





Building Design Technology Knowledge





Structures		
EYFS: Three Little Pigs House	Year 1: Free standing structure- Lighthouse	Year 2: Free-standing structures – spaceship for Beegu
<ul style="list-style-type: none"> ✓ A structure that is stable is less likely to fall over. ✓ Stability – in relation to a freestanding structure, the extent to which it is likely to fall over if a force is applied. ✓ It is important to build houses out of strong materials so they don't fall down. ✓ If you bundle straw then you can stack them to create a structure. ✓ Building bricks made the strongest structure. ✓ Building a straw house is weak and it can easily be blown down. It may also let rain in. ✓ Sticks are bendy and have holes between them so they will let cold air in. 	<ul style="list-style-type: none"> ✓ As a freestanding structure becomes taller its centre of gravity rises. Stability in a structure can be increased by making the base wider, making the base heavier or adding buttresses ✓ Freestanding structure – a structure that stands on its own foundation or base without attachment to anything else. ✓ Stability – in relation to a freestanding structure, the extent to which it is likely to fall over if a force is applied. ✓ Buttress – a structure added to a wall, tower or framework to make it more stable and/or reinforce it. ✓ Brick bonding – arranging bricks in a wall to improve the performance of the structure or improve its appearance. 	<ul style="list-style-type: none"> ✓ A structure is something arranged or assembled in a very specific way, using multiple parts ✓ Most structures are designed to remain stable and sturdy, meaning they won't break or fall over when something heavy is placed on them. ✓ Material can be shaped and joined to increase its strength ✓ Bracing is required across supports to ensure structures are strong and rigid ✓ Splaying a material will allow it to attach easily to another material. ✓ Direct joining with tape or glue is not very strong or sturdy.

Structures			
Year 3: Shell structure-sarcophagus for the Ancient Egyptians	Year 4: Shell structures – Pizza Box	Year 5: Framed structures – Mayan Home	Year 6: Framed structures using CAD
<ul style="list-style-type: none"> ✓ A structure is something arranged or assembled in a very specific way, using multiple parts ✓ Most structures are designed to remain stable and sturdy, meaning they won't break or fall over when something is placed in or on them. ✓ A shell structure is a hollow structure with a thin outer covering. ✓ There are 3 main things to consider when ensuring a frame structure is stable: Shape, Materials, Joining ✓ Net – the flat or opened-out shape of an object such as a box. 	<ul style="list-style-type: none"> ✓ A structure is something arranged or assembled in a very specific way, using multiple parts ✓ Most structures are designed to remain stable and sturdy, meaning they won't break or fall over when something is placed in or on them. ✓ A shell structure is a hollow structure with a thin outer covering ✓ CAD – computer-aided design ✓ Familiarity with general purpose software that can be used to draw accurate shapes ✓ Net – the flat or opened-out shape of an object such as a box. 	<ul style="list-style-type: none"> ✓ Most structures are designed to remain stable and sturdy, meaning they won't break or fall over when something heavy is placed on them. ✓ A frame structure is made of rigid parts that are put together. The parts then form the framework. ✓ Triangulation is the use of rigid triangles in construction to give stability to structures. A hacksaw is a saw with a narrow fine-toothed blade set in a frame, used especially for cutting metal or wood. ✓ A G-clamp is a type of clamp device typically used to hold wood or metal ✓ Joining is the process of linking or connecting two parts together. ✓ Examples of joining are Sellotape, glue, thread, zips, laces, nails, screws etc. 	<ul style="list-style-type: none"> ✓ Develop and use knowledge of box and frame structures and, where appropriate, more complex 3D structures. ✓ Develop and use knowledge of how to construct strong, stiff frame structures. (Recap from Y5) ✓ Familiarity with general purpose software that can be used to draw accurate shapes.

Mechanisms

EYFS: Pirates Treasure Chest	Year 1: Sliders and Levers – pop up book – Jack & the Beanstalk	Year 2: Wheels & axles (Brunel)
<ul style="list-style-type: none"> ✓ Hinge a mechanism which joins two pieces of material together to allow for opening and closing ✓ Catch a device used for fastening ✓ Stickers, buttons, elastic, pipe cleaners, split pins, treasury tags can be used for hinges and catches. ✓ There are many things that use hinges and catches: gates, doors, First Aid box, lids of boxes. 	<ul style="list-style-type: none"> ✓ Mechanisms are the parts that make something work. ✓ Sliders and Levers are mechanisms that make things move. ✓ Explain the different types of mechanisms: SLIDER and LEVER. ✓ Explain that a SLIDER will require a slot to allow the image to move. ✓ Explain that a LEVER will require a PIVOT to rotate round and round or in a curve. <p>Simple mechanisms move...</p> <div style="display: flex; flex-direction: column; align-items: flex-start;"> <div style="display: flex; align-items: center; margin-bottom: 10px;">  in a straight line </div> <div style="display: flex; align-items: center; margin-bottom: 10px;">  in a straight line, backwards and forwards </div> <div style="display: flex; align-items: center; margin-bottom: 10px;">  round and round </div> <div style="display: flex; align-items: center;">  in a curve </div> </div>	<ul style="list-style-type: none"> ✓ Axle – a rod on which one or more wheels can rotate, either freely or be fixed to and turn with the axle. Axle holder – the component through which an axle fits and rotates. ✓ Axles are used and supported to allow the wheels and axles to move freely. ✓ Bracing is used to reinforce and strengthen joins. ✓ Axles can be fixed or moving.


Mechanisms

Year 3: Levers and linkages- Bee Book	Year 4: Pneumatics – create a minotaur	Year 5: Cams- moving life cycle	Year 6: Pulleys & Gears (Carnival Float)
<ul style="list-style-type: none"> ✓ Mechanism – a device used to create movement in a product. ✓ Lever – a rigid bar which moves around a pivot. Levers are used in many everyday products. In this project children will use card strips for levers and paper fasteners for ✓ pivots. ✓ Linkage – the card strips joining one or more levers to produce the type of movement ✓ required. The term ‘linkage’ is also used to describe the lever and linkage mechanism as ✓ a whole. ✓ Slot – the hole through which a lever is placed to enable part of a picture to move. ✓ Guide or bridge – a short card strip used to keep lever and linkage mechanisms in place and control movement. ✓ Loose pivot – a paper fastener that joins card strips together. ✓ Fixed pivot – a paper fastener that joins card strips to the backing card. ✓ Joining is the process of linking or connecting two parts together. <p>Lever and linkage mechanisms usually produce oscillating or reciprocating movement:</p> <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">  Linear – in a straight line </div> <div style="display: flex; align-items: center;">  Reciprocating – backwards and forwards in a straight line e.g. a slider </div> <div style="display: flex; align-items: center;">  Rotary – round and round e.g. a wheel, cam, pulley, gear wheel </div> <div style="display: flex; align-items: center;">  Oscillating – backwards and forwards in an arc e.g. a lever </div> </div>	<ul style="list-style-type: none"> ✓ Pneumatic is a system which works to move things using gases or air. ✓ Hydraulic – a system that works using liquids (water). ✓ Compressed is something that is squashed such as air in a tube. ✓ System- a set of related parts or components used to create an outcome. In a pneumatic system the input movement is where the user pushes or pulls a syringe or pump. The output movement is where the object at the end of the tube moves. 	<ul style="list-style-type: none"> ✓ A cam is a mechanism that changes one sort of movement to another. Cams can be an off-centre wheel or a specially shaped wheel ✓ Rotary motion – movement that goes round ✓ Oscillating motion – moving to and fro around a pivot point, as in a lever ✓ Reciprocating motion – backwards and forwards movement in a straight line, as in a slider ✓ A hand drill is a manually operated hand tool for drilling holes ✓ A G-clamp is a type of clamp device typically used to hold wood or metal 	<ul style="list-style-type: none"> ✓ Understand that mechanical and electrical systems have an input, process and output ✓ Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement ✓ Pulley – a grooved wheel over which a drive belt can run. ✓ Gear – a wheel with teeth around its circumference. ✓ Gearing up or down – changing the rotational speed of a product by the use of pulleys or gears. When a small pulley or gear is used to drive a larger one the rotational speed is reduced and the product has been geared down. ✓ Mechanical system – a set of related parts or components used to create movement.

Food		
EYFS: Fruit tart	Year 1: Preparing Fruit and Vegetables – fruit smoothie	Year 2: Fruit kebabs
<ul style="list-style-type: none"> ✓ Eating fruit is a healthy option. ✓ We should eat '5 a day' – either five portions of fruit or vegetables to be healthy. ✓ You use a spoon to spoon the yoghurt into the tart shells. ✓ You use a knife to cut the fruit. ✓ It is important to wash your hands so that we don't spread germs. ✓ It is important to follow instructions otherwise we might not end up with a fruit tart. 	<ul style="list-style-type: none"> ✓ A smoothie is a drink made by puréeing ingredients in a blender. ✓ Fruit – fruit is an edible part of a plant that develops from a flower. ✓ Fruits grow all over the world on many types of plant. Some fruits only grow in certain areas, such as bananas and mangoes, which require warmer temperatures. ✓ Vegetable – a vegetable is an edible part of a plant that develops from any other part of the plant, such as a root or stem. ✓ Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The Eatwell Guide 	<ul style="list-style-type: none"> ✓ Understand where a range of tropical fruit comes from e.g. farmed or grown at home ✓ Kebab – cooked and/or fresh ingredients on a skewer. ✓ Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The Eatwell Guide ✓ Nutrients – all the things in food that the body needs to remain healthy.

Food			
Year 3: A cous cous salad	Year 4: Greek Salad	Year 5: Frittata	Year 6: Seasonal soup and bread
<ul style="list-style-type: none"> ✓ Vegetables have different levels of nutritional values that can be used to determine how healthy a meal can be. ✓ Couscous is pasta made from semolina flour mixed with water. ✓ Semolina is the name given to coarsely milled durum wheat, which is grown in fields. ✓ Salad is a cold dish of various mixtures of raw or cooked vegetables. ✓ Charred food is partially burnt and considered a type of browning. ✓ Appearance – how the food looks to the eye. <ul style="list-style-type: none"> • Texture – how the product feels in the mouth. • Sensory evaluation – evaluating food products in terms of the taste, smell, texture and appearance. 	<ul style="list-style-type: none"> ✓ Salad is a cold dish of various mixtures of raw or cooked vegetables ✓ Pita or pitta is a family of yeast-leavened round flatbreads baked from wheat flour, common in the Mediterranean. ✓ Hummus, also spelled hommus or houmous, is a Middle Eastern dip, spread, or savory dish made from cooked, mashed chickpeas blended with tahini, lemon juice, and garlic. ✓ Olives are dried in the sun, which causes them to blacken. ✓ Processed food – ingredients that have been changed in some way to enable them to be eaten or used in food preparation and cooking. ✓ Appearance – how the food looks to the eye. ✓ Texture – how the product feels in the mouth. ✓ Sensory evaluation – evaluating food products in terms of the taste, smell, 	<ul style="list-style-type: none"> ✓ Frittata is an egg-based Italian dish similar to an omelette or crustless quiche or scrambled eggs, enriched with additional ingredients such as meats, cheeses, or vegetables. ✓ The word frittata is Italian and roughly translates to 'fried'. ✓ cook (food) in hot fat or oil, typically in a shallow pan. ✓ Saute: fried quickly in a little hot fat. ✓ Bake: cook (food) by dry heat without direct exposure to a flame, typically in an oven. ✓ Garnish: to decorate 	<ul style="list-style-type: none"> ✓ Different vegetables are harvested in different seasons (seasonality) ✓ Different vegetables have different amounts of sugar which can be used to sweeten foods ✓ Vegetables have different levels of nutritional values that can be used to determine how healthy a meal can be. ✓ Rules that must be followed for health and safety when using knives ✓ Rubbing in – rubbing the dry ingredients together with the fat, lifting to put air into the mixture, so that it resembles fine breadcrumbs. ✓ Knead: pulling and squeezing dough to make it smooth. ✓ Simmer: stay just below boiling point while bubbling gently.

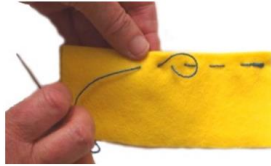
	texture and appearance. • Preference test – trying different foods and deciding which you like best.		
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Textiles		
EYFS: Christmas tree decoration	Year 1: Christmas Bauble- Weaving	Year 2: Christmas decoration- over stitch
<ul style="list-style-type: none"> ✓ Weaving - to make by passing threads or strips over and under each other ✓ Template – a shape drawn to assist in cutting out shapes. ✓ Sellotape can join the weaving to the card. 	<ul style="list-style-type: none"> ✓ Weaving - to make by passing threads or strips over and under each other ✓ Fabric – A fabric is a soft material used for sewing, weaving and knitting ✓ Template – a shape drawn to assist in cutting out shapes. 	<ul style="list-style-type: none"> ✓ An over stitch is a joining technique made with a needle and thread to join the edges of two pieces of fabric  <ul style="list-style-type: none"> ✓ Seam – a row of stitches joining two pieces of fabric. ✓ Sew – to join pieces of fabric with stitches. ✓ Template – a shape drawn to assist in cutting out shapes. ✓ Fabric products can be decorated with a range of finishing techniques, including fabric paints, textile paints and fabric crayons.

Textiles

Year 3: Felt Christmas bauble decoration – running stitch

- ✓ A running stitch is worked by passing the needle in and out of the fabric at a regular distance. It is used to join 2 pieces of fabric



- ✓ Seam Allowance – extra fabric allowed for joining together
- ✓ Template – a shape drawn to exact shape and size and used to assist cutting out.
- ✓ Appliqué describes method of stitching/gluing patches onto fabric to provide decoration.

Year 4: Felt Christmas Bauble decoration – blanket stitch

- ✓ A blanket stitch is a stitch in which widely spaced, interlocking loops are formed



- ✓ Embroider – to decorate fabric with stitches.
- ✓ Appliqué describes method of stitching/gluing patches onto fabric to provide decoration.
- ✓ Aesthetics – the way in which the product looks with the nature and expression of beauty.

Year 5: Embroidery – binka Christmas decoration

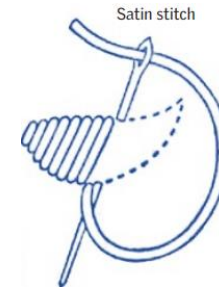
- ✓ Cross-stitching is a type of embroidery that uses little crosses or 'x's to create a tiled pattern or design



- ✓ Binca is a canvas fabric used for sewing and embroidery
- ✓ Embroider – to decorate fabric with stitches.
- ✓ Appliqué describes method of stitching/gluing patches onto fabric to provide decoration.
- ✓ Aesthetics – the way in which the product looks with the nature and expression of beauty

Year 6: Felt Santa's Bag to store a chocolate on the tree – ran of stitches and satin stitch to embroider

- ✓ A range of stitches can be used to join different fabrics together e.g. overstretch & running & blanket stitch
- ✓ A satin stitch is an embroidery stitch worked in parallel lines so closely and evenly to completely cover a section of fabric



- ✓ Fasteners are used to hold to pieces of fabric together e.g. a button
- ✓ Embroider – to decorate fabric with stitches.
- ✓ Appliqué describes method of stitching/gluing patches onto fabric to provide decoration.
- ✓ Aesthetics – the way in which the product looks with the nature and expression of beauty.

Electrical Systems

Year 3:	Year 4: Simple circuits and switches for a bedside table lamp	Year 5:	Year 6:
	<ul style="list-style-type: none">✓ Circuits- path through which electricity passes.✓ System- a set of related parts or components that together achieve a desired outcome.✓ Innovative- something that is a unique idea and one of a kind.✓ Switches- something that can control the flow of electricity in a circuit✓ Conductor- a material that allows a electrical current to pass through it✓ Insulator- a material that does not easily allow electricity to pass through it.	✓	<ul style="list-style-type: none">✓ Understand and use electrical systems in their products.✓ Apply their understanding of computing to program, monitor and control their products.✓ Output devices – components that produce an outcome e.g. bulbs and buzzers.✓ Input devices – components that are used to control an electrical circuit e.g. switches or sensors.