

Design and Technology

Each topic is listed, with an outline of what we would like children to *know*, *do* and *understand* within the unit.



Golden Threads:

- What are your ideas?
- What are you making?
- What would you change next time?

Reception

EYFS Statutory 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.

Children in reception will be learning to:

Return to and build on their previous learning, refining ideas and developing their ability to represent them.

- Provide opportunities to work together to develop and realise creative ideas. Provide children with a range of materials for children to construct with. Encourage them to think about and discuss what they want to make.
- Teach children different techniques for joining materials, such as how to use adhesive tape and different sorts of glue.
- Provide a range of materials and tools and teach children to use them with care and precision.
- Promote independence, taking care not to introduce too many new things at once.

Year 1/2 (Year A)

	Know	Do	Understand
Food (Sandwiches)	By the end of the unit children should know... <ul style="list-style-type: none"> • How to plan a successful project • What a sandwich is • Why being hygienic is so important when cooking and preparing food • How to use knives safely • How to cut accurately • How to grate safely • How to assemble ingredients • How to evaluate a product effectively 	By the end of the unit children should have... <ul style="list-style-type: none"> • Generated ideas • Used tools such as knives and graters safely • Cut ingredients safely and hygienically • Grated ingredients safely and hygienically • Assembled ingredients • Evaluated their product 	By the end of the unit children should understand... <ul style="list-style-type: none"> • That good hygiene is so important when preparing food to stop the spreading of germs • How to safely use kitchen equipment • How to prepare a sandwich successfully

	Know	Do	Understand
Materials (Houses linked to the Great Fire of London)	By the end of the unit children should know... <ul style="list-style-type: none"> • How to plan a successful project • Cut materials safely • Cut materials in different ways • How to join materials together • The components needed to build a house • How to evaluate a product effectively 	By the end of the unit children should have... <ul style="list-style-type: none"> • Generated ideas • Cut materials safely using tools provided • Demonstrated a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). • Demonstrated joining techniques using glue and combining materials to strengthen the product • Evaluated their product 	By the end of the unit children should understand... <ul style="list-style-type: none"> • How to safely cut using scissors so they do not hurt themselves or anyone else • How to combine materials in different ways to strengthen their product such as using glue

	Know	Do	Understand
Textiles (Sewing)	By the end of the unit children should know... <ul style="list-style-type: none"> • How to plan a successful project • How to hold a needle • How to thread a needle • How to successfully use running stitch • How to evaluate a product effectively 	By the end of the unit children should have... <ul style="list-style-type: none"> • Studied product that have been sewed • Joined textiles using running stitch • Used needles and thread effectively • Evaluated their product 	By the end of the unit children should understand... <ul style="list-style-type: none"> • How to successfully use running stitch with a needle and thread

Year 1/2 (Year B)

	Know	Do	Understand
Food (Fruit Salad)	By the end of the unit children should know... <ul style="list-style-type: none">• Why hygiene is so important in the preparation and cooking of food• How to use a peeler to peel different fruits• How to safely cut fruit• How to measure ingredients accurately• How to follow a recipe and why it is important to do so• The importance of eating healthy foods	By the end of the unit children should have... <ul style="list-style-type: none">• Prepared ingredients hygienically using appropriate utensils• Measured ingredients to the nearest gram accurately• Followed a recipe• Cut and peeled ingredients safely• Evaluated their product	By the end of the unit children should understand... <ul style="list-style-type: none">• Why eating healthy and being hygienic is so important• How to measure accurately, using a recipe to ensure they are precise

	Know	Do	Understand
Mechanics (Toys with moving parts)	By the end of the unit children should know... <ul style="list-style-type: none">• How to identify toys on the market that are success in using levers, wheels and winding mechanisms• How to create different mechanisms• How to cut materials accurately to ensure the mechanisms work• How to create their own moving toy	By the end of the unit children should have... <ul style="list-style-type: none">• Explored objects and designs to identify likes and dislikes of the designs.• Suggested improvements to existing designs.• Explored how products have been created.• Created products using levers, wheels and winding mechanisms.• Cut materials to the correct length• Evaluated their work	By the end of the unit children should understand... <ul style="list-style-type: none">• How to use levers, wheels and winding mechanisms to make a successful product

	<i>Know</i>	<i>Do</i>	<i>Understand</i>
Construction & materials (houses with moving components such as doors and windows)	<p>By the end of the unit children should know...</p> <ul style="list-style-type: none"> • How to strengthen products • How to measure accurately to the nearest millimetre to ensure all materials are the right length • How to create cut outs for windows and doors • How to use a hinge to join materials 	<p>By the end of the unit children should have...</p> <ul style="list-style-type: none"> • Explored objects and designs to identify likes and dislikes of the designs. • Suggested improvements to existing designs. • Explored how products have been created. • Used materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products • Cut materials accurately and safely by selecting appropriate tools. • Measures and marked out to the nearest millimetre. • Applied appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). • Used hinges to join materials • Evaluated their product 	<p>By the end of the unit children should understand...</p> <ul style="list-style-type: none"> • How to successfully cut out materials and add joins with hinges

Year 3/4 (Year A)

	Know	Do	Understand
Food (From the sixties)	<p>By the end of the unit children should know...</p> <ul style="list-style-type: none"> • The importance of correct storage and handling of ingredients (using knowledge of micro-organisms). • What ingredients are in a black forest gateau • How different recipes vary and why (some contain Kirsch, some do not) • How to use the oven and set a temperature • How to use a whisk successfully • How to follow and refine a recipe as well as creating one 	<p>By the end of the unit children should have...</p> <ul style="list-style-type: none"> • Measured accurately and calculated ratios of ingredients to scale up or down from a recipe. • Demonstrated a range of baking and cooking techniques (baking a cake, whipping cream, spreading cream, layering cakes) • Created and refine recipes, including ingredients, methods, cooking times and temperatures. 	<p>By the end of the unit children should understand...</p> <ul style="list-style-type: none"> • How recipes vary and why this occurs (different tastes, needs etc) • How to use an oven

	Know	Do	Understand
Electricals and electronics	<p>By the end of the unit children should know...</p> <ul style="list-style-type: none"> • What a battery is • How a battery works • Different types of batteries • How a battery can become damaged • How to identify a fault within a battery-operated device 	<p>By the end of the unit children should have...</p> <ul style="list-style-type: none"> • Diagnosed faults in battery operated devices (such as low battery, water damage or battery terminal damage). 	<p>By the end of the unit children should understand...</p> <ul style="list-style-type: none"> • What batgteries are and how that can become damaged (water damage etc) • How to identify damage to a bettery (it doesn't work, the product slows down)

	Know	Do	Understand
Construction	<p>By the end of the unit children should know...</p> <ul style="list-style-type: none"> • How to identify good products that already exist • How to plan a successful product • How to use screws and nails to successfully join products • How to safely use screws and nails • How to evaluate products, giving examples of how it could be improved 	<p>By the end of the unit children should have...</p> <ul style="list-style-type: none"> • Explored products that use screws and nails to secure materials • Used materials to practise screwing, gluing and nailing materials to make and strengthen products. • Evaluated their product 	<p>By the end of the unit children should understand...</p> <ul style="list-style-type: none"> • How to successfully join materials using screws and nails • How to safely handle screws and nails

Year 3/4 (Year B)

	Know	Do	Understand
Mechanics (Levers and linkages)	By the end of the unit children should know... <ul style="list-style-type: none">• The simplest type of mechanism is called lever. Levers can be used to change the distance and power of movement (a seesaw, scissors)• There are levers in our body such as our elbow• A linkage is something that joins one or more lever• How levers and linkages can be used	By the end of the unit children should have... <ul style="list-style-type: none">• Used scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (levers and linkages)• Created a lever• Created linkages	By the end of the unit children should understand... <ul style="list-style-type: none">• How levers and linkages can be used in products

	Know	Do	Understand
Materials and textiles (Cushions)	By the end of the unit children should know... <ul style="list-style-type: none">• How to thread a needle• How to use an invisible stitch• Why they need a seam allowance (to make sure that the fabric will be safely caught as they are being joining together)• What makes a cushion effective and what the consumer is looking for in a good cushion	By the end of the unit children should have... <ul style="list-style-type: none">• Designed with the user in mind, motivated by the service a product will offer (rather than simply for profit).• Made products through stages of prototypes, making continual refinements• Ensured products have a high-quality finish, using art skills where appropriate.• Cut materials with precision and refined the finish with appropriate tools (such as a more precise scissor cut after roughly cutting out a shape).• Chosen appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper).• Joined textiles with appropriate stitching.• Selected the most appropriate techniques to decorate textiles.	By the end of the unit children should understand... <ul style="list-style-type: none">• That different stiches create different effects• How to join textiles appropriately and create a good finished product, with detail added where necessary• The importance of identifying the needs of the consumer (so the product is sellable and people want to buy and use it)

	<i>Know</i>	<i>Do</i>	<i>Understand</i>
Electricals and electronics	<p>By the end of the unit children should know...</p> <ul style="list-style-type: none"> • The symbols used to represent different components of circuits • That there are two types of circuits; parallel and series • That in a series circuit the components are connected end-to-end, one after the other. They make a simple loop for the current to flow round. • That in a parallel circuit The components are connected side by side. The current has a choice of routes/paths • How to ensure a circuit is complete and what can stop it from being complete • How to create their own series and parallel circuits 	<p>By the end of the unit children should have...</p> <ul style="list-style-type: none"> • Created series circuits • Created parallel circuits • Identified what might cause a circuit to stop working (it's incomplete, it's not all joining etc) 	<p>By the end of the unit children should understand...</p> <ul style="list-style-type: none"> • How to successfully create a working series and parallel circuit

Year 5/6 (Year A)

	Know	Do	Understand
Electricals and electronics (Fairground rides)	<p>By the end of the unit children should know...</p> <ul style="list-style-type: none">• How different fairground rides work• How pulleys and belts create movement• How different sized pulleys and the way the belt is placed around them can affect the movement created• How to create a prototype and identify areas for development• How to create an electrical circuit to make components move• How to follow a design successfully	<p>By the end of the unit children should have...</p> <ul style="list-style-type: none">• Discussed and explored fairground rides they have been on• Explored the components that join together to make them work• Labelled pictures of fairground rides to show components and mechanisms• Explored and investigated how pulleys and belts create movement• Configured different sized pulleys and the way they belt is placed around them• Identified different ways to strengthen and reinforce structures• Used a variety of materials and components to create a fairground ride• Designed an appropriate electrical circuit for their ride• Made a prototype• Followed their design to successfully complete their project• Identified ways of improving their fairground ride• Evaluated their product	<p>By the end of the unit children should understand...</p> <ul style="list-style-type: none">• Why designing and making a prototype when completing a product is so important• How to incorporate materials and an electrical circuit into one product

	Know	Do	Understand
Food (Healthy and balanced diet)	<p>By the end of the unit children should know...</p> <ul style="list-style-type: none"> • Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms) • Understand what a healthy and balanced diet is, showing an understanding of different food groups • How a variety of ingredients used in products are grown and harvested, reared, caught and processed e.g. Where and when are the ingredients grown? Where do different meats/fish/cheese/eggs come from? How and why are they processed? • How to follow a recipe • How to use the claw technique when using a knife to cut ingredients 	<p>By the end of the unit children should have...</p> <ul style="list-style-type: none"> • Investigated a range of food products either using the contents of their lunch boxes or foods provided for them (Link to the principles of a varied and healthy diet- What ingredients have been used? Which food groups do they belong to? What substances are used in the products e.g. nutrients, water and fibre?) • Carried out sensory evaluations on the contents of the food- how do the sensory characteristics affect your liking of the food? • Gathered information about existing products related to the product they will be making • Discussed the purpose of the products that they will be designing, making and evaluating and who the products will be for. • Selected a range of utensils and use a range of techniques as appropriate to prepare ingredients hygienically including the bridge and claw technique, grating, peeling, chopping, slicing, mixing, spreading, kneading and baking. • Food preparation and cooking techniques could be practised by making a food product using an existing recipe. • Evaluated their product and suggested improvements 	<p>By the end of the unit children should understand...</p> <ul style="list-style-type: none"> • What a healthy and balanced diet looks like and what it should include • How to create a healthy and balanced meal

	Know	Do	Understand
Construction (3D Map)	<p>By the end of the unit children should know...</p> <ul style="list-style-type: none"> • What the purpose of a map is • What a 3D map looks like • What a prototype is and how it can be continually changed and refined • How to use a computer to aide the design of their product • How to successfully drill, glue, cut, screw, file and sand materials 	<p>By the end of the unit children should have...</p> <ul style="list-style-type: none"> • Designed with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Made products through stages of prototypes, making continual refinements. • Ensured products have a high quality finish, using art skills where appropriate. • Used prototypes, cross-sectional diagrams and computer aided designs to represent designs. • Developed a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding) 	<p>By the end of the unit children should understand...</p> <ul style="list-style-type: none"> • The importance of following a process when making a product for a consumer: <ul style="list-style-type: none"> - Research on what the consumer wants/needs - Making prototypes and refining (using a computer to aide when necessary) - Creating products - Finishing products to a high standard - Evaluating products and receiving consumer feedback

Year 5/6 (Year B)

	Know	Do	Understand
Textiles	<p>By the end of the unit children should know...</p> <ul style="list-style-type: none">• The features of a pencil case• What makes a good pencil case (it is big enough to hold stationary, it closes)• How to use running, back and whip stitches• How to attach fastening and embellishments	<p>By the end of the unit children should have...</p> <ul style="list-style-type: none">• Discussed how pencil cases are made and described their features• Compared pencil cases based on a design criteria• Created a design, that incorporates embellishments• Followed a design• Used a running stitch• Used a back stitch• Used a whip stitch• Created a fastening (button, toggle or popper)• Added embellishments to their design (beads/sequins)• Evaluated their end product and made suggestions for improvement	<p>By the end of the unit children should understand...</p> <ul style="list-style-type: none">• How to create a pencil case that is fit for purpose

	Know	Do	Understand
Mechanics (Pulleys and gears)	<p>By the end of the unit children should know...</p> <ul style="list-style-type: none"> • What a gear is • What a pulley is • How products using gears and pulleys work • How to create their own product using pulleys and gears 	<p>By the end of the unit children should have...</p> <ul style="list-style-type: none"> • Investigated, analysed and evaluated existing everyday products and existing or pre-made toys that incorporate gear or pulley systems • Created observational drawings and questions to develop understanding of each product in the collection (How innovative is the product? What design decisions have been made? What type of movement can be seen? What types of mechanical components are used and where are they positioned? What is the input, process and output of the system? How well does the product work? Why have the materials and components been chosen? How well has it been designed? How well has it been made?) • Investigated combinations of two different sized pulleys to learn about direction and speed of rotation (How many times does the smaller pulley turn each time the larger pulley turns once? Do the pulleys move in the same direction? How can you reverse the direction of rotation?) • Generated innovative ideas by carrying out research including surveys, interviews and questionnaires and develop a design specification for their product • Produced detailed step-by-step plans and lists of tools, equipment and materials needed • Made a high-quality product • Evaluated their product 	<p>By the end of the unit children should understand...</p> <ul style="list-style-type: none"> • How pulleys and gears work in a product to allow it to move

	Know	Do	Understand
Food (Celebrating culture-choose an appropriate dish from another culture-Chinese, Mexican etc)	<p>By the end of the unit children should know...</p> <ul style="list-style-type: none"> • Where different foods come from • What different foods taste like • How herbs and spices are used around the world • That diets around the world are based on similar food groups 	<p>By the end of the unit children should have...</p> <ul style="list-style-type: none"> • Tasted different herbs, spices and ingredients from other cultures (lemon grass, ginger, mango, pak choi, lime, figs etc) • Researched and studied different dishes from other cultures • Followed a recipe and made adaptations to it • Selected a range of utensils and use a range of techniques as appropriate to prepare ingredients hygienically including the bridge and claw technique, grating, peeling, chopping, slicing, mixing, spreading, kneading and baking. • Used an oven and/or hob safely and appropriately • Evaluated their end product 	<p>By the end of the unit children should understand...</p> <ul style="list-style-type: none"> • How food and tastes vary across the globe due to the use of different ingredients