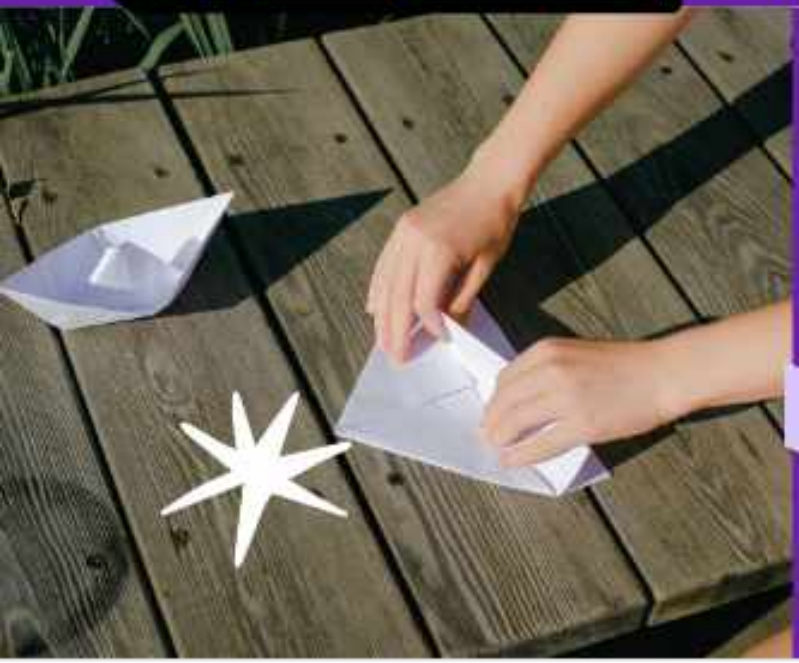

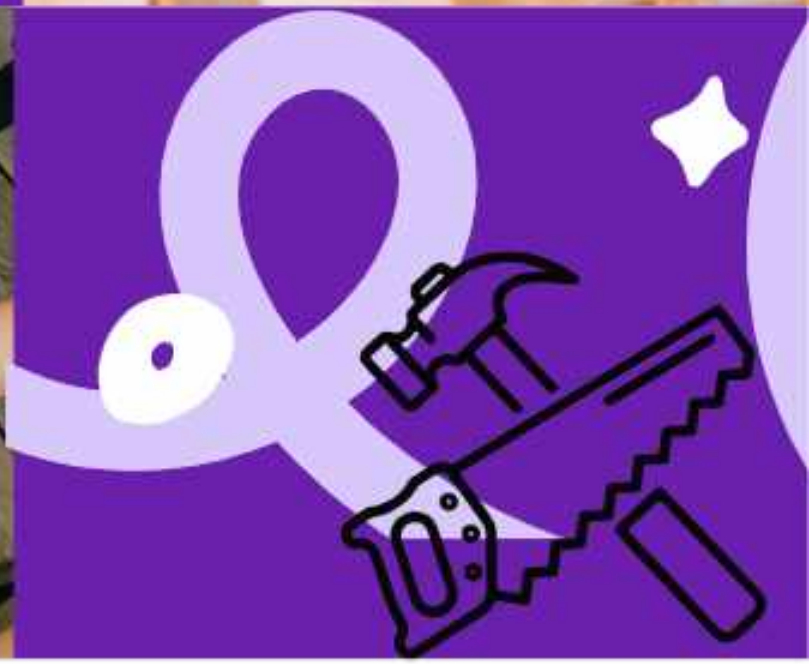

# Design and Technology

| Subject Lead | Mrs. R. Flynn |
| --- | --- |

# Subject Overview

"As Design and Technology Lead, my vision is to inspire every child to become a **creative and confident problem-solver**. Through **hands-on, inclusive learning**, pupils will develop the skills, knowledge and resilience to design and make purposeful products. I aim to nurture **curiosity, innovation and collaboration**, empowering children to think like designers and engineers and make a positive difference in the world around them."

## Design and Technology Curriculum 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.

## EYFS and Design and Technology

***Expressive arts and design educational programme***

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.

Early learning goals that link to design technology:

**EYFS - Expressive arts and design**

ELG Creating with materials

- 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.

**EYFS – Physical development**

ELG Fine motor

- Use a range of small tools, including scissors, paintbrushes and cutlery.

# Curriculum Intent

## Design and Technology Curriculum is designed to...

encourage ALL children to become innovative, creative and resourceful thinkers who enjoy solving problems and seeing their ideas become reality.
It supports Littleton Green's aim to develop confident, curious and resilient learners by providing opportunities to investigate, design, make, test and improve purposeful products.
Children learn that Design and Technology has a real impact on everyday life and that designers use knowledge, creativity and practical expertise to respond to people's needs.

## We aim for pupils to...

understand the complete design process and become increasingly independent in researching problems, developing design criteria, generating ideas, selecting appropriate tools and materials, making products and evaluating their success.
Pupils learn to take thoughtful risks, learn from prototypes and mistakes, respond constructively to feedback and consider the needs of the user and purpose throughout the design process.
By the end of each key stage, pupils will have developed increasingly secure technical knowledge and the confidence to apply it to unfamiliar design problems.

## Learning is sequenced so that...

knowledge and skills build steadily over time, allowing all pupils to progress confidently from early exploration and construction to increasingly complex, accurate and purposeful design outcomes.

The curriculum follows a spiral approach. Pupils revisit important concepts, skills and technical knowledge with increasing depth and complexity, using prior learning as the foundation for new challenges.

Through this structured approach, pupils become confident, reflective and resourceful designers who are well prepared for the next stage of their education.

***We Are PURPLE!***

# Curriculum Implementation

The teaching of Design and Technology is supported by high-quality resources and a carefully sequenced scheme, ensuring progression in both technical knowledge and practical skills. We use Kapow Primary to support planning, while adapting lessons to our context so all pupils can access and succeed.

## Design and Technology Learning Journey

### UNIT INTRODUCTION

Each unit begins with a purposeful design brief, problem or scenario.
Pupils are introduced to the intended user and purpose, relevant prior knowledge and the technical knowledge required for the project.
Knowledge organisers support pupils to revisit prior learning, understand key concepts and develop accurate subject-specific vocabulary.

### Individual Lesson Sequence

#### Retrieval Practice

A purposeful design brief, problem or scenario.
The intended user and purpose, relevant prior knowledge and the technical knowledge required for the project.

#### Hook

A purposeful problem, user or design brief.
Explore and evaluate existing products, investigate how things work and identify the needs of the intended user.
Use models, products, photographs, demonstrations or short investigations to stimulate curiosity.

#### Core Learning

- Explicit teaching of technical and subject-specific vocabulary.
- Investigation and analysis of existing products.
- Development of appropriate design criteria.
- Generation and communication of ideas through sketches, diagrams, models, templates or CAD
- Teacher modelling and demonstration of tools, techniques and processes.
- Guided practice with responsive scaffolding.
- Selection of suitable tools, materials, components or ingredients.
- Practical making with increasing accuracy and independence.
- Testing, refining and improving designs throughout the process.
- Explicit teaching of safe and responsible use of tools and equipment.

#### Reflection

Pupils review their product against its design criteria, intended purpose and user needs.
They discuss what has worked successfully, identify improvements and use feedback to refine their ideas.
Pupils increasingly justify their decisions using accurate Design and Technology vocabulary.

**A piece (or series) that showcases progress in technique, creative decision-making and accurate use of vocabulary, recorded in books or displays.**

Lessons are adapted so all pupils, including those with SEND, EAL and disadvantaged backgrounds, can access and succeed.

*Please see our page on Adaptive teaching for further information.*

# Curriculum Impact

We know our Design and Technology curriculum works when pupils can explain the design process and key technical vocabulary, apply their knowledge to solve problems and use tools, materials, components and ingredients with increasing independence, accuracy and control.

Pupils should be able to design with a clear user and purpose in mind, make functional and increasingly high-quality outcomes and evaluate their work thoughtfully against design criteria.

Through formative assessment, Kapow knowledge catchers and quizzes, practical outcomes, design work and pupil voice, we see knowledge being retained, applied and built upon. As pupils progress through school, they become increasingly confident, reflective and resourceful designers who understand how Design and Technology contributes to everyday life and the wider world.

| Assessment Technique | What this means |
| --- | --- |
| Formative Assessment | Ongoing assessment throughout lessons. This includes opportunities such as: questioning, retrieval practice, and interactive activities. Teachers observe and assess in real-time and adapt accordingly. |
| Summative Assessment | End of unit quiz to assess pupils knowledge and understanding. This helps teachers understand knowledge and skills over time. |
| Written Outcomes | Learning is shown in different ways, including creative tasks, labelled drawings and, when needed, short pieces of written work. |
| Pupil Voice | Our learning sequence encourages children to talk, reflect and explain their thinking. Teachers use these moments to check understanding through questioning, discussion and simple recorded responses. |

# Inclusion and Adaptation

At Littleton Green, we want every child to see themselves as a designer and technologist.

Design and Technology provides rich opportunities for pupils to solve authentic problems, collaborate with others and understand how products have been developed to meet the needs of different people and communities.

Pupils encounter a range of products, technologies, designers, engineers and inventions and are encouraged to consider how design decisions can affect individuals, communities and the environment.

## How We Adapt Design and Technology for All Learners

Our Design and Technology curriculum is structured so that every child can participate safely, develop technical knowledge and experience success.

Learning is broken into clear, manageable stages and teachers identify the specific knowledge or skill pupils need before increasing complexity.

To support pupils with SEND, EAL or those requiring additional support, teachers may use:

- clear visual models and step-by-step demonstrations;
- pre-teaching and reinforcement of technical vocabulary;
- photographs, diagrams, symbols and talk frames;
- templates, jigs and partially prepared materials where appropriate;
- adapted tools and materials to support access and safe participation;
- tasks broken into manageable stages;
- additional time to practise practical techniques;
- repeated modelling of difficult processes;
- flexible methods of recording, including annotated photographs, oral explanations and digital recording;
- targeted adult support which develops rather than replaces pupil independence.

Challenge is increased through precision, independence, complexity, design constraints and problem-solving, rather than simply increasing the amount of work.
These adaptations allow pupils to develop confidence while retaining the ambitious technical knowledge and design thinking expected for their age.

**Our aim is simple: every pupil participates, every pupil makes progress and every pupil experiences the satisfaction of turning an idea into a purposeful product.**

# Pupil Voice

**Stella. Year 2**

"D&T makes me happy because I like drawing and making moving monsters."

**Sahara. Year 4**

"I had fun designing and making my pavilion and I'm proud of what I created."

**Kian. Year 5**

"At first sewing was hard, but now I feel really confident because I made my own stuffed toy."

**Bethanie. Year 6**

"In D&T, I try my hardest and persevere when things get tricky."

# Design and Technology Unit Overview

## Y1

**STRUCTURES:**
Stable structures
**MECHANISMS:**
Moving Storybook
**MECHANISMS:**
Wheels and Axles
**COOKING & NUTRITION:**
Smoothies
**TEXTILES:**
Puppets

## Y2

**STRUCTURES:**
Baby Bear's Chair
**MECHANISMS:**
Making a Moving Monster
**MECHANISMS:**
Fairground Wheel
**COOKING & NUTRITION:**
Balanced Diet
**TEXTILES:**
Pouches

## Y3

**STRUCTURES:**
Castles
**MECHANISMS:**
Pneumatic Toys
**ELECTRICAL SYSTEMS:**
Electric Poster
**COOKING & NUTRITION:**
Eating Seasonally
**TEXTILES:**
Cross Stitch and Appliqué

## Y4

**STRUCTURES:**
Pavilions
**MECHANISMS:**
Mechanical Cars
**ELECTRICAL SYSTEMS:**
Torches
**COOKING & NUTRITION:**
Adapting a Recipe
**TEXTILES:**
Fastenings

## Y5

**STRUCTURES:**
Bridges
**MECHANISMS:**
Gears and pulleys
**ELECTRICAL SYSTEMS:**
Doodlers
**COOKING & NUTRITION:**
Developing a recipe
**TEXTILES:**
Stuffed Toys

## Y6

**COOKING AND NUTRITION:**
Come dine with me
**STRUCTURES:**
Playground pioneers
**TEXTILES:**
Bags
**ELECTRICAL SYSTEMS:**
Steady hand game
**MECHANICAL SYSTEMS:**
Automata toys

# Curriculum Design

Our Design and Technology curriculum is carefully sequenced so that pupils build **knowledge, practical expertise and design capability** year on year, progressing from early exploration of materials and construction to increasingly complex, accurate and purposeful products.

The four strands of **Design, Make, Evaluate and Technical Knowledge** underpin learning throughout the curriculum.

These are developed through six key areas:
**Cooking and Nutrition • Mechanisms/Mechanical Systems • Structures • Textiles • Electrical Systems • Digital World**

The curriculum is designed as a **spiral curriculum.** Pupils return to important concepts and skills throughout primary school, each time working with greater complexity and drawing explicitly on prior learning.

**Oracy** is embedded throughout Design and Technology. Pupils discuss products, explain and present design ideas, consider the perspective of the user, work collaboratively, critique designs and respond constructively to feedback using increasingly precise technical vocabulary.

Through exploring products, inventions, technologies and the needs of different users, **pupils develop cultural capital** and understand how design shapes the world around them. They also consider the social and environmental consequences of design decisions and the importance of responsible innovation.

The curriculum reflects our **PURPLE values**, encouraging pupils to be:

- Proud of carefully designed and constructed outcomes;
- Unique in generating original solutions;
- Reflective when testing, evaluating and refining ideas;
- Positive when prototypes fail or designs need adapting;
- Loving by considering the needs of users, communities and the environment;
- Empowered to apply their knowledge creatively and solve problems independently.

Design and Technology also supports **British Values** through collaboration, respect for differing ideas, individual creativity, responsible decision-making and consideration of how products and technology affect people and communities.

# Progression of Knowledge and skills

| YEAR 1 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| STRUCTURES: **Stable structures** **How can we make a pencil pot that doesn't fall over?** **(5 Lessons)** | Skill | Beginning to recognise how products and designs in the world around us solve certain needs.<br>Stating what they intend to make and why – identifying the purpose.<br>Talking about ideas, with purpose and user in mind.<br>Talking about existing products when generating ideas. | Choosing between a small number of materials, ingredients or components.<br>Explaining their choices based on personal experiences.<br>Requesting equipment appropriate to the purpose. (e.g. scissors for cutting, glue for joining)<br>refining their grip to cut competently and confidently. | Saying what they like about their peers' designs and products.<br>Accepting feedback and understanding it is meant to improve their work. | Recognising that different structures are used for different purposes.<br>Exploring the features of structures.<br>Describing structures as buildings or freestanding structures.<br>Creating supporting structures to aid stability. |
| | Knowledge | To know that the purpose is what something is for.<br>To know that a plan is deciding what to do first and next. | To know that different equipment does different things.<br>To know the names of common pieces of equipment.<br>To know that some tools are sharp like scissors and knives. | | To know that a structure is something that has been made and put together. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Loving:** Pupils consider who they are designing for – identifying the user. Pupils thinking about what others might want from a design. | **Significant person - Gustave Eiffel**<br>A French engineer born in 1832.<br>Designed interior structural elements of the Statue of Liberty.<br>Best known for the Eiffel Tower, which was designed by his company and named after him. | **freestanding, stable, structure** | This project develops pupils' cultural capital by engaging them in designing and making stable pencil pots, introducing basic skills such as cutting, joining, and decorating. Pupils explore stable structures in everyday products to understand how shape and support help items stand firmly. This hands-on activity encourages creativity, problem-solving, and an early appreciation of engineering and design in daily life. |

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| Oracy Opportunities | "Is this pencil pot fit for purpose?"<br>Children discuss and evaluate their finished pencil pot (end product), considering whether it is stable, strong and suitable for holding pencils. | | | | |
| Sentence Stems | **Opinion**<br>I like my pencil pot because...<br>I think my pencil pot is good because...<br>I would change... because... | **Explaining**<br>It is stable because...<br>It is strong because...<br>I used ___ so that... | **Comparing**<br>Mine is different because...<br>This one is better because... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because... | **Improving (key link to evaluation)**<br>Next time I would...<br>To make it better, I could... |
| End product | **Pencil pot** | | | | |

# Progression of Knowledge and skills

| YEAR 1 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| MECHANISMS: Moving Storybook<br>**How can we make story characters move to help tell a story?**<br>**(4 Lessons)** | Skill | Explaining how to adapt mechanisms, using bridges or guides to control the movement.<br>Designing a moving story book for a given audience. | Following a design to create moving models that use levers and sliders. | Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed.<br>Reviewing the success of a product by testing it with its intended audience. | To know that a mechanism is the parts of an object that move together.<br>To know that a slider mechanism moves an object from side to side.<br>To know that a slider mechanism has a slider, slots , guides and an object.<br>To know that bridges and guides are bits of card that purposefully restrict the movement of the slider. |
| | Knowledge | To know that in Design and technology we call a plan a 'design'. | | | |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Proud:** Pupils are able to celebrate their end product. | **Significant person - David A. Carter**<br>Carter is a prolific pop-up book author and artist who is perhaps best known for his "Bugs" series of books, which use pop-up techniques to bring a whole world of quirky insects to life.<br>His work is highly engaging and interactive, which makes it especially attractive to young children. | **adapt,**<br>**assemble,**<br>**design,**<br>**design criteria, input,**<br>**mechanism,**<br>**model,**<br>**sliders,**<br>**test** | This project develops pupils' cultural capital by engaging them in designing and making a moving storybook, introducing basic skills in cutting, folding, and assembling simple mechanisms. Pupils explore different types of moving storybooks to understand how mechanisms bring stories to life, fostering creativity and fine motor skills. This hands-on experience encourages a love of storytelling and an appreciation of how design enhances learning and play. |

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| Oracy Opportunity | "Does my storybook move in the best way?"<br>Children discuss and evaluate their finished moving storybook, focusing on whether the mechanism (slider/lever) works effectively to move the character and help tell the story. | | | | |
| Stem Sentences | **Opinion**<br>I like my storybook because...<br>I think my mechanism works well because...<br>I would change.... because | **Explaining**<br>My slider/lever moves because...<br>It works when I...<br>I used ___ so that the character... | **Comparing**<br>Mine is different because...<br>This one moves better because...<br>They are different because this one... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because... | **Improving (evaluation focus)**<br>Next time I would...<br>To make it better, I could...<br>I could improve the movement by... |
| End product | **Moving storybook** | | | | |

# Progression of Knowledge and skills

| YEAR 1 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| MECHANISMS: Wheels and Axles<br>**How can we design a toy that moves smoothly when we pull it?**<br>**(5 Lessons)** | Skill | Designing a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move.<br>Creating clearly labelled drawings that illustrate movement. | Adapting mechanisms, when:<br>- they do not work as they should.<br>- to fit their vehicle design.<br>- to improve how they work after testing their vehicle. | Testing wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move. | To know that wheels need to be round to rotate and move.<br>To understand that for a wheel to move it must be attached to a rotating axle.<br>To know that an axle moves within an axle holder which is fixed to the vehicle or toy.<br>To know that the frame of a vehicle (chassis) needs to be balanced. |
| | Knowledge | | | | To know some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Loving:** Pupils consider who they are designing for – identifying the user. Pupils thinking about what others might want from a design. | **Significant person - Henry Ford**<br>Revolutionised manufacturing methods by introducing a moving assembly line to make the automobile affordable for the general population. | **axle, axle holder, better, careful, choose, compare, design, dislike, like, mechanism, movement, product, straight line, tool, turn, user, wheel, worse** | This project develops pupils' cultural capital by engaging them in designing and making a pull-along toy with wheels and axles, introducing basic skills such as cutting, assembling, and decorating. Pupils explore different pull-along toys to understand how wheels and axles work to create movement and how toys encourage play and development. This hands-on activity fosters creativity, fine motor skills, and an appreciation of toys' role in childhood and culture. |

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| **Oracy Opportunity** | "Does my pull-along toy move well?"<br>Children discuss and evaluate their finished pull-along toy, focusing on whether the wheels and axles allow it to move smoothly when pulled. | | | | |
| **Sentence Stems** | **Opinion**<br>I like my toy because...<br>I think my toy works well because...<br>I don't think it works well because... | **Explaining**<br>The wheels turn because...<br>The axle helps it move because...<br>It moves when I pull it because...<br>I used ___ so that it could move... | **Comparing**<br>Mine is different because...<br>This one moves better because...<br>They are different because this one... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because... | **Improving (evaluation focus)**<br>Next time I would...<br>To make it better, I could...<br>I could improve the wheels by... |
| **End product** | Pull-along toy | | | | |

# Progression of Knowledge and skills

| YEAR 1 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| COOKING & NUTRITION: Smoothies<br>What makes a smoothie healthy and yummy?<br>(6 Lessons) | Skill | Designing smoothie carton packaging by-hand.<br>Learning where and how fruits and vegetables grow. | Chopping fruit and vegetables safely to make a smoothie.<br>Juicing fruits safely to make a smoothie.<br>Identifying if a food is a fruit. | Tasting and evaluating different food combinations.<br>Describing appearance, smell and taste.<br>Suggesting information to be included on packaging.<br>Comparing their own smoothie with someone else's. | |
| | Knowledge | | | | To know that a blender is a machine which mixes ingredients together into a smooth liquid.<br>To know that a fruit has seeds and a vegetable does not.<br>To know that fruits grow on trees or vines.<br>To know that vegetables can grow either above or below ground.<br>To know that a vegetable is any edible part of a plant. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Unique/Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Positive:** Pupils are able to use a range of cooking equipment. | **Significant person - Heston Blumenthal** His team helped develop "Love Smoothies," crafting vegetable-focused blends like "Broccoli and the Beast" and "Kale Kick" with full flavour appeal | **blend, blender, chopping board, compare, cut, design, evaluate, flavour, fork, fruit, healthy, ingredients, juice, juicer, leaf, plant, recipe, root, seed, select, smoothie, stem, table knife, taste, tree, vegetable, vine** | This project develops pupils' cultural capital by introducing them to basic cooking skills through making a smoothie. Pupils work together, building teamwork, communication, and sharing skills. A visit to the school kitchen gives them hands-on experience in a real cooking environment, helping them understand food hygiene and safety. The activity encourages healthy eating habits and curiosity about different fruits and flavours. |

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| **Oracy Opportunity** | "Is my smoothie healthy and yummy?"<br>Children discuss and evaluate their finished smoothie, focusing on taste, ingredients and how healthy it is. | | | | |
| **Stem sentences** | **Opinion**<br>I like my smoothie because...<br>I think it tastes good because...<br>I don't like it because... | **Explaining**<br>I used ___ because...<br>It tastes ___ because...<br>It is healthy because...<br>I chose ___ so that... | **Comparing**<br>Mine is different because...<br>This one tastes better because...<br>They are different because this one... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because... | **Improving (evaluation focus)**<br>Next time I would...<br>To make it better, I could...<br>I could add ___ to improve the taste |
| **End product** | Smoothie | | | | |

# Progression of Knowledge and skills

| YEAR 1 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| TEXTILES: Puppets How can we join materials to make a puppet? (4 Lessons) | Skill | Stating what they intend to make and why - identifying the purpose.<br>Talking about ideas, with purpose and user in mind.<br>Using basic drawing skills to communicate ideas.<br>Using a template to create a design for a puppet. | Choosing between a small number of materials, ingredients or components.<br>Explaining their choices based on personal experiences.<br>Explaining in simple terms why certain tools must be handled carefully.<br>Following and recalling simple safety instructions.<br>Using a straightedge to draw a straight line.<br>Beginning to use objects with a fixed width or length to create even spacing of markings or cuts. (e.g. a lolly stick).<br>Using a large plastic needle and large-weave embroidery fabric to begin to create a running stitch.<br>Applying masking tape to fix something in place or join to edges.<br>Adding texture to create visual interest.<br>Cutting fabric neatly with scissors.<br>Using joining methods to decorate a puppet.<br>Sequencing steps for construction. | Saying what they like about their peers' designs and products.<br>Accepting feedback and understanding it is meant to improve their work.<br>Reflecting on a finished product, explaining likes and dislikes. | Discussing fabric properties.<br>Threading large needles.<br>Rehearsing sewing techniques with large needles and thick thread, like wool.<br>Sewing a running stitch in large-weave embroidery fabric or hessian.<br>Creating patterns and following them with stitching.<br>Spacing stitches evenly. |
| | Knowledge | To know drawings are a way to explain ideas. | To know that choosing different materials or components will affect what the product does or looks like. | To know their ideas or products can be made better.<br>To know their final product might be different to their original idea. | To know the names of common pieces of equipment.<br>To know that following instructions helps with safety.<br>To know that spacing cuts or marks evenly can be useful.<br>To know that texture is how something feels.<br>To know their ideas can make someone else's work better.<br>To know other people's ideas can help make their work better.<br>To know evenly spaced stitches help when following a pattern.<br>To know that 'joining technique' means connecting two pieces of material together.<br>To know that there are various temporary methods of joining fabric by using staples, glue or pins.<br>To understand that different techniques for joining materials can be used for different purposes.<br>To understand that a template (or fabric pattern) is used to cut out the same shape multiple times.<br>To know that drawing a design idea is useful to see how an idea will look. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Empowered:** Pupils complete the challenge of creating their own puppet. | **Significant person – Jim Henson**<br>Used fleece, felt, faux fur, and textiles to craft expressive Muppet characters.<br>Techniques: Hand-sewing, foam sculpting, fabric dyeing.<br>Created puppets like Kermit the Frog, Grover, and Animal, blending soft materials with vibrant personalities. | **decorate, design, fabric, glue, model, hand puppet, safety pin, staple, stencil, template** | This project develops pupils' cultural capital by engaging them in designing and making a puppet using basic textile skills like cutting, joining, and decorating. Pupils watch a puppet show to experience storytelling through performance, deepening their understanding of how puppets are used across different cultures. This fosters creativity, fine motor skills, and an appreciation for cultural storytelling and craftsmanship. |

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|---|---|---|---|---|---|
| Oracy Opportunity | "Is my puppet effective?"<br>Children discuss and evaluate their finished puppet, focusing on how well it has been made, decorated and how it works for storytelling. | | | | |
| Stem Sentences | Opinion<br>I like my puppet because...<br>I think my puppet is good because...<br>I don't like this part because... | Explaining<br>I used ___ because...<br>I joined it using ___ so...<br>It works because...<br>I added ___ to make it... | Comparing<br>Mine is different because...<br>This puppet is better because...<br>They are different because this one... | Responding to others<br>I agree with ___ because...<br>I disagree with ___ because... | Improving (evaluation focus)<br>Next time I would...<br>To make it better, I could...<br>I could change ___ to improve it |
| End product | Puppet | | | | |

# Progression of Knowledge and skills

| Year 2 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| STRUCTURES: Baby Bear's Chair<br>**How can we make Baby Bear's chair strong and stable so it does not wobble or fall over? (4 Lessons)** | Skill | Generating and communicating ideas using sketching and modelling. | Making a structure according to design criteria.<br>Creating joints and structures from paper/card and tape.<br>Building a strong and stiff structure by folding paper. | Testing the strength of own structure.<br>Identifying the weakest part of a structure.<br>Evaluating the strength, stiffness and stability of own structure. | |
| | Knowledge | | | | To know that materials can be manipulated to improve strength and stiffness.<br>To know that a structure is something which has been formed or made from parts.<br>To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move.<br>To know that a 'strong' structure is one which does not break easily.<br>To know that a 'stiff' structure or material is one which does not bend easily. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Proud:** Pupils are able to celebrate their final product. | **Significant person - Robin Day** (1915–2010)<br>Iconic Chair: Polypropylene Chair (1963)<br>Most famous mass-produced chair in British history<br>Lightweight, stackable, affordable — used in schools, halls, and public spaces<br>A symbol of modern, functional design | **design criteria, man-made, natural, properties, structure, stable, shape, model, test** | This project develops pupils' cultural capital by engaging them in designing and making a model chair for Baby Bear, inspired by the story of Goldilocks and the Three Bears. Pupils explore a range of real-world chairs to understand what makes structures strong and stable. Working collaboratively, they develop teamwork, communication, and problem-solving skills. This hands-on experience helps pupils make connections between storytelling, design, and the function of everyday objects in the world around them. |

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| Oracy Opportunity | "Is my Baby Bear chair strong and stable?"<br>Children discuss and evaluate their finished chair, focusing on whether it is strong, stiff and stable enough to hold Baby Bear without wobbling or collapsing. | | | | | |
| Stem Sentences | **Opinion**<br>I think my chair is strong because...<br>I like my chair because...<br>I do not think it is stable because... | **Explaining**<br>It is strong because...<br>It is stable because...<br>The weakest part is... because...<br>I used ___ to make it stronger | **Comparing**<br>Mine is different because...<br>This chair is stronger because...<br>They are different because this one... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because...<br>I also think... because... | **Improving (evaluation focus)**<br>Next time I would...<br>To make it better, I could...<br>I could make it stronger by... | |
| End product | **Baby Bear's chair** | | | | | |

# Progression of Knowledge and skills

| YEAR 2 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| MECHANISMS: Making a Moving Monster How can we make a monster that moves using levers and pivots? (4 Lessons) | Skill | Creating a class design criteria for a moving monster.<br>Designing a moving monster for a specific audience in accordance with a design criteria. | Making linkages using card for levers and split pins for pivots.<br>Experimenting with linkages adjusting the widths, lengths and thicknesses of card used.<br>Cutting and assembling components neatly. | Evaluating own designs against design criteria.<br>Using peer feedback to modify a final design. | |
| | Knowledge | | | | To know that mechanisms are a collection of moving parts that work together as a machine to produce movement.<br>To know that there is always an input and output in a mechanism.<br>To know that an input is the energy that is used to start something working.<br>To know that an output is the movement that happens as a result of the input.<br>To know that a lever is something that turns on a pivot.<br>To know that a linkage mechanism is made up of a series of levers.To know some real-life objects that contain mechanisms. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Unique/Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Positive:** Pupils are able to use a range of equipment. | **Significant person - Rube Goldberg**<br>An American cartoonist, Goldberg was best known for his popular cartoons depicting complicated gadgets performing simple tasks in indirect, convoluted ways.<br>These "Rube Goldberg machines" embody the principle of creating movement and reactions through a series of linked, mechanical actions.<br>His designs were whimsical and humorous, but provide a rich source of inspiration for understanding how levers, linkages, and pivots can interact. | **axle, design criteria, input, linkage, mechanical, output, pivot, wheel** | This project develops pupils' cultural capital by engaging them in designing and making a moving monster using simple mechanisms such as pivots and levers. Pupils explore a variety of moving products to understand how mechanisms create motion in toys and everyday items. This hands-on experience builds problem-solving skills, creativity, and an early understanding of engineering principles in fun and meaningful ways. |

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| Oracy Opportunity | "Does my moving monster work well?"<br>Children discuss and evaluate their finished moving monster, focusing on whether the linkages and levers work effectively to create movement. | | | | |
| Stem Sentences | **Opinion**<br>I think my monster works well because...<br>I like my moving monster because...<br>I do not think it works well because... | **Explaining**<br>The lever moves because...<br>The linkage helps it move because...<br>It works when I...<br>I used ___ so that it could move... | **Comparing**<br>Mine is different because...<br>This monster moves better because...<br>They are different because this one... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because...<br>I also think... because... | **Improving (evaluation focus)**<br>Next time I would...<br>To make it better, I could...<br>I could improve the movement by... |
| End product | **Moving monster** | | | | |

# Progression of Knowledge and skills

| YEAR 2 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| ***MECHANISMS: Fairground Wheel*** ***How can we design a fairground wheel that spins smoothly and safely? (5 Lessons)*** | **Skill** | Conducting simple surveys or discussions to gather opinions on what others need or like in a design.<br>Knowing that a survey is used to find out what people like.<br>Using a simple design brief that outlines the intended use, target user, and key features of the product, to create simple design criteria.<br>Knowing that a design brief helps to decide what to make.<br>Knowing that design criteria are the steps for making a product successful.<br>Creating ideas with design criteria in mind. Referring to specific parts of existing products when generating ideas.<br>Knowing that the design criteria help when thinking of ideas.<br>Using labels to explain parts of a design, label materials, etc.<br>Using labels to explain parts of a design, label materials, etc.<br>Knowing that drawings can help explain how something works.<br>Knowing that a label explains part of a drawing. | Choosing materials, ingredients or components from a wider range of materials, ingredients or components.<br>Explaining their choices based on the properties of materials and components.<br>Knowing some properties of materials like hard, soft, flexible, waterproof, strong etc.<br>Following and recalling simple safety instructions.<br>Knowing that some tools are sharp like scissors and knives.<br>Choosing known geometric shapes when making.<br>Beginning to shape objects to improve how they work.<br>Knowing the names of some geometric shapes: triangle, pyramid, square, cube, circle, sphere.<br>Considering balance in their finishing, like evenly spaced decoration. | Discussing a range of existing products and saying what they like and dislike about them.<br>Evaluating existing products against design criteria.<br>Evaluating their ideas and creations against simple design criteria.<br>Knowing that design criteria help to decide if their product is a success.<br>Suggesting improvements to their peers' designs and products.<br>Knowing that improve means to make something better.<br>Knowing that their suggestions can improve someone else's work. | |
| | **Knowledge** | To know the features of a fairground wheel include the wheel, frame, pods, a base an axle and an axle holder. | | | To know everyday objects have mechanisms.<br>To know many things that move have parts inside to help them work.<br>To know mechanisms usually limit unwanted movement.<br>To know everyday objects utilise wheels and axles.<br>To know wheels must be able to turn to work effectively.<br>To know axles allow wheels to turn without falling off. |

| *British Values* | *Purple Values* | *Significant Person* | *Key Vocabulary* | *Cultural Capital* |
|---|---|---|---|---|
| ***Individual liberty:*** *Pupils are able to make individual choices during the design element of this unit.* | ***Loving:*** *Pupils conduct simple surveys or discussions to gather opinions on what others need or like in a design.* | **Significant person - George Washington Gale Ferris Jr.**<br>Known for: Inventing the original Ferris Wheel | **design brief, design criteria, evaluate, frame, model, opinion, rotate, survey** | This project develops pupils' cultural capital by engaging them in designing and making a model fairground wheel, building key skills in planning, measuring, joining, and evaluating. Pupils work collaboratively, strengthening teamwork, communication, and problem-solving skills. A visit to a local Ferris wheel provides real-life context and inspiration, helping pupils understand how large structures are engineered for movement and enjoyment. This experience encourages curiosity about design, mechanics, and the role of fairgrounds in cultural and social life. |

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| *Oracy Opportunity* | "Does my fairground wheel turn and work well?"<br>Children discuss and evaluate their finished fairground wheel model, focusing on whether the wheel rotates smoothly and the structure is balanced and secure. | | | | |
| *Stem Sentences* | **Opinion**<br>I think my wheel works well because...<br>I like my fairground wheel because...<br>I do not think it works well because... | **Explaining**<br>The wheel turns because...<br>The axle helps it move because...<br>It spins when I...<br>I used ___ so that it could turn... | **Comparing**<br>Mine is different because...<br>This wheel spins better because...<br>They are different because this one... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because...<br>I also think... because... | **Improving (evaluation focus)**<br>Next time I would...<br>To make it better, I could...<br>I could improve the movement by... |
| *End product* | Fairground wheel model | | | | |

# Progression of Knowledge and skills

| Year 2 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| ***COOKING & NUTRITION: Balanced Diet*** ***How can we design a wrap that is healthy and tasty? (6 Lessons)*** | Skill | *Designing three wrap ideas.* | Chopping foods safely to make a wrap.<br>Constructing a wrap that meets a design brief.<br>Grating foods to make a wrap.<br>Snipping smaller foods instead of cutting.<br>Spreading soft foods to make a wrap.<br>Identifying the five food groups.<br>Learning about a balanced diet. | Describing appearance, smell and taste.<br>Tasting and evaluating different food combinations.<br>Describing the information that should be included on a label. | |
| | Knowledge | | | | To know that 'diet' means the food and drink that a person or animal usually eats.<br>To know what makes a balanced diet.<br>To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar.<br>To know that I should eat a range of different foods from each food group, and roughly how much of each food group.<br>To know that 'ingredients' means the items in a mixture or recipe.<br>To know how to cut, grate, snip and spread to prepare foods.<br>To know how to review and give a score to evaluate. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| ***Individual liberty:*** *Pupils are able to make individual choices during the design element of this unit.* | ***Reflective:*** *Tasting and evaluating different food combinations.* | **Significant person - Jamie Oliver**<br>Helped raise awareness about the quality of school dinners in 2005. More recently, he has voiced concerns about the effect of the pandemic on food choices.<br>He supports teachers, charities and young people who are looking to change mindsets so every child gets healthy, nutritious food, providing the opportunity for dietary health.<br>He is also a celebrity chef who designs healthy and affordable meals for people to cook themselves. | **appearance, balanced, carbohydrates, chopping board, combination, cut, dairy, design, design brief, diet, evaluate, feel, fruit, grate, grater, ingredients, menu, oils, proteins, review, scissors, smell, snip, spread**<br>**Spreads, table knife, taste, vegetables** | This project develops pupils' cultural capital by engaging them in designing and making a healthy wrap, introducing basic food preparation skills such as chopping, assembling, and hygiene. Pupils learn about the components of a balanced diet and how to make healthy food choices. A visit to the school kitchen provides hands-on experience in a real food preparation environment, helping pupils understand the importance of food safety and nutrition in everyday life. |

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| ***Oracy Opportunity*** | "Is my wrap healthy and tasty?"<br>Children discuss and evaluate their finished wrap, focusing on whether it is balanced, healthy and tastes good. | | | | |
| ***Stem Sentences*** | **Opinion**<br>I like my wrap because...<br>I think my wrap is healthy because...<br>I do not like it because... | **Explaining**<br>I used ___ because...<br>It is healthy because...<br>It tastes ___ because...<br>My wrap includes ___ food group | **Comparing**<br>Mine is different because...<br>This wrap is healthier because...<br>They are different because this one... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because...<br>I also think... because... | **Improving (evaluation focus)**<br>Next time I would...<br>To make it better, I could...<br>I could make it healthier by... |
| ***End product*** | Wrap | | | | |

# Progression of Knowledge and skills

| Year 2 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| ***TEXTILES: Pouches*** ***How can we make and decorate a pouch that is useful and looks great? (4 Lessons)*** | **Skill** | Designing a pouch. | Selecting and cutting fabrics for sewing.<br>Decorating a pouch using fabric glue or running stitch.<br>Threading a needle.<br>Sewing running stitch, with evenly spaced, neat, even stitches to join fabric.<br>Neatly pinning and cutting fabric using a template. | Troubleshooting scenarios posed by teacher.<br>Evaluating the quality of the stitching on others' work.<br>Discussing as a class, the success of their stitching against the success criteria.<br>Identifying aspects of their peers' work that they particularly like and why. | |
| | **Knowledge** | | | | To know that sewing is a method of joining fabric<br>To know that different stitches can be used when sewing.<br>To understand the importance of tying a knot after sewing the final stitch.<br>To know that a thimble can be used to protect my fingers when sewing. |

| *British Values* | *Purple Values* | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| ***Individual liberty:*** *Pupils are able to make individual choices during the design element of this unit.* | ***Empowered:*** *Pupils are able to complete the challenge of sewing a pouch.* | **Bethany Williams**<br>A fashion designer from the Isle of Man<br>She started her own brand: Bethany Williams<br>She believes in creating sustainable and environmentally friendly products.<br>She makes clothing from recycled fabrics and waste materials.<br>Works with charities and community groups. | **decorate, fabric, fabric glue, knot, needle, needle threader, running stitch, sew, template, thread** | This project develops pupils' cultural capital by engaging them in designing and making a pouch using basic textile skills such as measuring, cutting, joining, and decorating fabric. Pupils learn how textile products are made and explore the purpose and design of pouches and containers across different cultures and time periods. This hands-on experience fosters creativity, fine motor skills, and an appreciation for the role of textiles in everyday life and cultural heritage. |

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| ***Oracy Opportunity*** | "Is my pouch useful and well made?"<br>Children discuss and evaluate their finished pouch, focusing on how well it has been constructed, sewn and decorated, and whether it is fit for purpose. | | | | |
| ***Stem Sentences*** | **Opinion**<br>I like my pouch because...<br>I think my pouch is good because...<br>I don't like this part because... | **Explaining**<br>I used ___ stitch because...<br>I joined it by ___ so...<br>It is strong because...<br>I added ___ to make it... | **Comparing**<br>Mine is different because...<br>This pouch is better because...<br>They are different because this one... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because...<br>I also think... because... | **Improving (evaluation focus)**<br>Next time I would...<br>To make it better, I could...<br>I could improve it by... |
| ***End product*** | **Pouch** | | | | |

# Progression of Knowledge and skills

| Year 3 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| **STRUCTURES: Castles**<br>**How can we design a castle that is strong, useful, and fit for a king or queen? (4 Lessons)** | Skill | Designing a castle with key features to appeal to a specific person/purpose.<br>Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours.<br>Designing and/or decorating a castle tower on CAD software. | Constructing a range of 3D geometric shapes using nets .<br>Creating special features for individual designs.<br>Making facades from a range of recycled materials. | Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design.<br>Suggesting points for modification of the individual designs. | |
| | Knowledge | To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse - and their purpose.<br>To know that a façade is the front of a structure.<br>To understand that a castle needed to be strong and stable to withstand enemy attack.<br>To know that a design specification is a list of success criteria for a product. | To know that a paper net is a flat 2D shape that can become a 3D shape once assembled. | | To understand that wide and flat based objects are more stable.<br>To understand the importance of strength and stiffness in structures. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Loving:** Pupils design a castle with key features to appeal to a specific person/purpose. | **Significant person - Eugène Viollet-le-Duc**<br>A French architect and author, Viollet-le-Duc was famous for his interpretive "restorations" of medieval buildings.<br>He redesigned parts of the famed Notre-Dame Cathedral in Paris and numerous castles, enhancing the structures while maintaining their historical significance.<br>He could provide a good example of understanding and employing 3D shapes and structures for creating strong architectural forms. | **2D, 3D, castle, design, key features, net, scoring, shape, stable, stiff, strong, structure, tab** | This project develops pupils' cultural capital by engaging them in designing and making a model castle, building skills in planning, measuring, joining, and evaluating. Pupils work collaboratively, enhancing teamwork, communication, and problem-solving skills throughout the project. A visit to a local castle allows them to experience historical architecture firsthand, inspiring their designs and deepening their understanding of medieval history and cultural heritage. This connection enriches their appreciation of how castles were used for protection and community life in the past. |

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| **Oracy Opportunity** | "Is my model castle strong, detailed and fit for purpose?"<br>Pupils discuss and evaluate their finished model castle, focusing on whether it is stable, well-constructed and includes effective design features (e.g. towers, battlements). | | | | |
| **Stem Sentences** | **Opinion**<br>I think my castle is successful because...<br>I like my castle because...<br>I do not think this part works because... | **Explaining**<br>I used ___ because...<br>This part is strong because...<br>This feature is important because...<br>It is stable because... | **Comparing**<br>Mine is different because...<br>This castle is stronger because...<br>They are similar/different because... | **Improving (evaluation focus)**<br>Next time I would...<br>To improve my castle, I could...<br>I could make it stronger by... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because...<br>Building on what ___ said... |
| **End product** | **Model castle** | | | | |

# Progression of Knowledge and skills

| Year 3 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| MECHANISMS: Pneumatic Toys<br>**How can we use air to make a toy move in a fun and surprising way?**<br>**(5 Lessons)** | Skill | Designing a toy which uses a pneumatic system.<br>Developing design criteria from a design brief.<br>Generating ideas using thumbnail sketches and exploded diagrams.<br>Learning that different types of drawings are used in design to explain ideas clearly. | Creating a pneumatic system to create a desired motion.<br>Building secure housing for a pneumatic system.<br>Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy.<br>Selecting materials due to their functional and aesthetic characteristics.<br>Manipulating materials to create different effects by cutting, creasing, folding and weaving. | Using the views of others to improve designs.<br>Testing and modifying the outcome, suggesting improvements.<br>Understanding the purpose of exploded-diagrams through the eyes of a designer and their client. | |
| | Knowledge | To understand how sketches, drawings and diagrams can be used to communicate design ideas.<br>To know that exploded-diagrams are used to show how different parts of a product fit together.<br>To know that thumbnail sketches are small drawings to get ideas down on paper quickly. | | | To understand how pneumatic systems work.<br>To understand that pneumatic systems can be used as part of a mechanism.<br>To know that pneumatic systems operate by drawing in, releasing and compressing air. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Loving:** Pupils consider feedback from peers to suggest improvements. Pupils explain why they think certain aspects of a peer's design are effective or why they suggested specific improvements. | **Simon Ingersoll (1871)**<br>An American inventor who designed a pneumatic drill.<br>Air is forced into a small space, pushing a piece of metal inside the drill back and forth. This movement makes the drill move up and down, allowing it to break through tough materials like rock or stone. | **diagram, evaluate, feedback, housing, linkage, mechanical system, mechanism, pivot, pneumatic system, thumbnail sketch** | This project develops pupils' cultural capital by engaging them in designing and making pneumatic toys, building skills in planning, measuring, assembling, and evaluating pneumatic systems. Pupils work collaboratively, developing teamwork, communication, and problem-solving skills throughout the process. By exploring various pneumatic mechanisms used in real-world products, they gain an understanding of how air pressure powers movement and the role of engineering in everyday life. |

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| **Oracy Opportunities** | "Does my pneumatic toy move effectively?"<br>Pupils discuss and evaluate their finished pneumatic toy, focusing on whether the air pressure system works to create movement and meet the design purpose. | | | | |
| **Stem Sentences** | **Opinion**<br>I think my toy works well because...<br>I like my pneumatic toy because...<br>I do not think this part works because... | **Explaining**<br>The air pushes because...<br>The movement happens when...<br>The input is ___ and the output is...<br>I used ___ so that it could move... | **Comparing**<br>Mine is different because...<br>This toy moves better because...<br>They are similar/different because... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because...<br>Building on what ___ said... | **Improving (evaluation focus)**<br>Next time I would...<br>To improve my toy, I could...<br>I could make the movement stronger by... |
| **End product** | Pneumatic toy | | | | |

# Progression of Knowledge and skills

| Year 3 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| ELECTRICAL SYSTEMS: Electric Poster<br>How can we use light to make our poster eye-catching and informative?<br>(4 Lessons) | Skill | Carry out research based on a given topic (e.g. The Romans) to develop a range of initial ideas.<br>Generate a final design for the electric poster with consideration to the client's needs and design criteria.<br>Design an electric poster that fits the requirements of a given brief.<br>Plan the positioning of the bulb (circuit component) and its purpose. | Create a final design for the electric poster.<br>Mount the poster onto corrugated card to improve its strength and allow it to withstand the weight of the circuit on the rear.<br>Measure and mark materials out using a template or ruler.<br>Fit an electrical component (bulb).<br>Learn ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge). | Learning to give and accept constructive criticism on own work and the work of others.<br>Testing the success of initial ideas against the design criteria and justifying opinions.<br>Revisiting the requirements of the client to review developing design ideas and check that they fulfil their needs | |
| | Knowledge | To understand the importance and purpose of information design. | To understand how material choices (such as mounting paper to corrugated card) can improve a product to serve its purpose (remain rigid without bending when the electrical circuit is attached). | | To understand that an electrical system is a group of parts (components) that work together to transport electricity around a circuit.<br>To understand common features of an electric product (switch, battery or plug, dials, buttons, etc.).<br>To list examples of common electric products (kettle, remote control etc.).<br>To understand that an electric product uses an electrical system to work (function).<br>To know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Reflective:** Pupils are able to evaluate their electric poster. | **Thomas Edison**<br>American inventor, with a world record number of original invention patents (1,093). Developed the incandescent lamp, improving on Joseph Swan's design almost 20 years later in 1880, which could then be used as part of a circuit to form a practical lighting system. | **battery, bulb, circuit, circuit component, crocodile wire, design, design criteria, develop, electric product electrical system, feedback, final design, information design, initial ideas, peer-assessment, public, research, self-assessment, sketch** | This project develops pupils' cultural capital by engaging them in designing and making an electrical poster, building basic skills in creating simple circuits. Pupils work together, enhancing teamwork, communication, and problem-solving abilities. By exploring everyday electrical products, they gain a greater understanding of how electricity powers devices and its importance in modern life, fostering curiosity about technology and its impact on society. |

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| **Oracy Opportunity** | "Does my electric poster work and meet the brief?"<br>Pupils discuss and evaluate their finished electric poster, focusing on whether the circuit works effectively and the design communicates information clearly to the user. | | | | |
| **Stem Sentence** | **Opinion**<br>I think my poster is successful because...<br>I like my electric poster because...<br>I don't think this part works because... | **Explaining**<br>The circuit works because...<br>When I press the switch, it...<br>The input is ___ and the output is...<br>I used ___ so that it would... | **Comparing**<br>Mine is different because...<br>This poster works better because...<br>They are similar/different because... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because...<br>Building on what ___ said... | **Improving (evaluation focus)**<br>Next time I would...<br>To improve my poster, I could...<br>I could improve the circuit by... |
| **End product** | Electric poster | | | | |

# Progression of Knowledge and skills

| Year 3 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| COOKING & NUTRITION: Eating Seasonally<br>How can we create a tasty tart using seasonal ingredients?<br>(6 Lessons) | Skill | Describing how climate affects where foods grow. | Identifying seasonal ingredients from the UK.<br>Following the instructions within a recipe.<br>Tasting seasonal ingredients.<br>Peeling foods by hand or with a peeler.<br>Cutting ingredients safely.<br>Choosing ingredients based on a design brief. | Describing the texture and flavour of ingredients.<br>Describing the benefits of seasonal fruits and vegetables and the impact on the environment. | |
| | Knowledge | | | | To know that seasonal means foods that grow in a given season in a given country.<br>To know some seasonal foods that grow in the UK and what season they grow in.<br>To know that eating seasonal foods can have a positive impact on the environment.<br>To know how to describe the flavour and texture of foods.<br>To know how to cut and peel safely.<br>To know that the appearance of food is as important as taste.<br>To know that similar coloured fruits and vegetables often have similar nutritional benefits. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Positive:** Pupils are able to use a range of cooking equipment. | **Mary Berry** is a famous British baker and TV judge who helped make The Great British Bake Off popular. She has written lots of cookbooks and teaches people how to bake. Mary is inspiring because she worked hard, never gave up, and believes everyone can cook. | **complementary, country, cut, design, evaluate, export, fruit, grate, import, ingredients, Mediterranean, mock-up, mountain, peel, polar, seasonal, seasons, snip, taste, temperate, texture, tropical, vegetable, weather** | This project develops pupils' cultural capital by engaging them in designing and making a tasty tart using seasonal ingredients, enhancing their understanding of nutrition, cooking skills, and food hygiene. A visit to a local supermarket allows pupils to explore fresh, seasonal produce and make informed choices about ingredients. This experience fosters awareness of sustainable eating, supports healthy lifestyle choices, and deepens appreciation for food's cultural and environmental significance. |

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| Oracy Opportunities | "Is my seasonal tart tasty and suitable for the season?"<br>Pupils discuss and evaluate their finished seasonal tart, focusing on whether it uses appropriate seasonal ingredients, tastes good and meets the design brief. | | | | |
| Stem Sentences | Opinion<br>I think my tart is successful because...<br>I like my tart because...<br>I don't think it tastes good because... | Explaining<br>I used ___ because it is in season...<br>It tastes ___ because...<br>The texture is ___ because...<br>I chose these ingredients so that... | Comparing<br>Mine is different because...<br>This tart tastes better because...<br>They are similar/different because... | Responding to others<br>I agree with ___ because...<br>I disagree with ___ because...<br>Building on what ___ said... | Improving (evaluation focus)<br>Next time I would...<br>To improve my tart, I could...<br>I could make it more seasonal by... |
| End product | Seasonal Tart | | | | |

# Progression of Knowledge and skills

| Year 3 | | Design | Make | Evaluate | Technical Knowledge |
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| TEXTILES: Cross Stitch and Appliqué<br>**How can we design an Egyptian collar that shows status and tells a story through stitches and shapes?**<br>**(4 Lessons)** | Skill | Designing and making a template from an existing cushion and applying individual design criteria. | Following design criteria to create a cushion or Egyptian collar.<br>Selecting and cutting fabrics with ease using fabric scissors.<br>Threading needles with greater independence.<br>Tying knots with greater independence.<br>Sewing cross stitch to join fabric.<br>Decorating fabric using appliqué.<br>Completing design ideas with stuffing and sewing the edges (Cushions) or embellishing the collars based on design ideas (Egyptian collars). | Evaluating an end product and thinking of other ways in which to create similar items. | |
| | Knowledge | | | | To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces.<br>To know that when two edges of fabric have been joined together it is called a seam.<br>To know that it is important to leave space on the fabric for the seam.<br>To understand that some products are turned inside out after sewing so the stitching is hidden. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
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| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Empowered:** Pupils are able to complete the challenge of sewing an Egyptian collar. | **Vivienne Westwood**<br>Vivienne Westwood became well known for designing corsets with a punk influence.<br>She even created her own clan, MacAndreas, with its own tartan. The Lochcarron of Scotland recognised the design.<br>This process usually takes 200 years. | **asymmetrical, appliqué, cotton, cross-stitch, embellish, fabric, patch, pinking, polyester, running stitch, silk, symmetrical, template, thread, unique** | This project develops pupils' cultural capital by engaging them in designing and making an Egyptian collar, developing skills in measuring, cutting, and assembling textiles and decorative materials. Pupils explore historical sources and artifacts to understand the cultural significance and symbolism of Egyptian jewellery. This deepens their appreciation of ancient cultures and how art and design reflect history, identity, and tradition. |

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| **Oracy Opportunity** | "Does my Egyptian collar show design and skill?"<br>Pupils discuss and evaluate their finished Egyptian collar, focusing on how well they have used cross stitch, appliqué and decoration techniques to create a successful and meaningful design. | | | |
| **Stem Sentences** | **Opinion**<br>I think my collar is successful because...<br>I like my design because...<br>I do not think this part works because... | **Explaining**<br>I used cross stitch/appliqué because...<br>This design shows ___ because...<br>My stitching is neat because...<br>I chose these colours/patterns so that... | **Comparing**<br>Mine is different because...<br>This collar looks more effective because...<br>They are similar/different because... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because...<br>Building on what ___ said... |
| **End product** | Egyptian Collar | | | |

# Progression of Knowledge and skills

| Year 4 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| STRUCTURES: Pavilions<br>How can we design a pavilion that is both strong and inviting for people to use?<br>(4 Lessons) | Skill | Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect.<br>Building frame structures designed to support weight. | Creating a range of different shaped frame structures.<br>Making a variety of free-standing frame structures of different shapes and sizes.<br>Selecting appropriate materials to build a strong structure and cladding.<br>Reinforcing corners to strengthen a structure.<br>Creating a design in accordance with a plan.<br>Learning to create different textural effects with materials. | Evaluating structures made by the class.<br>Describing what characteristics of a design and construction made it the most effective.<br>Considering effective and ineffective designs. | |
| | Knowledge | To know that a pavilion is a decorative building or structure for leisure activities.<br>To know that aesthetics are how a product looks.<br>To know that a product's function means its purpose.<br>To understand that the target audience means the person or group of people a product is designed for.<br>To know that architects consider light, shadow and patterns when designing. | To know that cladding can be applied to structures for different effects. | | To understand what a frame structure is.<br>To know that a 'free-standing' structure is one which can stand on its own. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Reflective:** Pupils are able to evaluate their final product. | Zaha Hadid<br>• An Iraqi-British architect. Hadid was known for her radical deconstructivist designs.<br>• Many of her works involve fluid and unconventional shapes, demonstrating a creative approach to 3D design. | **3D shapes, cladding, design criteria, innovative, natural, reinforce, structure** | This project develops pupils' cultural capital by engaging them in designing and making a model pavilion, building skills in planning, measuring, joining, and evaluating. A visit to local structures allows pupils to observe architectural features, materials, and design styles firsthand, inspiring their own creations. This experience helps pupils appreciate how buildings reflect cultural identity, history, and community needs, broadening their understanding of architecture's role in society. |

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| **Oracy Opportunity** | "Does my pavilion meet the needs of the user?"<br>Pupils discuss and evaluate their finished model pavilion, focusing on whether it is fit for purpose, visually appealing (aesthetic) and suitable for the target audience. | | | | |
| **Sentance Stems** | **Opinion**<br>I think my pavilion is successful because...<br>I like my design because...<br>I do not think this part works because... | **Explaining**<br>I designed it for ___ so...<br>It is fit for purpose because...<br>The structure is strong because...<br>I used ___ material because... | **Comparing**<br>Mine is different because...<br>This pavilion is more effective because...<br>They are similar/different because... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because... | **Building on what ___ said...**<br>Improving (evaluation focus)<br>Next time I would...<br>To improve my pavilion, I could...<br>I could make it more suitable for the user by... |
| **End product** | Model Pavilion | | | | |

# Progression of Knowledge and skills

| Year 4 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| MECHANISMS: Mechanical Cars<br>**How can we design a mechanical car that travels as far and fast as possible? (5 Lessons)** | Skill | Developing drawing and sketching skills with a focus on clarity and simplicity.<br>Beginning to recognise the benefit of a range of diagram types or prototypes to communicate ideas. (Eg. sketches, cross-sectional diagram, thumbnail sketches and exploded diagrams)<br>Creating prototypes using materials with similar properties to their final design.<br>Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences.<br>Developing designs by adding detail and justifications about materials, tools, methods. | Following detailed safety instructions.<br>Using a ruler as a measuring tool with increasing accuracy by creating spaced marks using millimetres and measuring lengths of objects.<br>Handle different sizes and types of scissors with confidence.<br>With close supervision using a hot glue gun to join wooden materials (e.g. lolly sticks).<br>Selecting equipment required for a series of tasks based on the plan. Explain why each piece is suitable for each stage.<br>Selecting materials, components or ingredients from a wider choice but within a limited design space (e.g. seasonal ingredients from May and June in the UK). | Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements.<br>Reflecting on feedback to decide if and how it could be used to improve future iterations.<br>Investigating and analysing a range of existing products by looking at their functionality and appeal.<br>Analysing why specific products, designers or inventors are successful.<br>Evaluating their designs by comparing them against design criteria and considering feedback from peers to suggest improvements.<br>Evaluating how effective their chosen materials and tools were in fulfilling the design brief. | |
| | Knowledge | To know that extra information on drawings or diagrams can help the user understand a design or idea.<br>To know that an exploded diagram shows how the parts of a product fit together.<br>To know that a prototype is a detailed model that helps a user understand how a product will work.<br>To know that a target audience is a group of people that might like the idea. | To know that different tools and equipment have different dangers.<br>To know that a ruler can be used to measure length.<br>To know that a hot glue gun can be used to join materials.<br>To know that choices of materials and equipment can affect the final product. | To know that better suggestions of improvements mean better feedback.<br>To know that they can choose to use feedback or not.<br>To know that some products are more successful than other because of their function.<br>To know that feedback is ideas and suggestions from other people that can help improve their work. | To understand that a mechanical system can allow us to move something more easily.<br>To know that mechanical systems have more than one mechanism that moves to make them work.<br>To know that mechanical systems are often hidden in products to make them look more appealing. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Positive:** Pupils are able to use a range of equipment and materials. | **Bertha Benz**<br>German automotive pioneer and businesswoman, notable for undertaking the first long-distance automobile journey in 1888. Her initiative demonstrated the practicality of Karl Benz's Motorwagen and contributed to early automotive development. | **bearing**<br>**chassis**<br>**force**<br>**machine**<br>**mechanism**<br>**prototype**<br>**target audience** | In Year 4, the mechanical car unit develops cultural capital by linking learning to real-life engineering and transport design. Through designing and making a moving car, pupils explore how mechanisms are used in everyday products and how vehicles meet different needs. They develop practical skills in constructing and testing moving parts while understanding function and purpose. Evaluating and improving their designs fosters creativity, resilience and problem solving. This unit empowers pupils to see themselves as engineers, building confidence and curiosity about how things work in the world around them. |

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| **Oracy Opportunity** | Does my mechanical car move effectively and meet the design brief?"<br>Pupils discuss and evaluate their finished mechanical car, focusing on whether the mechanism works efficiently (e.g. wheels, axles, chassis) and whether it meets the needs of the target audience. | | | | |
| **Sentence Stems** | **Opinion**<br>I think my car is successful because...<br>I like my mechanical car because...<br>I don't think this part works because... | **Explaining**<br>The mechanism works because...<br>The wheels/axle help it move because...<br>It moves smoothly because...<br>I designed it for ___ so... | **Comparing**<br>Mine is different because...<br>This car moves better because...<br>They are similar/different because... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because...<br>Building on what ___ said... | **Improving (evaluation focus)**<br>Next time I would...<br>To improve my car, I could...<br>I could make it work better by... |
| **End product** | **Mechanical car** | | | | |

# Progression of Knowledge and skills

| Year 4 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| ELECTRICAL SYSTEMS: Torches<br>**How can we design a torch that works well and is useful for a specific person or purpose?**<br>**(4 Lessons)** | Skill | Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. | Making a torch with a working electrical circuit and switch.<br>Using appropriate equipment to cut and attach materials.<br>Assembling a torch according to the design and success criteria. | Evaluating electrical products.<br>Testing and evaluating the success of a final product. | |
| | Knowledge | To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens. | | | To understand that electrical conductors are materials which electricity can pass through.<br>To understand that electrical insulators are materials which electricity cannot pass through.<br>To know that a battery contains stored electricity that can be used to power products.<br>To know that an electrical circuit must be complete for electricity to flow.<br>To know that a switch can be used to complete and break an electrical circuit.<br>To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Loving:** Pupils design a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. | **Significant person - Sir Joseph Swan** English physicist and chemist. Invented the first electric light bulb in 1860, which used a glass, vacuum casing and filament, that we recognise in the bulbs of today. His original design was not very practical to power and Thomas Edison further developed this design. | **battery, bulb, buzzer, circuit diagram, component, conductor, electrical item, electricity, electronic item, insulator, series circuit, switch, target audience, test, torch, wire** | This project develops pupils' cultural capital by engaging them in designing and making a torch, building foundational skills in creating simple electrical circuits. Pupils work collaboratively, enhancing teamwork, communication, and problem-solving throughout the process. By exploring a variety of electrical products, they gain a deeper understanding of how electricity powers everyday devices, fostering curiosity about technology and its role in different cultures and industries around the world. |

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| **Oracy Opportunity** | "Does my torch work well and meet the user's needs?"<br>Pupils discuss and evaluate their finished torch, focusing on whether the electrical circuit works effectively and whether the product is fit for purpose for the target user. | | | | |
| **Sentence Stems** | **Opinion**<br>I think my torch is successful because...<br>I like my torch because...<br>I do not think this part works because... | **Explaining**<br>The circuit works because...<br>When I press the switch, it...<br>The battery powers the...<br>I designed it for ___ so... | **Comparing**<br>Mine is different because...<br>This torch works better because...<br>They are similar/different because... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because... | **Building on what ___ said...**<br>Improving (evaluation focus)<br>Next time I would...<br>To improve my torch, I could...<br>I could make it work better by... |
| **End product** | Torch | | | | |

# Progression of Knowledge and skills

| Year 4 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| COOKING & NUTRITION: Adapting a Recipe<br>**How can we change a biscuit recipe to make it delicious and different?**<br>**(6 Lessons)** | Skill | Designing a biscuit within a given budget.<br>Conducting market research. | Following a baking recipe<br>Understanding safety and hygiene rules.<br>Adapting a recipe. | Evaluating an adapted recipe.<br>Evaluating and comparing a range of products.<br>Suggesting modifications. | |
| | Knowledge | | | | To know that the amount of an ingredient in a recipe is known as the 'quantity.'<br>To know that safety and hygiene are important when cooking.<br>To know the following cooking techniques: sieving, measuring, stirring, cutting out and shaping.<br>To know the importance of budgeting while planning ingredients for a recipe.<br>To know that products often have a target audience. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Loving:** Pupils conduct market research and identify a target audience. | **Nadiya Hussain** is a British chef who won The Great British Bake Off. She taught herself to bake and is now famous for her cooking, books and TV shows. Nadiya is inspiring because she believed in herself and shows others they can achieve their dreams too. | **adapt, addition, appearance, budget, buttery, combine, comment, compare, construct, cream, crunchy, cuboid, cut, design, evaluate, fold, hygiene, ingredients, layout, market research, modify, multiplication, opinion, pounds, sieve, sift, target audience, taste, texture, unique, wooden spoon** | This project develops pupils' cultural capital by engaging them in adapting a biscuit recipe, building practical cookery skills such as measuring, mixing, and baking. A visit to the school kitchen gives pupils hands-on experience in a professional food preparation environment, deepening their understanding of food hygiene and safety. Through experimenting with ingredients and flavours, pupils develop creativity and an appreciation for how recipes can reflect personal and cultural tastes. |

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| **Oracy Opportunity** | "Have I successfully adapted my biscuit recipe?"<br>Pupils discuss and evaluate their finished biscuit, focusing on how well they have adapted the recipe to meet a purpose or audience, and whether the final product is successful in taste, texture and appearance. | | | | | |
| **Sentence Stems** | **Opinion**<br>I think my biscuit is successful because...<br>I like my biscuit because...<br>I don't think this part works because... | **Explaining**<br>I adapted the recipe by ___ because...<br>I chose these ingredients so that...<br>The texture/taste is ___ because...<br>I designed it for ___ so... | **Comparing**<br>Mine is different because...<br>This biscuit tastes better because...<br>They are similar/different because... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because...<br>Building on what ___ said... | **Improving (evaluation focus)**<br>Next time I would...<br>To improve my biscuit, I could...<br>I could adapt the recipe further by... | |
| **End product** | **Biscuit** | | | | | |

# Progression of Knowledge and skills

| Year 4 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| **TEXTILES: Fastenings**<br>**How can we design a book sleeve that protects our books and shows our personality?**<br>**(4 Lessons)** | Skill | Writing design criteria for a product, articulating decisions made.<br>Designing a personalised book sleeve. | Making and testing a paper template with accuracy and in keeping with the design criteria<br>Measuring, marking and cutting fabric using a paper template.<br>Selecting a stitch style to join fabric.<br>Working neatly by sewing small, straight stitches.<br>Incorporating a fastening to a design. | Testing and evaluating an end product against the original design criteria.<br>Deciding how many of the criteria should be met for the product to be considered successful.<br>Suggesting modifications for improvement.<br>Articulating the advantages and disadvantages of different fastening types. | |
| | Knowledge | | | | To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro.<br>To know that different fastening types are useful for different purposes.<br>To know that creating a mock up (prototype) of their design is useful for checking ideas and proportions. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Loving:** Pupils identify the features, benefits and disadvantages of a range of fastening types. | **Stella McCartney**<br>Started out training to design and make suits.<br>She now has a design label named after her.<br>Stella McCartney was appointed creative director by Adidas for the 2012 Olympics, designing outfits for Team GB.<br>As a vegetarian, she stays true to her beliefs by refusing to work with fur or leather. | **criteria, fabric, fastening, fix, mock-up, stitch, template** | This project develops pupils' cultural capital by engaging them in designing and making a book sleeve using textile skills such as measuring, cutting, and sewing. Pupils develop creativity, fine motor skills, and attention to detail. They also explore the cultural significance of textiles and how fabric designs can reflect identity, history, and traditions from around the world, fostering an appreciation of craftsmanship and cultural diversity. |

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| **Oracy Opportunity** | "Does my book sleeve protect the book and suit the user?"<br>Pupils discuss and evaluate their finished book sleeve, focusing on whether it protects the book effectively, the fastening works well, and whether the design reflects the user's needs and preferences. | | | | |
| **Sentence Stems** | **Opinion**<br>I think my book sleeve is successful because...<br>I like my design because...<br>I do not think this part works because... | **Explaining**<br>The fastening works because...<br>It protects the book because...<br>I designed it for ___ so...<br>I used ___ material because... | **Comparing**<br>Mine is different because...<br>This sleeve is more effective because...<br>They are similar/different because... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because... | **Building on what ___ said...**<br>Improving (evaluation focus)<br>Next time I would...<br>To improve my book sleeve, I could...<br>I could make the fastening better by... |
| **End product** | **Book sleeve** | | | | |

# Progression of Knowledge and skills

| Year 5 | | Design | Make | Evaluate | Technical Knowledge |
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| STRUCTURES: Bridges<br>**How can we design a strong and stable bridge that can hold weight and looks great?**<br>**(4 Lessons)** | Skill | Designing a stable structure that is able to support weight.<br>Creating a frame structure with a focus on triangulation. | Making a range of different shaped beam bridges.<br>Using triangles to create truss bridges that span a given distance and support a load.<br>Building a wooden bridge structure.<br>Independently measuring and marking wood accurately.<br>Selecting appropriate tools and equipment for particular tasks.<br>Using the correct techniques to saws safely.<br>Identifying where a structure needs reinforcement and using card corners for support.<br>Explaining why selecting appropriating materials is an important part of the design process.<br>Understanding basic wood functional properties. | Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary.<br>Suggesting points for improvements for own bridges and those designed by others. | |
| | Knowledge | | To understand the difference between arch, beam, truss and suspension bridges.<br>To understand how to carry and use a saw safely. | | To understand some different ways to reinforce structures.<br>To understand how triangles can be used to reinforce bridges.<br>To know that properties are words that describe the form and function of materials.<br>To understand why material selection is important based on properties.<br>To understand the material (functional and aesthetic) properties of wood. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Reflective:** Pupils are able to evaluate their end product. | **Significant person - Norman Foster**<br>Designer of the London Millennium Footbridge. | **accuracy, aesthetics, arch bridge, assemble, beam bridge, bench hook/vice, corrugation, evaluate, factors, hardwood, joints, lamination, mark out, material properties, quality of finish, reinforce, rigid, sandpaper/glasspaper, softwood, stability, stiffness, strength, technique, tenon saw/coping saw, truss bridge, visual appeal, wood file/rasp, wood sourcing** | This project develops pupils' cultural capital by engaging them in the design and construction of a model bridge, building essential D&T skills such as planning, measuring, joining, and evaluating. Pupils work collaboratively, developing teamwork and communication skills throughout the process. A visit to a local bridge allows them to observe real engineering structures, understand different types of bridges, and consider factors like strength and design in the real world. This experience deepens their appreciation of engineering achievements and how infrastructure shapes communities and connects people across cultures and regions. |

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| **Oracy opportunity** | "Does my bridge hold weight and work effectively?"<br>Pupils discuss and evaluate their finished model bridge, focusing on whether it is strong, stable and suitable for its purpose, and how well it uses structural features (e.g. beams, supports, trusses). | | | | |
| **Sentence Stems** | Opinion<br>I think my bridge is successful because...<br>I like my bridge because...<br>I don't think this part is strong because... | Explaining<br>My bridge is strong because...<br>The structure holds weight because...<br>I used a ___ (beam/truss/arch) because...<br>I reinforced it by ___ so... | Comparing<br>Mine is different because...<br>This bridge is stronger because...<br>They are similar/different because... | Responding to others<br>I agree with ___ because...<br>I disagree with ___ because... | Building on what ___ said...<br>Improving (evaluation focus)<br>Next time I would...<br>To improve my bridge, I could...<br>I could make it stronger by... |
| **End product** | Model bridge | | | | |

# Progression of Knowledge and skills

| Year 5 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| **MECHANISMS: Gears and pulleys**<br>**How can we use gears and pulleys to make a machine that solves a real problem or makes a task easier?**<br>**(5 Lessons)** | Skill | Noticing wider-reaching problems or needs in the community.<br>Identifying a wide range of needs and potential barriers through market research.<br>Writing more complex problem statements that consider multiple factors and constraints.<br>Creating more complex design criteria that require considering detailed user needs, environmental impact, materials and cost.<br>Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality.<br>Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design.<br>Using a series of prototypes to refine and improve their designs. | Consistently apply safety instructions.<br>Select appropriate scissors to handle delicate cutting tasks and challenging materials.<br>Cutting patterns and drawings accurately.<br>In supervised groups, using hot glue guns safely.<br>Recognising that hot glue is useful for joining materials that need a strong bond that sets quickly.<br>Choosing PVA glue over hot glue for its safety when joining materials in less intensive projects. | Reflecting on the usability, aesthetics, innovation and sustainability of products and discussing how design choices impact these aspects.<br>Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost.<br>Considering alternative materials, tools or techniques that could enhance the product.<br>Providing feedback that is helpful, specific, and encouraging.<br>Incorporating feedback from peers or users improves their product further, explaining the changes they made and the impact they had. | |
| | Knowledge | That market research is a way of collecting information about problems or needs.<br>That constraints are things that might stop our ideas being successful.<br>That original and innovative ideas are different from what has been made before.<br>That annotations are detailed labels and comments on diagrams. | That risks are things that might happen.<br>That hot glue creates a strong bond quickly.<br>That is often better to choose safer equipment.<br>That sustainability means thinking about the materials that were used to make a product and how the product was made.<br>That their final product can still be improved by different materials or techniques. | That evaluating their designs in detail will help them understand its successful and less successful parts.<br>That feedback should be positive, helpful and specific.<br>That explaining how they used feedback to improve their design can help them create better products in the future. | That mechanical systems that use gears in everyday objects (e.g. bicycle, clock).<br>That gears and pulleys allow us to transfer movement and force from one part of a mechanical system to another.<br>That gears allow us to increase the output of a mechanism. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Unique/Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Positive:** Pupils are able to use a range of equipment and materials. | **Significant person - Leonardo da Vinci**<br>An Italian polymath who designed innovative machines using gears and pulleys, demonstrating advanced mechanical understanding.<br>His sketches and concepts laid the foundation for modern mechanical systems and engineering. | **annotate, axle, force, gear, gear system, input, machine, market research, mechanism, output, problem, statement, pulley, pulley system, renewable energy, research, sustainability, teeth** | This project develops pupils' cultural capital by introducing them to mechanical systems through designing and constructing pulley and gear mechanisms. Pupils build key D&T skills such as planning, measuring, assembling, and evaluating moving parts. Hands-on learning encourages problem-solving, creativity, and teamwork. Exploring real-world applications of pulleys and gears, such as in machinery and transportation, helps pupils understand the impact of engineering on daily life and different industries, broadening their awareness of how technology shapes societies worldwide. |

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| **Oracy Opportunity** | "Does my gear and pulley system work efficiently?"<br>Pupils discuss and evaluate their finished gear and pulley system, focusing on whether the mechanism transfers movement effectively and whether it meets the intended purpose. | | | | |
| **Sentence Stems** | **Opinion**<br>I think my system is successful because...<br>I like my design because...<br>I don't think this part works because... | **Explaining**<br>The gear/pulley works because...<br>The movement changes when...<br>It moves faster/slower because...<br>I designed it so that... | **Comparing**<br>Mine is different because...<br>This system works better because...<br>They are similar/different because... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because... | **Building on what ___ said...**<br>Improving (evaluation focus)<br>Next time I would...<br>To improve my system, I could...<br>I could make it more efficient by... |
| **End product** | Gear and pulley system | | | | |

# Progression of Knowledge and skills

| Year 5 | | Design | Make | Evaluate | Technical Knowledge |
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| **ELECTRICAL SYSTEMS: Doodlers**<br>**How can we use electricity to make our drawings come to life in exciting and creative ways?**<br>**(4 Lessons)** | Skill | Creating more complex design criteria that require considering detailed user needs, environmental impact, materials and cost.<br>Developing more independence in generating ideas.<br>Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality.<br>Using a series of prototypes to refine and improve their designs. Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product.<br>Developing design criteria based on findings from investigating existing products.<br>Developing design criteria that clarifies the target user. | Producing lists of equipment, materials and tools that they need for a task.<br>Creating a step-by-step plan for making.<br>Selecting materials, components or ingredients based on research or user needs.<br>Explaining their choices, referring to their research.<br>Understanding and explaining each safety rule's importance.<br>Consistently apply safety instructions.<br>Balancing aesthetics and functionality when creating parts of a design.<br>Considering when best to apply finishing effects.<br>Altering a product's form and function by tinkering with its configuration.<br>Making a functional series circuit, incorporating a motor.<br>Constructing a product with consideration for the design criteria.<br>Breaking down the construction process into steps so that others can make the product. | Reflecting on the usability, aesthetics, innovation and sustainability of products and discussing how design choices impact these aspects.<br>Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost.<br>Considering alternative materials, tools or techniques that could enhance the product.<br>Providing feedback that is helpful, specific, and encouraging.<br>Incorporating feedback from peers or users to improve their product further, explaining the changes they made and the impact they had.<br>Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses.<br>Determining which parts of a product affect its function and which parts affect its form.<br>Analysing whether changes in configuration positively or negatively affect an existing product.<br>Peer evaluating a set of instructions to build a product. | Beginning to understand that electricity flows around a circuit.<br>Using different components to produce different results from electrical systems.<br>Creating working electrical circuits with a wider variety of electrical components.<br>Deconstructing electrical systems to understand how they work. |
| | Knowledge | To know environmental impact is how the product and making the product might affect the environment.<br>To know original and innovative ideas are different from what has been made before.<br>To know annotations are detailed labels and comments on diagrams.<br>To know improving on prototypes can help to improve the final design. | To know some equipment can work well with other equipment.<br>To know risks are things that might go wrong.<br>To know the shape of an object can affect both its aesthetics and function.<br>To know sustainability means thinking about the materials that were used to make a product and how the product was made. | To know looking at other designers work can help inform designs.<br>To know their final product can still be improved by using different materials or techniques.<br>To know evaluating their designs in detail will help them understand its successful and less successful parts.<br>To know feedback should be positive, helpful and specific.<br>To know that explaining how they used feedback to improve their design can help them create better products in the future. | To know that series circuits only have one direction for the electricity to flow.<br>To know when there is a break in a series circuit, all components turn off.<br>To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin.<br>To know a motorised product is one which uses a motor to function.<br>To know an electric motor converts electricity into rotational movement.<br>To know a motorised product is one which uses a motor to function.<br>To know the names of components that can form an electrical system.<br>To know that product analysis is critiquing the strengths and weaknesses of a product.<br>To know that 'configuration' means how the parts of a product are arranged. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
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| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Loving** Pupils develop design criteria that clarifies the target user. Pupils carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. Pupils peer evaluate a set of instructions to build a product. | **Michael Faraday**<br>English chemist and physicist (September 1791 – August 1867) and is credited with key early discoveries in the development of the electric motor.<br>Faraday constructed the first electric dynamo, the ancestor of modern power generators and the electric motor. | **circuit component, configuration, current, develop, DIY, investigate, motor, motorised, problem solve, product analysis, series circuit, stable, target user** | This project develops pupils' cultural capital by engaging them in designing and building a doodler using electrical components, including a motor. Pupils develop key skills in constructing simple circuits, understanding how motors work, and assembling moving parts. They work collaboratively, building teamwork and problem-solving abilities. By exploring various motorised products used in everyday life, pupils gain insight into the role of technology and engineering in shaping modern society and how innovations impact different industries and cultures worldwide. |

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| **Oracy Opportunity** | "Does my doodler work effectively and create the intended movement?"<br>Pupils discuss and evaluate their finished doodler, focusing on whether the motor and circuit work effectively to create movement, and whether the final outcome matches their design idea. | | | | |
| **Stem Sentences** | Opinion<br>I think my doodler is successful because...<br>I like my design because...<br>I do not think this part works because... | Explaining<br>The motor works because...<br>The movement happens when...<br>The circuit powers ___ so...<br>I designed it so that... | Comparing<br>Mine is different because...<br>This doodler works better because...<br>They are similar/different because... | Responding to others<br>I agree with ___ because...<br>I disagree with ___ because...<br>Building on what ___ said... | Improving (evaluation focus)<br>Next time I would...<br>To improve my doodler, I could...<br>I could change ___ to improve the movement |
| **End product** | Doodler | | | | |

# Progression of Knowledge and skills

| Year 5 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| COOKING & NUTRITION: Developing a Recipe<br>**How can we create a Bolognese sauce that is tasty, healthy, and suited to different people's needs? (6 Lessons)** | Skill | Researching existing recipes.<br>Suggesting alternative ingredients.<br>Designing a jar label. | Writing an alternative recipe.<br>Understanding cross-contamination.<br>Using preparation skills.<br>Making a developed recipe. | Explaining the farm to fork process.<br>Analysing nutritional content. | |
| | Knowledge | | | | To know that beef comes from cows reared on farms.<br>To know that recipes can be adapted to suit nutritional needs and dietary requirements.<br>To know that nutritional information is found on food packaging.<br>To know that coloured chopping boards can prevent cross-contamination.<br>To know that food packaging serves many purposes. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Loving:** Pupils research existing recipes and explain the farm-to-fork process. | **Gordon Ramsay** is a famous chef from Britain who worked very hard to become successful and now teaches people how to cook. | **beef, brand, cook, cross-contamination, cut, design, enhance, equipment, evaluate, farm, grate, hygiene, ingredients, label, measure, nutrient, nutrition, nutritional value, preference, press, process, recipe, safety, theme** | This project enhances pupils' cultural capital by teaching them how to prepare a nutritious Bolognese sauce, developing essential cookery skills such as chopping, measuring, cooking, and food hygiene. A visit to the school kitchen provides hands-on experience in a real cooking environment, helping pupils understand professional food preparation and safety practices. A visit from a local farm supports learning about where ingredients come from and the importance of fresh, seasonal produce. Through exploring the cultural origins of the dish, pupils also gain an appreciation for international cuisines and the role of food in bringing people together across cultures. |

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| **Oracy Opportunity** | "Is my bolognese sauce suitable for the user and successful?"<br>Pupils discuss and evaluate their finished bolognese sauce, focusing on whether it is healthy, suits the needs of the target audience, and meets the design brief (e.g. ingredient choices, flavour, dietary needs). | | | | |
| **Stem sentences** | **Opinion**<br>I think my sauce is successful because...<br>I like my bolognese because...<br>I don't think this part works because... | **Explaining**<br>I adapted the recipe by ___ because...<br>I chose these ingredients so that...<br>It is healthy because...<br>I designed it for ___ so... | **Comparing**<br>Mine is different because...<br>This sauce tastes better because...<br>They are similar/different because... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because... | **Building on what ___ said...**<br>Improving (evaluation focus)<br>Next time I would...<br>To improve my sauce, I could...<br>I could make it more suitable by... |
| **End product** | Bolognese sauce | | | | |

# Progression of Knowledge and skills

| Year 5 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| **TEXTILES: Stuffed Toys**<br>**How can we design and make a stuffed toy that is unique, comfortable to cuddle, and built to last?**<br>**(4 Lessons)** | Skill | Designing a stuffed toy, considering the main component shapes required and creating an appropriate template.<br>Considering the proportions of individual components. | Creating a 3D stuffed toy from a 2D design.<br>Measuring, marking and cutting fabric accurately and independently.<br>Creating strong and secure blanket stitches when joining fabric.<br>Threading needles independently.<br>Using appliqué to attach pieces of fabric decoration.<br>Sewing blanket stitch to join fabric.<br>Applying blanket stitch so the spaces between the stitches are even and regular. | Testing and evaluating an end product and giving point for further improvements. | |
| | Knowledge | | | | To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric.<br>To understand that it is easier to finish simpler designs to a high standard.<br>To know that soft toys are often made by creating appendages separately and then attaching them to the main body.<br>To know that small, neat stitches which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Unique/Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Proud:** Pupils are able to celebrate their end product. | **Margarete Steiff**<br>A German designer and seamstress<br>Created one of the first modern stuffed toys (a felt elephant in 1880)<br>Founded the Steiff company, which became one of the most famous plush toy makers in the world<br>Her work led to the development of the teddy bear in the early 1900s | **accurate, annotate, appendage, blanket-stitch, design criteria, detail, evaluation, fabric, sew, shape, stuffed toy, stuffing** | This project develops pupils' cultural capital by engaging them in the design and creation of a soft toy, building important D&T skills such as sewing, cutting, measuring, and evaluating. Pupils work collaboratively, enhancing teamwork and communication skills throughout the making process. They also explore the cultural significance of toys and how soft toys can reflect identity, comfort, and creativity across different cultures. This hands-on experience fosters creativity, fine motor skills, and an appreciation of craftsmanship. |

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| **Oracy Opportunity** | "Is my stuffed toy well-made and suitable for the user?"<br>Pupils discuss and evaluate their finished stuffed toy, focusing on whether it is securely constructed, well-designed and suitable for its intended user (e.g. a child). | | | | |
| **Stem Sentences** | **Opinion**<br>I think my toy is successful because...<br>I like my stuffed toy because...<br>I do not think this part works because... | **Explaining**<br>I designed it for ___ so...<br>The stitching is strong because...<br>The fabric works well because...<br>I used ___ technique because... | **Comparing**<br>Mine is different because...<br>This toy is more effective because...<br>They are similar/different because... | **Responding to others**<br>I agree with ___ because...<br>I disagree with ___ because... | **Building on what ___ said...**<br>Improving (evaluation focus)<br>Next time I would...<br>To improve my toy, I could...<br>I could make it stronger by... |
| **End product** | **Stuffed toy** | | | | |

# Progression of Knowledge and skills

| Year 6 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| STRUCTURES: Playgrounds How can we design playground apparatus that is safe, fun, and suitable for children to play on? (4 Lessons) | Skill | Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs. | Building a range of play apparatus structures drawing upon new and prior knowledge of structures.<br>Measuring, marking and cutting wood to create a range of structures.<br>Using a range of materials to reinforce and add decoration to structures. | Improving a design plan based on peer evaluation.<br>Testing and adapting a design to improve it as it is developed.<br>Identifying what makes a successful structure. | |
| | Knowledge | To understand what a 'footprint plan' is.<br>To understand that in the real world, design can impact users in positive and negative ways.<br>To know that a prototype is a cheap model to test a design idea | | | To know that structures can be strengthened by manipulating materials and shapes. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Positive:** Pupils are able to use a range of tools. | **Significant person - Charles Wicksteed** (1847–1931)<br>An engineer and entrepreneur in Kettering.<br>Built the UK's first public playground in 1918 and launched Wicksteed Park in 1921.<br>Designed robust swings, slides, plank swings, see-saws, roundabouts, and the iconic "jazz swing" and "joy wheel," ensuring equipment was safe, durable, and inclusive | **apparatus, design criteria, equipment, playground, landscape features, cladding** | This project enhances pupils' cultural capital by engaging them in the design and construction of model playground apparatus, developing key D&T skills such as planning, measuring, joining, and evaluating. It encourages creativity, problem-solving, and teamwork while helping students understand the importance of inclusive and safe design. A visit to a local park allows pupils to observe real-life playground structures, consider user needs, and gather inspiration for their own models. By exploring how play equipment is used in different cultures and communities, pupils gain awareness of diversity, public spaces, and the impact of design on everyday life. |

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| **Oracy Opportunity** | "Does my playground equipment meet the needs of the user?"<br>Pupils discuss and evaluate their finished model playground apparatus, focusing on whether it is safe, functional, appealing and suitable for the target audience, as well as how well it reflects their design ideas and real-world considerations. | | | | |
| **Stem Sentences** | **Opinion**<br>I am convinced my design is successful because...<br>Overall, I think my playground equipment works well because...<br>However, I think this part could be improved because... | **Explaining**<br>I designed it for ___, therefore...<br>This is safe because...<br>The structure works because...<br>I selected these materials because...<br>This meets the design criteria because... | **Comparing**<br>In some ways, mine is similar because...<br>However, it is different because...<br>This design is more effective because... | **Responding to others**<br>I understand your point of view, however...<br>I agree with ___ and would like to add... | **Building on what ___ said...**<br>Improving (evaluation focus)<br>In the future, I would...<br>To improve my design, I could...<br>A key change I would make is...<br>because...<br>Based on feedback, I would adapt... |
| **End product** | Model playground | | | | |

# Progression of Knowledge and skills

| Year 6 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| **MECHANISMS: Automata Toys**<br>**How can we design an automata toy that tells a story or creates movement in an interesting and clever way?**<br>**(4 Lessons)** | Skill | Noticing wider-reaching problems or needs in the community.<br>Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality.<br>Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design. | Producing lists of equipment, materials and tools that they need for a task.<br>Selecting materials, components or ingredients based on research or user needs.<br>Explaining their choices, referring to their research.<br>Considering which equipment will work well together.<br>Choosing from the known range of equipment available to them with little guidance.<br>Assessing risks associated with different tools and equipment.<br>Understanding and explaining the importance of each safety rule.<br>Consistently apply safety instructions.<br>Cutting jelutong or other harder wood with a coping saw or a tenon saw in small groups.<br>Cutting in a back-and-forth sawing motion where appropriate.<br>In supervised groups, using hot glue guns safely.<br>Recognising that hot glue is useful for joining materials that need a strong bond that sets quickly. | Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost.<br>Providing feedback that is helpful, specific and encouraging.<br>Incorporating feedback from peers or users to improve their product further, explaining the changes they made and the impact they had. | |
| | Knowledge | To know that a cross-sectional diagram shows the inner workings of a product. | | | To know that the mechanism in an automata uses a system of cams, axles and followers.<br>To know that different shaped cams produce different outputs.<br>To know which mechanisms are working together to make a mechanical system.<br>To know that there are different directions of movement.<br>To know that mechanisms can change one type of movement to another.<br>To know that an automata is a hand powered mechanical toy. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Unique/Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Loving/Mutual respect:** Pupils notice wider-reaching problems or needs in the community. | **Significant person - Keith Newstead** (1956–2020)<br>One of Britain's most celebrated automata artists.<br>His intricate wooden creations have been exhibited at the Exploratorium (San Francisco), Eden Project, and the Tokyo Toy Museum | **accurate, automata, axle, bench hook, cam, cam profile, component, cross-sectional diagram, diagram, dowel, evaluate, exploded diagram, follower, form, frame, function, housing, mechanism, storefront, visual** | This project develops pupils' cultural capital by introducing mechanical systems through the design and construction of an automata toy. Pupils apply D&T skills such as measuring, cutting, assembling cams and linkages, and refining moving parts. The project builds understanding of how mechanisms are used in real-world products and explores the historical and cultural development of toys and automata across time and cultures, fostering curiosity, creativity, and engineering awareness. |

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| **Oracy Opportunity** | "Does my automata toy work effectively and achieve its purpose?"<br>Pupils discuss and evaluate their finished automata toy, focusing on whether the mechanical system (cams, followers, movement) works effectively and whether the product meets the design brief and communicates a clear idea to the user. | | | | |
| **Stem Sentences** | **Opinion**<br>I am convinced my automata is successful because...<br>Overall, I think my design meets the brief because...<br>However, I believe this part could be improved because... | **Explaining**<br>The cam mechanism works because...<br>The follower moves when...<br>This creates movement because...<br>I designed it for ___, therefore...<br>This meets the design criteria because... | **Comparing**<br>In comparison to ___, my design...<br>One similarity/difference is...<br>This design is more effective because... | **Responding to others**<br>I understand your point of view, however...<br>I agree with ___ and would like to add...<br>Building on what ___ said...<br>Taking your feedback into account... | **Improving (evaluation focus)**<br>In the future, I would adapt...<br>To refine my automata, I could...<br>A key improvement would be... because...<br>Based on testing and feedback, I would... |
| **End product** | Automata Toy | | | | |

# Progression of Knowledge and skills

| Year 6 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| ELECTRICAL SYSTEMS: Steady Hand Game<br>**How can we design a steady hand game that is challenging, fun, and works reliably?**<br>**(4 Lessons)** | Skill | Designing a steady hand game - identifying and naming the components required.<br>Drawing a design from three different perspectives.<br>Generating ideas through sketching and discussion.<br>Modelling ideas through prototypes.<br>Understanding the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function.' | Constructing a stable base for a game.<br>Accurately cutting, folding and assembling a net.<br>Decorating the base of the game to a high-quality finish.<br>Making and testing a circuit.<br>Incorporating a circuit into a base. | Testing own and others finished games, identifying what went well and making suggestions for improvement.<br>Gathering images and information about existing children's toys.<br>Analysing a selection of existing children's toys. | |
| | Knowledge | To know that 'form' means the shape and appearance of an object.<br>To know the difference between 'form' and 'function'.<br>To understand that 'fit for purpose' means that a product works how it should and is easy to use.<br>To know that form over purpose means that a product looks good but does not work very well.<br>To know the importance of 'form follows function' when designing: the product must be designed primarily with the function in mind.<br>To understand the diagram perspectives 'top view', 'side view' and 'back'. | | | To know that batteries contain acid, which can be dangerous if they leak.<br>To know the names of the components in a basic series circuit, including a buzzer. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Unique/Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Proud:** Pupils are able to celebrate their final product. | **Significant person - Bob Scrimshaw**<br>Inventor of the Electric Buzz-Wire Game<br>In 1953, Yorkshire electrician Bob Scrimshaw developed the earliest electric wire-loop (buzz-wire) game, widely considered the origin of modern steady-hand games.<br>His design featured guiding a metal loop along a winding wire without touching it—triggering an electrical buzzer or light upon contact. | **assemble, battery, battery pack, benefit, bulb, bulb holder, buzzer, circuit, circuit symbol, component, conductor, copper, design, design criteria, evaluation, fine motor skills, fit for purpose, form, function, gross motor skills, insulator, LED, user** | This project enhances pupils' cultural capital by engaging them in hands-on design and construction of a steady hand game, developing practical understanding of electrical systems. It promotes creativity, iterative design, and problem-solving—core D&T skills—while encouraging teamwork and resilience. The activity connects to real-world engineering and innovation, helping pupils appreciate how products are designed and used across different times and cultures. |

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| **Oracy Opportunity** | "Does my steady hand game work reliably and meet the design brief?"<br>Pupils discuss and evaluate their finished steady hand game, focusing on whether the circuit works consistently (buzzer/light activates correctly) and whether the product is challenging, engaging and suitable for the user. | | | | |
| **Stem sentences** | **Opinion**<br>I am convinced my game is successful because...<br>Overall, I think my design works effectively because...<br>However, I believe this part could be improved because... | **Explaining**<br>The circuit works because...<br>When the wire touches the loop, it...<br>The buzzer/light activates because...<br>I designed it for ___, therefore...<br>This meets the design criteria because... | **Comparing**<br>In comparison to ___, my game...<br>One similarity/difference is...<br>This design is more engaging because... | **Responding to others**<br>I understand your point of view, however...<br>I agree with ___ and would like to add...<br>Building on what ___ said...<br>Taking your feedback into account... | **Improving (evaluation focus)**<br>In the future, I would adapt...<br>To improve my game, I could...<br>A key improvement would be... because...<br>Based on testing and feedback, I would... |
| **End product** | Steady Hand Game | | | | |

# Progression of Knowledge and skills

| Year 6 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| COOKING & NUTRITION: Come Dine with Me<br>**How can we plan and prepare a delicious, balanced 3-course meal that stays within a budget?**<br>**(6 Lessons)** | Skill | Writing a recipe, explaining the key steps, method and ingredients.<br>Including facts and drawings from research undertaken. | Following a recipe, including using the correct quantities of each ingredient.<br>Adapting a recipe based on research.<br>Working to a given timescale.<br>Working safely and hygienically with independence. | Evaluating a recipe, considering; taste, smell, texture and origin of the food group.<br>Taste testing and scoring final products.<br>Suggesting and writing up points of improvements in productions.<br>Evaluating health and safety in production to minimise cross contamination. | |
| | Knowledge | | | | To know that 'flavour' is how a food or drink tastes.<br>To know that many countries have 'national dishes' which are recipes associated with that country.<br>To know that 'processed food' means food that has been put through multiple changes in a factory.<br>To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides.<br>To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork). |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit.<br>**Democracy:** Pupils carry out taste testing and score final products. | **Loving:** Pupils adapt a recipe based on research. | **Ainsley Harriott** is a British chef who teaches people how to cook in a fun way. He is famous for his TV shows and his cheerful personality. | **balance, bitter, bridge method, complement, cookbook, cross-contamination, enhance, equipment, farm to fork, flavours, ingredients, method, pairing, preparation, recipe, research, salty, sour, storyboard, sweet, umami** | This project enriches pupils' cultural capital by developing practical cookery skills through the design and preparation of a three-course meal. Pupils learn about nutrition, food hygiene, meal planning, and time management, building life-long skills for healthy, independent living. A visit to the school kitchen gives pupils first-hand experience of a professional food preparation environment, deepening their understanding of real-world cooking processes. The project also explores dishes from different cultures, encouraging appreciation of global food traditions and the social value of sharing meals across communities. |

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| **Orcacy opportunity** | "Does my three-course meal meet the brief and suit the user?"<br>Pupils discuss and evaluate their planned and prepared three-course meal, focusing on whether it is balanced, cost-effective, well-sequenced and suitable for the target audience. | | | | |
| **Stem sentences** | **Opinion**<br>I am convinced my meal is successful because...<br>Overall, I believe my menu meets the brief because...<br>However, I think this part could be improved because... | **Explaining**<br>I designed my meal for ___, therefore...<br>My meal is balanced because...<br>I selected these ingredients due to...<br>This dish complements the others because...<br>This meets the design criteria because | **Comparing**<br>In comparison to ___, my menu...<br>One key similarity/difference is...<br>This meal is more effective because... | **Responding to others**<br>I understand your point of view, however...<br>I agree with ___ and would like to add...<br>Building on what ___ said...<br>Taking this feedback into account... | **Improving (evaluation focus)**<br>In the future, I would adapt...<br>To refine my menu, I could...<br>A key improvement would be... because...<br>Based on evaluation, I would change... |
| **End product** | 3-course meal | | | | |

# Progression of Knowledge and skills

| Year 6 | | Design | Make | Evaluate | Technical Knowledge |
|---|---|---|---|---|---|
| **TEXTILES: Bags**<br>**How can we design and make a bag that meets the needs of a specific user while being both attractive and practical? (5 Lessons)** | Skill | Creating more complex design criteria that require considering detailed user needs, environmental impact, materials and cost.<br>Developing more independence in generating ideas.<br>Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality.<br>Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design.<br>Beginning to select methods to communicate their ideas, justifying their choices. (eg. prototypes, cross-sectional, exploded diagrams, CAD etc). | Assessing risks associated with different tools and equipment.<br>Understanding and explaining the importance of each safety rule.<br>Consistently apply safety instructions.<br>Using a ruler to accurately measure and draw lines and marks.<br>Select appropriate scissors to handle delicate cutting tasks and challenging materials.<br>Cutting patterns and drawings accurately.<br>Choosing PVA glue over hot glue for safety when joining materials in less intensive projects.<br>Balancing aesthetics and functionality when creating parts of a design.<br>Using nets to create 3D objects.<br>Considering when best to apply finishing effects. | Reflecting on the usability, aesthetics, innovation and sustainability of products and discussing how design choices impact these aspects.<br>Evaluating the work of a range of designers to help inform their designs.<br>Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost.<br>Considering alternative materials, tools or techniques that could enhance the product. | Threading needles independently.<br>Beginning to follow simple patterns or templates that require accurate cutting or measuring.<br>Using pins effectively to secure a template to fabric without creases or bulges.<br>Attaching objects like buttons using thread.<br>Using a template (or clothing pattern) helps to accurately mark out a design on fabric. |
| | Knowledge | Different materials have different costs.<br>Original and innovative ideas are different from what has been made before.<br>Drawings and diagrams can be communicated in 3D.<br>Improving on prototypes can help to improve the final design. | Materials and equipment lists help to plan better.<br>Aesthetics are the way something looks.<br>Research can help decide which materials are best for both aesthetics and functional properties.<br>Risks are things that might go wrong.<br>Different measuring tools can be useful depending on what is being measured.<br>The shape of an object can affect both its aesthetics and function.<br>Aesthetics is how something looks.<br>Nets can be folded to create 3D shapes.<br>Texture can provide functional properties as well as aesthetic. | Sustainability means thinking about the materials that were used to make a product and how the product was made.<br>Looking at other designers' work can help inform designs.<br>Their final product can still be improved by using different materials or techniques.<br>Evaluating their designs in detail will help them understand its successful and less successful parts.<br>Explaining how they used feedback to improve their design can help them create better products in the future. | Complete products are sometimes made in parts that are sewn together.<br>Consistently sized stitches improve the aesthetic of a product. |

| British Values | Purple Values | Significant Person | Key Vocabulary | Cultural Capital |
|---|---|---|---|---|
| **Individual liberty:** Pupils are able to make individual choices during the design element of this unit. | **Empowered:** Pupils are able to complete the change of sewing a bag. | **Akosua Afriyie-Kumi** A bag designer from Ghana.<br>Inspired by bright and bold colours of Africa.<br>She believes in ethical fashion and supporting sustainable choices in the fashion industry.<br>High-quality products that are hand woven following traditional Ghanaian weaving techniques.<br>Uses natural materials and dyes. | **innovative**<br>**pattern piece**<br>**seam allowance** | In Year 6, the textiles unit builds cultural capital by linking learning to real-life contexts and global influences in fashion and sustainability. Through designing and making a bag, pupils explore how textiles reflect purpose, identity and need across cultures. They develop sewing skills while considering materials and ethical production, supporting informed choices as responsible consumers. Evaluating products and creating their own designs fosters independence, creativity and resilience. This unit empowers pupils to see themselves as designers, confidently engaging with the designed world around them. |

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| **Oracy opportunity** | "Does my bag meet the needs of the user and show quality design?"<br>Pupils discuss and evaluate their finished bag, focusing on whether it is fit for purpose, well-constructed and reflects careful design choices, including pattern, seam allowance and finishing techniques. | | | | |
| **Sentence stems** | **Opinion**<br>I am convinced my bag is successful because...<br>Overall, I think my design works well because...<br>However, I believe this part could be improved because... | **Explaining**<br>I designed it for ___, therefore...<br>This bag is fit for purpose because...<br>The seams are strong because...<br>I selected these materials because...<br>This meets the design criteria because | **Comparing**<br>In comparison to ___, my bag...<br>One similarity/difference is...<br>This design is more effective because... | **Responding to others**<br>I understand your point of view, however...<br>I agree with ___ and would like to add...<br>Building on what ___ said...<br>Taking this feedback into account... | **Improving (evaluation focus)**<br>In the future, I would adapt...<br>To refine my bag, I could...<br>A key improvement would be... because...<br>Based on feedback, I would change... |
| **End product** | Bag | | | | |