

Design and Technology at Launde

"The satisfaction? The joy? That comes from solving problems and making things." - Hank Green

Intent

Design and technology prepares children at Launde Primary School to take part in the development of tomorrow's rapidly changing world. The subject encourages children to become autonomous and creative problem-solvers, both as individuals and as part of a team. It enables them to identify needs and opportunities and to respond by developing ideas, and eventually making products and systems. Through the study of design and technology they combine practical skills with an understanding of aesthetic, social and environmental issues, as well as of functions and industrial practices. This allows them to reflect on and evaluate present and past design and technology, its uses and its impacts. Design and technology helps all children to become discriminating and informed consumers and potential innovators.

Aims:

- To develop imaginative thinking in children and to enable them to talk about what they like and dislike when designing and making things
- To enable children to talk about how things work, and to draw and model their ideas
- To encourage children to select appropriate tools and techniques for making a product, whilst following safe procedures
- To explore attitudes towards the made world and how we live and work within it
- To develop an understanding of technological processes and products, their manufacture and their contribution to our society
- To foster enjoyment, satisfaction and purpose in designing and making things

Implementation

Our design and technology lessons are taught in blocks to enable the children to work through the research design, make and evaluate cycle in a meaningful way. Products are planned into the curriculum so that all the children have the opportunity to make something. Experiments and exploration are also planned in sequentially. Product are often linked to other areas of the curriculum to give context and reason to the learning of the skills.

Design and Technology lessons at Launde follow a structure that allows children to:

- Research the world around them, objects, designers and the construction of a product
- To plan, investigate and try out their ideas for a design
- To practise using tools and understand how the tools can help them create their designs
- To turn their 2D design in to a 3D product
- To reflect on their work with a critical eye and make improvements



Research

Design

Make

Evaluate

We use four processes to support the children in developing their understanding, researching, through to designing, making a product and then evaluating their product.

Research – Children given the opportunity to investigate a range of products that are already available. To investigate their construction, materials and purpose. Teacher introduces the children to designers, architects and craftspeople.

Design – Children to think about the design criteria and what the function of the final product should be. To generate ideas for their product following their design criteria. To think about the steps that would be needed to construct the product. To plan the aesthetic finish of a product and use.

Make – Children create their own product to fulfil their design criteria. Using appropriate tools and learnt joining methods.

Evaluate – Children have the opportunity to complete self or peer assessments on their work. Appraisal skills are developed to reflect on their final product against their design criteria.



Impact

When the children leave Launde they will have:

- Develop the creative, technical and practical expertise to perform everyday tasks
- To apply their knowledge, understanding and skills in order to design and make improvements to a product
- To critique, evaluate and test their ideas and products and the work of others
 - To develop a critical understanding of the world them and how a product can impact on daily life



Design and Technology Disciplinary Knowledge Progression of skills

	EYFS	KS1	Lower KS2	Upper KS2
Mechanisms	Explore a range of different construction toys using gears, axles and wheels.	<ul style="list-style-type: none"> • Basic fixing techniques • Measuring and marking • Scissors and hole punch • Likes / dislikes and reasons why • Develop ideas using talk and simple drawings • Understand how to identify a target group • Choose and explain simple fixing techniques • Explore and use mechanisms • Observe designs and use as a basis for own 	<ul style="list-style-type: none"> • Create labelled drawings. • Devise alternative plans. • Consider function and aesthetics. • Choose, use and combine components. • Use simple tests to evaluate 	<ul style="list-style-type: none"> • Model & share using cross sectional/exploded diagrams and prototypes. • Begin to use research and design criteria. • Apply a range of finishing techniques. • Use results of investigations and it sources, produce a detailed step-by step plan. • Integrate complex electrical systems. • Program, monitor and control products. • Devise a detailed design specification. • Monitor and control a product.
Structures	<p>Create items of personal interests, use the environment/images to support the decision of what to create.</p> <p>Say what they are going to make before doing so and what it will look like.</p> <p>Create objects for a given purpose</p> <p>Explain to a adult what they have created and what it is for.</p>	<ul style="list-style-type: none"> • Strengthening and stability. • Basic fixing techniques • Selecting own resources • How well does product work? • Drawing and labelling parts • Cutting and scoring. • Joining 2d and 3d materials. • Evaluate against children’s initial aims. 	<ul style="list-style-type: none"> • Understand and use electrical systems. • Strengthen, stiffen and reinforce more complex structures. • Plan & order main stages of a product. • Establish purpose and criteria for their project. • Select from a wider range of tools. 	<ul style="list-style-type: none"> • Joining and finishing accurately • Consider functionality and appeal • Design specification • Evaluate and implement modifications
Textiles and materials	<p>Knows how to and can join construction pieces together to build and balance.</p> <p>Knows when to use specific adhesives (glue stick paper,</p>	<ul style="list-style-type: none"> • Use running stitch to join two pieces of felt (with pre-punched holes). • Begin to cut, shape and join fabric. 	<ul style="list-style-type: none"> • Identify key stages in planning and making. • Analyse design and material of existing products. • Select from a range of tools and techniques. 	<ul style="list-style-type: none"> • Select and utilise wider range of textiles. • Produce a detailed step-by-step plan. • Create a 3d product using sewing techniques.

	<p>PVA heavier items) and uses them effectively.</p> <p>Knows that paper can be joined in several ways and applies this knowledge in their creative work.</p> <p>Selects construction pieces due to their aesthetics, size or function.</p> <p>Joins simple components in 3D structures effectively using a selected method of joining (box modelling)</p>	<ul style="list-style-type: none"> • Explore different finishing techniques. • Select the best tools and materials 	<ul style="list-style-type: none"> • Make cuts, holes, and fixings • Create / outline template using rigid fabric. • Draw round a template using tailor's chalk. • Use scissors accurately and thread a needle. • Use running stitch to join two pieces of felt. • Use back stitch to create a shape 	<ul style="list-style-type: none"> • Evaluate their ideas and products objectively.
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EYFS skills progression for cutting, scissor grip and paper grip:

	2 Years	2.5 Years	3-3.5 Years	3.5-4 Years	4-5 Years	6-7 Years
Cutting Skill	Snips with Scissors	Cuts across a 6-inch piece of paper	Cuts along a 6-inch line	Cuts out a circle	Cuts out a square	Cuts a variety of shapes and pictures
Scissor Grip	Holds scissors with palm face down	Holds scissors with palm slightly up	Holds scissors with neutral wrist	Holds scissors with neutral wrist	Holds scissors with neutral wrist	Holds scissors with neutral wrist
Paper Grip	Holds paper awkwardly	Holds paper with palm up; keeps paper steady	Holds paper with palm partially up; keeps paper steady	Coordinates holding the paper and the scissors	Coordinates holding the paper and the scissors	Hand holding paper moves synchronously with hand holding scissors; fluid cutting

EYFS			
Design task	Mechanisms – making a vehicle that has wheels.	Structure – make a prop to support role play	Textiles and materials - collage
Cross curricular links	Science – what shape wheels works the best	Role Play – engaging in imaginative play	EAD – exploring different media
Term	Autumn	Spring	Summer
Research	<i>Explore a range of different construction toys using gears, axles and wheels.</i>	<i>Explore a range of construction toys that toys that involve joining and balancing components. Props used in role play. Children will be taught how to do different joining techniques with different materials so that they can make props for their role play and also their own ideas within the provision.</i>	<i>Explore joining different textiles and paper materials using glue eg. collage</i>
Design Developing, planning and communicating ideas.	Children will be taught how to do junk modelling and how to use different materials to join junk modelling together	Return to and build on their previous learning, refining ideas and developing their ability to represent them	Children will be able to use their skills to make different things within the provision
Make Working with tools, equipment and components to make quality products.	Create collaboratively, sharing ideas, resources and skills Using construction to build for a purpose	Make use of props and materials when role playing Safely use and explore a variety of different tools, materials and techniques Create collaboratively, sharing ideas, resources and skills	Safely use and explore a variety of different tools, materials and techniques Make use of props and materials when role playing Share their creations, explaining the process they have used Create collaboratively, sharing ideas, resources and skills Return to and build on their previous learning, refining ideas and developing their ability to represent them
Evaluating processes and products.	They should play with their creation, show pride in their creations, labelling them for safe keeping, reflect on their projects and say what worked well.		

Technical Knowledge	I can.... Build, balance, join, cut, label, choose appropriate tools and construction material, explain my creation, make my creation move	I can... Cut, label, colour, paint, fold, fringe, stick, scrunch, hole punch, link, rip, tie, draw, staple, roll, join, bend,	I can.... Cut, stick, rip, join, scrunch, draw around a shape
Tools	Scissors, Sellotape, glue, split pins,	Scissors, glue, Sellotape, blocks, construction materials	Paper, glue, tissue paper, scissors, glue spreader, pencils,
Vocabulary	Construction Junk modelling Joins Materials Size Build Enclosure	Joins Materials Size Role play Props Techniques	Joins Materials Size Techniques Props Stick Paper Textiles

KS1	Year 1 – Mechanisms	Year 1 – Structures and Product	Year 2 – Mechanisms	Year 2 - Blanket making
Design task	Moving Pictures	Make a slide	Moving vehicle – Safety vehicle	Patchwork blanket
Cross curricular links	Easter cards	Exploring our local park	History- Great Fire of London	Caring for others and our world- RE
Term	Spring	Summer	Spring	Summer
Research	<ul style="list-style-type: none"> - Discuss a range of books, cards and other products that have moving parts. What does the moving part do? How does it work? What effect does it have? Surprise? Does it show how something works? Does it work well? - Use a simple moving picture book to talk about how levers / sliders can be used to make movement & bring stories to life. - Explore use of simple lever and sliding 	<ul style="list-style-type: none"> - Explore different types of structures. - explore existing playground equipment with a focus on a slide - investigate different slides and angles to help the object slide at the best pace 	<ul style="list-style-type: none"> - Explore what is a vehicle? What are they used for? Do you know the names of any vehicles? - Explore use of wheels and axels - Study different vehicles e.g. lorries, prams, cars, vans, ambulances, caravans, fire engines, tractors, buses Identify, draw and label different features and parts of vehicles. Existence of different terrain and how 	<ul style="list-style-type: none"> - Examine a selection of hand puppets / finger puppets made from a variety of materials. How has the puppet been put together? What type of fabric has been used? What has been added? Who might the puppet have been made for? How well has it been made?

	<p>mechanisms using card strips and paper fasteners & construction kits.</p> <ul style="list-style-type: none"> - Investigate products that include levers eg a balance, a pair of scissors. - Create drawings with arrows to show movement and label parts/materials 		<p>this affects design of vehicles.</p> <ul style="list-style-type: none"> - Wheels and axles can be joined in two different ways: - the wheel is attached tightly to the axle and the axle is free to rotate - the axle is fixed with the wheel free to rotate around it - Different finishing techniques e.g. collage, paint, graphics 	<ul style="list-style-type: none"> - Identify key features including stitching and how elements are joined. Children to label these key elements. - Explore a range of puppet shows and share how puppets make characters come to life in stories.
<p>Design Developing, planning and communicating ideas.</p>	<ul style="list-style-type: none"> - Discuss with the children the requirements for their story with a moving picture. Who is the story for? What might it be like? How could you do this? What must the individual picture do? How is it going to move? - Discuss types of finishing techniques that could be used eg collage, paint, felt-tip pens & pros and cons of each. - Consider order in which things need to be done. How will this be achieved? What do you need to do first? - Children to model their ideas first in paper or card (this mechanism could be used in the final picture or model) 	<ul style="list-style-type: none"> - Use knowledge of existing products to support plans for a similar structure. - Develop and communicate ideas and model them. - Explore existing products and communicate ideas through talking and drawing. - Design purposeful, functional products for themselves based on a design criteria. 	<ul style="list-style-type: none"> - Generate ideas by drawing on their own experiences. - Children to use ICT to research, copy and paste pictures that they want to use as inspiration for their vehicle design. - Develop a mobility scooter for Gansta Granny through discussion, observation, drawing, modelling and templates. - Identify a purpose for what they intend to design and make. - Identify simple design criteria. - Make simple drawings and label parts. - Children to investigate which materials could be used for the different parts of their vehicle and add it to their plans. 	<ul style="list-style-type: none"> - Children practise basic sewing techniques eg starting, ending, running stitch, using eg hessian, binca/plastic mesh. - Children practise using a template to cut out two identical pieces of fabric and fix together in a variety of ways. - Children consider how they will add features and bring characters to life. How do you want your character to look?

<p>Make Working with tools, equipment and components to make quality products.</p>	<ul style="list-style-type: none"> - Based on their planning, make their designs using the appropriate techniques and tools. - With help, cut and shape a range of materials. - Assemble, join and combine materials and components together using a variety of temporary methods (glues, tape) - Make own lever and sliding mechanism 	<ul style="list-style-type: none"> - Based on their planning, make their designs using the appropriate techniques and tools. - With help, cut and shape a range of materials. - Assemble, join and combine materials and components together using a variety of temporary methods (glues, tape) - Build structures, exploring how they can be made stronger, stiffer and more stable 	<ul style="list-style-type: none"> - Use a range of tools and equipment to perform practical tasks, e.g. cutting, shaping, joining and finishing. - Measure, cut and score with some accuracy. - Explore and use mechanisms, e.g. wheels and axles. - Variety and choice of materials, tools and joining components. - Reference to and adaptation of original design. 	<ul style="list-style-type: none"> - Children devise design criteria. Who will your puppet be for and what job will it do? Whose hand must it fit? How secure will it need to be? What does it need to look like? "A good puppet should be..." - Children create a plan for their chosen character and identify techniques they will use. - Children create a paper mock-up of their template which can be used as a pattern. - Children focus on accuracy when marking out, cutting, joining and finishing.
<p>Evaluating processes and products.</p>	<ul style="list-style-type: none"> - Evaluate their own moving picture by discussing how well it works in relation to their purpose / design criteria. - Identify strengths and weaknesses. - Ask questions about what they have made and how they have gone about it. 	<ul style="list-style-type: none"> - Evaluate their product by discussing how well it works in relation to their purpose / design criteria. - Identify strengths and weaknesses. - Ask questions about what they have made and how they have gone about it. 	<ul style="list-style-type: none"> - Evaluate against their design and criteria. - Evaluate their products as they are developed, identifying strengths and possible changes they might make. - Explore how they can be made stronger, stiffer and more stable. - Discuss what they like and dislike about them. 	<ul style="list-style-type: none"> - Children to compare with design criteria. Have the pieces been joined securely and effectively? - - Can children identify the character and its chosen expression or mood?

				- Can the puppet be used effectively to tell a story?
Technical Knowledge	<ul style="list-style-type: none"> - A picture moves left and right by using a lever - Using split pins, make a lever move and a slider move - Cutting skills need to be accurate - Explain how they intend to fix simple materials & choose from a range of methods. - Observe designs and use as a basis for their own creations. 	<ul style="list-style-type: none"> - Explore how structures can be made stronger, stiffer, and more stable. - Use fixing techniques to assemble, join and combine materials. - Communicate with others about how they want to construct their product. - Select appropriate resources and tools for their building projects. - Start to evaluate their product by discussing how well it works in relation to the purpose 	<ul style="list-style-type: none"> - Integrate key criteria into an overall design e.g. terrain, function - Use simple fixing techniques to assemble, join and combine materials enabling movement - Measure, mark out and cut a range of materials - Use tools including scissors and hole punch safely - Evaluate a product by saying what they like / don't like and by identifying strengths and possible changes 	<ul style="list-style-type: none"> - Demonstrate how to cut, shape and join fabric to make a simple product. - Use basic sewing techniques including running stitch to join two pieces of felt (with pre-punched holes). - Start to choose and use appropriate finishing techniques based on own ideas. - Select the best tools and materials.
Tools	Scissors Split pins Blue tack Pencil	Scissors Pipe cleaners Glue Tape	Wheels Card Axels Glue Scissors Rulers	Material – hessian, binca Sewing needle Thread scissors
Vocabulary	Cut, Lever, Right, Left, Up, Down, turn, Shape, Design, Make, evaluate, hole punch, paper fastener, handle, metal, slide, direction, length, movement, forward, backwards	Slide, Structure, Stiffer, Stronger Joining, Design, Make, evaluate, structure, strength, criteria, investigate, temporary, weight, base, evaluate, waterproof, windproof, stable, steady, sturdy permanent	Wheels, axles, purpose, punch, criteria, join, combine, hinge, chassis, evaluate, doweling, vehicle, rotate, mechanism, investigate, design, research, make, evaluate, axle, chassis, shaft, doweling, Vehicle, Mobility scooter	Label, mock-up, template, fabric, sewing needle, running stitch, puppet, seam, stitch, thread, Shape, join, Finish, Design, Make, Evaluate

Lower KS2	Year 3 – Structures (Shelters)	Year 3 - Packaging	Year 4 – Structures (Towers)	Year 4 - Textiles
Design task	Build a den	Make a package for a cereal bar	Build a tower	Make a bag

Cross curricular links	Prehistoric age	Food technology and science	Cities in Europe	
Term	Autumn	Spring	Autumn	Spring
Research	<ul style="list-style-type: none"> - Investigate and discuss a range of existing shelters. - Explore different designers that have designed shelters - Explore the shelters that they have already used - How well has it been made? - Why/What materials have been chosen? - What methods of construction have been used? Framework inside, frame outside, shell structures - What is the purpose or use of the shelter? - Use local school grounds to research into different shelters 	<ul style="list-style-type: none"> - Investigate and discuss existing products design of cereal packets. Look at construction and package design - Study requirements – marketing, design to stack in a lorry, space for information needed on a packet 	<ul style="list-style-type: none"> - Research different towers around Europe, discuss what they are used for, materials made from, what supports are used to keep structure and height. - Explore different architects that built the towers - Evaluate products and identify criteria that can be used for their own designs - Investigate what makes a tower strong? Study the different ways – folding, rolling, joining, layering 	<ul style="list-style-type: none"> - Investigate a variety of bag designs and purposes of the children's bags from home. - Evaluate fabrics used and identify criteria that can be used for their own designs. - Research different fastenings used and evaluate effectiveness. - Research different ways uses to join materials together
Design Developing, planning and communicating ideas.	<ul style="list-style-type: none"> - Generate ideas for an item, consider its purpose. - Identify a purpose and establish a criteria for a successful product. - make a mini model and test using a fan, watering can. - Share outcomes and improvement ideas through communication. - Make drawings with labels when designing. - Explore different materials for making a shelter and properties needed 	<ul style="list-style-type: none"> - Generate ideas for a packet, consider its purpose. - consider views of others to improve design further - Identify a purpose and establish a criteria for a successful product. - Model ideas through communication. - Make drawings with labels when designing. - Complete more than 1 design. Choose one. 	<ul style="list-style-type: none"> - Generate ideas to design a 1m tower from paper. - Create and label drawings from different views showing specific features. - Discuss in teams what they have learnt about tower structures and key components. 	<ul style="list-style-type: none"> - Generate ideas, considering the purposes for which they are designing. - Create and label drawings from different views showing specific features. - Make a template for bag construction using squared paper

	<ul style="list-style-type: none"> - Experiment with how they withstand certain conditions. 			
Make Working with tools, equipment and components to make quality products.	<ul style="list-style-type: none"> - Create the design/model using the appropriate tools and techniques from the design criteria. - Measure, mark out, cut, score and assemble components with more accuracy. 	<ul style="list-style-type: none"> - Create the design/model using the appropriate tools and techniques from the design criteria. - Measure, mark out, cut, score and assemble components with more accuracy. - Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT. 	<ul style="list-style-type: none"> - Select appropriate tools and techniques for making a tower from spaghetti. - Measure, mark out, cut and shape a range of materials. - Use the appropriate tools and techniques. - Join and combine materials and components accurately, test and then improve designs. - Make improvements throughout the designing process. 	<ul style="list-style-type: none"> - Select appropriate tools and techniques for making their product. - Measure, mark out, cut and shape fabric chosen for bag. - Use the appropriate tools and techniques. - Join and combine fabric and components accurately, test and then improve designs. - Sew using a range of different stitches. - Make improvements throughout the designing process. - Use chosen fastening to keep bag flap in place.
Evaluating processes and products.	<ul style="list-style-type: none"> - Evaluate their product against original design criteria, e.g. how well it meets its intended purpose. - Evaluate and discuss ways it could be improved. 	<ul style="list-style-type: none"> - Evaluate their product against original design criteria, e.g. how well it meets its intended purpose. - Evaluate and discuss ways it could be improved with a partner 	<ul style="list-style-type: none"> - Evaluate their tower. - Evaluate their products against the design criteria. - Consider strengths and what could be improved. 	<ul style="list-style-type: none"> - Evaluate their work both during and at the end of the assignment. - Evaluate their products against the design criteria.
Technical Knowledge	<ul style="list-style-type: none"> - Build a small shelter using materials and tools - Cut and Measure - Make a model that has a purpose - Test effectiveness of different materials 	<ul style="list-style-type: none"> - Folding - Cutting - Graphic designs- text size, font, colours, eye catching 	<ul style="list-style-type: none"> - Building for height - Foundations needed to create stability - Measure, cut, shape accurately - How folding, rolling, joining, layering effects strength of product. 	<ul style="list-style-type: none"> - Create a template - Use scissors to cut felt into the desired shape - Thread a needle. - Use running stitch to join two pieces of felt (no pre-punch holes). - Use back stitch to create a shape on a piece of fabric. - Fixing fastening
Tools/resources	Scissors	IT programme for graphic design	Cardboard	Sewing needle

	Carboard Straws plastic and paper Pipe cleaners Sellotape Masking tape, blue tac, paper, thin card	cardboard	Art straws Dried spaghetti Scissors tape	Material – felt Cardboard Sequins Squared paper Thread Fastening
Vocabulary	Structure, shelter, construction, materials, wood, metal, steel, plastic, fabric, slate, waterproof protection, porous, absorbent, Cut, join, lean, design purpose, tools, scale, research, design, make, evaluate	Fold, cut, size, font, purpose, consumer, logo, nutritional information, barcodes, ingredients, flavours, manufacturer, construction, flaps, seams, openings, precision, research, design, redesign, make, evaluate	Tower, height, stability, weight, measure, materials, research, design, make, evaluate	Pouch, drawstring, embellishment, tailor, thimble, backstitch, embroidery

Upper KS2	Year 5 – Structure and Product	Year 5 – Mechanisms and Product	Year 6 – Structures and Product	Year 6 – Mechanisms and Product
Design task	Build a bridge	Gears linked to science	Building a chair	Fairground buzzer game
Cross curricular links	North America	Science		
Term	Autumn	Summer	Autumn 2	Summer 2
Research	<ul style="list-style-type: none"> - Study different types of bridges found in North America - Identify features and describe how they are different - Study purpose of bridges - Study types of bridges - beam, arch, suspension, cantilever and understand their differences - Explore architects and why they chose the designs for bridge built. 	<ul style="list-style-type: none"> - Investigate how they work and what we use them for - Research different bike gears 	<ul style="list-style-type: none"> - Investigate chairs around classroom - Research a variety of chair designs - discuss aesthetics and purpose - Explore different chair designers and their motivation 	<ul style="list-style-type: none"> - Investigate range of existing products - Understand how electrical systems work such as a series circuit - Understand how buzzers, bulbs and motors work in a circuit. - A traditional light bulb has a filament that heats up and glows when an electrical current runs through it. Up to 90% of the energy used goes towards producing the heat - Electricity travels at the speed of light, that's 300 million metres per second! - However, the electricity that flows through your home and appliances you use is much

				slower, about 1/100th the speed of light.
Design Developing, planning and communicating ideas.	<ul style="list-style-type: none"> - Generate ideas through brainstorming - Draw up a specification for their design of a bridge to test which is the strongest. - Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, suggesting alternative methods of making if the first attempts fail. 	<ul style="list-style-type: none"> - Generate ideas through brainstorming and identify a purpose for their product. - Draw up a specification for their design. - Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, suggesting alternative methods of making if the first attempts fail. - Recognise that some mechanism, including levers, pulleys and gears, allow a smaller force to have a greater effect - Use ICT to develop ideas. 	<ul style="list-style-type: none"> - Develop a design specification for a chair - Communicate their ideas through detailed labelled drawings. - Explore, develop and communicate aspects of their design proposals by modelling their ideas for a chair in a variety of ways. - Plan the order of their work, choosing appropriate materials, tools and techniques. - Make a prototype - Practise simple joining techniques 	<ul style="list-style-type: none"> - Communicate their ideas through detailed labelled drawings. - Develop a design specification - Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways. - Plan the order of their work, choosing appropriate materials, tools and techniques.
Make Working with tools, equipment and components to make quality products.	<ul style="list-style-type: none"> - Select appropriate tools and techniques. - Measure and mark out accurately different bridge distances required – 10cm,13cm,16cm, 19cm, 22cm. - Use skills in using different tools and equipment safely and accurately. - Develop a clear idea of what has to be done, planning to use the materials, equipment(weights) - Suggest alternatives - Weigh and measure according to plan. - Build bridge and test it to 'destruction' by adding 	<ul style="list-style-type: none"> - Select appropriate tools and techniques. - Use scientific knowledge of transferable forces to choose appropriate mechanisms for a product such as levers, pulleys, gears - Measure and mark out accurately - Use skills in using different tools and equipment safely and accurately. - Weigh and measure according to plan. 	<ul style="list-style-type: none"> - Select appropriate tools, materials, components and techniques. - Understand how to sue tools safely - Assemble components make a chair. - Use woodwork tools safely and accurately. - Construct products using permanent joining techniques - Make modifications as they go along, re-evaluating to ensure strength, appropriate joins. 	<ul style="list-style-type: none"> - Select appropriate tools, materials, components and techniques. - Assemble components make working models. - Use tools safely and accurately - Construct products using permanent joining techniques - Make modifications as they go along.

	<p>weights until bridge collapses.</p> <ul style="list-style-type: none"> - Consider ways to improve 			
Evaluating processes and products.	<ul style="list-style-type: none"> - Evaluate their bridge against the original design specification. - Evaluate it personally and seek evaluation from others. - Record experiment, understanding fair testing, observation, accurate collecting of readings etc to support evaluations. 	<ul style="list-style-type: none"> - Evaluate a product against the original design specification. - Evaluate it personally and seek evaluation from others. 	<ul style="list-style-type: none"> - Evaluate their products, identifying strengths and areas for development and carrying out appropriate tests. - Record their evaluations using drawings with labels. - Evaluate against their original criteria and suggest ways that their product could be improved. 	<ul style="list-style-type: none"> - Evaluate their buzzer game, identifying strengths and areas for development and carrying out appropriate tests. - Record their evaluations using drawings with labels. - Evaluate against their original criteria and suggest ways that their product could be improved.
Technical Knowledge	<ul style="list-style-type: none"> - Four types of bridge design – beam, arch, cantilever, suspension. - How to conduct a tech experiment to test products and design 	<ul style="list-style-type: none"> - To put gears together to make something turn - 	<ul style="list-style-type: none"> - To saw wood using junior hacksaw - To fit two pieces of wood together using wood glue and mitre edges 	<ul style="list-style-type: none"> - To use electricity skills to make a circuit (linked to science) - To make a noise or light up for a game - the difference between series and parallel circuits; - why breaks in a circuit will stop it from working - to make a working circuit, select - to use the appropriate materials; - to map out where different components will go - to consider where the LEDs will be positioned to optimise use - to create a labelled design showing positive and negative parts in relation to the LED and the battery.
Tools/resources	Weights Carboard Straws	Gears Levers Pulleys	Wood Glue Junior hacksaw	Electrical components e.g. bulb, wires, buzzers, motors Split pins

	Timer scissors	weights	Sandpaper clamps Mitre block Safety rules	Foil Cardboard
Vocabulary	Bridge, cantilever, lift bridge, test, destruction test, research, design, make, evaluate	Gears, science, pulleys, weights, research, design, make, evaluate	Ergonomics, functionality, user, purpose, research, innovative, prototype, design specification, annotated sketch, assemble, research, design, make, evaluate	Series circuit, parallel circuit, target audience, component. LED, filament, modify