	Autumn 1	Autumn 2 DT	Spring 1	Spring 2 DT	Summer 1	Summer 2 DT
FS1	**What materials are available for us to create with?**		**How do we use simple tools?**		**Learning to use tools and materials on our own to create.**	
FS2	**Building confidence with tools and materials.**		**Extending our skills with tools and materials.**		**.** **Making plans and making choices.**	
Year 1		**To design and make a vehicle with wheels attached to an axle (fire engines)** Explain what they are making. Design products that have a clear purpose and an intended user. Use pictures to convey what they want to make. Make products, using a range of tools to cut, shape, join and finish.		**To make a healthy Fruit smoothy** Understand where food comes from. Group familiar food products together e.g. fruit and vegetables. Cut ingredients safely.		**To design and make a book with flaps** Mark out materials to be cut using a template. Fold, tear and cut paper or card Investigate strengthening sheet materials. Roll paper to create tubes.

		Say what they like and don't like about their product. Talk about how closely their finished product meets their design criteria. Attach wheels to chassis using an axle. With support cut strip wood/dowel using a hacksaw. Make vehicles with construction kits which contain free running wheels.		Prepare simple dishes-safely and hygienically-without using a heat source.		Demonstrate a range of joining techniques such as gluing or taping. Measure and mark out lines. Explore objects and designs to identify likes and dislikes Explore how products have been created
Year 2		**To design and make a hand puppet which is decorated to have a clear face.** Explain what they are making and which materials they are using. Design products that have a clear purpose and an intended user.		**To design and make a healthy sandwich.** Group foods into the five groups in 'The Eatwell Plate'. Cut, grate or peel ingredients		**To design and make a model space craft and launch pad to hold it securely in place.** Make products, using a range of tools to cut, shape, join and finish. Say what they like

		Use pictures and words to convey what they want to make. Demonstrate a range of joining techniques such as gluing, taping or creating hinges. Demonstrate a range of cutting and shaping techniques such as tearing, cutting, folding and curling. Use simple pop-ups. Explore objects and designs to identify likes and dislikes		safely. Prepare simple dishes- safely and hygienically- without using a heat source. Measure or weigh using cups or an electronic scale..		and don't like about their product and explain why. Talk about how closely their finished product meets their design criteria. Begin to use software to represent 2D designs. Use a range of materials to create models e.g. tubes, dowel and cotton reels. Use materials to practise drilling, screwing, nailing and gluing to strengthen products Cut materials safely using tools provided. Explore how products have been created.

Year 3		**To make a Christmas card with an electronic element.** **(Sound or light up)** Create series of circuits Measure and mark out accurately. Cut materials accurately and safely by selecting appropriate tools. Cut slots. Explore products by disassembling them. Improve on existing designs.		**To follow a recipe to make a healthy vegetable soup** Know that a healthy diet is made up from a variety of different food and drink, as depicted in The Eatwell Plate. Measure and weigh ingredients appropriately. Follow a recipe.		**To design and make a bridge which will hold allow a toy car to cross an expanse of 30cm, with moving parts which allow a tall boat to pass under it.** Investigate existing products, including drawing them. Plan with a partner a simple sequence of actions to make a product. Collaboratively develop more than one design. Collaboratively develop prototypes. Generate designs with annotated sketches Refine work and

						techniques as work progresses. Collaboratively identify strengths and weaknesses of their design ideas. Strengthen frames using diagonal struts. Begin to use mechanical systems in their products e.g. gears, pulleys and levers. Identify some of the great designers in different areas of study to generate ideas from their designs.
Year 4		**To design and make a toy for a toddler with moving parts and an electronic component.**		**To make a healthy meal**		**To make a bag or money carrier that will hold a 500g weight and**

		Create series and parallel circuits. Investigate how to make structures more stable e.g by widening the base. Understand and use mechanical structures in their products e.g. gears, pulleys, levers and gears. Use and explore complex pop-ups. Cut slots and internal shapes. Disassemble products to understand how they work. Improve on existing designs, giving reasons for choices.		examples - *Vegetable Shepherd's pie, Curry, Moussaka,* Measure ingredients using scales. Prepare ingredients hygienically and using the appropriate utensils by following a recipe		**fastens to keep the contents safe.** Investigate existing products, including drawing them to analyse and understand how they are made. Plan a sequence of actions to make a product. Develop more than one design. Develop prototypes. Generate designs with annotated sketches and computer-aided design (CAD) where appropriate. Refine work and techniques as work progresses, continually evaluating the product design.

						Identify strengths and weaknesses of their design ideas. Talk about how closely their finish product meets the criteria of the design Measure and mark out to the nearest mm. Create nets. Identify some of the great designers in different areas of study to generate ideas from their designs
Year 5		**To make a child's soft toy** Undertake research to inform design process. This may include surveys and interviews. Use prototypes, cross-sectional diagrams, exploded diagrams		**To make a robot with moving parts and electronic components** Use knowledge of inventors, designers, engineers, chefs and manufacturers who have	.	**Bake off who makes the best cakes?** Assemble or cook ingredients, controlling the temperature of the oven or hob if cooking. Measure accurately using

		and CAD software to represent designs. Consider the views of others when evaluating their own work. Ensure products have a high-quality finish, using art skills where appropriate. Justify their decisions about materials and methods of construction. Make suggestions on how their design/product could be improved.		developed ground-breaking products to create their own innovative designs. Control a model using an ICT control model. Use a glue gun with close supervision. Join materials using appropriate methods. Cut accurately and with precision Cut accurately and safely to a marked line. Join/combine materials with temporary, fixed or moving joints.		different equipment. Create recipes, including ingredients, methods, cooking times and temperatures. Understand the importance of correct storage and handling of ingredients.

Year 6		**To create a fun fair attraction with moving parts and electronic components** Undertake research to inform the design process. This may include surveys and interviews. Use prototypes, cross-sectional diagrams, exploded diagrams and CAD software to represent designs. Consider the views of others when evaluating their own work. Ensure products have a high-quality finish, using art skills where appropriate. Justify their decisions about materials and methods of construction.		**Ethical textiles? – Lucy and Yak link? Waistcoat?** Use knowledge of inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products to create their own innovative designs.		**Come dine with me.** **What would your winning menu be?** Combine ingredients appropriately e.g. beating or rubbing. Measure ingredients to the nearest gram and millilitre and calculate ratios of ingredients to scale up or down from a recipe. Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.

		Make suggestions on how their design/product could be improved. Create circuits that employ a number of components (such as LEDs, resistors and transistors). Cut wood accurately to 1mm. Build frameworks using a range of materials e.g. wood, card and corrugated plastic. Use a cam to make an up and down mechanism. Cut materials with precision and refine the finish with appropriate tools (such as sanding wood). Show an understanding of the qualities of materials to choose appropriate tools to cut and shape.				Create and refine recipes, including ingredients, methods, cooking times and temperatures.

	Design and Technology EYFS and KS1
ELG	**Physical development** Fine motor skills *Use a range of small tools, including scissors, paintbrushes and cutlery. **Expressive Art and design** Creating with materials *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.
National Curiculum	**Subject content Key stage 1** Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment]. 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.
Nursery	***Continuous Provision*** *Children have access to explore the properties of a wide variety of materials from the natural world.* *Children have access to explore the properties of a wide variety of man-made materials.* *Children have access to explore Duplo and Wooden Blocks.*

<table>
<tr><td></td><td colspan="3">Children will develop vocabulary to describe the properties of materials (including words to describe size, shape, texture, strength, flexibility.)
Children will have access to experiences in the indoor and outdoor environment to encourage exploration of materials and creative thinking.
Children will explore a wide variety of common foods including fruits, vegetables, biscuits, breads and cakes.
Children will know the names of common fruit and vegetables.
Children will explore the properties of common foods and food preparation through adult let baking experiences.
Children will have experience of a range of tools and equipment (including, but not exclusive to, pencils, pens, paint brush, scissors, simple dough tools and glue sticks) and know how to manipulate them.</td></tr>
<tr><td></td><td>What materials are available for us to create with?
(By the end of the Autumn Term children will be able to…)

Responds through practical exploration and talk to a wide range of materials and media.

Understands they can manipulate, transform and create effects.

Explores mixing colours</td><td>How do we use simple tools?
(By the end of the Spring Term children will be able to…)

Uses media and materials to express their own ideas.

Knows that when colours are mixed it creates new colours.

Uses lines to enclose spaces.

Stacks blocks both vertically and horizontally.

With support can use a variety of tools.</td><td>Learning to use tools and materials on our own to create.
(By the end of the summer term children will be able to…)

Constructs with a purpose in mind using a variety of resources.

Uses creations in play.

Uses blocks to create enclosures and spaces.

Uses tools independently.</td></tr>
<tr><td>Reception</td><td colspan="3">Continuous Provision
Children will be able to identify and name some properties of a wide variety of materials from the natural world.
Children will be able to identify and name some properties of a wide variety of man-made materials.
Children be able to manipulate a variety of constructions sets including but not exclusive to; Duplo, Wooden Blocks, Lego, Stickle Bricks, simple Meccano type sets and Kids K’nex)
Children will know a range vocabulary to describe the properties of materials (including words to describe size, shape, texture, strength, flexibility.)
Children will have access to challenges in the indoor and outdoor environment to encourage exploration of materials, creative thinking, and problem solving.</td></tr>
</table>

	Children will know a wide variety of common foods including fruits, vegetables, biscuits, breads and cakes. *Children will explore the properties of common foods and food preparation through adult let baking experiences.* *Children will know the names of a wide range of common fruit and vegetables.* *Children will have experience of a range of tools and equipment (including, but not exclusive to, pencils, pens, paint brush, scissors, blunt knife, dough tools, PVA glue, glue spreaders, glue sticks, Sellotape, staples, split pins) and know how to manipulate them.* *Children will construct by Junk Modelling as a self-directed experience and an adult led challenge experience.* *Children will be encouraged to think what they what to make before they begin to build.* *Children will be encouraged to think about finished presentation of their models using paint and collage.*		
	Building confidence with tools and materials. **(By the end of the Autumn Term children will be able to…)** *Regularly uses simple tools and techniques competently and appropriately to create something new including scissors, paint, rolling pins, cutters.* *Beginning to explore simple ways to join materials – types of glue, tape* *Name the primary colours.* *Understand that colours can be mixed to create new colours.* *Know to add black or white to change the shade of a colour.* *Know how to use poster paint and watercolours.*	**Extending our skills with tools and materials.** **(By the end of the Spring Term children will be able to…)** *Selects appropriate resources to express themselves imaginatively e.g. through role play, simple narratives and natural explorations of materials.* *Revisits and adapts work where necessary to create and change a picture or model.* *Knows more ways to join materials – split pins, staples, string, peg* *Can choose an appropriate method of joining materials.* *Use scissors with more control to cut around an object.* *Use powder paint.*	**Making plans and making choices.** **(By the end of the summer term children will be able to…)** *Use a variety of materials and tools including – scissors, tape, staples, string, split pins, pegs, rolling pins, clay and dough tools.* *Choose the best tool/ method to use and begin to explain why.* *Plan how something will look and follow this plan.* *Explain how they created something to others.* *Use creations within their play.* *Follow a simple recipe using scales and measuring spoons.*

	Use scissors to make snips and cut a line. *Use clay and our hands to create a simple art piece.* *Follow a simple recipe with adult support.*		*Follow a simple recipe with less adult support, know what scales are used for.* *Consider colour and pattern in creations.*		*Use tools with clay to create a piece of art.* *Use adult tools with support e.g. hammer, saw, nails.*
	Design, make, evaluate and improve	**Cooking and nutrition**	**Construction, mechanics and electronics**	**Materials**	**Take inspiration from design throughout history**
Year 1 ***To design and make a vehicle with wheels attached to an axle (fire engines)*** ***To make a healthy Fruit smoothy*** ***To design and make a book with flaps***	Explain what they are making. *Know how to talk about projects with a partner.* Design products that have a clear purpose and an intended user. *Design a fire engine toy with wheels that rolls over a surface.* *Design a book with simple flaps that open and close.* *Design a healthy fruit smoothie* Use pictures to	Understand where food comes from. *Know that foods can be from plants or animals.* Group familiar food products together e.g. fruit and vegetables. *Know common fruits including pomegranate, mango, pineapple, etc* *Know common vegetables including sweet pepper, sweet potato, kale, spinach* Cut ingredients safely. *Make a fruit smoothie* *Know how to hold a blunt knife correctly.* *Know to use a chopping*	Mark out materials to be cut using a template. *Know how to place a template on the material to be cut.* *Understand the importance of holding the template still.* *Know how to draw around a template to prepare materials for cutting.* Attach wheels to chassis using an axle. *Know how to build a simple wooden chassis as a base for*	Fold, tear and cut paper or card *Know that we can fold tear and cut paper.* *Know that a sharp fold can help us tear paper more carefully.* *Know that cutting paper will make a neater edge.* *Know how to hold scissors correctly to cut carefully.* Investigate strengthening sheet materials.	Explore objects and designs to identify likes and dislikes *Have time to play with a variety of toy vehicles.* *Have time to play with a variety of lift the flap type books.* *Know what a wheeled toy is.* *Be able to say what they like and don't like about the toy.* *Know what a lift the flap book is.*

	convey what they want to make. *Know how to draw a simple plan and say what materials are needed.* Make products, using a range of tools to cut, shape, join and finish. *I know how to use:* - *a hacksaw* - *cutting board* - *sandpaper* - *PVA glue* Say what they like and don't like about their product. *Give 2 stars and a wish.* Talk about how closely their finished product meets their design criteria. *Say how a finished product is the same as a plan.*	*board to cut and move prepared food.* Prepare simple dishes- safely and hygienically- without using a heat source. *Know we follow a recipe to prepare food* *Know why it is important to wash hands before preparing food.* *Know how to wash hands thoroughly.* *Know how to use a blender with adult supervision.*	*making a toy vehicle.* *Know how to attach an axle to the chassis.* With support cut strip wood/dowel using a hacksaw. *Know that tools can be dangerous if used incorrectly.* *Know how to handle a hacksaw safely.* *Know how to hold a hacksaw.* *Know how to cut wood with a hacksaw.* Make vehicles with construction kits which contain free running wheels. *Know how to connect and join the pieces from a variety of construction kits to assemble simple models.* *Know how to make a chassis and axle using construction kits,*	*Know that paper and card become stronger if you place multiple sheets on top of each other.* *Know that by strengthening sheets we can make a stronger product.* Roll paper to create tubes. *Know that by rolling paper to make tubes we create a strong structure* Demonstrate a range of joining techniques such as gluing or taping. *Know how to join materials using glue.* *Know how to join materials using tape.* *Know that creating a flap gives us a useful surface to glue or tape.* Measure and mark out lines.	*Be able to say what they like and don't like about the book.* Explore how products have been created *Know that toys and books are made professionally.* *Know that toys and books are mass produced in factories and machines are used to do this.* *Watch videos of this process.* *Know there are also artisan toy and book makers.*

				Know how to use a centimetre ruler to measure a line. *Know the importance of marking a starting point before drawing out a measured line.* *Know the importance of holding the ruler still.* *Know how to mark out a line against a ruler*	
Year 2 ***To design and make a hand puppet which is decorated to have a clear face.*** ***To design and make a healthy sandwich.*** ***To design and make a model space craft and launch pad to hold it securely in place.***	Explain what they are making and which materials they are using. *Know how to talk about projects with a group.* *Know what materials are needed.* *Begin to say how materials will be assembled.* Design products that have a clear purpose and an intended user. *Design and make a hand puppet.*	Group foods into the five groups in The Eatwell Plate. *Know there are five main food groups –* - *Meat, fish, eggs and beans,* - *Fruit and vegetables,* - *Bread, rice, potato and pasta* - *Fatty and sugary food.* - *Dairy* Cut, grate or peel ingredients safely. *Know how to use a grater to grate vegetables,* *Know how to use*	Use a range of materials to create models e.g. tubes, dowel and cotton reels. *Know that we can use construct models with a wide variety of materials including, card, paper, fabric, junk, dowel, wood,* Use materials to practise drilling, screwing, nailing and gluing to strengthen products *Know that pieces of wood can be joined together with glue, nails or screws.*	Demonstrate a range of joining techniques such as gluing, taping or creating hinges. *Know that glue and tape can be used to join materials together .* *Know that creating a flap can help us glue and tape difficult shapes together.* *Know that sometimes a stronger glue or both tape and glue will be needed when joining.* *Know that flaps can be adapted to create a hinge which will create*	Explore objects and designs to identify likes and dislikes *Look at a variety of different puppets and explore how they are operated.* *Say what they like and don't like about the style and operation of the puppets.* Explore how products have been created. *Look at images and video to explore the development of space flight.*

	Design and make a model space craft. Use pictures and words to convey what they want to make. *Know how to draw a simple plan with a list of materials and key features.* Make products, using a range of tools to cut, shape, join and finish. *Know how to use scissors safely to cut paper, card and fabric.* *Know how to join card and paper using glue and tape.* *Know that card and paper can be joined using string and split pins.* *Know how to join materials using needle and thread.* Say what they like and don't like about	*simple paring knife to chop and peel fruit and vegetables.* *Know how to use a chopping board for cutting fruit and vegetables.* Prepare simple dishes- safely and hygienically- without using a heat source. *Know to wash hands before preparing food.* *Know that washing removes dirt and germs which can make us ill if consumed.* *Know the importance of keeping our hands clean while preparing food.* *Know to clean the preparation area and equipment thoroughly before preparing food.* *Know how to spread to butter a slice of bread.* *Know how to make a sandwich.*	*Know that screws and nails can strengthen the join.* *Know that we can use a drill to make a hole or prepare for a screw to be used.*	*a moving part on a model.* Cut materials safely using tools provided. *Know that tools are dangerous if not used correctly.* *Know how to hold and carry scissors, saws, small hammers, drills, screwdrivers safely.* *Use scissors, hammers, saws, drills, screwdrivers safely.* Demonstrate a range of cutting and shaping techniques such as tearing, cutting, folding and curling. *Know that paper and card can be shaped by tearing, cutting, folding and curling.* *Know that cutting will usually give you a neater finish.* *Know that sometimes tearing and folding can be useful for speed or*	*Find out who makes the modern-day rockets.* *Find out where the rockets are made and how they are made.*

	their product and explain why. *Give 2 stars and a wish with some explanation about why.* Talk about how closely their finished product meets their design criteria. *Say how a finished product is the same as a plan and different.* Begin to use software to represent 2D designs. *Know how to use shapes on word to represent a design.*	*Know that the contents of a sandwich can make it healthy or unhealthy.* Measure or weigh using cups or electronic scales *Know that we can measure with measuring cups.* *Know that we can measure with an electronic scale*		*to create a desired effect.* Use simple pop-ups.	

Additional knowledge

Check/add more detail / moved from different KS

	Design and Technology KS2
National Curiculum	**Key stage 2** Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. 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 **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** As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life. Pupils should be taught to: -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, make, evaluate and improve	Cooking and nutrition	Construction, mechanics and electronics	Materials	Take inspiration from design throughout history
Year 3 ***To make a Christmas card with an electronic element. (Sound or light up)*** ***To follow a recipe to make a healthy vegetable soup*** ***To design and make a bridge which will hold allow a toy car to cross an expanse of 30cm, with moving parts which allow a tall boat to pass under it.***	Investigate existing products, including drawing them. *Explore types of bridges with moving parts.* *Know that there are different types of bridges.* *Know that brides have moving parts that are operated in a variety of ways.* Plan with a partner a simple sequence of actions to make a product. *Know that designers plan out their projects before they construct them.* *Know that working with a partner means cooperating and sharing of ideas, space, work and outcome.* *Know that we can plan a sequence of actions as a written*	Know that a healthy diet is made up from a variety of different food and drink, as depicted in The Eatwell Plate. *Know that a healthy diet is made up from the components of the Eatwell Plate* *Protein - Meat, fish, eggs and beans,* *Fibre - Fruit and vegetables,* *Carbohydrates - Bread, rice, potato and pasta* *Fatty and sugary food.* *Dairy.* *Know that the quantity of each food group is also important for a healthy diet,* Measure and weigh ingredients appropriately. *Know how to use measuring cups and electronic scales to measuring out food to create a healthy dish.*	Create series of circuits *Know that electronic devices are operated by electricity.* *Know that a battery is a chemical form of electricity.* *Know that a battery has a positive and a negative end.* *Know that the electricity must travel in a circuit along wires which connect the positive end of the battery to the device you want to operate and that the circuit must be completed by a second wire back to the negative part of the battery.* *Know that if the circuit is broken the light bulb will go off.* Strengthen frames using diagonal struts. *Know that a diagonal strut placed across a corner or join will secure the join and can be used*	Measure and mark out accurately. *know how to use a template to measure and mark out.* *know how to use a ruler to measure and mark out.* *know the importance of marking a starting point when measuring and marking out.* *understand the importance of parallel and perpendicular when measuring and marking out.* *use measuring and marking out when making a Christmas card with a light up component, and a bridge with moving parts.* Cut materials accurately and safely by selecting appropriate tools. *know how to use scissors safely.*	Explore products by disassembling them. *Know that if we disassemble a product, we can work out how it was made.* *Know how to disassemble a product carefully, identifying seams, and joins to take apart first.* *Know how to disassemble a selection of Christmas cards with electronic components to investigate how they are operated.* Improve on existing designs. *Know that we can take an existing design and improve upon it.* *Take a design from a Christmas card they have investigated, plan how the card*

	list of instructions, pictorially or a combination of the two. Collaboratively develop more than one design. *Know that our first idea isn't always the best idea.* *Cooperate with a partner to generate several design ideas for a bridge with moving parts.* Collaboratively develop prototypes. *Know that a prototype is preliminary vision from which our final idea will be generated.* *Know that construction kits, straws, card and paper models are ways we can make a prototype.* *Work with a partner to make a prototype bridge with moving parts.*	Follow a recipe *Know that a recipe is the way we record how to make certain food.* *Know the list of ingredients is first so you can buy everything you need before you start.* *Know how to follow the steps of a recipe to make a healthy soup.*	*to strengthen a frame to hold the moving components of a bridge* Begin to use mechanical systems in their products e.g. gears, pulleys and levers. *Know that gears, pulleys and levers are all ways in which we can make things move,* *Know gears are a series of toothed wheels that interlock to move each other,* *Know that a pully is a wheel with a ridge in it that a rope sits in and that it is used to help lift things.* *Know that a lever is a bar resting on a pivot which is used to lift.* *Know that gears, levers and pullies can be used to manipulate the moving parts of a bridge*	*know how to use a craft knife against a ruler to create a slot.* *know craft knifes can be dangerous if not used safely* *know you need to use a strong, cutting board when using a craft knife.* *know how to use a craft knife safely to cut a slot.* Cut slots. *Use a craft knife and ruler to cut a simple slot.*	*could be improved upon.* Identify some of the great designers in different areas of study to generate ideas from their designs. *Know that there have been many great bridge designers in history.* *Explore the different types of bridges and find out about bridge designers from history.*

	Generate designs with annotated sketches *Know that an annotation is a label on a drawing which explains what something is, what it is made from, how it is constructed or how it works.* *Produce a design, annotating to show purpose, materials, joins and moving features.* Refine work and techniques as work progresses. *Know that we may need to develop a technique to achieve a specific outcome, for example practice ways of joining two parts of the bridge to achieve a smooth movement.* *Construct a moving element for a bridge exploring how to make the movement more efficient.*				

	Collaboratively identify strengths and weaknesses of their design ideas. *Know that a finished product will have some elements which work. Some will have gone well and some will be weaker.* *Say to a partner what are their favourite parts of their bridge design, what they feel will work as they want it to and what they feel might not work so well or be more challenging to achieve.* *Listen to a partner as they say what are their favourite parts of their bridge design, what they feel will work as they want it to and what they feel might not work so well or be more challenging to achieve.* Talk about how closely their finished				

	product meets their design criteria. *Know that their design was generated in response to specific criteria.* *Know that their finished product should meet the initial design criteria.* *Ask themselves 'will their model bridge move to allow a boat to pass through it.?'*				
Year 4 ***To design and make a toy for a toddler with moving parts and an electronic component.*** ***To make a healthy meal*** ***To make a bag or money carrier that will hold a 500g weight and fastens to keep the contents safe.***	Investigate existing products, including drawing them to analyse and understand how they are made. *Explore a selection of existing bags / toys to know that previous designs exist from different designers of the past.* *Know how to draw a sketch of an existing design and use the process to consider how they were made.*	Measure ingredients using scales. *Know how to use electric scales to measure out ingredients to make a healthy meal, measuring out rice, vegetables, herbs and spices. (Example meals are – Vegetarian; Shepherd's pie, Paella, Curry, Moussaka.)* Prepare ingredients hygienically and using the appropriate utensils by following a recipe. *Know to wash hands and wipe down the work*	Create series and parallel circuits. *To know that in a series circuit the electricity passes through every component.* *Explore how we can operate motors, lights and buzzers using a series or parallel circuits.* Investigate how to make structures more stable e.g by widening the base. *Discuss how young children have limited control over their movements and require*	Measure and mark out to the nearest mm. *When creating our prototype bags or purses use rulers to accurately measure and work out the measurements required for the actual product.* Use and explore complex pop-ups. *When investigating and planning our toy design explore how gears, leavers and springs can be used to create pop ups.* Cut slots and internal shapes.	Disassemble products to understand how they work. *Disassemble a selection of toddler toys to explore how they work* Improve on existing designs, giving reasons for choices. *Taking an existing children's toy identify how it can be improved upon and use this as a starting point to make and design our own toy.*

	Know how to talk about what they have noticed about how the bags / toys have been constructed. Plan a sequence of actions to make a product. *Know how to read and consider a given set of criteria.* *Know to use the criteria when developing our own ideas.* *Know how to independently plan out a project to make a bag / toy from a given set of criteria.* Develop more than one design. *Know that it is a good idea to come up with a variety of initial ideas and then choose the best one.* *Draw a variety of designs for a bag / toy*	*space before any food preparation takes place.* *Know how a recipe is set out.* *Know how to follow a recipe to prepare and make a healthy meal.* *Know how to wash peel and chop vegetables for a healthy meal.* *Know how to hold and use a potato peeler, a paring knife and a vegetable knife safely to prepare vegetables.*	*a toy with a stable base. Consider how they can make a toy more stable?* Understand and use mechanical structures in their products e.g. gears, pulleys, levers and gears. *Explore toddler toys with moving parts and simple electronic components. How do these toys operate?*	*Know how to accurately use a craft knife and board to cut slots and internal shapes in paper and card.* Create nets. *Make nets to create a prototype for our bags and purses.*	Identify some of the great designers in different areas of study to generate ideas from their designs *Explore famous bag designs and designers from modern day and through history.*

	Develop prototypes. *Know that a prototype is a simple model that gives the idea of what the final product will look like.* *Know that a prototype cane be made from basic materials.* *Using paper, card, string, tape and staples make a prototype bag / toy* Generate designs with annotated sketches and computer-aided design (CAD) where appropriate. *Know that annotations can be used to add specific detail to a plan* *Create an annotated design for a bag / toy.* *Know computers can be used to create a design.* *Explore simple computer-based drawing tools and Aps, to create a design.*				

	Refine work and techniques as work progresses, continually evaluating the product design. *Make bag / toy from their own design.* *Know to use and follow the plan to build the bag / toy.* *Verbally identify difficulties and adjust the plan as these difficulties arise.* *Add notes to the plan of any changes made during the construction of the bag / toy.* Identify strengths and weaknesses of their design ideas. *Know that things that went well are strengths while things that didn't work well are weaknesses of the design.* *Know that for the completed bag /toy to be a success that it*				

	must achieve all of the specifications and be fit for purpose. *Know how to identify how the bag / toy can be improved upon?* Talk about how closely their finish product meets the criteria of the design *Know how to present their design and finished product to the class.* *Know to include an outline of the ways in which they have met the initial criteria.*				
Year 5 ***To make a child's soft toy*** ***To make a robot with moving parts and electronic components*** ***Bake off who makes the best cakes?***	Undertake research to inform design process. This may include surveys and interviews. *Know how to put together a survey to find out what which animal would be best for a soft toy company to make into a stuffed toy.*	Assemble or cook ingredients, controlling the temperature of the oven or hob if cooking. *Know that recipes will show a list of instructions including the ingredients to be bought, the method to follow and the temperature for cooking.*	Control a model using an ICT control model. *Know ICT models exist.* *Use and control age-appropriate ICT models to design a robot with moving parts.*	Cut accurately and with precision *Know how to hold and manipulate a variety of scissors, craft knives and light hand saws.* *Develop accuracy and precision with scissors and craft*	Use knowledge of inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products to create their own innovative designs. *Know how to use the internet to*

	Know how to write questions to find out what functions people would like robots to perform. *Know how to approach people and what language to use when carrying out market research.* Use prototypes, cross-sectional diagrams, exploded diagrams and CAD software to represent designs. *Know what a prototype is and how to construct one using skills accumulated previously.* *Know what a cross-sectional diagram is and how to draw one.* *Know what an exploded diagram is and how to draw one.*	*Know how to apply and follow the recipe* *Know the oven and hob are extremely hot and that care must always be taken to avoid a burn.* *Know that the adult will supervise when using a oven or hob and that the adult will use oven gloves when removing hot items from the hob or oven.* *Know how to set the temperature of the oven or hob with adult supervision.* Measure accurately using different equipment. *Confidently use digital, balance and traditional mechanical scales to measure quantities.* Create recipes, including ingredients, methods, cooking times and temperatures.	Use a glue gun with close supervision. *Know there are hot and cold glue guns.* *Know that hot glue guns are very dangerous as they heat the glue to high temperatures.* *Know hot glue will burn if it gets on your skin.* *Know to create a safe space in which to use a hot glue gun.* *Know to consider their own body and other people around before using a hot glue gun.* *Know how to hold and operate a hot glue gun.* Join materials using appropriate methods. *Know when to choose needle and thread, a tape, glue or nail to join materials.*	*knife and light hand saws* Cut accurately and safely to a marked line. *Know that cutting tools have to be sharp and so are always dangerous.* *Know that we carry sharp tools safely with the blade or sharp point faced down and away and that we always walk when carrying these tools.* *Know how to create a safe space when using sharp tools, to work slowly and with care, always being aware of the sharp edge in relation to ourselves and others around us.* Join/combine materials with temporary, fixed or moving joints.	*investigate and research inventors, designers, engineers, chefs and manufacturers from history and modern day.* *Know of a range of innovators from history with links to the soft toy industry and know the designers today produce work to high health and safety standards.* *Know that cutting edge designers are working on developing extremely sophisticated robotics and be aware of significant individuals in the industry.* *Know that many modern chefs are exploring how to push the boundaries with*

	Know CAD stands for computer aided design *Know that CAD can be used when designing products* Consider the views of others when evaluating their own work. *Know that the purpose of design is to produce something that other people appreciate.* *Know that gathering other people's view is an important part of evaluating their work* Ensure products have a high-quality finish, using art skills where appropriate.	*Know that cake recipes can be adapted to produce new and interesting cakes* *Know that many people adapt existing recipes to make new and interesting cakes. (Watching a program like Bake Off may be useful)* *Explore the effects these adaptations can have on the finished product. Undertake a class Bake Off project* Understand the importance of correct storage and handling of ingredients. *Know that all baking equipment must be clean before use and left clean after use.* *Know that baking equipment is stored in a clean and safe location.*	*Know how to use a glue gun to join materials.* *Know how to safely cut thick tapes.* *Know how to secure thread before stitching and control a needle and thread with increasing accuracy.* *Know how to use a small hammer to join with nails and tacks.* *Use a hand drill to drill tight and loose fit holes.* *Know that a hand drill is used to make a hole in wood.* *Know that the size of the bit will dictate the size of the hole made.* *Know that all hand tools can be dangerous and must be used in a safe*	*Know when to choose a tape, glue or nail to join materials.* *Know that fabric can be pinned or tacked before it is finally stitched into place.* *Know how to use a glue gun to join materials.* *Know how to safely cut thick tapes.* *Know how to use a small hammer to join with nails and tacks.* *Know how to create a flap to create a moving joint with card, paper, fabric, plastic, creating a score line when appropriate.* *Know how to apply a metal hinge to wood to create a moving joint.*	*food preparation, presentation, fusions of foods, new methods of cooking and bringing new flavours from around the world.*

	Know that the overall finish of their products is an important factor to consider *Know that time needs to be given to finish the product to a high standard.* *Know that skills acquired in art can be utilised in DT.* Justify their decisions about materials and methods of construction. *Know that the choices they make in the design process need to be justified to the given specifications and may include things like* - *Qualities of a material,* - *Availability of a material,* - *Aesthetics,*	*Know how to use a knife safely and use skills previously acquired.*	*space, using a vice to hold the wood still and safety goggles to protect the eyes.*		

	- *Expense* Make suggestions on how their design/product could be improved. *Know that a critical evaluation of their product will show up areas for improvement.* *Know that design is a process and these areas for improvement are an important factor in leading the process forwards.* *Know how to highlight the areas for improvement.*				
Year 6 ***To create a fun fair attraction with moving parts and electronic components*** ***Ethical textiles? – Lucy and Yak link? Waistcoat?***	Undertake research to inform the design process. This may include surveys and interviews. *Know that market research is an important part of the design process*	Combine ingredients appropriately e.g. beating or rubbing. *Know that cooking and baking involves the combining of ingredients in a variety of ways and experience some of these in real situations.*	Create circuits that employ a number of components (such as LEDs, resistors and transistors). *Know how to build a variety of circuits.*	Cut materials with precision and refine the finish with appropriate tools (such as sanding wood). *Know how to safely use a range of hand tools, including*	Use knowledge of inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products to create their own innovative designs.

Come dine with me. What would your winning menu be?	*Know how to construct questions for market research and how to carry out a survey* Use prototypes, cross-sectional diagrams, exploded diagrams and CAD software to represent designs. *Know how to design products including where appropriate; prototypes, cross-sectional diagrams and exploded diagram.* *Know CAD stands for computer aided design and explore simple CAD programmes for example to build circuits.* Consider the views of others when evaluating their own work. *Know that the purpose of design is*	*For example, folding, beating, creaming, sifting, whisking,* Measure ingredients to the nearest gram and millilitre and calculate ratios of ingredients to scale up or down from a recipe. *Confidently measure ingredients to the nearest gram or millilitre.* *Know that if we want to make more of our product, we must increase all the ingredients by the same ratio.* *Know that if we want to make less of our product, we must decrease the all the ingredients by the same ratio.* *Know how to scale up or down the ingredients.* *(Differentiate expectation accordingly)*	*Know how to add more than one component to a circuit.* Cut wood accurately to 1mm. Build frameworks using a range of materials e.g. wood, card and corrugated plastic. *Know how to construct a framework for a fair ground attraction.* *Know how to use a saw safely to cut wood accurately to 1mm.* *Know that all hand tools are potentially dangerous and that they need to be used in a cleared safe space using a vice to hold the wood securely.* *Know that when using hand tools, it is very important to be aware of your own body and the people around you and to position the*	*scissors, craft knives, hammers, saws and drills with precision.* *Know that some fabrics fray when they are cut and may need pinking scissors.* *Know that cutting some materials such as wood may result in a rough or sharp edge. Know that sanding this edge will produce a smooth and high quality finished cut.* Show an understanding of the qualities of materials to choose appropriate tools to cut and shape. *Know to draw on previously acquired knowledge of tools and materials when selecting the most appropriate materials to construct with.*	*Know that when faced with creating a design it is important to explore what is currently available in this field and research the people who are responsible for their design and creation.* *Know that by studying what has happened before we can identify mistakes and improve upon past design.* *Know of a variety of significant inventors, designers, engineers, chefs and manufacturers studied previously and build on this by researching before each Y6 project begins.*

	to produce something that other people appreciate and plan to gathering other people's view as part of their evaluation Ensure products have a high-quality finish, using art skills where appropriate. *Know that the overall finish of their products is an important factor and plan for a hight quality finish, selecting from skills acquired in art.* Justify their decisions about materials and methods of construction. *Know that the choices they make in the design process need to be justified to the given specifications and may include things like* - *Qualities of a material,*	Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed. *Know that our food supply is affected by availability.* *Know that some products are produced in the UK and that these could be grown on a farm, reared on a farm, caught or produced in a factory.* *Know that UK production is based on availability and affected by the season.* *Know that there is a farming calendar that is specific to the UK seasons.* *Know that when food is available out of season it will have been imported from another country or grown in an*	*tools away from the body.* *Know that all hand tools must be transported safely in a tool box with blades and sharp edges covered.* *Know that a range of materials can be used to build a frame including wood, card, corrugated plastic.* Use a cam to make an up and down mechanism. *Know that a cam is a mechanism used for moving parts in machinery including fairground attractions.* *Explore cams in real life situations* *Know how to construct a cam to achieve a moving part in their fairground attraction model*		

	- *Availability of a material* - Aesthetics, - Expense Make suggestions on how their design/product could be improved. *Know to evaluate their finished work critically and identify a list of areas for improvement, suggesting possible future solutions.*	*artificially controlled environments.* *Know that some food cannot be produced in the UK because of our climate.* Create and refine recipes, including ingredients, methods, cooking times and temperatures. *Undertake a 'Come Dine with Me' project to impress their classmates with their culinary skills. (NB only precooked meat and fish products can be used in school)* *Explore a range or recipes to inform their menu.* *Know how to refine a recipe by adjusting ingredients, methods, cooking time or temperature.*			

Additional knowledge

Check/add more detail / moved from different KS