Design & Technology Overview

Design	Make	Evaluate	Apply

	Autumn term	Spring term	Summer term	
EYFS	**Cooking and nutrition** **Healthy Choices**	**Structures & Mechanisms** **Construction**	**Textiles** **Minibeast fabric collage**	
	Learn how to manage own basic hygiene and personal needs including oral health and healthy food choices.	Create collaboratively, sharing ideas, resources and skills. Return and build on their previous learning, refining ideas and developing their ability to represent them.	Safely use and explore a variety of materials, tools and techniques experimenting with design, texture and function. Share their creations, explaining the process they have used.	
Year 1	**Textiles** **Puppets**	**Structures** **Constructing windmills**	**Cooking and nutrition** **Fruit and vegetables**	**Mechanisms** **Wheels and axles**
	• Join fabrics together using pins, staples or glue. • Design a puppet and use a template. • Know how to Join their two puppets' faces together as one. • Decorate a puppet to match their design.	• Identify features and create a suitable design. • Know how to make stable structures. • Make functioning turbines and axles that are assembled into the main supporting structure. • Say what is good about their windmill and what they could do better.	• Describe fruits and vegetables and explain why they are a fruit or a vegetable. • Name a range of places that fruit and vegetables grow. • Describe the basic characteristics of fruit and vegetables. • Know how to prepare fruits and vegetables to make a smoothie.	• Explain that wheels move because they are attached to an axle. • Know that wheels are used in everyday life not just cars. • Identify and explain vehicle flaws using the correct vocabulary. • Design and make a vehicle that includes moving wheels, axles and axle holders. • Explain what must be changed if there are operational issues.
Year 1 Curriculum links	**English Writing:** Instructional Writing (Aut 2)	**Art:** Drawing Albrecht Durer - **Dutch Artist (Aut 1)**	**Reading Comprehension:** Fresh Fruits (Sum 1) What are you eating? (Sum 1) Read the menu (Sum 1) Cornflake cakes (Sum 1)	**History:** The lives of significant people (Sum 2)
Year 2	**Cooking and Nutrition** **A balanced diet**	**Structures** **Baby bear's chair**	**Mechanisms** **Moving monster**	**Textiles** **Pouches**

	• Know the main food groups and identify foods that belong to each group. • Describe the taste, texture and smell of a given food. • Create four different wrap designs, considering flavour combinations. • Construct a wrap that meets the design brief and their plan.	• Explore features of structures and the stability of different shapes. • Know that the shape of the structure affects its strength. • Make a structure according to the design criteria. • Evaluate finished structure's strength, stiffness, and stability.	• Know how objects move through levers, pivots and linkages. • Know that a lever is something that turns on a pivot. • Design their own simple linkage system. • Make a mechanism using linkages by connecting levers and pivots. • Evaluate how functional the monster can move.		• Know how to thread a needle, tie a knot and sew a running stitch. • Use a template and cut fabric to make two pouches shapes. • Join the two pieces of fabric together using a running stitch. • Decorate the pouch using a variety of materials. • Evaluate their product and discuss possible improvements.
Year 2 Curriculum links	**Science:** Animals including humans (Aut 2) **PSHE:** Health and Well-Being (Aut 2)	**Music:** Orchestral Instruments (Sum 1) **Maths:** 3D shape	**Writing:** Instructions (Spr 2) **Science:** Everyday materials (Sum 1)		**Science:** Everyday materials (Sum 1) **PSHE:** Health and Well-being (Aut 2)
Year 3	**Mechanical system** **Pneumatic toys**		**Structures** **Construct a castle**	**Cooking and Nutrition** **Eating seasonally**	**Electrical Systems** **Static electricity**
	• Know how pneumatic toys work. • Use syringes and balloons to design a pneumatic toy. • Build secure housing for a pneumatic system. • Assemble all the different parts various joining techniques. • Evaluate product considering functional and aesthetic characteristics.		• Know how multiple shapes (2D and 3D) are combined to form a strong and stable structure. • Design a castle to match the criteria. • Construct a range of 3D shapes using nets. • Evaluate their own work and the work of others.	• Know that climate affects food growth. • Know the advantages of eating seasonal foods grown in the UK. • Create a recipe that is healthy and nutritious using seasonal vegetables. • Safely follow a recipe when cooking. • Evaluate finished product.	• Know what static electricity is • Design a game aimed at a target audience • Make and test game designs • Evaluate their game
Year 3 Curriculum links	**Science:** Forces and Magnets (Spr 1) **Science:** Animals and including Humans (Aut 1)		**Maths:** Properties of 2D and 3D shapes (Sum 1) **Geography:** Counties and Regions of the UK (Sum1) **History:** The Romans (Sum)	**Geography:** Counties and Regions of the UK (Aut) **Science:** Animals including humans (Aut 1) **PSHE:** Health and Well-being (Aut 2)	**Science:** Forces and Magnets (Spr 1) **PSHE:** Family and Relationships (Aut 1)

<table>
<tr><td rowspan="2">Year 4</td><td colspan="2">Cooking and Nutrition
Adapting a recipe</td><td>Structures
Pavilions</td><td>Digital World
Monitoring devices</td><td>Mechanical systems
Making a slingshot car</td></tr>
<tr><td colspan="2">• Follow a recipe, with some support.
• Describe some of the features of a biscuit based on taste, smell, texture and appearance.
• Adapt a recipe by adding extra ingredients.
• Plan a biscuit recipe within a budget.</td><td>• Create a range of different shaped frame structures.
• Know how to make a stable, strong structure.
• Design and build a free-standing structure.
• Select appropriate materials to build a strong structure.
• Experiment with various materials to produce effect cladding which matches the design.</td><td>• Know how to use the internet to research key information.
• Use information to create a design criteria
• Know how to write a program to monitor the ambient temperature.
• Know the key functions in the program.
• Generate creative and unique micro:bit case, stand or housing ideas.
• Explore TinkerCad interface and tools.</td><td>• Design a shape that is suitable for a vehicle.
• Attempt to reduce air resistance through the design of the shape.
• Produce panels that will fit the chassis and can be assembled effectively using the tabs they have designed.
• Construct car bodies effectively.
• Conduct a trial accurately and draw conclusions and improvements from the results.</td></tr>
<tr><td>Year 4 Curriculum links</td><td colspan="2">PSHE: Economic Wellbeing (Sum 2)
Maths: Money
Maths: Shape, nets
Maths: Addition and Subtraction (Aut 1)</td><td>History: Vikings and Anglo-Saxons Struggles (Spr 1)
Core Book: Viking Voyages (Spr)</td><td>Computing: Programming (Spr1 and Sum2)
Maths: Measurement – Time (Sum 2)
Science: Living things and their habitats (Spr 2)</td><td>Maths: Shape (Sum 2)</td></tr>
<tr><td rowspan="2">Year 5</td><td>Electrical Systems
Doodlers</td><td>Cooking and Nutrition
What could be healthier?</td><td colspan="2">Mechanical systems
Making a pop-up book</td><td>Structures
Bridges</td></tr>
<tr><td>• Know how motors are used in electrical products.
• Know simple circuit components (battery, bulb, motor and switch).
• Know how to take apart a product and reassemble it.
• Know which parts of the product affect its form.</td><td>• Know how beef gets from the farm to our plates.
• Suggest ideas as to what a ‘healthy meal’ means.
• Notice the nutritional differences between different products and recipes.
• Recognise nutritional differences between two similar recipes and</td><td colspan="2">• Create a pop-up book which uses a mixture of structures and mechanisms.
• Know the name of each mechanism, input and output accurately.
• Follow a design brief to make a pop up book using storyboards for ideas for a book.
• Make mechanisms and/or structures using sliders, pivots and folds to produce movement.
• Know how to use layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result.
• Evaluate the work of others and receive feedback on their own work.</td><td>• Know stronger and weaker shapes.
• Know that supporting shapes can help increase the strength of a bridge, allowing it to hold more weight.
• Know and identify beam, arch and truss bridges and describe their differences.
• Use triangles to create simple truss bridges that support a load (weight).
• Cut beams to the correct size, using a cutting mat.
• Smooth down any rough cut edges with sandpaper.
• Follow each stage of the truss bridge creation as instructed by their teacher.
• Complete a bridge, with varying ranges of accuracy and finish, supported by the teacher.</td></tr>
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	• Can identify design criteria based on findings from an investigation. • Know how to incorporate a motor into an electrical system. • Create a DIY kit for another individual to assemble their product. • Can identify and list the materials, equipment and circuit components required to build the product. • Explain the steps required to assemble the product.	give some justification as to why this is. • Work as a team to amend a bolognese recipe with healthy adaptations. • Follow a recipe and make a Bolognese.		• Identify some areas for improvement, reinforcing their bridges as necessary.
Year 5 Curriculum links	**Science:** Electricity (Yr 4)	**Writing:** Instructions (Spr 2) **PSHE:** Health and Well Being (Healthy Meals) (Spr 2)	**Science:** Forces (Levers) (Spr 1) **English:** Traditional Stories (Spr 1) **History:** Greek Fables (Spr)	**Science:** (Forces) (Spr 1) **Art**: Using Armatures (Sum) **Maths:** Length and angles in shapes (Sum) **Maths:** Weight and capacity of bridges
Year 6	**Cooking and Nutrition** **Come dine with me**	**Digital world** **Navigating the world**	**Structure** **Playgrounds**	**Mechanical systems** **Automata toys**
	• Know how to research a recipe by ingredient. • Know that not all courses complement each other. • Know which ingredients and equipment is needed for the recipe. • Know the process of 'Farm to Fork' for a given ingredient.	• Complete a design brief and criteria based on a client request. • Write a program to include multiple functions as part of a navigation device. • Develop a sustainable product concept. • Develop 3D CAD skills to produce a virtual model.	• Design a playground with a variety of structures. • Make playground items giving consideration to the shape and type of material to ensure strong structures. • Know how to measure, mark, cut and shape wood to create a range of structures. • Test structures and adapt with any improvements. • Attach structures to a base, reinforcing the join where necessary. • Consider the surrounding environment of the playground and create a landscape.	• Prepare wood for assembly by measuring, marking and cutting each piece. • Assemble the automata frame components and supports with the help of an exploded diagram. • Secure the joints of the frame at right angles using cardboard triangles. • Explore the relationship between cam profiles and follower movement to inform a design decision. • Know the purpose of a cam, follower and axle. • Measure and apply panels to the automata window display to conceal the inner workings. • Evaluate design against the design.

	• Know how to prepare ingredients and follow a recipe safely.	• Present a pitch to 'sell' the product to a specified client. • Know and explain the key functions and features of the navigation tool. • Describe how the product fits the client's request and how it will benefit the customers.		
Year 6 Curriculum links	**Reading Comprehension:** The Baking Battle **Maths**: Ratio & Proportion **Writing:** Instructions - Making a Sandwich (Aut 1) **Visit:** Furness Academy Transition Session	**Computing**: Programming – Variables in games and sensing movement	**PSHE**: Economic Well-Being – Attitudes to money & jobs (Sum 2) **Visitor**: Playdale Designer to talk about job roles & costs involved	**Maths**: Measuring in mm and cm (Spr 1) Conversions between cm and mm (Spr 1)

Mechanisms
(KS1) Introduce and explore simple mechanisms, such as sliders, wheels and axles in their designs. Recognise where mechanisms such as these exist in toys and other familiar products.
(KS2) Extend pupils understanding of individual mechanisms, to form part of a functional system, for example: Automatas, that use a combination of cams, followers, axles/shaft, cranks and toppers.
Structures
(KS1) Build structures such as windmills and chairs, exploring how they can be made stronger, stiffer and more stable. Recognise areas of weakness through trial and error.
(KS2) Continue to develop KS1 exploration skills, through more complex builds such as pavilion and bridge designs. Understand material selection and learn methods to reinforce structures.
Textiles
(KS1) Explore different methods of joining fabrics and experiment to determine the pros and cons of each technique.
Cooking & Nutrition
(KS1) Learn about the basic rules of a healthy and varied diet to create dishes. Understand where food comes from, for example plants and animals.
(KS2) Understand and apply the principles of a healthy and varied diet to prepare and cook a variety of dishes using a range of cooking techniques and methods. Understand what is meant by seasonal foods. Know where and how ingredients are sourced.
Electrical Systems (KS2)
Create functional electrical products that use series circuits, incorporating different components such as bulbs, LEDs, switches, buzzers and motors. Consider how the materials used in these products can: ● Protect the circuitry. ● Reflect light. ● Conduct electricity. ● Insulate.
Digital World (KS2)
Learn how to develop an electronic product with processing capabilities. Apply Computing principles to program functions within a product including to control and monitor it. Understand how the history and evolution of product design lead to the on-going Digital revolution and the impact it is having in the world today.