



St Joseph's RC Primary School
Design and Technology Knowledge and Skills

Design and Technology

National Curriculum

KS1 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.

Cooking and Nutrition

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

KS2 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



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Technical knowledge

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

Cooking and nutrition

- 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.

Design and Technology Core Knowledge

| Foundation Stage | Y1/ Y2 | Y3/ Y4 | Y5/ Y6 |
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| <p>Expressive Arts</p> <ul style="list-style-type: none"> • 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. <p>Physical Development</p> <ul style="list-style-type: none"> • Hold a pencil effectively in preparation for fluent writing – using the tripod | <ul style="list-style-type: none"> • Use own ideas to design something • Describe how their own idea works • Design a product which moves • Explain to someone else how they want to make their product • Use own ideas to make something • Make a product which moves • Choose appropriate resources and tools • Describe how something works • Explain what works well and not so well in the model they have made • Think of an idea and plan what to do next • Explain why they have chosen specific textiles • Choose tools and materials and explain why they have chosen them • Join materials and components in different ways • Measure materials to use in a model or structure • Explain what went well with their work • Make a model stronger and more stable • Use wheels and axles, when | <ul style="list-style-type: none"> • Prove that a design meets a set criteria • Design a product and make sure that it looks attractive • Choose a material for both its suitability and its appearance • Follow a step-by- step plan, choosing the right equipment and materials • Select the most appropriate tools and techniques for a given task • Make a product which uses both electrical and mechanical components • Use ideas from other people when designing • Produce a plan and explain it • Persevere and adapt work when original ideas do not work • Communicate ideas in a range of ways, including by sketches and drawings which are annotated • Know which tools to use for a particular task and show knowledge of handling it • Know which material is likely to give the best outcome | <ul style="list-style-type: none"> • Come up with a range of ideas after collecting information from different sources • Produce a detailed step-by-step plan • Explain how a product will appeal to a specific audience • Design a product that requires pulleys or gears • Use a range of tools and equipment competently • Make a prototype before making a final version • Make a product that relies on pulleys or gears • Use market research to inform plans and ideas • Follow and refine original plans • Justify planning in a convincing way • Show that culture and society is considered in plans and designs • Know which tool to use for a specific practical task • Know how to use the tool correctly and safely • Know what each tool is used for • Explain why a specific tool is best for a |



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| <p>grip in almost all cases.</p> <ul style="list-style-type: none"> • Use a range of small tools, including scissors, paintbrushes and cutlery. • Begin to show accuracy and care when drawing. | <ul style="list-style-type: none"> • Make their own model stronger • Cut food safely appropriate to do so • Weigh ingredients to use in a recipe • Describe the ingredients used when making a dish or a cake | <ul style="list-style-type: none"> • Work accurately to measure, make cuts and make holes • Explain how to improve a finished model • Know why a model has or has not been successful • Know how to strengthen a product by stiffening a given part or reinforce a part of the structure • Use a simple IT program within the design • Describe how food ingredients come together • Weigh out ingredients and follow a given recipe to create a dish • Talk about which food is healthy and which food is not • Know when food is ready for harvesting • Know which season various foods are available for harvesting • Measure accurately • Evaluate and suggest improv. for designs • Evaluate products for both their purpose and appearance • Explain how the original design has been improved • Present a product in an interesting way • Links scientific knowledge by using lights, switches or buzzers • Use electrical systems to enhance the quality of the product • Use IT where appropriate and add to the quality of the product • Know how to be both hygienic and safe when using food • Bring a creative element to the food product being designed | <ul style="list-style-type: none"> • Suggest alternative plans; outlining the positive features and draw backs • Evaluate appearance and function against original criteria • Link scientific knowledge to design by using pulleys or gears • Use more complex IT to help enhance the quality of the product produced • Be both hygienic and safe in the kitchen • Know how to prepare a meal by collecting the ingredients in the first place • Know which season various foods are available for harvesting • Know how to test and evaluate designed products • Explain how products should be stored and give reasons • Evaluate product against clear criteria • Use electrical systems correctly and accurately to enhance a given product • Know which IT product would further enhance a specific product • Use knowledge to improve a made product by strengthening, stiffening or reinforcing • Explain how food ingredients should be stored and give specific reasons • Work within a budget to create a meal • Understand the difference between a savoury and sweet dish |
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| Design and Technology Progression of skills and knowledge (Cycle A) | | | | | | |
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| Aspect Structures | Skills | | EYFS (Rec) | Y1 Y2 | Y3 Y4 | Y5 Y6 |
| | | | Junk Modelling | Baby bear's chair | Constructing a castle | |
| | Design | <ul style="list-style-type: none"> • Making verbal plans and material choices. • Developing a junk model. | <ul style="list-style-type: none"> • Generating and communicating ideas using sketching and modelling. • Learning about different types of structures, found in the natural world and in everyday objects. | <ul style="list-style-type: none"> • Designing a castle with key features to appeal to a specific person/purpose. • Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours. • Designing and/or decorating a castle tower on CAD software. | | |
| | Make | <ul style="list-style-type: none"> • Improving fine motor/scissor skills with a variety of materials. • Joining materials in a variety of ways (temporary and permanent). • Joining different materials together. • Describing their junk model, and how they intend to put it together. | <ul style="list-style-type: none"> • Making a structure according to design criteria. • Creating joints and structures from paper/card and tape. • Building a strong and stiff structure by folding paper. | <ul style="list-style-type: none"> • Constructing a range of 3D geometric shapes using nets . • Creating special features for individual designs. • Making facades from a range of recycled materials. | | |
| | Evaluate | <ul style="list-style-type: none"> • Giving a verbal evaluation of their own and others' junk models with adult support. • Checking to see if their model matches their plan. • Considering what they would do differently if they were to do it again. • Describing their favourite and least | <ul style="list-style-type: none"> • Exploring the features of structures. • Comparing the stability of different shapes. • Testing the strength of own structures. • Identifying the weakest part of a structure. • Evaluating the strength, stiffness and stability of own structure. | <ul style="list-style-type: none"> • Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. • Suggesting points for modification of the individual designs. | | |



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| | | | favourite part of their model. | | | |
| | Knowledge | Technical | <ul style="list-style-type: none"> To know there are a range to different materials that can be used to make a model and that they are all slightly different. Making simple suggestions to fix their junk model. | <ul style="list-style-type: none"> To know that shapes and structures with wide, flat bases or legs are the most stable. To understand that the shape of a structure affects its strength. To know that materials can be manipulated to improve strength and stiffness. To know that a structure is something which has been formed or made from parts. To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move. To know that a 'strong' structure is one which does not break easily. To know that a 'stiff' structure or material is one which does not bend easily. | <ul style="list-style-type: none"> To understand that wide and flat based objects are more stable. To understand the importance of strength and stiffness in structures. | |
| | | Additional | | <ul style="list-style-type: none"> To know that natural structures are those found in nature. To know that man-made structures are those made by people. | <ul style="list-style-type: none"> To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse - and their purpose. To know that a façade is the front of a structure. To understand that a castle needed to be strong and stable to withstand enemy attack. To know that a paper net is a flat 2D shape that can become a 3D shape once assembled. To know that a design | <ul style="list-style-type: none"> To understand the difference between arch, beam, truss and suspension bridges. To understand how to carry and use a saw safely. |



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| Mechanisms/ Mechanical Systems | Skills | | | | specification is a list of success criteria for a product. | |
| | | | EYFS (Rec) | Y1 Y2 | Y3 Y4 | Y5 Y6 |
| | | | | Making a moving storybook | Pneumatic toys | Automata toys |
| | Design | | <ul style="list-style-type: none"> Explaining how to adapt mechanisms, using bridges or guides to control the movement. Designing a moving story book for a given audience. | <ul style="list-style-type: none"> Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences. Taking part in structured idea blasting sessions. Coming up with more ideas and considering the feasibility of their ideas in the classroom. Developing drawing and sketching skills with a focus on clarity and simplicity. Developing designs by adding detail and justifications about materials, tools, methods. 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). | <ul style="list-style-type: none"> Noticing wider-reaching problems or needs in the community. Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality. Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design. | |
| | Make | | <ul style="list-style-type: none"> Following a design to create moving models that use levers and sliders. | <ul style="list-style-type: none"> Selecting equipment required for a series of tasks based on the plan. Explain why each piece is suitable for each stage. Suggesting simple safety rules based on their understanding of tool dangers. Participating in discussions about classroom safety procedures. Cutting out more complex shapes accurately. Handle different sizes and types of scissors with confidence. | <ul style="list-style-type: none"> Producing lists of equipment, materials and tools that they need for a task. Selecting materials, components or ingredients based on research or user needs. Explaining their choices, referring to their research. Considering which equipment will work well together. Choosing from the known range of equipment available to them with little guidance. Assessing risks associated with different tools and equipment. Understanding and explaining the importance of each safety rule. Consistently apply safety instructions. Cutting jelutong or other harder wood with a coping saw or a tenon saw in small groups. Cutting in a back-and-forth sawing motion where appropriate. In supervised groups, using hot glue guns safely. Recognising that hot glue is useful for joining materials that need a | |



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| | | | | <ul style="list-style-type: none"> Using PVA glue to join corrugated card and light wood (e.g. balsa wood). Choosing shapes to suit the function of a product. Painting or colouring precisely to improve the finish. Making facades from a range of materials. <ul style="list-style-type: none"> Sealing edges with tape to cover gaps in joins. | strong bond that sets quickly. |
| | Evaluate | | <ul style="list-style-type: none"> Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed. <ul style="list-style-type: none"> Reviewing the success of a product by testing it with its intended audience. | <ul style="list-style-type: none"> Analysing why specific products, designers or inventors are successful. Evaluating their designs by comparing them against design criteria and considering feedback from peers to suggest improvements. Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements. <ul style="list-style-type: none"> Reflecting on feedback to decide if and how it could be used to improve future iterations. | <ul style="list-style-type: none"> Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost. Providing feedback that is helpful, specific and encouraging. Incorporating feedback from peers or users to improve their product further, explaining the changes they made and the impact they had. |
| | Knowledge | Technical | | <ul style="list-style-type: none"> To know that a mechanism is the parts of an object that move together. To know that a slider mechanism moves an object from side to side. To know that a slider mechanism has a slider, slots, guides and an object. To know that bridges and guides are bits of card that purposefully restrict the movement of the slider. | <ul style="list-style-type: none"> Beginning to understand how mechanisms work. <ul style="list-style-type: none"> Recognising pneumatic systems in everyday objects (e.g. car boot, adjustable chair.) |



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Additional

- To know that in Design and technology we call a plan a 'design'.

- To know that a problem or need is something that a designer can help to solve.
- To know that extra information on drawings or diagrams can help the user understand a design or idea.
- To know that thumbnail sketches are less detailed quick sketches.
- To know that a cross-sectional diagram shows the inside of a product.
- To know that an exploded diagram shows how the parts of a product fit together.
- To know that different pieces of equipment will be used at different stages in a plan.
- To know that different tools and equipment have different dangers.
- To know that scissors are useful for cutting out complex shapes,
- To know that designers and inventors create products.
- To know that choices of materials and equipment can affect the final product.
- To know that feedback is ideas and suggestions from other people that can help improve their work.
- To know that they can choose to use feedback or not.
- To understand that a mechanical system can allow us to move something more easily.
- To know that mechanical systems have more than one mechanism that moves to make them work.
- To know that mechanical systems are often hidden in products to make them look more appealing.

- To know that an automata is a hand powered mechanical toy.
- To know that a cross-sectional diagram shows the inner workings of a product.



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| | | | | | <ul style="list-style-type: none"> • To know that pushing air can be used to move a mechanism. • To know that pivots can be used to create more movement in the mechanical system. • To know that a combination of mechanisms can improve a product. | |
| Electrical Systems (Cycle B and KS2 only) | | | | | | |
| Cooking and nutrition | Skills | | EYFS (Rec) | Y1 Y2 | Y3 Y4 | Y5 Y6 |
| | | | Soup | Balanced Diet | Eating seasonally | Developing a recipe |
| | | Design | <ul style="list-style-type: none"> • Designing a soup recipe as a class. • Designing soup packaging. | <ul style="list-style-type: none"> • Designing three wrap ideas based on a food combination which work well together. | <ul style="list-style-type: none"> • Designing a recipe for a savoury tart. | <ul style="list-style-type: none"> • Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Writing an amended method for a recipe to incorporate the relevant changes to ingredients. • Designing appealing packaging to reflect a recipe. • Researching existing recipes to inform ingredient choices. |
| | | Make | <ul style="list-style-type: none"> • Chopping plasticine safely. • Chopping vegetables with support. | <ul style="list-style-type: none"> • Chopping foods safely to make a wrap. • Constructing a wrap that meets a design brief. • Grating foods to make a wrap. • Snipping smaller foods instead of cutting. | <ul style="list-style-type: none"> • Following the instructions within a recipe. • Tasting seasonal ingredients. • Selecting seasonal ingredients. • Peeling ingredients safely. • Cutting safely with a vegetable knife. | <ul style="list-style-type: none"> • Cutting and preparing vegetables safely. • Using equipment safely, including knives, hot pans and hobs. • Knowing how to avoid cross-contamination. • Following a step by step method carefully to make a recipe. |
| | | Evaluate | <ul style="list-style-type: none"> • Tasting the soup and giving opinions. • Describing some of the following when tasting food: look, feel, smell and taste. • Choosing their favourite packaging design and explaining why. | <ul style="list-style-type: none"> • Describing the taste, texture and smell of fruit and vegetables. • Taste testing food combinations and final products. • Describing the information that should be included on a label. • Evaluating food by giving a score. | <ul style="list-style-type: none"> • Establishing and using design criteria to help test and review dishes. • Describing the benefits of seasonal fruits and vegetables and the impact on the environment. • Suggesting points for improvement when making a seasonal tart. | <ul style="list-style-type: none"> • Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups. |



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| Textiles | Knowledge | | <ul style="list-style-type: none"> To know that soup is ingredients (usually vegetables and liquid) blended together. To know that vegetables are grown. To recognise and name some common vegetables. To know that different vegetables taste different. To know that eating vegetables is good for us. To discuss why different packages might be used for different foods. | <ul style="list-style-type: none"> To know that 'diet' means the food and drink that a person or animal usually eats. To understand what makes a balanced diet. To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar. To understand that I should eat a range of different foods from each food group, and roughly how much of each food group. To know that 'ingredients' means the items in a mixture or recipe. | <ul style="list-style-type: none"> To know that not all fruits and vegetables can be grown in the UK. To know that climate affects food growth. To know that vegetables and fruit grow in certain seasons. To know that cooking instructions are known as a 'recipe'. To know that imported food is food which has been brought into the country. To know that exported food is food which has been sent to another country.. To know that eating seasonal foods can have a positive impact on the environment. To know that similar coloured fruits and vegetables often have similar nutritional benefits. To know that the appearance of food is as important as taste. | <ul style="list-style-type: none"> To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed. To know that recipes can be adapted to suit nutritional needs and Dietary requirements. To know that I can use a nutritional calculator to see how healthy a Food option is. To understand that 'cross-contamination' means bacteria and germs Have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects. To know that coloured chopping boards can prevent cross-contamination. To know that nutritional information is found on food packaging. To know that food packaging serves many purposes. |
| | Skills | | EYFS (Rec) | Y1 Y2 | Y3 Y4 | Y5 Y6 |
| | | | Bookmarks | | | Stuffed toys |
| | | Design | <ul style="list-style-type: none"> Discussing what a good design needs. Designing a simple pattern with paper. Designing a bookmark. Choosing from available materials. | | | <ul style="list-style-type: none"> Designing a stuffed toy, considering the main component shapes required and creating an appropriate template. Considering the proportions of individual components. |
| | Make | <ul style="list-style-type: none"> Developing fine motor/cutting skills with scissors. | | | <ul style="list-style-type: none"> Creating a 3D stuffed toy from a 2D design. Measuring, marking and cutting fabric accurately and independently . Creating strong and secure blanket stitches when joining fabric. Threading needles independently. Using appliqué to attach pieces of fabric decoration. | |



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| Digital world (Cycle B and KS2 only) | | | <ul style="list-style-type: none"> • Exploring fine motor/threading and weaving (under, over technique) with a variety of materials. • Using a prepared needle and wool to practise threading. | | | <ul style="list-style-type: none"> • Sewing blanket stitch to join fabric. • Applying blanket stitch so the spaces between the stitches are even and regular. |
| | | Evaluate | <ul style="list-style-type: none"> • Reflecting on a finished product and comparing to their design. | | | <ul style="list-style-type: none"> • Testing and evaluating an end product and giving point for further improvements. |
| | Knowledge | | <ul style="list-style-type: none"> • To know that a design is a way of planning our idea before we start. • To know that threading is putting one material through an object. | | | <ul style="list-style-type: none"> • To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric. • To understand that it is easier to finish simpler designs to a high standard. • To know that soft toys are often made by creating appendages separately and then attaching them to the main body. • To know that small, neat stitches which are pulled taut are important ensure that the soft toy is strong and holds the stuffing securely. |

| Design and Technology Progression of skills and knowledge (Cycle B) | | | | | | | |
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| Structures | Skills | | EYFS (Rec) | Y1 Y2 | Y3 Y4 | Y5 Y6 | |
| | | | | Boats | | | Bridges |
| | | Design | <ul style="list-style-type: none"> • Designing a junk model boat. • Using knowledge from exploration to | | | | <ul style="list-style-type: none"> • Designing a stable structure that is able to support weight. • Creating a frame structure with a focus on triangulation. |



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| | | | inform design. | | | |
| | | Make | <ul style="list-style-type: none"> • Making a boat that floats and is waterproof, considering material choices. | | | <ul style="list-style-type: none"> • Making a range of different shaped beam bridges. • Using triangles to create truss bridges that span a given distance and support a load. • Building a wooden bridge structure. • Independently measuring and marking wood accurately. • Selecting appropriate tools and equipment for particular tasks. • Using the correct techniques to saws safely. • Identifying where a structure needs reinforcement and using card corners for support. • Explaining why selecting appropriating materials is an important part of the design process. • Understanding basic wood functional properties. |
| | | Evaluate | <ul style="list-style-type: none"> • Making predictions about, and evaluating different materials to see if they are waterproof. • Making predictions about, and evaluating existing boats to see which floats best. • Testing their design and reflecting on what could have been done differently. • Investigating the how the shapes and structure of a boat affect the way it moves. | | | <ul style="list-style-type: none"> • Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary. • Suggesting points for improvements for own bridges and those designed by others. |
| | Knowledge | Technical | <ul style="list-style-type: none"> • To know that 'waterproof' materials are those which do not absorb water. | | | <ul style="list-style-type: none"> • To understand some different ways to reinforce structures. • To understand how triangles can be used to reinforce bridges. • To know that properties are words that describe the form and function of |



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| | | | | | | materials. • To understand why material selection is important based on properties. • To understand the material (functional and aesthetic) properties of wood. |
| | | Additional | • To know that some objects float and others sink. • To know the different parts of a boat. | | | • To understand the difference between arch, beam, truss and suspension bridges. • To understand how to carry and use a saw safely. |
| Mechanisms/ mechanical systems | Skills | | EYFS (Rec) | Y1 Y2 | Y3 Y4 | Y5 Y6 |
| | | | | Wheels and axles | | |
| | | Design | | <ul style="list-style-type: none"> Thinking about what others might want from a design. Beginning to recognise how products and designs in the world around us solve certain needs. Considering who they are designing for - by identifying the user. Stating what they intend to make and why - by identifying the purpose. Talking about ideas with purpose and user in mind. Talking about existing products when generating ideas. Using basic drawing skills to communicate ideas. | | |
| | Make | | <ul style="list-style-type: none"> Planning more than one step ahead. Choosing between a small number of | | | |



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| | | | | <p>materials, ingredients or components.</p> <ul style="list-style-type: none">● Explaining their choices based on personal experiences.● Requesting equipment appropriate to the purpose (e.g. scissors for cutting and glue for joining).● Explaining in simple terms why certain tools must be handled carefully.● Following and recalling simple safety instructions.●● Finding the middle of an object.● Refining their grip to cut competently and confidently.● Cutting straight lines and evenly spaced lines.● Beginning to cut large shapes and thicker materials like card.● Puncturing holes.● Recognising the edges of paper and card need to be stuck firmly using a glue stick.● Using tools, like scissors, to create shapes.● Beginning to cut large shapes and thicker materials like card.● Beginning to use controlled painting or colouring techniques to finish a product.● Adding texture to | | |
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| | | | | create visual interest. | | |
| | | Evaluate | | <ul style="list-style-type: none"> ● Discussing existing products, saying what they like about them. ● Comparing two products and discussing which is better for a specific purpose. ● Discussing how their products could be improved based on personal preferences. ● Comparing their finished products with their original designs. ● Saying what they like about their peers' designs and products. ● Accepting feedback and understanding it is meant to improve their work. | | |
| | Knowledge | Technical | | <ul style="list-style-type: none"> ● Recognising and exploring everyday objects that have mechanisms. ● Many things that move have parts inside to help them work. ● Mechanisms usually limit unwanted movement. ● An axle allows the wheel to turn without falling off. | | |
| | | Additional | | <ul style="list-style-type: none"> ● To know that the 'user' is the person who will use the product. ● To know that different users may want different things from a design. | | |



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| | | | | <ul style="list-style-type: none">• To know that designers usually design and make something to solve a problem.• To know that who they are designing for makes a difference to what they design.• To know that the purpose is what something is for.• To know that existing products can help when deciding what to design.• To know that drawings are a way to explain ideas.• To know that a plan is deciding what to do first and next.• To know that choosing different materials or components will have an effect on what their product does or looks like.••To know that different equipment does different things.• To know the names of common pieces of equipment.• To know that some tools are sharp like scissors and knives.• To know that following instructions helps with safety.• To know that cutting in a straight line can be helpful when making. | | |
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| Electrical systems (Cycle B KS2 only) | Skills | EYFS (Rec) | Y1 Y2 | <ul style="list-style-type: none"> • To know that tools can be used to shape objects. • To know that different materials can be shaped by different tools. • To know that some products will be better than others. • To know that their ideas or products can be made better. • To know that their final product might be different to their original idea. • To know that their ideas can make someone else's work better. • To know that other people's ideas can help make their work better. | Y3 Y4 | Y5 Y6 | |
| | | Design | | | <ul style="list-style-type: none"> • Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. | | |
| | | Make | | | <ul style="list-style-type: none"> • Making a torch with a working electrical circuit and switch. • Using appropriate equipment to cut and attach materials. • Assembling a torch according to the design and success criteria. | | |
| | | Evaluate | | | <ul style="list-style-type: none"> • Evaluating electrical products. • Testing and evaluating the | | |



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Design and Technology Knowledge and Skills

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| | Knowledge | Technical | | | <p>success of a final product.</p> <ul style="list-style-type: none"> • To understand that electrical conductors are materials which electricity can pass through. • To understand that electrical insulators are materials which electricity cannot pass through. • To know that a battery contains stored electricity that can be used to power products. • To know that an electrical circuit must be complete for electricity to flow. • To know that a switch can be used to complete and break an electrical circuit. | |
| | | Additional | | | <ul style="list-style-type: none"> • To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens. • To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison. | |
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| Cooking and nutrition | Skills | | EYFS (Rec) | Y1 Y2 | Y3 Y4 | Y5 Y6 |
| | | | Soup | Smoothies | Biscuits | Come dine with me |
| | | Design | <ul style="list-style-type: none"> • Designing a soup recipe as a class. • Designing soup packaging. | <ul style="list-style-type: none"> • Designing smoothie carton packaging by-hand. | <ul style="list-style-type: none"> • Designing a biscuit within a given budget, drawing upon previous taste testing judgements. | <ul style="list-style-type: none"> • Writing a recipe, explaining the key steps, method and ingredients. • Including facts and drawings from research undertaken. |
| | Make | <ul style="list-style-type: none"> • Chopping plasticine safely. • Chopping vegetables with | <ul style="list-style-type: none"> • Chopping fruit and vegetables safely to make a smoothie. | <ul style="list-style-type: none"> • Following a baking recipe, including the preparation of ingredients. | <ul style="list-style-type: none"> • Following a recipe, including using the correct quantities of each ingredient. • Adapting a recipe based on research. | |



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| Textiles | | | support. | <ul style="list-style-type: none"> Juicing fruits safely to make a smoothie. | <ul style="list-style-type: none"> Cooking safely, following basic hygiene rules. Adapting a recipe to meet the requirements of a target audience. | <ul style="list-style-type: none"> Working to a given timescale. Working safely and hygienically with independence. |
| | | Evaluate | <ul style="list-style-type: none"> Tasting the soup and giving opinions. Describing some of the following when tasting food: look, feel, smell and taste. Choosing their favourite packaging design and explaining why. | <ul style="list-style-type: none"> Tasting and evaluating different food combinations. Describing appearance, smell and taste. Suggesting information to be included on packaging. Comparing their own smoothie with someone else's. | <ul style="list-style-type: none"> Evaluating a recipe, considering: taste, smell, texture and appearance. Describing the impact of the budget on the selection of ingredients. Evaluating and comparing a range of food products. Suggesting modifications to a recipe (e.g. This biscuit has too many raisins, and it is falling apart, so next time I will use less raisins). | <ul style="list-style-type: none"> Evaluating a recipe, considering: taste, smell, texture and origin of the food group. Taste testing and scoring final products. Suggesting and writing up points of improvements when scoring others' dishes, and when evaluating their own throughout the planning, preparation and cooking process. Evaluating health and safety in production to minimise cross contamination. |
| | | Knowledge | <ul style="list-style-type: none"> To know that soup is ingredients (usually vegetables and liquid) blended together. To know that vegetables are grown. To recognise and name some common vegetables. To know that different vegetables taste different. To know that eating vegetables is good for us. To discuss why different packages might be used for different foods. | <ul style="list-style-type: none"> To know that a blender is a machine which mixes ingredients together into a smooth liquid. To know that a fruit has seeds. To know that fruits grow on trees or vines. To know that vegetables can grow either above or below ground. To know that vegetables is any edible part of a plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber). | <ul style="list-style-type: none"> To know that the amount of an ingredient in a recipe is known as the 'quantity.' To know that safety and hygiene are important when cooking. To know the following cooking techniques: sieving, measuring, stirring, cutting out and shaping. To understand the importance of budgeting while planning ingredients for biscuits. To know that products often have a target audience. | <ul style="list-style-type: none"> To know that 'flavour' is how a food or drink tastes. To know that many countries have 'national dishes' which are recipes associated with that country. To know that 'processed food' means food that has been put through multiple changes in a factory. To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides. To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork). |
| | Skills | | EYFS (Rec) | Y1 Y2 | Y3 Y4 | Y5 Y6 |
| | | | Bookmarks | Puppets | Book sleeve | |



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| | Design | <ul style="list-style-type: none"> • Discussing what a good design needs. • Designing a simple pattern with paper. • Designing a bookmark. • Choosing from available materials. | <ul style="list-style-type: none"> • Using a template to create a design for a puppet. | <ul style="list-style-type: none"> • Writing design criteria for a product, articulating decisions made. • Designing a personalised book sleeve. | |
| | Make | <ul style="list-style-type: none"> • Developing fine motor/cutting skills with scissors. • Exploring fine motor/threading and weaving (under, over technique) with a variety of materials. • Using a prepared needle and wool to practise threading. | <ul style="list-style-type: none"> • Cutting fabric neatly with scissors. • Using joining methods to decorate a puppet. • Sequencing the steps taken during construction. | <ul style="list-style-type: none"> • Making and testing a paper template with accuracy and in keeping with the design criteria. • Measuring, marking and cutting fabric using a paper template. • Selecting a stitch style to join fabric. • Working neatly by sewing small, straight stitches. • Incorporating a fastening to a design. | |
| | Evaluate | <ul style="list-style-type: none"> • Reflecting on a finished product and comparing to their design. | <ul style="list-style-type: none"> • Reflecting on a finished product, explaining likes and dislikes. | <ul style="list-style-type: none"> • Testing and evaluating an end product against the original design criteria. • Deciding how many of the criteria should be met for the product to be considered successful. • Suggesting modifications for improvement. • Articulating the advantages and disadvantages of different fastening types. | |
| Knowledge | | <ul style="list-style-type: none"> • To know that a design is a way of planning our idea before we start. • To know that threading is putting one | <ul style="list-style-type: none"> • To know that 'joining technique' means connecting two pieces of material together. • To know that there are various temporary methods of | <ul style="list-style-type: none"> • To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro. • To know that different fastening types are useful for different purposes. | |



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| Digital world (KS2 only) | Skills | | material through an object. | joining fabric by using staples, glue or pins. • To understand that different techniques for joining materials can be used for different purposes. • To understand that a template (or fabric pattern) is used to cut out the same shape multiple times. • To know that drawing a design idea is useful to see how an idea will look. | • To know that creating a mock up (prototype) of their design is useful for checking ideas and proportions. | |
| | | | EYFS (Rec) | Y1 Y2 | Y3 Y4 | Y5 Y6 |
| | | Design | | | | Monitoring devices • Researching (books, internet) for a particular (user's) animal's needs. • Developing design criteria based on research. • Generating multiple housing ideas using building bricks. • Understanding what a virtual model is and the pros and cons of traditional and CAD modelling. • Placing and manoeuvring 3D objects, using CAD. • Changing the properties of, or combining one or more 3D objects, using CAD. |
| | | Make | | | | • Understanding the functional and aesthetic properties of plastics. • Programming to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range. |
| | | Evaluate | | | | • Stating an event or fact from the last 100 years of plastic history. • Explaining how plastic is affecting planet Earth and suggesting ways to make more sustainable choices. • Explaining key functions in my program (audible alert, visuals). • Explaining how my product would be useful for an animal carer including programmed features. |
| Knowledge | Technical | | | | | • To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record. |



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| | | | | | | <ul style="list-style-type: none">• To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose.• To understand that conditional statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met. |
| | Additional | | | | | <ul style="list-style-type: none">• To understand key developments in thermometer history.• To know events or facts that took place over the last 100 years in the history of plastic, and how this is changing our outlook on the future.• To know the 6Rs of sustainability.• To understand what a virtual model is and the pros and cons of traditional vs CAD modelling. |