beginning to be used by teachers to drive enquire skills and develop children's technical knowledge, understanding and additionally support our vocabulary rich curriculum. The purpose of a knowledge organiser is to highlight key vocabulary with definitions. They contain a child's version of the teacher's medium-term plan so that the children can see the learning sequence. On a DT organiser you will find pictures and diagrams demonstrating the key technical knowledge needed for the unit.

IMPLEMENTATION

Textiles - Puppets

Decorate	To add details to a design to improve its appearance.
Design	To make, draw or write plans for something.
Fabric	A natural or man-made woven or knitted material that is made from plant fibres, animal fur or synthetic material.
Glue	A sticky liquid that can join two things together.
Model	A practise version, often on a smaller scale, that lets you test out your idea and see how it will look and work.
Hand puppet	A toy that you can make move by putting your hand inside it
Safety pin	A 'U' shaped pin with a cap where the needle slots in securely after fastening.
Stencil	A shape that you can draw around.
Technique	A way of doing something to complete a task.
Template	A stencil which you use to help you draw a shape more easily on to different materials.

Key facts

You will use a variety of techniques to create your puppet including cutting, gluing, stapling and pinning.



Did you know?

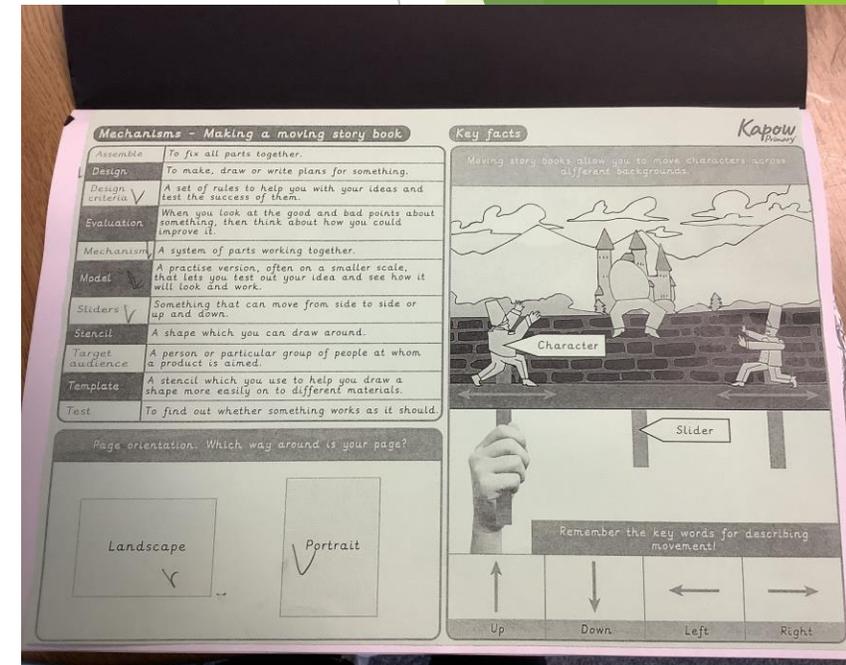
Puppets were first invented over 3,000 years ago in Egypt. They were made out of clay.



What colour fabric will you choose for your puppet?
What colour hair will your puppet have?
What kind of eyes, nose and ears will your puppet have?



Kapow Primary



Knowledge note that has been annotated with ticks by a year 1 child during there mechanism module

Abbots Green 50

At Abbots Green we feel that it is important to celebrate and showcase our children's work. As you walk around the school you will see display examples of DT work from a variety of year groups. To enhance the children's development of becoming designers we provide them with exciting opportunities from our Abbots 50.

Year group	Art
Nursery	29 – Build a shelter
Reception	29 – Build a shelter 6 – Grow and harvest fruit and vegetables
1	29 – Build a shelter 26 – promoting healthy eating and exercise
2	1 – Prepare, cook and serve a meal to others. 26 – promoting healthy eating and exercise 29 – Build a shelter
3	29 – Build a shelter
4	6 – Grow and harvest fruit and vegetables 26 – promoting healthy eating and exercise 29 – Build a shelter
5	29 – Build a shelter
6	15 – Take responsibility for a budget. 29 – Build a shelter

IMPLEMENTATION

At Abbots Green, we use formative and summative assessment to track our children's learning throughout each year group. At the end of each module teachers track the attainment of their class. We use a verbal retrieval practice in each lesson which enables pupils to revisit their learning regularly to ensure it is retained and embedded. Our 'Go Global' sessions offer children to revisit previously taught content whilst expanding and developing this with further challenge.

Vocabulary

Within each unit of DT, for Year 1 up, the children have provided with a knowledge note which contains subject specific vocabulary and diagrams to help all children access the learning. Each DT lesson contains a vocabulary focus where teachers choose up to three focus words for the session. The knowledge notes are annotated by the children to aid with their understanding.

Writing

Pupils are expected to write across all areas of the curriculum and teachers model how to write purposefully using the curriculum and teachers model how to write purposefully using the correct features and subject specific vocabulary.

Oracy

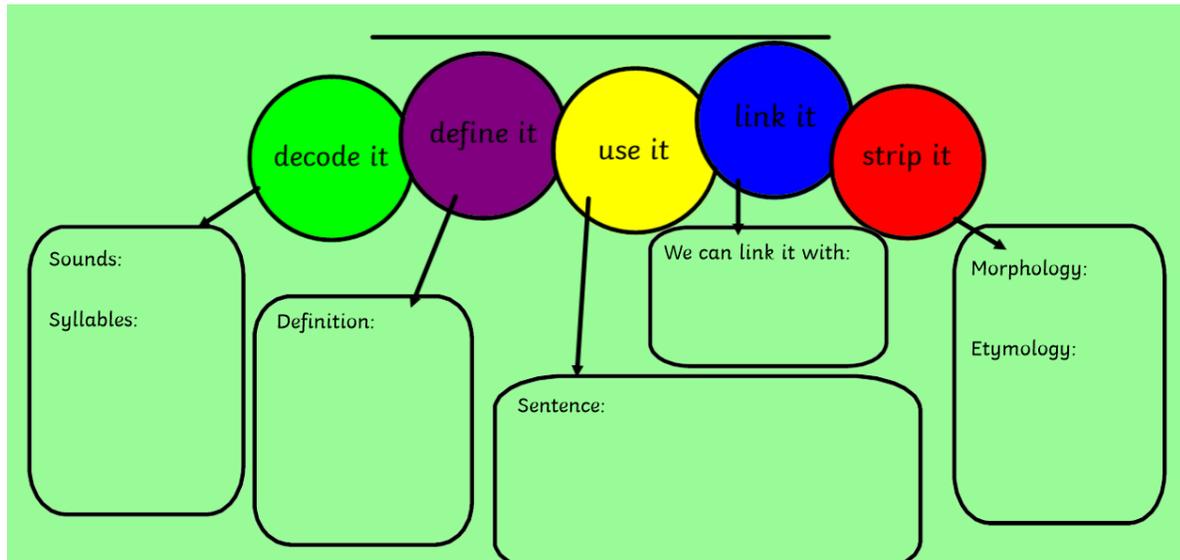
Oracy is promoted as children are encouraged to speak in full sentences incorporating their DT specific vocabulary.

Continuous Professional Development

All staff have undergone CPD in Sweller's cognitive load theory and split attention affect and Rosenshine's principles of instructions. Staff have also received CPD in planning and the use of resources within a history lesson which has supported the development of a modular wider curriculum.

Furthermore, staff have been trained in the Theory of Reading which emphasises the importance of teaching reading across all subjects and the importance of vocabulary – including etymology and morphology.

IMPLEMENTATION



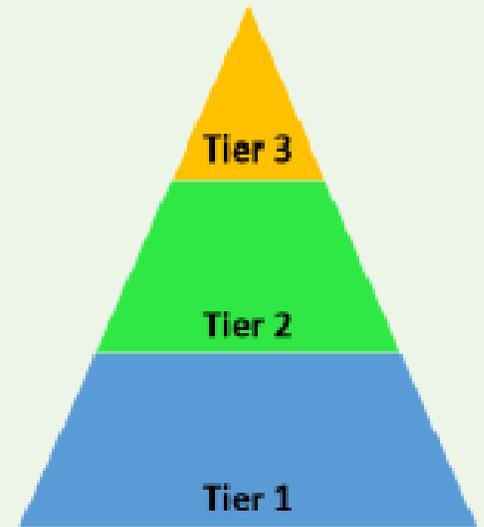
5phase approach to teaching vocabulary

Which words?

Tier 3: *Low frequency, context-specific vocabulary – language that is taught as part of a specific subject or domain.*

Tier 2: *High frequency and multiple meaning vocabulary, often found in adult conversation and literature.*

Tier 1: *Basic vocabulary needed to function in daily life.*



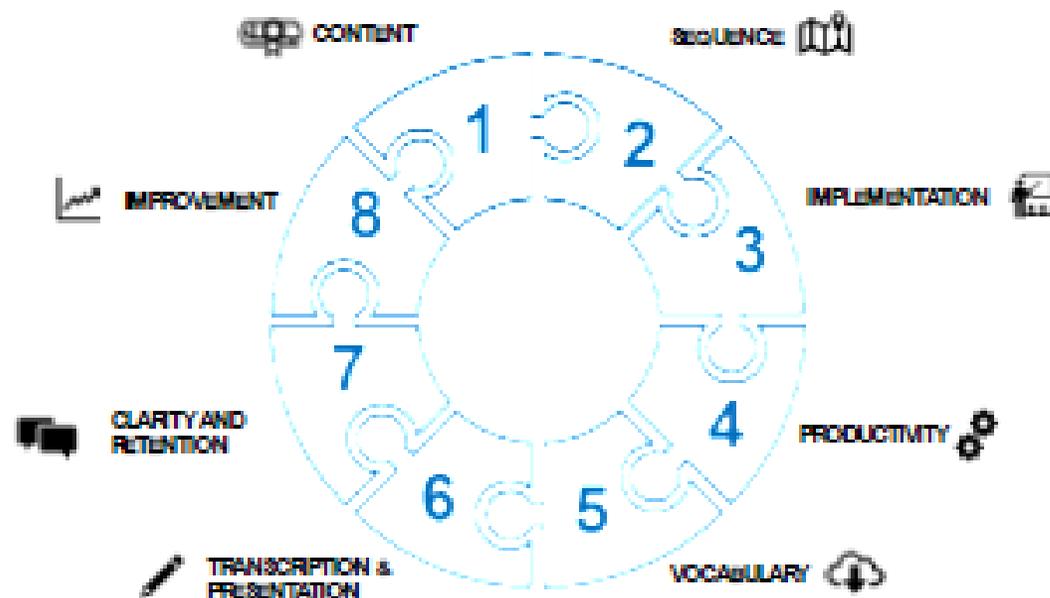


**ABBOTS
GREEN**
ACADEMY

Design and
technology
Impact

In DT book looks are carried out. However, moving forwards pupil book studies will be used to assess and monitor the teaching and learning. These book studies will require the subject lead to have multiple sessions with small groups of children where questioning will be used to check the children's retention of knowledge and understanding of vocabulary. As a result, feedback can then be given to staff members to help inform future planning.

QUALITY ASSURE books through studying:



IMPACT

EYFS

Early years children experience DT everyday as part of the continuous provision in their environment. Weekly planning identifies opportunities for the children to experience different areas of DT linked to their weekly text. Here is an example of experimenting with colour and textiles to create a unique butterfly.



The children have regular opportunity to explore food. Here the provision is set up for the children to independently cut and create their own healthy kebab.



Children have daily access to small and large scale loose parts which they use to design and create individually as well as within groups.

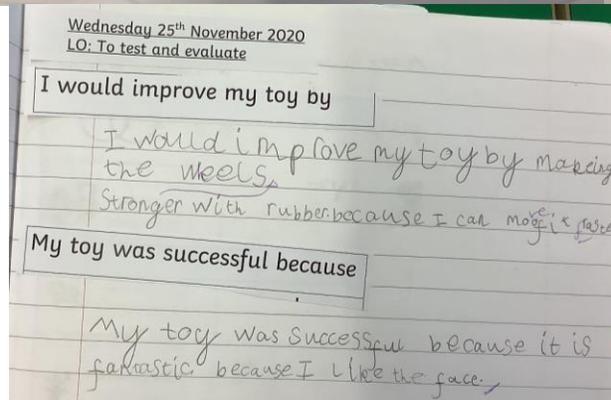
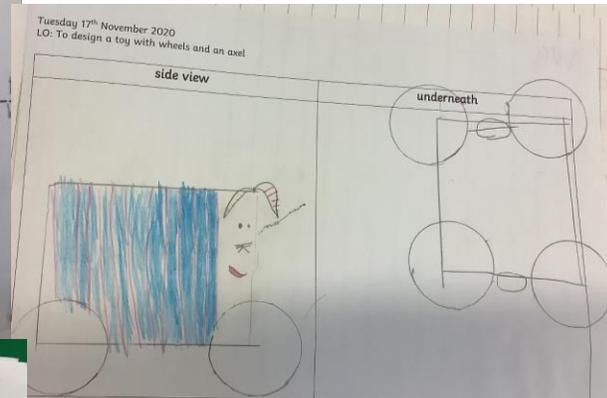
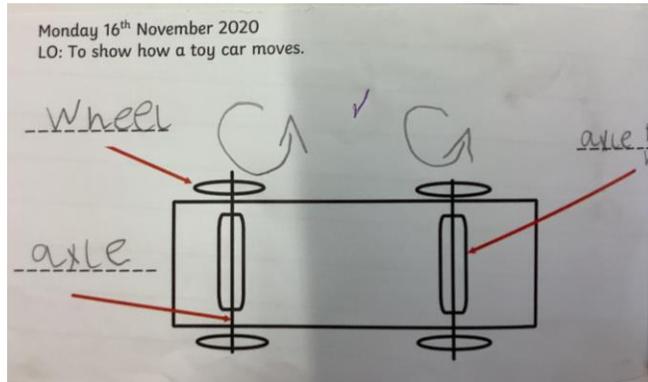


Year 1

Year 1 the teaching of DT is blocked. The children designed and made cars linking to their history topic of toys. The children investigated the mechanism needed to wheels to work. They created their own design, made and evaluated their work.



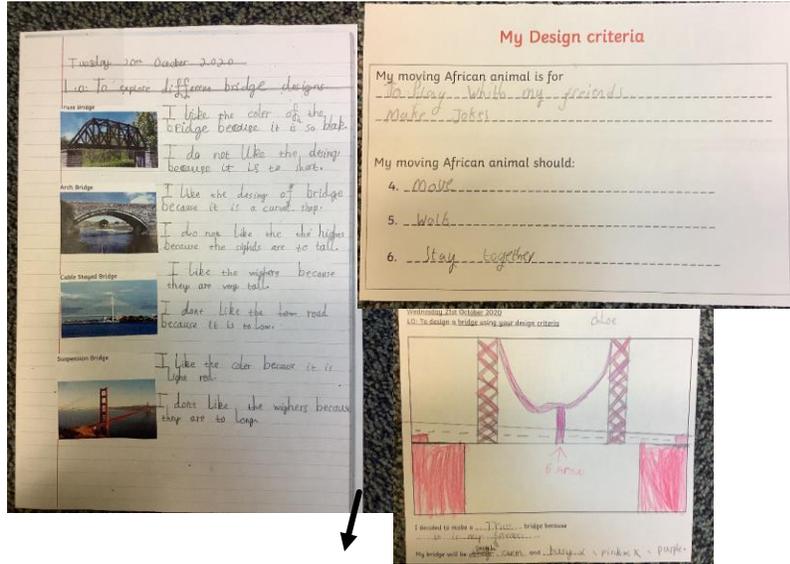
IMPACT



In textiles the year 1 children have started a project to make a puppet, linked to their English learning. The children practised a few different ways to attach fabric together before deciding on the joins they would use in their design. In values and beliefs the children made doves using split pins to create the mechanism. This linked to previous work using split pins in DT.

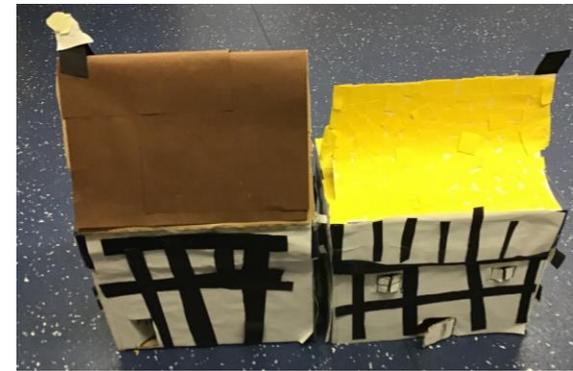
Year 2

IMPACT



Whilst learning about London the Year 2 children undertook an investigation into bridges. Evaluated current designs before designing and creating their own bridges using a design criteria they had created.

As part of a Geography topic about Africa the children designed and created African animals with a moving mechanism.



Year 2 have been looking at the Great Fire of London as a significant event in history. To enhance their learning in the subject in DT the children made tutor houses to recreate the fire and observe how the fire spread so quickly.

They even got to meet the local fire brigade.

Year 3



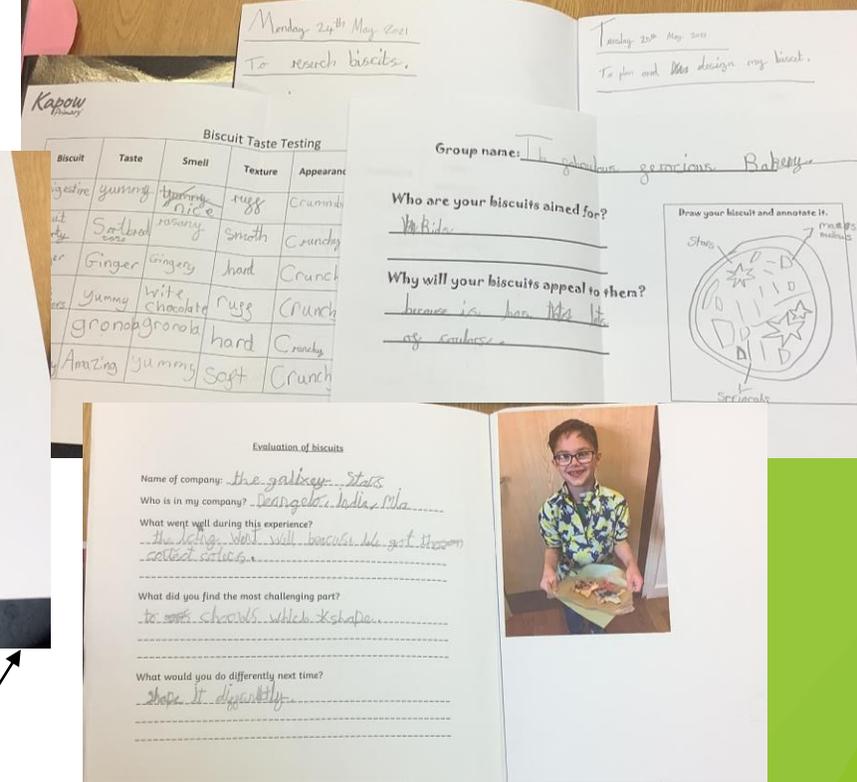
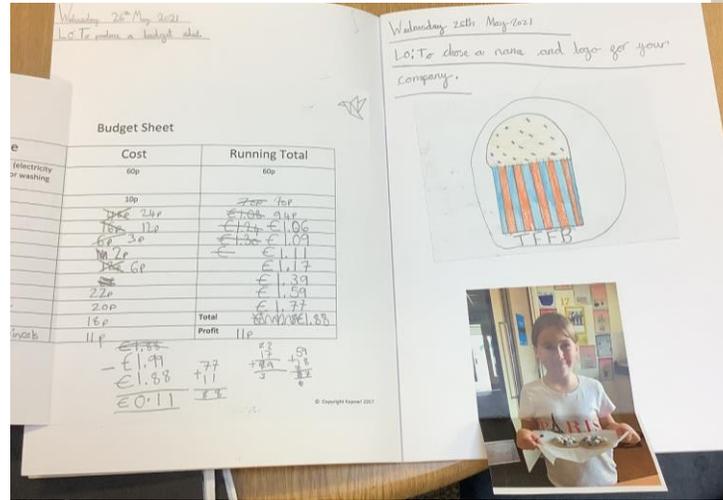
Year 3 have been learning about healthy eating. As part of their food topic the children had the opportunity to design, make and their own healthy food kebabs.

Year 4



IMPACT

Year 4 have been learning about the Romans. To enhance their learning they designed and created roman catapults in D.T.

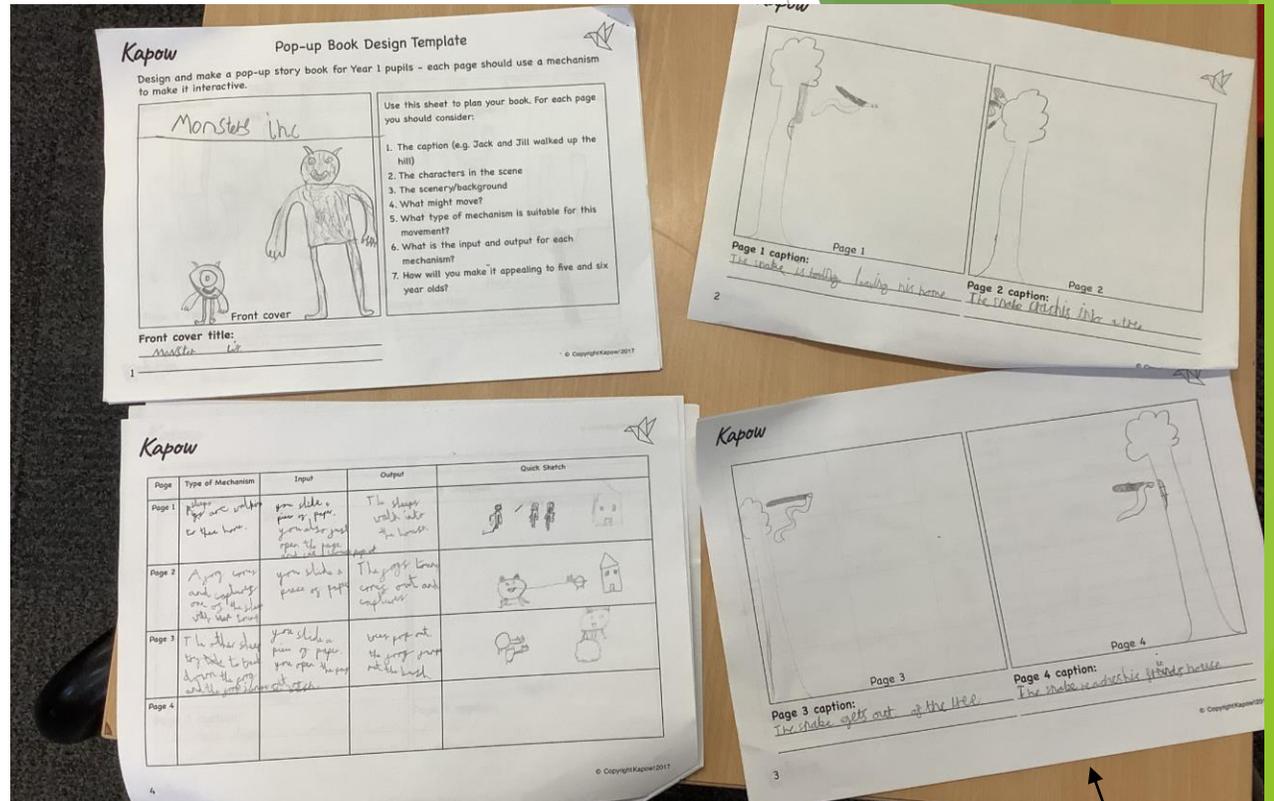


Year 4 have looking at food within their DT lessons. The children completed a biscuit project. The children first evaluated biscuits currently on the market before working in small groups, 'companies', to design, make and evaluate their product. As part of this project the children used their maths skills to create a budget for their ingredients and know how much to charge for each biscuit to make a profit. The budgeting sheet included details on ingredients as well as fees for electricity and other amenities.

Year 5

IMPACT

In Year 5 the children had the opportunity to practise God's eye weaving as part of a transition project into Year 6.

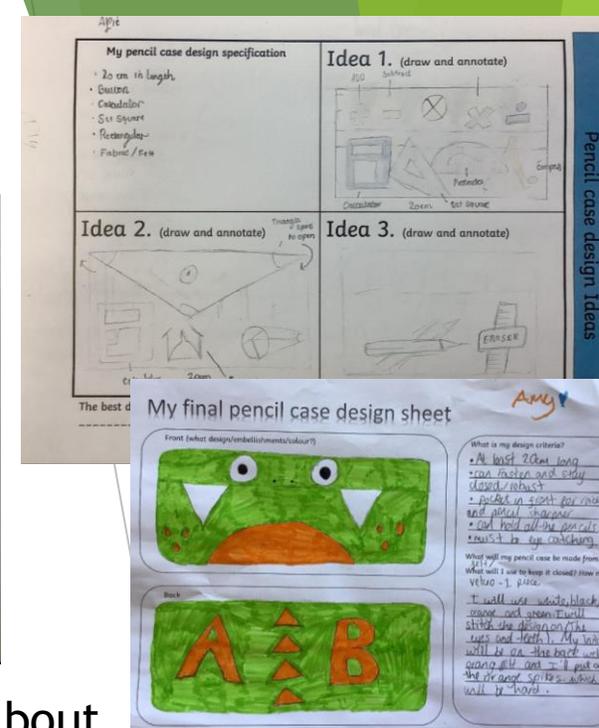
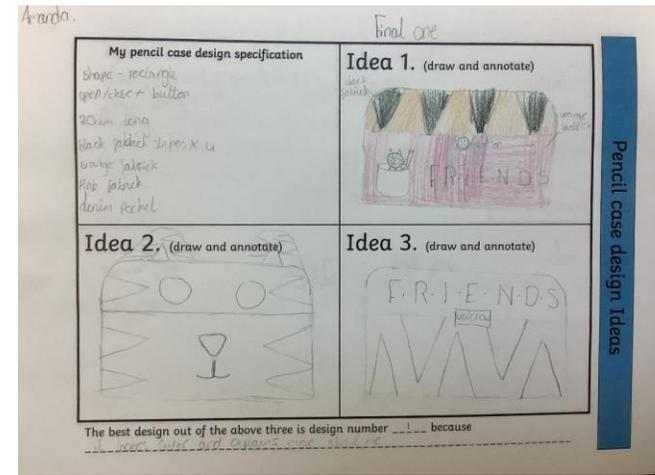


In Year 5 the children have been designing and making pop up books to share with the Year 1 children.

Year 6

IMPACT

In the autumn term the Year 6 children embark on a parent partnership project to make an electronic circuit game linked to their knowledge of WW1 from history.



Year 6 have been learning about textiles. They have been designing for a purpose; to create themselves a pencil case. They children created design criteria to follow and created multiple designs to choose from. They then used a range of different stitches and application techniques to complete their project. One child was inspired by this project and made another pencil case at home.

