

## National Curriculum Requirements

### **By the end of KS1:**

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

When designing and making, pupils should be taught to:

#### Design

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

#### Make

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

#### Evaluate

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

#### Technical knowledge

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

### **By the end of KS2:**

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

When designing and making, pupils should be taught to:

### Design

- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
- Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

### Make

- Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

### Evaluate

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

### Technical knowledge

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



# Design Technology

## Manor Park Curriculum design



### **Intent**

*At Manor Park, design and technology is an inspiring and practical subject. Using creativity and imagination, our pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and other's needs. We aim to inspire our children to be engineers, designers, chefs and architects. By the time they leave Manor Park, children will have the knowledge, skills and understanding to be able to design and make products. Children will know how to complete a variety of practical tasks and work with a range of equipment, tools and resources, and know how to cook and understand the principles of nutrition.*

### **Implementation**

*We have a bespoke, inspiring design and technology curriculum for our children which is based on the National Curriculum for KS1 and KS2 and Development Matters for EYFS. DT is taught once a term in KS1 and KS2. Each year group will do three DT projects across a year. These projects relate to their topic, to ensure links are made in a cross-curricular way, giving children motivation and meaning for their learning. DT is taught on a DT day and, if needed, a design/research afternoon beforehand so that resources can be sourced. Through our DT days, children are taught the iterative process of designing and making. Children follow the design, make and evaluate cycle when making their products. Our curriculum ensures each year group does a technical, textile and food project across the year, apart from Year 5. In Year 5, there are 3 technical projects so that they can learn the more complex skills and build on and apply their understanding of the skills across the year. Children will create a range of structures, mechanisms, textiles, electrical systems and food products working with a range of media. Skills are taught progressively to ensure that all children are able to learn, practice and build on skills as they move through the school.*

### **Impact**

*It is our uncompromising vision that all children reach age related expectations at the end of each year. On going teacher assessment is used to swiftly address gaps, therefore ensuring almost all children securely meet the objectives mapped out in our curriculum.*

Year Group	Autumn	Spring	Summer	
	<p><b>KS1 National Curriculum objectives covered in each project</b></p> <ul style="list-style-type: none"> <li>• Design purposeful, functional, appealing products for themselves and other users based on design criteria</li> <li>• Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</li> <li>• Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</li> <li>• Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</li> <li>• Explore and evaluate a range of existing products</li> <li>• Evaluate their ideas and products against design criteria</li> </ul> <p><b>KS1 National Curriculum objectives covered in each food project</b></p> <ul style="list-style-type: none"> <li>• Use the basic principles of a healthy and varied diet to prepare dishes</li> <li>• Understand where food comes from</li> </ul>			
Year 1	<p><b><u>Superhumans</u></b> Food project- Make a superhero breakfast</p> <p><b><u>Design</u></b> -Design a breakfast plate following the simple given design criteria (healthy) -Communicate their ideas through talking -Draw a simple annotated diagram to show a design</p> <p><b><u>Make</u></b> - Use simple utensils (knife, peeler) and equipment to prepare fruit and vegetables with some support e.g., peel, cut, slice, squeeze and chop safely. -Select from a range of fruit and vegetables according to their characteristics e.g.,</p>	<p><b><u>Wild Woods</u></b> Technical project- Make a woodland setting with moveable characters on sliders</p> <ul style="list-style-type: none"> <li>• Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products</li> </ul> <p><b><u>Design</u></b> - Look at pictures of woodland animals to help develop ideas - Communicate ideas through talking - Draw a simple picture of an intended design with basic labelling following a given design criteria</p> <p><b><u>Make</u></b></p>	<p><b><u>Hear me Roar</u></b> Technical project- Make a dinosaur on a lever</p> <ul style="list-style-type: none"> <li>• Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products</li> </ul> <p><b><u>Design</u></b> -Look at pictures of dinosaurs to help develop ideas -Use pictures and words to show an intended design following a simple design criteria</p> <p><b><u>Make</u></b> -Use different equipment to join materials together-split pin, glue, cello tape -Use scissors to cut safely and with some accuracy -Select from a range of decorations to finish (decorate) their product -Select from and use a range of materials and components, lollipop sticks, card, paper -Create a slider mechanism</p> <p><b><u>Technical Knowledge:</u></b> - Understand and explain how a simple lever mechanisms work -Use a lever mechanism in their woodland setting</p> <p><b><u>Evaluate</u></b></p>	<p><b><u>Flashback</u></b> Textiles project- Create a toy for a child</p> <p><b><u>Design</u></b> - Communicate and have own ideas - Design appealing products for a particular user based on a simple design criteria</p> <p><b><u>Make</u></b> - Explain what they are making - Cut out shapes which have been created by drawing around a template - Join two pieces of material together using glue - Use finishing techniques to decorate their puppet- adding eyes, colour, sequins, patterns</p> <p><b><u>Evaluate</u></b> - As they work, start to identify strengths and possible changes they might make to improve existing design - Evaluate product against the simple design criteria</p>

	<p>colour, texture and taste to create a chosen product.</p> <p><b><u>Evaluate</u></b>  -Evaluate their own product- saying what they do and do not like about what they have made and attempt to say why</p> <p><b><u>Cooking</u></b>  -Understand which foods are healthy and unhealthy  -Understand where fruit and vegetables come from and the difference between them (<i>outdoor learning</i>)</p>	<p>- Use different equipment to join materials together- glue, cello tape  -Use scissors to cut safely and with some accuracy  -Select from a limited range of decorations to finish (decorate) their product  -Select from and use a range of materials and components, lollipop sticks, boxes, card, paper</p> <p><b><u>Evaluate</u></b>  - Explore how a slider mechanism works/has been created looking at examples (teacher example)  -Evaluate their own product and their peers- saying what they do and do not like about what they have made and attempt to say why  -Evaluate whether the right materials were chosen for strength</p> <p><b><u>Technical Knowledge:</u></b>  - Understand and explain how sliders work  -Use a slider mechanism in their woodland setting</p>	<p>-Explore how a lever mechanism works/has been created looking at examples (teacher example)  -Evaluate their own product and their peers- saying what they do and do not like about what they have made and attempt to say why</p> <p><b><u>Previous learning links:</u></b></p> <ul style="list-style-type: none"> <li>Year 1 (Autumn 2)- Woodland setting- using a slider mechanism</li> </ul>	
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**Year 2**

**Our City in the Spotlight**

Technical project- Make a basic car which can be pushed using wooden dowels, wheels and axles

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

**Design**

-Explain the purpose of their product (finished product can be moved on wheels)

- Design own functional car using ICT (tinkercad) ensuring it meets the needs for the user and follows a design criteria

**Make**

-Understand what components are needed to construct a moving vehicle

-Select and use a range of tools- saw, benchhook, scissors, ruler

-Select from and use a range of materials -paper, card  
- With help, measure and mark wooden dowel to the nearest cm

-Cut wooden dowels safely using a saw and bench hook with some support

-Make suggestions as to what to do next

-Join different materials together using glue, cellotape and a hot glue gun with support

-Use finishing techniques to improve the appearance of their product by adding simple decorations - feathers, buttons, straws

**Evaluate**

-Investigate a range of existing cars- observing cars in the local community ([outdoor learning](#))

-Evaluate their own product and their peers, identifying how closely it met the design criteria and suggesting any improvements

**Around the World**

Food project- Make an English Tea Party and Indian Tea party

**Design**

- Work together to design their tea party following a design criteria

-Draw a diagram of an intended design for tea party- add notes to drawing to help explanations

**Make**

-Prepare two dishes safely, using a range of equipment

-Understand the purpose of different tools and which to select for particular tasks- peeler, knife, colander, sieve, juicer

- Measure and weigh ingredients using measuring cups

-Begin to select from a range of hand tools and equipment

-Wash, peel, cut, slice and grate vegetables with increasing confidence

-Use a range of equipment- knife, peeler, grater, chopping board

-Combine ingredients in an aesthetically pleasing way

**Evaluate**

-Evaluate the strength of their own and others' dishes, including critique of how dishes could be improved

**Cooking**

-Prepare two dishes of nutritional value

-Explain and understand where food comes from referring to plants and animals ([outdoor learning](#))

-Understand the basic principles of a healthy diet

-Recognise the need for a variety of foods in a diet

**Where food comes from (geography lesson- equator)**

-Fruit and vegetables grown in the UK and abroad

**Conquering Land and Sea**

Textiles project- Create a pirate flag

**Design**

- Propose more than 1 idea for their product

- Create a mock-up of their pirate flag using paper and card- deciding on colours and patterns

- Draw a labelled diagram of their design taking into account the decisions in the mockup stage and following a design criteria

**Make**

-Select materials based on their characteristics

-Use a bigger needle and thread to join materials using a basic running stitch

- Use Bianca material

-Cut decorations out of material to the correct shape and size with some accuracy

**Evaluate**

-Investigate a range of existing flags

-Evaluate their own product and their peers, identifying how it met the design criteria and suggesting any improvements

**Previous learning links:**

- Year 1- Summer 1 (flashback)- making a puppet

**Technical knowledge**

- Understand how wheels and axles mechanisms work
- Attach wheels to a chassis using an axle
- Create and use mechanisms (wheels and axles) in their product
- Build car structures and look at ways to make it stronger, stiffer and more stable

**Previous learning links:**

- Year 1- Autumn 2 (Wild Woods)- Mechanisms- slider
- Year 1- Spring (Hear Me Roar)- Mechanisms- lever

**Previous learning links:**

- Year 1- Autumn 1 & Spring (Superhumans & Hear me roar)- where food comes from, healthy and unhealthy foods

	<p><b>KS2 National Curriculum objectives covered in each project</b></p> <ul style="list-style-type: none"> <li>• Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups</li> <li>• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</li> <li>• Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</li> <li>• Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</li> <li>• Investigate and analyse a range of existing products</li> <li>• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</li> </ul>		
<p><b>Year 3</b></p>	<p style="text-align: center;"><b><u>Meet the Greeks</u></b></p> <p style="text-align: center;"><b>Textiles project- Make an Ancient Greek sash</b></p> <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>- Research ancient Greek sashes</li> <li>- Make some suggestions for the design criteria- following research</li> <li>- Use an annotated sketch to show an intended design</li> </ul> <p><b><u>Make</u></b></p> <ul style="list-style-type: none"> <li>- Use a range of tools and equipment- scissors, needle, thread</li> <li>- Select materials considering functional and aesthetic qualities</li> <li>- Explain why they have chosen a particular material</li> <li>- Create a paper pattern as a template for their design</li> <li>- Attach pattern to material and cut with accuracy</li> <li>- Use a regular sewing needle to sew a running stitch to join material and create sash</li> </ul> <p><b><u>Evaluate</u></b></p> <ul style="list-style-type: none"> <li>- Investigate and analyse a range of existing sashes</li> <li>- Use design criteria to evaluate their finished product</li> <li>- Suggest a change to make their design better</li> </ul> <p><b><u>Previous learning links:</u></b></p> <ul style="list-style-type: none"> <li>- Year 2 (Summer- Conquering Land and Sea)- Pirate flag using running stitch</li> </ul> <p><b><u>Topic enhancement:</u></b></p>	<p style="text-align: center;"><b><u>Food Glorious Food</u></b></p> <p style="text-align: center;"><b>Food project- Design and make a chocolate bar (including the packaging)</b></p> <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>- Research existing chocolate bars and their packaging</li> <li>- Use their knowledge of a broad range of existing products to help generate ideas</li> <li>- Design an appealing chocolate bar packaging to meet a design criteria</li> <li>- Use an annotated sketch to create the net shape of the packing and the design on the bar</li> </ul> <p><b><u>Make</u></b></p> <p>For the chocolate</p> <ul style="list-style-type: none"> <li>- Select and use appropriate equipment to prepare and combine ingredients-chocolate moulds, spoon, mixing bowl</li> <li>- Measure and weigh out ingredients using weighing scales</li> </ul> <p>For the packaging</p> <ul style="list-style-type: none"> <li>- Use a range of tools safely- scissors, ruler, craft knife, cutting mat, safety ruler</li> <li>- Measure to the nearest cm and mark out the net of their 3D shape</li> <li>- Cut, shape and score cardboard with some accuracy</li> <li>- Construct a strong shell structure out of cardboard</li> <li>- Assemble their 3D shape using glue</li> <li>- Use ICT to create a digital graphic design to go on packaging</li> </ul>	<p style="text-align: center;"><b><u>Across the Ages</u></b></p> <p style="text-align: center;"><b>Technical project- Create a shelter</b></p> <p>Apply their understanding of how to strengthen, stiffen and reinforce more complex structures</p> <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>- Research prehistoric shelters</li> <li>-Use research to inform the design criteria for a shelter suitable to the context of an era</li> <li>-Make some suggestions for the design criteria</li> <li>- Design a functional shelter</li> <li>- Use a cross sectional diagram to show an intended design including labelling</li> </ul> <p><b><u>Make</u></b></p> <ul style="list-style-type: none"> <li>- With growing independence, measure and mark wooden dowel to the nearest cm</li> <li>- Cut wooden dowel using a saw and bench hook increasingly independently (5 pieces)</li> <li>- Create a frame structure using diagonal struts to strengthen (A frame)</li> <li>- Join base to A frame using a hot glue gun with some support</li> </ul> <p><b><u>Evaluate</u></b></p> <ul style="list-style-type: none"> <li>-Investigate the construction of existing structures</li> <li>-Use design criteria to evaluate their product</li> <li>-Begin to ask questions- is it strong? Is it stable? Does it match the original design?</li> </ul>



		<p><b><u>Evaluate</u></b></p> <ul style="list-style-type: none"><li>- Investigate and research a range of existing chocolate packaging and bars</li><li>-Evaluate their work against the design criteria</li><li>-Evaluate a peer's work</li></ul> <p><b><u>Make pizza/frittata</u></b></p> <ul style="list-style-type: none"><li>-Prepare and cook a variety of predominantly savory dishes using a range of cooking techniques</li><li>-Understand and apply the principles of a healthy and varied diet</li><li>-Describe what a balanced diet is</li><li>-Look at the nutritional value of a recipe</li><li>-Use different techniques- peel, mix, measure, grate.</li></ul> <p><b><u>Topic enhancement:</u></b></p> <ul style="list-style-type: none"><li>- Cadbury world trip</li></ul>	<p><b><u>Technical Knowledge:</u></b></p> <ul style="list-style-type: none"><li>-Understand how to make structures more stable</li></ul> <p><b><u>Previous learning links:</u></b></p> <ul style="list-style-type: none"><li>- Year 2- (Autumn 1-Our City in the Spotlight)- making a car- sawing wooden dowels, using a hot glue gun.</li></ul>
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## Year 4

### Chariots of Fire

Food project- Make a traditional Roman meal (bread and salad)

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

#### Design

- Research what they ate in the Roman times
- Use research to inform design decisions and create a design criteria
- Plan their own bread with annotated design
- Think about presenting product in an interesting way

#### Make

##### Bread

- Start to independently follow a recipe
- Measure and weigh out ingredients to the nearest gram and millilitre
- Combine ingredients
- Use a range of cooking techniques- kneading, mixing, baking
- Shape bread into a decorative pattern and bake
- With support, use a heat source to cook ingredients

##### Salad

- Use a range of tools and equipment- sieve, colander, knife, peeler, chopping board to prepare ingredients

#### Evaluate

- Evaluate final product- referring back to the design criteria
- Evaluate considering whether they contribute to a balanced diet

#### Cooking

### Waves

Technical project- Make a lighthouse with a working light fitting

- Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]

#### Design

- Research what lighthouses are and what they are used for
- Use research to inform designs
- Draw an exploded diagram to show the intended design including the series circuit

#### Make

- Select and use a range of different materials and components (bottles, card, paper, junk modelling materials) according to their functional and aesthetic properties
- Use electrical components to create a series circuit
- Select and use a range of tools- scissors, hot glue gun, cello tape
- Assemble and join materials with some degree of accuracy

#### Evaluate

- Investigate an existing series circuit to identify how it has been put together
- Evaluate the final product, identifying what went well and what could be better
- Test the product- does the series circuit work?

#### Technical knowledge

- Understand how a series circuit works
- Use a series circuit in their product including switches and bulbs

### Invaders

Textiles project- Make a Viking bag

#### Design

- Use research to inform design criteria
- Consider functionality and aesthetic properties when designing
- Create an annotated sketch with labels of their design

#### Make

- Measure and mark out fabric to the nearest cm and millimetre
- Use a simple pattern to create a bag
- Cut fabric with some degree of accuracy
- Use a range of tools and equipment- needle, thread
- Use a running and back stitch accurately to join two pieces of material
- Understand the importance of a seam allowance

#### Evaluate

- Evaluate their product as their work progresses, refining techniques if needed
- Evaluate final product, is it fit for purpose?
- Test product out- Is it strong enough to carry items? Is it the right size? Is the strap a good length?

#### Previous learning links:

- Year 2 (Summer)- Running stitch (fabric with holes and bigger needle)
- Year 3 (Autumn)- Running stitch independently

- Understand and explain some processes that food goes through to preserve them or make them more appealing (Pickling, salting, drying, smoking)

**Previous learning links:**

- Year 1 (Spring)- Making fruit kebab
- Year 2 (Spring)- Making the tea party
- Year 3 (Spring)- Making chocolate

**Year 5**

**Walk like an Egyptian**

Technical project- Make an Egyptian shaduf

- Understand and use mechanical systems in their products
- Apply their understanding of how to strengthen, stiffen and reinforce more complex structures

**Design**

- Research shadufs- how they work, what they need to do (collect water/irrigation) (outdoor learning)
- Explain how an existing product is useful to the user
- Use research to inform and develop a detailed design criteria
- Design their product considering its clear purpose and taking the users view into account when designing
- Design a functional shadulf
- Use computer aided design to show their ideas
- Produce a step-by-step plan as a guide to making

**Make**

- Independently take exact measurements and mark out wooden dowel within 1 millimetre to ensure symmetry and stability
- Use a saw and a bench hook to cut thin dowels with precision and accuracy
- Use the hot glue gun independently
- Create a strong structure by strengthening and reinforcing with dowels

**Evaluate**

- Test and evaluate their final product e.g. Can their shaduf hold a pompom? How many?
- Evaluate products as making and make changes as needed
- Evaluate and compare peers shadufs
- Suggest improvements, considering the materials and methods that have been used

**Technical Knowledge:**

**To Infinity and Beyond**

Technical project- Make a rocket

**Design**

- Research existing rockets
- Use research to design a rocket
- Use an exploded diagram to show their intended design and the different parts of the rocket

**Make**

- Select and use a range of different materials and components (card, paper, junk modelling materials) according to their functional and aesthetic properties
- Create rocket and rocket frame using appropriate materials such as cardboard
- Select and use a range of tools- scissors, hot glue gun, cellotape
- Assemble and join materials with accuracy
- Independently assemble rocket using a hot glue gun

**Evaluate**

- Evaluate work and peers- how far did the rocket travel? Did it stay together? Was it fit for purpose? (outdoor learning)

**Spirit of Samba**

Technical project- Create an Amazonian animal moving cam toy.

- Understand and use mechanical systems in their products

**Design**

- Research Amazonian animals- considering the colours and textures
- Choose what movement their animal will make- rotary or linear
- Choose the correct CAM for their design
- Generate a range of design ideas and clearly communicate their final designs
- Draw an exploded diagram to show an intended final design- identifying the CAM components and labelling

**Make**

Box and mechanism

- Independently, measure to the nearest mm and mark out wood for box
- Saw wood with precision and accuracy and join
- Use a saw and bench hook to cut wooden dowel
- Assemble product together

**Animal**

- Use a range of joining techniques to decorate their animal- hot glue gun, cello tape, stapler
- Select from a wide range of materials- paint, fabric, tissue, felt-tips, feathers to decorate referring back to design
- Refine the finish- a more precise scissor after roughly cutting out a shape

**Evaluate**

- Evaluate products as making and make changes as needed
- Evaluate work referring back to the original design criteria- is it for purpose and functional?

- Understand how a lever mechanism works
- Explain how mechanical systems (lever) create movement
- Use a lever mechanism in their product
- Reinforce the structure using additional strengthening dowels

**Previous learning links:**

- Year 2- (Autumn)- Making a car
- Year 3- (Summer)- Making a shelter
- Year 4- (Autumn)- Making an Egyptian shaduf

**Technical knowledge**

- Understand how CAMS mechanisms work and the different components (CAM and follower)
- Look at existing CAM toys (videos)
- Understand the different movements- rotary or linear
- Know that different CAM shapes produce different movements
- Explain how mechanical systems (CAMS) create movement

**Carnival day**

Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.

- Discuss reasons why fruit and vegetables grow very well in places like Brazil and may not grow so well in England.
- Identify where the different fruits and vegetables have been grown (specific for South America)
- Research fruits and why they grow so well in certain places.

**Previous learning links:**

- Year 1 (Autumn 2)- Slider mechanism
- Year 2 (Autumn)- Making a car-mechanisms
- Year 4 (Autumn)- Lever mechanism

**Year 6**

**Rising from the Rubble**

Technical project- Make an Anderson shelter with working light fitting.

Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]

Apply their understanding of how to strengthen, stiffen and reinforce more complex structures

**Design**

- Research Anderson shelters
- Use research to inform the design criteria for a shelter suitable to the context of an era
- Design with the user in mind, motivated by the service a product will offer
- Draw a cross-sectional diagram to show the inside and outside of their shelter

**Make**

- Select the most appropriate material for structures, explaining what makes them strong
- Independently, measure and mark wooden dowel to the nearest mm (different length dowels- 12 pieces)
- Use a saw and bench hook to saw wooden dowels with precision and refine the finish with appropriate tools (such as sanding wood)
- Use a hot glue gun to attach dowels to the base
- Measure and mark corrugated card to the correct measurements
- Cut corrugated card with precision and accuracy
- Cover shelter with corrugated card
- Finish product by painting silver to ensure it has a high-quality finish

**Evaluate**

- Evaluate shelter- is it sturdy, strong? How good would it be at protecting people?
- Evaluate light fitting, does it work? Referring back to the original design criteria

**Frozen**

Technical project- Make a snowmobile with control pad

Apply their understanding of computing to program, monitor and control their products.

**Design**

- Research snowmobiles
- Use an exploded diagram to design a snowmobile labelling the different components- crumble board, wheels, axle.

**Make**

- Independently, measure and mark wooden dowel to the nearest mm with accuracy
- Attach wood together to create the frame using a hot glue gun
- Create wheel and axles (2 axles and 4 wheels)
- Attach to frame
- Attach crumble board to snowmobile

**Technical knowledge**

- Learn about crumble boards and how they work
- Practice using a crumble board and programming
- Use computing knowledge to program/control their vehicle

**Evaluate**

- Critically evaluate the quality of design and fitness for purpose of products as they design and make
- Evaluate finished products against the original design criteria

**Previous learning links:**

- Year 2 (Autumn)- Making a car

**Benin**

Textiles project- Benin Applique

**Design**

- Use research to inform a design criteria
- Consider the aesthetic qualities of the design when planning
- Draw an annotated labelled sketch of intended design
- Produce prototypes to show my ideas including material and colour choices

**Make**

- Create a paper pattern for their patch
- Measure and mark out fabric to the nearest cm and millimetre
- Independently, cut out fabric pieces with accuracy needed for design
- Use a sewing needle to independently sew a whip stitch to accurately join fabric pieces onto fabric

**Evaluate**

- Evaluate finished product against the design criteria. Is it colourful? Is it bright?

**Previous learning links:**

- Year 2 (Summer)- Running stitch (fabric with holes and bigger needle)
- Year 3 (Autumn)- Running stitch independently
- Year 4 (Summer)

	<p><b><u>Technical Knowledge:</u></b></p> <ul style="list-style-type: none"><li>- Practice making a light fitting circuit</li><li>- Understand and demonstrate that electrical systems have an input, process and output</li><li>- Use a series circuit in their product</li><li>- Learn about lightbulb inventor- Thomas Edison</li><li>- Understand how to make structures stronger and apply this in their work</li></ul> <p><b><u>Previous learning links:</u></b></p> <ul style="list-style-type: none"><li>- Year 3 (Summer)- Building a shelter</li><li>- Year 5 (Autumn)- Building a strong shaduf</li><li>- Year 4 (Spring)- Lighthouse with working light fitting</li></ul>		
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