Lightcliffe CofE Primary School

Design and Technology Curriculum Intent and Overview

In partnership to **Educate, Nurture & Empower**

A member of ABBEY MULTI ACADEMY TRUST

DT Curriculum at Lightcliffe CE Primary School

At Lightcliffe Primary we want to inspire pupils to be innovative and creative thinkers who have an appreciation for the product design cycle through ideation, creation, and evaluation. We want pupils to develop the confidence to take risks, through drafting design concepts, modelling, and testing and to be reflective learners who evaluate their work and the work of others.

Through our scheme of work, we aim to build an awareness of the impact of design and technology on our lives and encourage pupils to become resourceful, enterprising citizens who will have the skills to contribute to future design advancements.

Our Design and technology scheme of work enables pupils to meet the end of key stage attainment targets in the National curriculum and the aims also align with those in the National curriculum. EYFS (Reception) units provide opportunities for pupils' to work towards the Development matters statements and the Early Learning Goals.

The scheme of work has been designed as a spiral curriculum with the following key principles in mind:

✓ Cyclical: Pupils return to the key strands again and again during their time in primary school.

✓ Increasing depth: Each time the key strand is revisited it is covered with greater complexity.

✓ Prior knowledge: Upon returning to each key strand, prior knowledge is utilised so pupils can build upon previous foundations, rather than starting again

National curriculum in England

Purpose of Study

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Aims

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.

Attainment targets

Early Years Foundation Stage

The Expressive Art and Design EYFS Statutory Educational Programme outlines:

The development of children's artistic and cultural awareness supports their imagination and creativity. It is important that children have regular

opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. The quality and variety of what children see, hear and participate in is crucial for developing their understanding, self-expression, vocabulary and ability to communicate through the arts. The frequency, repetition and depth of their experiences are fundamental to their progress in interpreting and appreciating what they hear, respond to and observe.

EYFS Art and Design DM/ELG		
Reception	**Expressive Art and Design**	• Explore, use and refine a variety of artistic effects to express their ideas and feelings. • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Create collaboratively, sharing ideas, resources and skills.
ELG	**Expressive Art and Design**	• Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function; • Share their creations, explaining the process they have used; • Make use of props and materials when role playing characters in narratives and stories

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Key stage 1

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].

When designing and making, pupils should be taught to:

Design

- design purposeful, functional, appealing products for themselves and other users based on design criteria
- generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

Make

- select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

Evaluate

- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria

Technical knowledge

- build structures, exploring how they can be made stronger, stiffer and more stable
- explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.

Key stage 2

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

When designing and making, pupils should be taught to:

Design

- 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
- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

Make

- select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- 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

Evaluate

- investigate and analyse a range of existing products
- evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- understand how key events and individuals in design and technology have helped shape the world

Technical knowledge

- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
- apply their understanding of computing to program, monitor and control their products

Cooking and nutrition

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Pupils should be taught to:

Key stage 1

- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from.

Key stage 2

- understand and apply the principles of a healthy and varied diet
- prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed

Through our Design and technology scheme, pupils respond to design briefs and scenarios that require consideration of the needs of others, developing their skills in six key areas:

- Mechanisms
- Structures
- Textiles
- Food
- Electrical systems (KS2) and
- Digital world (KS2)

Each of our key areas follows the design process (design, make and evaluate) and has a particular theme and focus from the technical knowledge or cooking and nutrition section of the curriculum. The scheme is a spiral curriculum, with key areas revisited again and again with increasing complexity, allowing pupils to revisit and build on their previous learning.

Lessons incorporate a range of teaching strategies from independent tasks, paired and group work including practical hands-on, computer-based and inventive tasks. This variety means that lessons are engaging and appeal to those with a variety of learning styles. We aim to differentiate every lesson to ensure that lessons can be accessed by all pupils and opportunities to stretch pupils' learning are available when required. Knowledge organisers for each unit support pupils in building a foundation of factual knowledge by encouraging recall of key facts and vocabulary.

Unit Overview

	Unit 1	Unit 2	Unit 3
Year 1	**Textiles:** Puppets	**Mechanisms:** Moving Story Books	**Food**: Smoothies
Year 2	**Food:** Balanced Diet	**Mechanisms**: Moving Monsters	**Structures:** Baby bear's chair (lego)
Year 3	**Structures**: Constructing a castle	**Mechanical Systems:** Pneumatic Toys	**Food:** Eating seasonally
Year 4	**Electrical systems:** Torches	**Food:** Adapting a recipe	**Textiles:** Fastenings
Year 5	**Mechanisms:** Gears and Pulleys	**Bridges:** how structural elements contribute to strength and safety	**Food:** Adapting a recipe (bread making)
Year 6	**Textiles:** Stuffed Toys (Xmas theme)	**Digital:** making of moving models (coding and programming using motion sensors)	**Come Dine With Me:** Skills used from previous units of work.

<table>
<tr><td rowspan="5">Year 1
Textiles:
puppets</td><td colspan="4">Key Concepts</td></tr>
<tr><td colspan="4">• Pupils explore textiles by learning basic sewing and joining techniques.
• They investigate different types of puppets and their uses.
• Pupils design and make their own simple fabric puppet using hand-sewing skills</td></tr>
<tr><td>Knowledge</td><td colspan="3">Skills</td></tr>
<tr><td>• Know that a design is a plan for making something.
• Know that threading means putting thread or wool through a hole or fabric.
• Know that puppets can be made from different materials and used for storytelling.
• Know that joining materials can be done by sewing or gluing.</td><td>Design
• Talk about what makes a good puppet.
• Draw a simple design for a puppet.
• Choose materials based on colour, texture, and purpose.
• Plan how to decorate and join parts of the puppet.</td><td>Make
• Use scissors safely to cut fabric.
• Practise threading a needle and sewing with support.
• Use running stitch to join two pieces of fabric.
• Decorate using buttons, sequins, or fabric pens.</td><td>Evaluate
• Talk about what went well and what could be improved.
• Compare the finished puppet to the original design.
• Share the puppet with others and explain how it was made.</td></tr>
<tr><td colspan="4">Vocabulary</td></tr>
<tr><td colspan="4">Puppet, fabric, sew, stitch, thread, needle, join, cut, glue, decorate, design, pattern, buttons, sequins, wool</td></tr>
</table>

<table>
<tr><td rowspan="6">Year 1 Mechanisms - Making a moving storybook</td><td colspan="4">Key Concepts</td></tr>
<tr><td colspan="4">Pupils identify whether a mechanism is a side-to-side slider or an up-and-down slider and determine what movement the mechanism will make. They learn to clearly label drawings to show which parts of their design will move and in which direction. Pupils make a picture, which meets the design criteria, with parts that move purposefully as planned.
They evaluate the main strengths and weaknesses of their design and suggest alterations.</td></tr>
<tr><td>Knowledge</td><td colspan="3">Skills</td></tr>
<tr><td rowspan="2">To know that a mechanism is the parts of an object that move together.

To know that a slider mechanism moves an object from side to side.

To know that a slider mechanism has a slider, slots, guides and an object.

To know that bridges and guides are bits of card that purposefully restrict the movement of the slider.</td><td>Design</td><td>Make</td><td>Evaluate</td></tr>
<tr><td>Explaining how to adapt mechanisms, using guides to control the movement.

Designing a Christmas card to a given audience.</td><td>Following a design to create moving models that use levers and sliders.</td><td>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.</td></tr>
<tr><td colspan="4">Vocabulary</td></tr>
<tr><td colspan="4">Sliders, mechanism, adapt, design criteria, design, input, model, template, assemble, test</td></tr>
</table>

<table>
<tr><td rowspan="5">Year 1
Food:
Smoothies</td><td colspan="4">Key Concepts
• Pupils explore where fruit and vegetables come from and how they are used in food.
• They learn about healthy eating and the importance of a balanced diet.
• Pupils design and make their own smoothie using a selection of fruits and ingredients</td></tr>
<tr><td>Knowledge</td><td colspan="3">Skills</td></tr>
<tr><td>• Know that fruits and vegetables are part of a healthy diet.
• Know that smoothies are made by blending ingredients together.
• Know that we must wash our hands and food before preparing it.
• Know that we can describe food using taste, texture, and smell.</td><td>Design
• Talk about favourite fruits and what makes a good smoothie.
• Choose ingredients based on taste, colour, and texture.
• Draw a simple plan for a smoothie recipe.
• Decide how to present the smoothie.</td><td>Make
• Use tools safely to cut and prepare fruit (with support).
• Use a blender (with adult supervision) to mix ingredients.
• Follow hygiene rules when handling food.
• Combine ingredients to create a smoothie.</td><td>Evaluate
• Taste and describe the smoothie using sensory vocabulary.
• Say what they like about their smoothie and what they might change.
• Compare their smoothie to their original plan.</td></tr>
<tr><td colspan="4">Vocabulary</td></tr>
<tr><td colspan="4">• Fruit, vegetable, smoothie, blend, chop, cut, mix, taste, texture, sweet, sour, healthy, hygiene, ingredients, recipe</td></tr>
</table>

Year 2 Food: Balanced Diet	**Key Concepts** • Pupils learn about the importance of a balanced diet and healthy eating. • They explore the five food groups and how to combine them in a healthy meal. • Pupils design and make a simple, healthy wrap using a variety of ingredients.			
	Knowledge	**Skills**		
		Design	**Make**	**Evaluate**
	• Know that a balanced diet includes a variety of food groups. • Know the five main food groups: fruit and vegetables, carbohydrates, protein, dairy, and fats. • Know that hygiene is important when preparing food. • Know that different ingredients have different nutritional values.	• Talk about what makes a healthy meal. • Choose ingredients from different food groups. • Plan a healthy wrap using a simple design sheet. • Think about taste, texture, and appearance when designing.	• Use tools safely to cut, grate, or peel ingredients (with support). • Follow hygiene rules when preparing food. • Assemble ingredients to make a healthy wrap. • Work carefully and safely with food.	• Taste and describe their wrap using sensory vocabulary. • Say what they like about it and what they might change. • Compare their wrap to their original design.
	Vocabulary • Balanced diet, food group, fruit, vegetable, protein, dairy, carbohydrate, fat, healthy, hygiene, ingredient, wrap, taste, texture, design			

<table>
<tr><td rowspan="5">Year 2: Mechanisms : Moving Monsters</td><td colspan="4">Key Concepts
• Pupils explore simple mechanisms including levers and linkages.
• They investigate how movement can be created using pivots and joints.
• Pupils apply their understanding to design and make a moving monster with a functional mechanism,</td></tr>
<tr><td>Knowledge</td><td colspan="3">Skills</td></tr>
<tr><td>• Know that mechanisms are parts that help things move.
• Know that levers and linkages can create movement.
• Know that a pivot is a point that something turns around.
• Know that a design is a plan for making something.</td><td>Design
• Explore examples of moving monsters and discuss how they work.
• Generate ideas for their own monster with moving parts.
• Draw a labelled design showing how the mechanism will work.
• Choose materials and tools suitable for the task.</td><td>Make
• Cut and join card using scissors, split pins, and glue.
• Create simple linkages using levers and pivots.
• Assemble parts to make a moving mechanism.
• Work safely and carefully with tools and materials.</td><td>Evaluate
• Test the finished monster to see if it moves as planned.
• Talk about what works well and what could be improved.
• Compare the final product to the original design.
• Share their work and explain how the mechanism functions.</td></tr>
<tr><td colspan="4">Vocabulary
• Mechanism, lever, linkage, pivot, split pin, movement, design, cut, join, card, monster, assemble, evaluate, improve</td></tr>
</table>

<table>
<tr><td rowspan="5">Year 2: Structures: Baby Bear's Chair</td><td colspan="4">Key Concepts
• Pupils explore structures and how to make them stable and strong.
• They investigate how to join materials and test their strength.
• Pupils design and build a chair for Baby Bear using simple construction techniques.</td></tr>
<tr><td>Knowledge</td><td colspan="3">Skills</td></tr>
<tr><td>• Know that a structure is something that has been built and can stand on its own.
• Know that stability means something can stand without falling.
• Know that materials can be joined in different ways (e.g. glue, tape, tabs).
• Know that testing helps us improve our designs.</td><td>Design
• Explore different types of chairs and what makes them strong.
• Generate ideas for a chair that will hold Baby Bear.
• Draw a labelled design showing materials and joining methods.
• Choose materials based on strength and suitability.</td><td>Make
• Cut and shape materials like card and paper.
• Use joining techniques such as tabs, glue, and tape.
• Build a simple structure with a stable base.
• Work carefully and safely with tools and materials.</td><td>Evaluate
• Test the chair to see if it holds Baby Bear.
• Talk about what worked well and what could be improved.
• Compare the final product to the original design.
• Suggest ways to make the structure stronger or more stable.</td></tr>
<tr><td colspan="4">Vocabulary
• Structure, stable, strong, join, glue, tape, tabs, card, paper, design, build, test, improve, evaluate, Baby Bear.</td></tr>
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<table>
<tr><td rowspan="5">Year 3: Structures: Constructing a Castle</td><td colspan="4">Key Concepts
• Pupils explore how to create strong and stable structures using a range of materials.
• They investigate features of castles and how they were built for strength and defence.
• Pupils design and construct their own model castle using techniques to reinforce and strengthen structures.</td></tr>
<tr><td>Knowledge</td><td colspan="3">Skills</td></tr>
<tr><td>• Know that structures need to be strong and stable to stand up.
• Know that reinforcing and strengthening materials can improve a structure.
• Know that castles have features like towers, battlements, and drawbridges for defence.
• Know that a net is a 2D shape that can be folded to make a 3D shape.</td><td>Design
• Research and discuss the features of real castles.
• Generate ideas for their own castle design.
• Draw a labelled plan showing key features and materials.
• Choose materials and joining methods suitable for the task.</td><td>Make
• Cut and shape materials accurately using tools.
• Use tabs, flaps, and glue to join and assemble parts.
• Create 3D shapes from nets.
• Reinforce and strengthen structures using layering and folding techniques.</td><td>Evaluate
• Test the stability and strength of their castle.
• Reflect on what worked well and what could be improved.
• Compare their finished model to their original design.
• Explain how they made their structure strong and stable.</td></tr>
<tr><td colspan="4">Vocabulary</td></tr>
<tr><td colspan="4">• Structure, stable, strong, reinforce, join, net, 3D shape, cut, fold, glue, battlement, tower, drawbridge, castle, design, evaluate</td></tr>
</table>

<table>
<tr><td rowspan="4">Year 3: Mechanisms : Pneumatic Toys</td><td colspan="4">Key Concepts
• Pupils explore how pneumatic systems use air to create movement.
• They investigate how air pressure can be used to power a moving part.
• Pupils design and make a moving toy that uses a simple pneumatic mechanism.</td></tr>
<tr><td>Knowledge</td><td colspan="3">Skills</td></tr>
<tr><td>• Know that pneumatics use air to create movement.
• Know that air can be pushed through tubes to move parts.
• Know that a mechanism is a system of parts working together to produce movement.
• Know that designs must be planned and tested before making.</td><td>Design
• Explore examples of pneumatic toys and how they work.
• Generate ideas for a toy with a moving part powered by air.
• Draw a labelled design showing the pneumatic system.
• Choose materials and tools suitable for the task.</td><td>Make
• Cut and join materials accurately using scissors and glue.
• Use syringes and tubing to create a pneumatic system.
• Assemble parts to make a working toy.
• Work safely and carefully with tools and materials.</td><td>Evaluate
• Test the toy to see if the pneumatic system works as intended.
• Reflect on what worked well and what could be improved.
• Compare the final product to the original design.
• Explain how the pneumatic mechanism creates movement.</td></tr>
<tr><td colspan="4">Vocabulary
• Pneumatic, air, pressure, syringe, tubing, mechanism, movement, design, cut, join, glue, toy, evaluate, improve</td></tr>
</table>

<table>
<tr><td rowspan="5">Year 3:
Food: Eating Seasonally</td><td colspan="4">Key Concepts
• Pupils explore where food comes from and the concept of seasonal eating.
• They investigate how different foods grow in different seasons and climates.
• Pupils understand the benefits of eating seasonal and locally sourced food.</td></tr>
<tr><td>Knowledge</td><td colspan="3">Skills</td></tr>
<tr><td>• Know that different foods grow in different seasons.
• Know that seasonal food is often fresher and more sustainable.
• Know that food can be grown locally or imported from other countries.
• Know that planning meals around seasonal produce can reduce environmental impact.
•</td><td>Design
• Explore seasonal recipes and ingredients.
• Generate ideas for a dish using seasonal fruits or vegetables.
• Draw a labelled design of the dish, including ingredients and preparation steps.
• Choose appropriate tools and ingredients for making the dish.</td><td>Make
• Wash, peel, chop, and prepare ingredients safely.
• Follow a recipe to make a simple seasonal dish.
• Use basic kitchen tools safely and effectively.
• Work hygienically and clean up after cooking.</td><td>Evaluate
• Taste and evaluate the dish based on flavour, texture, and appearance.
• Reflect on what worked well and what could be improved.
• Compare the final dish to the original design or recipe.
• Explain how the ingredients used are seasonal and why that matters.</td></tr>
<tr><td colspan="4">Vocabulary</td></tr>
<tr><td colspan="4">• Seasonal, local, ingredients, recipe, prepare, chop, peel, cook, hygiene, sustainable, fresh, evaluate, improve</td></tr>
</table>

<table>
<tr><td rowspan="4">Year 4: Electronics: Torches</td><td colspan="4">Key Concepts
• Pupils explore how electrical systems are used in products.
• They investigate how a simple circuit can power a light source.
• Pupils design and make a functional torch for a specific user or purpose.</td></tr>
<tr><td>Knowledge</td><td colspan="3">Skills</td></tr>
<tr><td>• Know that a torch uses an electrical circuit to power a bulb.
• Know the components of a simple circuit: battery, wires, switch, bulb.
• Know that different materials can be used to create a torch casing.
• Know that products are designed with the user in mind.</td><td>Design
• Explore different types of torches and their purposes.
• Generate ideas for a torch design based on a specific user (e.g. camper, child, cyclist).
• Draw a labelled diagram showing the torch design and circuit layout.
• Choose appropriate materials and components for the torch.</td><td>Make
• Build a simple circuit using batteries, wires, and a bulb.
• Incorporate a switch into the circuit.
• Construct a torch casing using card, plastic, or recycled materials.
• Assemble the torch safely and accurately.</td><td>Evaluate
• Test the torch to ensure it works and meets the design criteria.
• Reflect on what worked well and what could be improved.
• Compare the final product to the original design.
• Explain how the torch functions and how it suits the intended user.</td></tr>
<tr><td colspan="4">Vocabulary
Circuit, battery, bulb, switch, wire, torch, design, user, test, evaluate, improve, function, component.</td></tr>
</table>

Year 4: Food: Adapting a recipe	Key Concepts • Pupils explore how recipes can be changed to suit different needs and preferences. • They investigate ingredients, nutrition, and flavour combinations. • Pupils design and make a modified version of a given recipe.			
	Knowledge	Skills		
		Design	Make	Evaluate
	• Know that recipes can be adapted for taste, dietary needs, or availability of ingredients. • Know the importance of a balanced diet and nutritional content. • Know how to read and follow a recipe accurately. • Know that food preparation must follow hygiene and safety rules.	• Explore a base recipe and identify possible adaptations. • Generate ideas for how to change ingredients or flavours. • Plan and record changes to the recipe with reasons. • Choose appropriate tools and ingredients for the adapted dish.	• Measure ingredients accurately using scales and measuring spoons. • Prepare and combine ingredients using appropriate techniques. • Follow hygiene and safety rules when handling food. • Cook or assemble the adapted dish with care and accuracy.	• Taste and evaluate the adapted dish for flavour, texture, and appearance. • Reflect on how the changes affected the outcome. • Compare the adapted dish to the original recipe. • Explain the reasons for the adaptations and how successful they were.
	Vocabulary			
	Adapt, recipe, ingredient, measure, hygiene, nutrition, flavour, texture, evaluate, improve, balanced diet, modify			

Year 4: Textiles: Fastenings	Key Concepts			
	• Pupils explore different types of fastenings used in textile products. • They investigate how fastenings serve both functional and decorative purposes. • Pupils design and make a textile item that includes a fastening.			
	Knowledge	Skills		
		Design	Make	Evaluate
	• Know that fastenings can include buttons, zips, Velcro, poppers, and ties. • Know that fastenings are used to open, close, or secure textile products. • Know that textile products are designed for specific users and purposes. • Know that different materials and stitches are used in textile construction.	• Explore examples of textile products with different fastenings. • Generate ideas for a textile item (e.g. wallet, pouch, case) with a fastening. • Draw a labelled design showing the fastening and construction method. • Choose suitable fabrics, fastenings, and tools for the task.	• Measure and cut fabric accurately. • Use stitching techniques to join fabric and attach fastenings. • Incorporate a fastening into the textile product securely. • Work safely and carefully with needles, scissors, and other tools.	• Test the fastening to ensure it works as intended. • Reflect on the effectiveness and appearance of the fastening. • Compare the final product to the original design. • Explain how the fastening improves the function of the product.
	Vocabulary			
	Fastening, textile, fabric, stitch, sew, button, zip, Velcro, popper, design, measure, cut, join, evaluate, improve			

<table>
<tr><td rowspan="5">Year 5: Bridges: how structural elements contribute to strength and safety</td><td colspan="4">Key Concepts</td></tr>
<tr><td colspan="4">• Pupils explore how structures can be made strong and stable.
• They investigate different types of bridges and how they are constructed.
• Pupils design and build a truss bridge using knowledge of shapes and forces.</td></tr>
<tr><td>Knowledge</td><td colspan="3">Skills</td></tr>
<tr><td>• Know that structures need to be strong and stable to support weight.
• Know that triangles are a strong shape used in bridge design.
• Know the features of different bridge types: beam, arch, truss.
• Know how to reinforce structures using cross-bracing and layering.</td><td>Design
• Explore real-world bridges and their structural features.
• Generate ideas for a bridge that can span a gap and support weight.
• Draw a labelled diagram showing the structure and materials.
• Plan the construction steps and select appropriate materials.</td><td>Make
• Measure, cut, and join materials accurately.
• Use techniques such as layering and bracing to strengthen structures.
• Assemble a truss bridge using wood, card, or other materials.
• Work safely with tools like saws, glue guns, and scissors.</td><td>Evaluate
• Test the bridge for strength and stability.
• Reflect on what worked well and what could be improved.
• Compare the final bridge to the original design.
• Explain how the structure supports weight and resists forces.</td></tr>
<tr><td colspan="4">Vocabulary</td></tr>
<tr><td colspan="4">Structure, bridge, beam, arch, truss, triangle, stable, strong, reinforce, cross-brace, measure, cut, join, evaluate, improve</td></tr>
</table>

<table>
<tr><td rowspan="4">Year 5: Food: adapting a recipe: bread making</td><td colspan="4">Key Concepts
• Pupils explore how recipes can be adapted to suit different preferences, dietary needs, or cultural influences.
• They investigate the science and process of bread making.
• Pupils design and make a modified bread recipe, considering flavour, texture, and appearance.</td></tr>
<tr><td>Knowledge</td><td colspan="3">Skills</td></tr>
<tr><td>• Know that bread is made using flour, water, yeast, and salt.
• Know how yeast causes bread to rise through fermentation.
• Know that recipes can be adapted by changing ingredients, flavours, or techniques.
• Know the importance of hygiene and accurate measurement in food preparation.</td><td>Design
• Explore different types of bread (e.g. flatbread, wholemeal, flavoured, seeded).
• Generate ideas for adapting a basic bread recipe (e.g. adding herbs, cheese, or dried fruit).
• Plan and record changes to the recipe with reasons for each adaptation.
• Choose appropriate ingredients and tools for the adapted bread.</td><td>Make
• Measure ingredients accurately using scales and measuring spoons.
• Mix, knead, and shape dough correctly.
• Allow dough to prove and bake it safely.
• Work hygienically and follow safety procedures in the kitchen.</td><td>Evaluate
• Taste and evaluate the adapted bread for flavour, texture, and appearance.
• Reflect on how the changes affected the outcome.
• Compare the adapted bread to the original recipe.
• Explain the reasons for the adaptations and how successful they were.</td></tr>
<tr><td colspan="4">Vocabulary
Bread, dough, yeast, prove, knead, adapt, recipe, ingredient, measure, hygiene, flavour, texture, evaluate, improve</td></tr>
</table>

Year 6: Textiles: Stuffed Toys	Key Concepts			
	• Pupils explore how textiles can be used to create functional and appealing products. • They investigate different joining techniques and materials suitable for soft toys. • Pupils design and make a stuffed toy with a specific user in mind, considering aesthetics and function.			
	Knowledge	Skills		
		Design	Make	Evaluate
	• Know that stuffed toys are made using fabric, stuffing, and joining techniques. • Know how to use templates to create accurate shapes. • Know different joining methods (e.g., running stitch, backstitch, overcast stitch). • Know how to evaluate a product against design criteria.	• Research existing stuffed toys and identify features that appeal to different users. • Generate ideas through annotated sketches and mood boards. • Develop design criteria based on the needs of a specific user (e.g., a younger child). • Plan the steps and materials needed to make the toy.	• Use templates to cut fabric accurately. • Join fabric using appropriate hand-stitching techniques. • Stuff and finish the toy neatly and securely. • Use tools safely and work with care and precision.	• Test the toy for durability, safety, and appeal. • Gather feedback from peers or the intended user. • Reflect on what worked well and what could be improved. • Suggest changes to improve the design or construction.
	Vocabulary			
	Template, stitch, fabric, seam, stuffing, durable, aesthetic, user, evaluate, improve, secure, design criteria			

<table>
<tr><td rowspan="5">Year 6: Digital: Junior STEM (Programming a moving model)</td><td colspan="4">Key Concepts
• Pupils explore how mechanical systems and programming can be combined to create interactive models.
• They learn to write and debug algorithms using block-based coding.
• Pupils design, build, and program a moving model using sensors and motors, applying engineering and computing skills.</td></tr>
<tr><td>Knowledge</td><td colspan="3">Skills</td></tr>
<tr><td>• Know how to use block-based programming software to control motors and sensors.
• Know how motion sensors can be used as inputs in a program.
• Know how gears and pulleys affect movement and speed.
• Know how to follow and create instructions to build a mechanical model.</td><td>Design
• Explore existing robotic models and identify key features.
• Generate ideas for improving a basic model (e.g., adding features to the alligator).
• Plan the sequence of construction and programming steps.
• Select appropriate components (e.g., sensors, gears, Lego pieces) for the model.</td><td>Make
• Accurately identify and assemble Lego components using instructions.
• Build a stable and functional mechanical model.
• Write and test algorithms using Lego software to control movement and responses.
• Use motion sensors to trigger programmed actions.</td><td>Evaluate
• Test the model for functionality, responsiveness, and stability.
• Reflect on how well the algorithm controls the model.
• Suggest improvements to both the physical design and the programming.
• Compare the final model to the original plan and design criteria.</td></tr>
<tr><td colspan="4">Vocabulary</td></tr>
<tr><td colspan="4">Algorithm, input, output, motor, sensor, gear, pulley, debug, program, model, structure, motion, control, improve</td></tr>
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<table>
<tr><td rowspan="5">Year 6: Food: Come Dine With Me</td><td colspan="4">Key Concepts
• Pupils apply their understanding of nutrition, food preparation, and presentation to plan and create a three-course meal.
• They work collaboratively to design a menu, prepare dishes, and evaluate their outcomes.
• Pupils consider dietary needs, cultural influences, and presentation techniques.</td></tr>
<tr><td>Knowledge</td><td colspan="3">Skills</td></tr>
<tr><td>• Know how to plan a balanced meal using the Eatwell Guide.
• Know how to adapt recipes for dietary requirements and preferences.
• Know the importance of hygiene, safety, and accurate measurement in food preparation.
• Know how to present food attractively and evaluate its sensory qualities.</td><td>Design
• Research and select suitable recipes for a starter, main, and dessert.
• Develop a menu with consideration for nutrition, taste, and presentation.
• Plan the preparation steps and allocate roles within a team.
• Choose appropriate ingredients and equipment for each dish.</td><td>Make
• Prepare ingredients using a range of techniques (e.g., chopping, mixing, baking).
• Cook dishes safely and hygienically.
• Present food attractively using plating techniques.
• Work collaboratively and manage time effectively.</td><td>Evaluate
• Taste and assess each dish for flavour, texture, and appearance.
• Reflect on teamwork, preparation, and presentation.
• Gather feedback from peers and suggest improvements.
• Compare the final meal to the original plan and design criteria.</td></tr>
<tr><td colspan="4">Vocabulary</td></tr>
<tr><td colspan="4">Menu, nutrition, hygiene, preparation, presentation, recipe, ingredient, dietary, evaluate, teamwork, flavour, texture, plating</td></tr>
</table>