Y1 Design and Technology

Mechanical and electrical systems

Homes

Key knowledge

To know that book front covers need to be attractive.

To know mechanisms (sliders) need to move smoothly.

To know and have an awareness of the key design process steps (design, make, evaluate).

Key skills

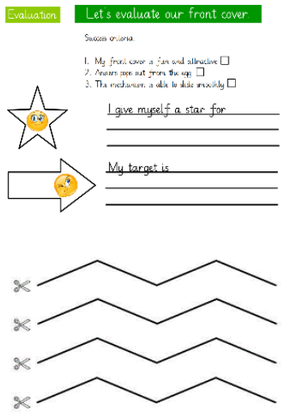
To be able to cut character and item templates.

To be able to use masking tape to hold a slider in place.

To be able to glue together materials (paper and card).

To be able to follow simple teacher instructions to create an end product.

To be able to begin to follow and design process.



Enquiry/question/outcome/activity

To design and make a book cover with a working mechanism.

Key vocabulary (tier 2)

attractive
cut
materials
stick

Key vocabulary (tier 3)

slider
template

Textiles

Food and cooking

Structures

Autumn – Homes and pirates, plans and ventures

DT WEEK FOCUS—MAKING A BEDROOM

Key knowledge

To know materials can join together.

To know designs have different themes.

To know objects are made from different materials.

To know free-standing structures stand on their own base.

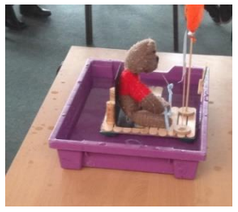
To know and have an awareness of the key design process steps (design, make, evaluate).

To know boats must be able to float.

To know polystyrene, cotton reels and plastic lids all float.

To have an awareness of the key design process steps (design, make, evaluate).

To know where glue needs to be applied.



Key skills

To be able to cut simple shapes from paper or thin card.

To be able to glue together materials (paper, craft sticks, card).

To be able to use scissors safely.

To be able to measure by drawing around an object.

To be able to begin to follow an iterative design process.

To be able to use simple verbal evaluation and written against design criteria.

To be able to saw wood with adult supervision.

To be able to measure by drawing around an object.

To be able to begin to follow an interactive design process.

To be able to use a simple verbal evaluation against design criteria.

To be able to apply glue accurately.

Enquiry/question/outcome/activity

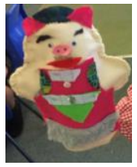
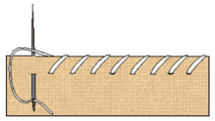
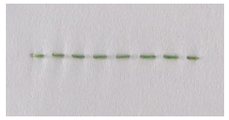
To design and make a bedroom for a Lego character.
To design and make a pirate ship for a stranded Barnes Bear which floats for a minute.

Key vocabulary (tier 2)

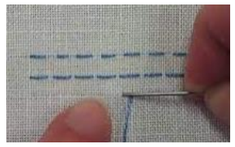
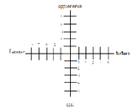
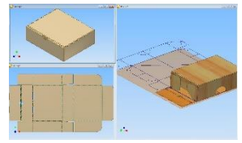
bed (bunk bed)
carpet
cut
chair
curtain
design
fit
float
hard
join
lamp
lights
materials
measure
object
research
sink
size
soft
theme
wallpaper
window
wood

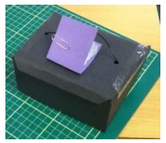
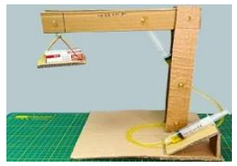
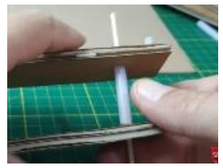
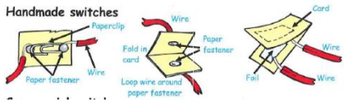
Key vocabulary (tier 3)

buoyant
design
disc
evaluate
flexible
foil
free standing
glue gun
iterative
MDF
polystyrene
research
waterproof

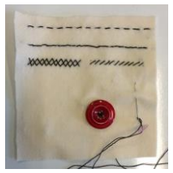
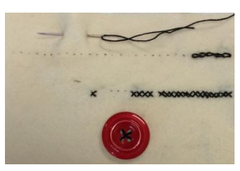
Mechanical and electrical systems		Textiles		Food and cooking (Healthy and varied diet including cooking and nutrition)		Structures	
Y2 Design and Technology	**Battles, burns and bandages** **Mechanisms (wheels and axles)**		**Myself and my surroundings**		**Autumn – Battles, burns and bandages** **Spring – Japan – Sushi** **DT WEEK FOCUS - BREADMAKING**		
	Key knowledge To know fire engines need to transport water. To know an axle is a rod which allows a wheel to rotate. To know cars and fire engines need at least 4 wheels. To know automotive engineers design, build and test vehicles. To begin to recognise the key parts of the design process (design, make and evaluate). 	**Key skills** To be able to use PVA glue to join a variety of materials including card and egg boxes. To be able to use masking tape to attach a variety of materials including straws and card. To be able to construct an axle to fit through a straw. To be able to select appropriate materials for decoration. To be able to follow a simple iterative process. To be able to use simple written evaluation against a design criteria. 	**Key knowledge** To know a glove puppet has a soft, hollow body so that you can put your hand inside and move its head and arms with your fingers. To know a puppet must look attractive. To know that sewing fabric together will make the join last for a long time. To begin to recognise the key parts of the design process (design, make and evaluate).   	**Key skills** To be able to develop our sewing skills by making puppets. To be able to join fabric using staplers, safety pins and sewing. To be able to thread a needle with supervision. To be able to use a running stitch. To be able to use an over stitch to join fabric. To be able to use simple written evaluation against a design criteria.  	**Key knowledge** To know bread has different flavours and textures because of its ingredients. To know bread needs to be attractive. To know bread is cooked in the oven and rises with yeast. To know dough is made up of flour, water, yeast and salt. To begin to recognise the key parts of the design process (design, make and evaluate). To know sushi is a traditional Japanese dish. To know the claw grip and bridge hold techniques keep fingers out of the way of a knife. To know instructions need to be followed in order.  	**Key skills** To be able to roll play dough into a variety of bread shapes. To be able to work in a pair effectively. To be able to knead dough into a desired shape. To be able to measure and mix ingredients with adult supervision. To be able to use simple written evaluation against a design criteria. To be able to measure and weigh ingredients using non-standard measures (handful). To be able to start to follow a recipe. To be able to prepare food hygienically. To be able to cut, peel and grate vegetables with adult supervision. To be able to use simple written evaluation against a design criteria. 		
	Enquiry/question/outcome/activity To build a model fire truck that could transport water.		**Enquiry/question/outcome/activity** To design and make a glove puppet linked to the book 'The True Story of the Three Little Pigs'.		**Enquiry/question/outcome/activity** To design and make a bread product that can be sold in Thomas Farynor's bakery. To prepare and make sushi.		
	Key vocabulary (tier 2) evaluate fire engine hose material wheel	**Key vocabulary (tier 3)** axle holder chassis fixed axle free axle friction iterative	**Key vocabulary (tier 2)** design evaluate fabric hollow join needle puppet sew staple stitch thread	**Key vocabulary (tier 3)** over stitch running stitch textiles	**Key vocabulary (tier 2)** appearance attractive crunchy evaluate grate ingredients knife loaf mix peel recipes salty smell sushi sweet taste texture	**Key vocabulary (tier 3)** bridge hold claw grip hygiene iterative knead nori yeast		

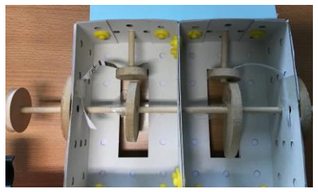
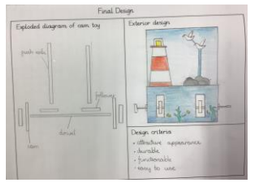
Y3 Design and Technology

Mechanical and electrical systems	Textiles		Food and cooking (Healthy and varied diet including cooking and nutrition)		Structures	
	Richmond Park DT WEEK FOCUS – SEWING APRONS		The Romans Food – healthy snack		The Romans Shell structures (including computer-aided design)	
	Key knowledge To know aprons are useful to protect our clothing and can be personalised. To know aprons help to organise things. To know aprons must be attractive and comfortable to wear. To know the key parts of the design process (design, make, evaluate).  	**Key skills** To be able to use running stitch to sew on a variety of decorations. To be able to thread a needle using a threader. To be able to sew on a button. To be able to cut lettering out of fabric using scissors. To be able to use short written evaluation commenting on more than one aspect of the design criteria.  	**Key knowledge** To know a healthy diet requires different amounts of each food group (carbohydrates, protein, fats and minerals. To know food must be prepared hygienically. To know a salad must be healthy, look appealing, have a mix of textures and be tasty. To know the key parts of the design process (design, make, evaluate).  	**Key skills** To able to use a claw grip carefully and independently to cut vegetables. To be able to use a bridge hold grip carefully and independently to cut vegetables. To be able to test ingredients and evaluate different flavours and textures. To be able to use short written evaluation commenting on more than one aspect of the design criteria. To be able to name key parts of the design process (design, make, evaluate).  	**Key knowledge** To know computers can be used to design a product with software. To know 2D (two-dimensional) shapes are flat, while 3D (three-dimensional) shapes are solid objects with length, breadth, and depth. To know containers need a lid and must securely hold their contents. To know the key parts of the design process (design, make, evaluate). 	**Key skills** To be able to cut out packaging accurately and independently. To be able to generate, develop and model using computer aided design. To be able to measure accurately using rulers and standard units of measure (cm). To be able to use short written evaluation commenting on more than one aspect of the design criteria. 
	Enquiry/question/outcome/activity To design and make an apron. Children to sew on pocket and decorate.		**Enquiry/question/outcome/activity** To design and make a healthy snack.		**Enquiry/question/outcome/activity** To design and make packaging for the healthy snack.	
	Key vocabulary (tier 2) apron cutting design evaluate knot make needles thread	**Key vocabulary (tier 3)** innovative iterative	**Key vocabulary (tier 2)** chop cut design evaluate grate ingredients make method peel recipe	**Key vocabulary (tier 3)** bridge grip claw grip iterative texture	**Key vocabulary (tier 2)** design evaluate make package packaging three-dimensional two dimensional	**Key vocabulary (tier 3)** cad (computer-aided design) iterative prototype software

	Mechanical and electrical systems		Textiles		Food and cooking		Structures	
Y4 Design and Technology	Conflict – Britain at war MECHANISMS – simple circuits, Morse code machines and switches DT WEEK FOCUS – MORSE CODE MACHINES				Change			
	Key knowledge To know Morse code uses dots and dashes to communicate letters and numbers. To know electrical devices can use a variety of switches including: pressure, pivot, slide. To know a 3D box can be made from a 2D printed net. To know pressure switches are the most effective for a Morse code machine. To understand and implement the key parts of the design process (design, make, evaluate) To know mechanism/mechanical systems use related components that act together to create a movement. To know motion is movement from one place to another. To know a pivot is a turn on a central point. To know the lever is the simplest type of mechanism. A lever is a stiff bar which moves around a pivot. To know linkage is the part of the mechanism used to join one or more levers to produce the type of movement required. To know a loose pivot joins the levers together. To know a fixed pivot joins the levers to the overall object.  	**Key skills** To be able to use research and develop design criteria. To be able to construct different types of switches using a variety of materials. To be able to join a variety of components together to create a series circuit with a buzzer. To be able to construct boxes. To be able to use tools safely – Stanley knife, cutting board, metal ruler – with assistance. To be able to create written evaluation commenting on more than one aspect of the design criteria with justifications. To be able to describe how a hydraulic level system works.   			**Key knowledge** To know and name a variety of everyday foods and the five food groups. To know the food pyramid shows us how much of each food group we need. To know healthy wraps need balanced ingredients. To understand the key parts of the design process (design, make, evaluate). 	**Key skills** To be able to independently cut using a knife. To be able to grate using a grater. To be able to chop using a knife. To be able to prepare food hygienically. To be able to increase confidence in using the claw grip and bridge hold grip to safely use knives. To be able to create written evaluation commenting on more than one aspect of the design criteria with justifications. 		
	Enquiry/question/outcome/activity To design and make a Morse code machine (linked to science). To design and make a hydraulic lever system (linked to science and learning themes of the ancient Greeks).				**Enquiry/question/outcome/activity** To design, prepare and make a healthy snack.			
	Key vocabulary (tier 2) backwards battery break buzzer cables cell circuit component conductor dash direction dot down fixed forward insulator left loose motion movement parallel pivot pull push right signal stiff switch up	**Key vocabulary (tier 3)** design criteria hydraulic fulcrum iterative justification lever linkage Morse code pivot pivot switch pressure switch slide switch syringe system			**Key vocabulary (tier 2)** balanced chop cut evaluate fats food groups fruit grate healthy mix peel sugars variety vegetables	**Key vocabulary (tier 3)** bridge hold carbohydrates claw grip dairy food pyramid hygienic protein		

Y5 Design and Technology

Mechanical and electrical systems	Textiles Space DT WEEK FOCUS – SEWING STARS		Food and cooking India Food – mango lassi		Structures Taj Mahal building day	
	Key knowledge To know a bedroom decoration must fit the theme and be attractive. To know that a blanket stitch is most effective at joining fabric together to make the item more durable. To know different types of stitch can be used for a variety of decorative outcomes. To know the key parts of the design process and the awareness of the wider iterative process (problem, research, practical tasks). To know the design process is a cycle consisting of problem, research, design criteria, practical tasks, design ideas, final ideas, product making and evaluation.  	**Key skills** To be able to thread and use needles independently. To be able to use running, cross, back and blanket stitches. To be able to cut felt designs accurately and independently. To be able to use clear and cohesive written evaluation which comments on multiple aspects of the design process with justifications relating back to the user. To be able to evaluate own product using an evaluation star. To be able to design a product using available materials.   	**Key knowledge** To know lassi is a traditional Indian drink which combines fruit and yoghurt as its base ingredients. To know a lassi can be sweet or salty. To know lassi needs to look appealing, taste good and have a balance of spices. To know the key parts of the design process and the awareness of the wider iterative process (problem, research, practical tasks). 	**Key skills** To be able to use claw and bridge hold techniques independently when cutting with a knife. To be able to use a knife to cut and slice a variety of fruits navigating fruits with stones (mangoes) carefully. To be able to follow a set of instructions and measure ingredients using scales and measuring jugs. To be able to work collaboratively with others. To be able to use clear and cohesive written evaluation which comments on multiple aspects of the design process with justifications relating back to the user. To be able to design make and evaluate a lassi.	**Key knowledge** To know that the Taj Mahal is one of the seven man-made wonders of the world. To know that the Taj Mahal has been designed with symmetrically. To know that triangles can be found in many buildings and other constructions. To know that triangles are very often used in the construction of bridges as they provide stability and help to distribute forces evenly across the bridge. 	**Key skills** To be able to consider the similarities and differences between the structures of the seven man-made wonders of the world. To be able to appreciate and explain why these might be considered to be the most impressive structures in the world. To be able to create triangles from 3 sticks and elastic bands, ensuring that joins are secure and lengths are equal To be able to create tetrahedrons from four triangles. To be able to work collaboratively in teams of two, four and whole classes.
	Enquiry/question/outcome/activity To design and make a star to decorate a space themed bedroom.		**Enquiry/question/outcome/activity** To prepare and make a mango lassi (linked with an India theme).		**Enquiry/question/outcome/activity** What are the seven man-made wonders of the world? Why do you think these are the seven man-made wonders of the world? What makes them special? Build the Taj Mahal from bamboo sticks and elastic bands	
	Key vocabulary (tier 2) decoration design durable effective evaluation felt practical research sew textiles thread	**Key vocabulary (tier 3)** back stitch blanket stitch criteria cross stitch design stitch innovative iterative running stitch	**Key vocabulary (tier 2)** appealing balance bitter combine ingredients recipe sour spices spicy sweet traditional variety	**Key vocabulary (tier 3)** Alphonso mango bridge hold claw grip Kesar mango lassi	**Key vocabulary (tier 2)** arch construction structure symmetry tomb triangle	**Key vocabulary (tier 3)** dome minaret Mughal architecture tetrahedron

	Mechanical and electrical systems		Textiles		Food and cooking		Structures	
Y6 Design and Technology	Dangerous Earth DT WEEK–MAKING CAM TOYS				Ancient Egyptians			
	Key knowledge To know offset cams can provide rotary and up and down movements including eccentric cams, drop/snail cams, pear cams. To know cams turn rotational movement into linear movement. To know the 8 steps of the design process and how to apply them to the desired outcome.   	**Key skills** To be able to measure, cut and glue accurately and independently using standard units. To be able to choose an appropriate (best fit) cam. To be able to measure and saw dowel safely and independently. To be able to use a glue gun independently to secure cams and rods. To be able to work collaboratively in a pair. To be able to create a clear and comprehensive written evaluation which comments on multiple aspects of the design process with justifications relating back to the user.   			**Key knowledge** To know the available foods in Ancient Egyptian times. To know that avocado, yogurt, sour cream and tomatoes sensible base ingredients for a dip. To know the 8 steps of the design process and how to apply them to the desired outcome. 	**Key skills** To be able to use claw and bridge hold grip independently and efficiently when using knives. To be able to measure ingredients accurately using standard units. To be able to use a variety of utensils such as graters, chopping boards, mixing bowls, and juicers safely and effectively. To be able to prepare food hygienically. To be able to create a clear and comprehensive written evaluation, which comments on multiple aspects of the design process with justifications relating back to the user.  		
	Enquiry/question/outcome/activity To design and make a moving cam toy.				**Enquiry/question/outcome/activity** To design, prepare and make a dip that would be suitable for ancient Egyptians.			
	Key vocabulary (tier 2) cost effective durable follower interactive materials mechanical movement slider storage sturdy up and down movement user-centred versatility	**Key vocabulary (tier 3)** aesthetically pleasing cams (drop, pear, eccentric) crank iterative linear movement mechanism push rod shaft tech card			**Key vocabulary (tier 2)** avocado balanced chop chopping board colander core cut dice grate juice juicer mix nutrition outer leaf peel slice stir	**Key vocabulary (tier 3)** aioli guacamole salsa serrated edged knife sour cream and chive taramasalata zest		