



Design and Technology Learning Overview

EYFS Framework -		Key Stage 1			Key Stage 2			
Nursery	Reception	Areas of Learning	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Make imaginative and complex 'small worlds' with blocks and construction kits. Explore different materials freely, to develop their ideas about how to use them and what to make. Join different materials and explore different textures. Use drawing to represent ideas. Develop their own ideas and then decide which materials to use to express them.	Can Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Can make and use props and materials to support their role play and storytelling. Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources and skills. Can talk about their creations, explaining what they like about their work, the process they have used and what they would do to improve things next time.	Key Learning Information	Term 1 Click HERE to access the Mechanisms: Designing and Making Moving Pictures Learning Organiser		Term 1 Click HERE to access the Textiles: Designing and Making Cushions Learning Organiser	Term 1 Click HERE to access the Structures: Designing and Making Bridges Learning Organiser	Term 1 Click HERE to access the Food Technology: Celebrating Breads from Different Cultures (Cooking and Nutrition) Learning Organiser	Term 1 Click HERE to access the Electrical Systems: Designing and Making a Burglar Alarm Learning Organiser
			Term 1 Click HERE to access the Textiles: Designing and Making Sock and Glove Puppets Learning Organiser					
			Term 2 Click HERE to access the Mechanisms: Designing and Making a Wheeled Vehicle Learning Organiser		Term 2 Click HERE to access the Mechanisms: Designing and Making Pneumatic Toys Learning Organiser	Term 2 Click HERE to access the Electrical Systems: Designing and Making Torches Learning Organiser	Term 2 Click HERE to access the Mechanical Systems: Trebuchets and Catapults Structures Learning Organiser	Term 2 Click HERE to access the Textiles: Designing and Making Sandals Learning Organiser
			Term 2 Click HERE to access the Structures & Mechanisms: Designing and Making Castles Learning Organiser					
			Term 3 Click HERE to access the Food Technology: Making a Fruit Salad Learning Organiser		Term 3 Click HERE to access the Food Technology: Kind to the Community Food Learning Organiser	Term 3 Click HERE to access the Textiles: Designing and Making Anglo-Saxon Purses Learning Organiser	Term 3 Click HERE to access the Structures: Designing and Making an Earthquake Proof Structure Learning Organiser	Term 3 Click HERE to access the Mechanical Systems: Designing and Making Automata Toys Learning Organiser
			Term 3 Click HERE to access the Food Technology: Making Pizzas Learning Organiser					



		Mechanisms Technical Knowledge Designing and Making Moving Pictures Design and make a moving story book using different mechanisms. -Make a sliding mechanism out of card. -Understand and use a pivot and lever mechanism using card and a split pin. -Make a wheel mechanism using card and a split pin. -Match a mechanism to the type of movement it makes.  Designing and Making a Wheeled Vehicle Design, make, test and evaluate their own moving vehicle. Pupils look at how wheeled toys are constructed. They experiment with mechanisms and troubleshoot why some wheels don't rotate, before designing and building a moving vehicle. Design a wheeled vehicle that complies with the given criteria of functional and appealing to themselves. 	Designing and Making Pneumatic Toys Children will have an understanding of pneumatic systems. They will design, make and evaluate their own pneumatic toy. -Develop vocabulary related to the project. -Explain how simple pneumatic systems work using appropriate vocabulary. -Recognise familiar objects that use air to make them work. -Describe how objects use air to make them work. -Create simple effective pneumatic systems. -Investigate ways of using pneumatic systems with other materials to control movement.  		Trebuchets and Catapults Pupils research, investigate and analyse how mediaeval trebuchet and catapults were constructed and how the propulsion mechanism works. Design, make and test a mediaeval missile launching weapon. -A catapult is a mechanism to launch a missile, such as a stone or spear, over a distance. In ancient times a catapult was used as a military weapon. -Triangulation involves the use of triangular shapes to give stability to a structure. This can be seen on bridges or towers such as the Eiffel Tower in France. -Triangulation can relate to hinged or pinned structures, these types of structure usually offer no resistance to bending movements when a force is applied. Triangulation allows the force to be spread.	Designing and Making Automata Toys Children will design, make and evaluate an automata toy using wooden components. --Linkages change the direction of a force. -For the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles. -Attempt a partial assembly of their toys using an exploded-diagram, following a teacher's demonstration.. -Explore different cam profiles and choose three for their follower toppers with an explanation of their choices.  
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Structures Technical Knowledge

Designing and Making Castles with a Drawbridge –

Know how to make freestanding structures stronger, stiffer and more stable.
 - Know that shapes and structures with wide, flat bases or legs are the most stable.
 - Know what a drawbridge is. -Use prior mechanisms knowledge to create a drawbridge.
 -Design a castle with key features to appeal to a specific person/purpose.
 -Construct 3D nets.



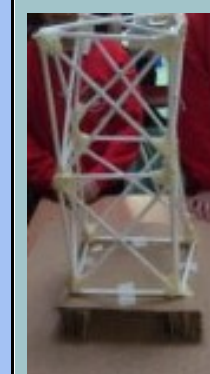
Designing and Making Bridges

Look at, investigate and analyse how bridges are constructed. The pupils will explore and experiment with a range of different bridge structures, forces and components involved in bridge building, before they design and make their own and test it for its functionality and robustness.
 -Design a stable structure that is able to support weight
 -Make frame structure with focus on triangulation
 -Create a range of different shaped beam bridges -Use triangles to create truss bridges that span a given distance and supports a load
 -Build a bridge structure - Independently measure and mark wood accurately - Select appropriate tools and equipment for particular tasks
 - Identify where a structure needs reinforcement and use card corners for support



Designing and Making an Earthquake Proof Structure -

Understand how to strengthen, stiffen and reinforce 3-D frameworks. - Know and use technical vocabulary relevant to the project.





		Textiles Technical Knowledge		Year 2 Designing and Marking Sock and Glove Puppets. Design, make and evaluate an animal puppet, using their chosen method of attaching. - Identify how existing puppets work and discuss their purpose - Test and identify the suitability of different materials ensuring they are fit for purpose. - Know that 'joining technique' means connecting two pieces of material together - Join fabrics using pins, staples and glue - Join two puppet faces together as one - Understand the different techniques for joining materials can be used for different purposes.	Designing and Making Cushions The children will practise a new sewing skill, then design make and evaluate their own cushion using cross stitch and appliques. - Explore and analyse existing products - Understand the terms 'functional' and aesthetic' linked to existing products. - Know that when two edges are joined together it is called a seam - Know that it is important to leave space on the fabric for the seam. - Understand that some products are turned inside out after sewing so the stitching is hidden - Sew cross stitch and appliqué.	Designing and Making Anglo-Saxon Purses Pupils will create a purse in the style of the Anglo- Saxons. In order to do so they will create templates and patterns to follow as well as using sewing techniques yo join fabrics.The children will then explore and use fasteners in their purses. - Develop back stitch - Know that there are different ways of fastening (buttons, drawstring, popper, toggle and zip) - Discuss the advantages and disadvantages of different types of fastenings. - Use backstitch to securely join fabrics - Threading needles with greater independence - Understanding that fabrics can be layered for effect.		Designing and making sandals Children research, investigate and analyse how Roman and modern day sandals are constructed – what materials and fixes are typically uses, and devise a design criteria for a sandal to ensure that the product in innovative, functional, attractive and fit for use. Designa. Sandal, recording anf communicating one's ideas using annotated sketched, exploded diagrams, prototypes, patterns, templates and computer design programmes. - Understand ways in which textlies are joined and decorated. - Use pattern pieces to measure, mark and cut fabric/ - Make a prototype - Join fabric pieces by hand sewing - Understand how to use seams - Understand that different stitches has different purposes.
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		Electrical & Digital Technical Knowledge			Designing and Making Torches Pupils are introduced to electricity and electrical safety. They will look at how torches are constructed before looking to design, make and test a simple functioning torch. Learn how to communicate one's ideas using annotated sketches. - Understand how to make an electrical circuit using different materials for switches. - Consider what makes a good casing for a torch and what materials they may be made from. - Understand the difference between electrical conductors and insulators. - Identifying the features of a torch - Understanding how a torch works - Articulating the positives and negatives about different torches 		Designing and Making a Burglar Alarm Pupils use their knowledge of electronic circuits to create a burglar alarm. - Batteries contain acid which can be dangerous if they leak. - Name the components in a basic series circuit including a buzzer. - Know that 'form' means the shape and appearance of an object. - Know that form over purpose means that a product looks good but does not work very well.
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		Cooking & Nutrition Technical Knowledge Making a Fruit Salad Identify some fruits and use them to make a fruit salad. Use different grips to chop fruit. -Talk about what he/she eats at home. -Understand the difference between fruit and vegetables. -Say where some foods come from with support. - Say whether some foods are healthy or unhealthy. Making Pizzas Understand and use the principles of a healthy and varied diet to prepare pizzas. The children explore what makes a balanced diet and taste test combinations of different food groups before designing and making their own pizzas. Children learn how to safely grate and chop a range of ingredients -Name the main food groups and identify foods that belong to each group. - Describe the taste, feel and smell of a given food. - Understand hygiene rules for cooking. -Demonstrate how to use cutting and peeling skills. - Demonstrate how to chop a range of ingredients.	Kind to the Community Food Use locally sourced and 'Fair Trade' foods to make a nutritious tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish. - Explore where different food comes from and discuss why food comes from different places. - Explain the benefits of seasonal foods. -Investigate Fairtrade ingredients that are available in shops and experiment with flavour combinations. 		Celebrating Breads from Different Cultures (Cooking and Nutrition) - Know how to use utensils and equipment including heat sources to prepare and cook food. -Understand about seasonality in relation to food products and the source of different food products. - Know and use relevant technical and sensory vocabulary. 	
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		Designing Technical Knowledge	-Use talk and drawing to generate and communicate ideas. -Generate ideas based on simple design criteria and their own experiences, explaining what they could do. -Use pictures and words to convey what they want to design/make. -Add notes to drawings to help explanations. -Describe their models and drawings of ideas and intentions verbally. -Understand that a template (or fabric pattern) is used to cut out the same shape multiple times -Know that drawing a design idea is useful to see how an idea will look	-Develop more than one design or adaptation of an initial design. -Plan a sequence of actions to make a product. - Propose realistic suggestions as to how they can achieve their design ideas.	- Generate and clarify ideas through discussion with peers to develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. - Use annotated sketches to develop and communicate ideas. -Generate, develop, model and communicate realistic ideas through discussion and annotated diagrams.	-Generate ideas through research including surveys, interviews and questionnaires and discussion with peers to develop a design brief and criteria for a design specification. -Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. - Develop and communicate ideas through discussion, annotated drawings and exploded drawings.	- Use research using surveys, interviews, questionnaires and web-based resources. to develop a design specification for a range of functional products. -Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. -Generate and develop innovative ideas and share and clarify these through discussion. -Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams.
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		Making Designing and Making a Wheeled Vehicle -Join appropriately for different materials and situations e.g. glue, tape. -Try out different axle fixings and their strengths and weaknesses. -Distinguish between fixed and freely moving axles. -Troubleshoot why some wheels don't rotate -Use a range of materials to create models with wheels and axles e.g. tubes, dowel, cotton reels. -Attach wheels to a chassis using an axle. -Use a hole punch and Insert paper fasteners for card. Making a Fruit Salad -With support, chop fruit using a bridge and claw grip. - Have an awareness of basic hygiene. Designing and Making Moving Pictures -Make linkages using card for levers and split pins for pivots. -Use scissors to cut components neatly. Designing and Making Sock and Glove Puppets -Cut fabric neatly with scissors -Use joining methods to decorate a puppet -Thread a needle -Sew using a running stitch -Sequence steps for construction - Making Pizzas -Grate cheese safely -Chop vegetables safely using a bridge and claw grip Designing and Making Castles with a Drawbridge -Make a stable structure (castle) from card, tape and joining materials. -Use scissors to cut paper. -Make nets of shapes. -With support, make a drawbridge (link to	Designing and Making Cushions -Follow a design criteria to create a cushion. -Select and cut fabrics using fabric scissors. -Use a running stitch to join two fabrics together. -Decorate fabric using applique and cross stitch. Designing and Making Pneumatic Toys -Create a pneumatic system to create a desired motion. -Build secure housing for a pneumatic system. -Using syringes and balloons, create different types of pneumatic systems to make a functional and appealing pneumatic toy. -Select materials due to their functional and aesthetic characteristics. -Manipulate materials to create different effects by cutting, creasing, folding and weaving. -Select suitable tools. Kind to the Community Food -Prepare a work space to cook safely on. - Cut and prepare vegetables.	Designing and Making Torches -Make a torch/ light with a working electrical circuit and switch -Follow a design criteria to create a torch -Use a range of materials and equipment safely. -Recognise that if there is a break in the circuit electricity the light will not work -Assemble a torch according to the design and success criteria. Designing and Making Bridges -Make a range of different shaped beam bridges -Using triangles to create truss bridges that span a given distance and supports 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 Designing and Making Anglo-Saxon Purses - Measure and cut fabric accurately.	Designing and Making an Earthquake Proof Structure - Explore how structures are built and investigate what methods of building can make the tallest and strongest structure. - Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used. -Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks. -Use finishing and decorative techniques suitable for the product they are designing and making. Celebrating Breads from Different Cultures (Cooking and Nutrition) -Write a step-by-step recipe, including a list of ingredients, equipment and utensils -Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients. -Make, decorate and present the food product appropriately for the intended user and purpose. Trebuchets and Catapults Structures -Create a triangular frame structure for support. - Use knowledge of nets to create a frame structure. -	Designing and Making a Burglar Alarm -Constructing a stable base for a burglar alarm - Accurately cut, fold and assemble a net -Decorate the base of the alarm to a high quality finish • Make and test a circuit Incorporating a circuit into a base Designing and Making Sandals -Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests. -Evaluate their work both during and at the end of the assignment. -Record their evaluations using drawings with labels. - Evaluate against their original criteria and suggest ways that their product could be improved. Designing and Making Automata Toys -Mark, saw and cut out the components and supports of their toy with a varying degree of accuracy to the intended measurements. - Follow health and safety rules, taking care with the equipment. -Create neat, decorated follower toppers with some accuracy. -Measure and cut panels that fit with some inaccuracies to conceal the inner workings of the automata.
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					-Use appropriate equipment to cut and attach materials - Use backstitch to join fabrics - Securely add buttons, beads and sequins. - Create a secure fastening (drawstring).	Mark, saw and cut wood with accuracy. -Follow health and safety procedures.	-Decorate and finish the automata to meet the design criteria and brief.
		Evaluating	-Start to evaluate their product by discussing how well it works in relation to the purpose (design criteria). -When looking at existing products explain what they like and dislike about products and why. -Begin to evaluate their products as they are developed, identifying strengths and possible changes they might make. Evaluate their work against their design criteria. - Look at a range of existing products and explain what they like and dislike about products and why. -Start to evaluate their products as they are developed, identifying strengths and possible changes they might make. -With confidence, talk about their ideas, saying what they like and dislike about them.	-Start to evaluate their product against original design criteria e.g. how well it meets its intended purpose -Begin to disassemble and evaluate familiar products and consider the views of others to improve them.	-Evaluate their products carrying out appropriate tests. -Start to evaluate their work both during and at the end of the assignment. -Be able to disassemble and evaluate familiar products and consider the views of others to improve them. - Evaluate the key designs of individuals in design and technology has helped shape the world.	-Start to evaluate a product against the original design specification and by carrying out tests. -Evaluate their work both during and at the end of the assignment. -Begin to evaluate it personally and seek evaluation from others.	-Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests. -Evaluate their work both during and at the end of the assignment. -Record their evaluations using drawings with labels. - Evaluate against their original criteria and suggest ways that their product could be improved. -Evaluate the key designs of individuals in design and technology has helped shape the world.