

Pennine Way Primary School



Design and Technology knowledge, skills and vocabulary progression

Design and Technology curriculum at Pennine Way

Our Design and Technology curriculum enthusiastically brings collaboration to the classroom. Where the skills and knowledge of; designing, structures, mechanisms, control and materials, are meaningful and more importantly they are made fun. Health and safety skills intrinsically support our use of tools, electrical systems and cooking appliances as we develop, model and evaluate our products. Feel, taste and bring to life your imagination.

Design and Technology Curriculum Intent

Our intent for Design and Technology is to provide a curriculum that enables children the opportunity to show their ability to design and create through practical activities. There are clear progression of skills and knowledge from the early years through to the end of key stage 2. Our Design and Technology curriculum is a very practical one; we aim for the children to evaluate, plan, design, make and evaluate like a real engineer, designer or chef and gain experience in solving real life problems by creating a range of products for a variety of audiences and purposes. We pride ourselves on providing an inclusive curriculum; pupils with SEND needs will be able to access Design and Technology lessons alongside their peers but will be given extra support or resources where needed.

Design and Technology Curriculum Implementation

To implement our Design and Technology vision for the school we have created a curriculum that teaches five different strands, these are; textiles, structures, cooking and nutrition, mechanisms (mechanical systems in key stage 2) and electrical systems. The studies vary from year group to year group so that everyone gets equal coverage of the strands. Each study incorporates designing, making, evaluating and developing an understanding of technical knowledge and incorporates learning about famous designers as well as producing an end product for each study.

During each study, pupils consider the audience, design briefs, analyse products already available on the market and develop skills in design methods, including the use of CAD (Computer Aided Design) programmes. The implementation of cooking and nutrition within the Design and Technology curriculum uses resources from Phunky Foods to give the children an exciting curriculum which will range from making a fruit salad in the early years, all the way to cooking a traditional Spanish dish in Year 6.

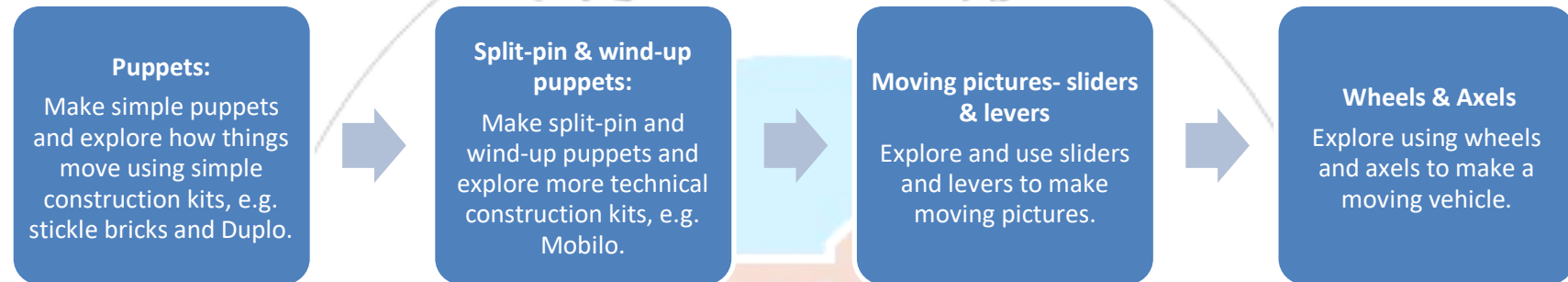
Design and Technology Impact

The impact of Design and Technology at Pennine Way Primary School will be measured through the skills that children will learn which they can apply to aspects of their later life. Summative assessments will show this progress and will provide us with the knowledge and skills to address any gaps in learning throughout the school. Our well-structured curriculum will mean that children are excited and enthusiastic about Design and Technology and that is our ultimate goal as a school.

Design Technology Curriculum Map			
	Autumn	Spring	Summer
Nursery	Mechanisms: Explore toys with moving parts, use wheels within their constructions, and make simple puppets. Textiles: Explore different materials within play. Thread with shoe laces, beads and cotton reels. Structures: Use construction toys and junk modelling imaginatively within play, building both horizontally and vertically. Cooking and Nutrition: Explore healthy eating and food hygiene, independently use utensils, create a fruit salad and frozen yogurt treat.		
Reception	Mechanisms: Make split-pin and wind-up puppets. Follow instructions, and use imagination, when building with more technical construction kits. Textiles: Use different materials for a purpose within play. Develop threading skills using lacing cards and threading snakes and develop skills used to plait. Structures: Construct more complex structures within play, using a broader range of materials, tools and joining components. Cooking and nutrition: Know where some food comes from, and how it gets to a shop. Use tools independently, make a fruit smoothie and a super crunch pot.		
Year 1	Mechanisms: Moving pictures Explore and use sliders and levers to make moving pictures.	Textiles: Weaving Develop skills in weaving to create a textile decoration.	Structures: Chairs Make a free-standing structure in the context of Goldilocks and the 3 bears' chairs
Year 2	Textiles: Christmas Stocking Use a running stitch to make a Christmas stocking.	Mechanisms: Wheels & Axels Explore using wheels and axels to make a moving vehicle. (National Engineering Week – 21 st February)	Cooking and Nutrition: Sweet and Savoury snacks Prepare a healthy snack (banana and oat cookie) and a healthy wrap or sandwich.
Year 3	Electrical systems Battery-operated night light using electrical systems.	Structures: Bridges Construct bridges and strengthen, stiffen and reinforce more complex structures (National Engineering Week – 21 st February)	Cooking & Nutrition: Breads and Pizza Breads from around the world, e.g. bread, pizza, baguette, naan, pitta (National Allergy Awareness Week 22 nd April)
Year 4	Textiles: Hand puppet Use a whipstitch to create a hand puppet, including sewing on buttons	Mechanical Systems: Use CAMs and Linkages to make a moving animal. (National Engineering Week – 21 st February)	Cooking & Nutrition: Pasta Use a hob to make pasta meals, including cooking meat- Spaghetti Bolognese and tuna pasta salad
Year 5	Mechanical systems Knex with gears, pulleys, linkages	Structures: Gliders & catapults Reinforce and strengthen a moveable structure. (National Engineering Week – 21 st February)	Cooking & Nutrition: Homemade vs Processed How food makes you feel- homemade vs processed Vegetarian curry, beef stir fry. (National Vegetarian Week – 15 th May)
Year 6	Textiles: Pencil case Use embroidery and a sewing machine to make pencil cases.	Electrical Systems Use SPIKE Lego essentials to program and control electrical systems.	Cooking and Nutrition: Spanish food Make a number of traditional Spanish dishes, including paella and a tapas selection.

Design and Technology strands running throughout the school

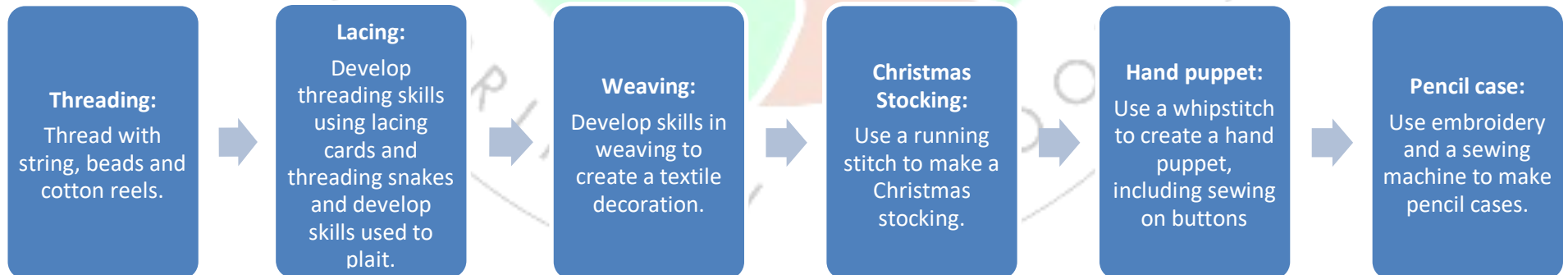
Mechanisms: This strand runs through the early years and key stage 1. During key stage 2, mechanical systems and electrical systems build upon the skills developed in the mechanism studies further.



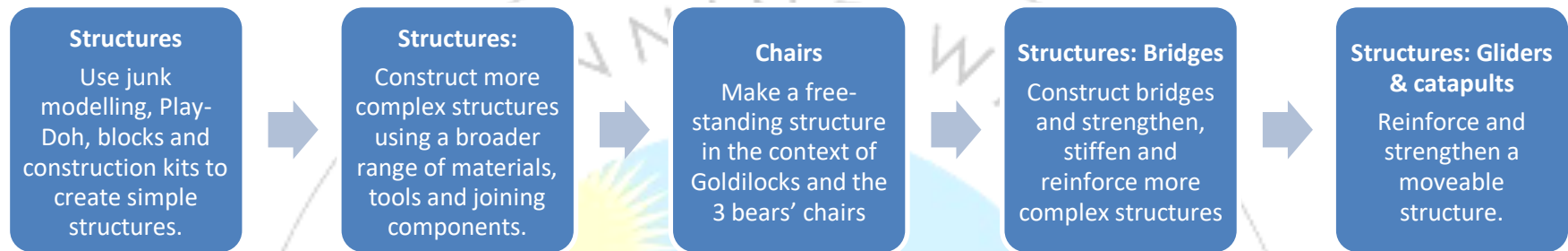
Electrical systems and mechanical systems: These strands run through key stage 2 and build on the knowledge and skills developed during the mechanisms strand in the early years and key stage 1.



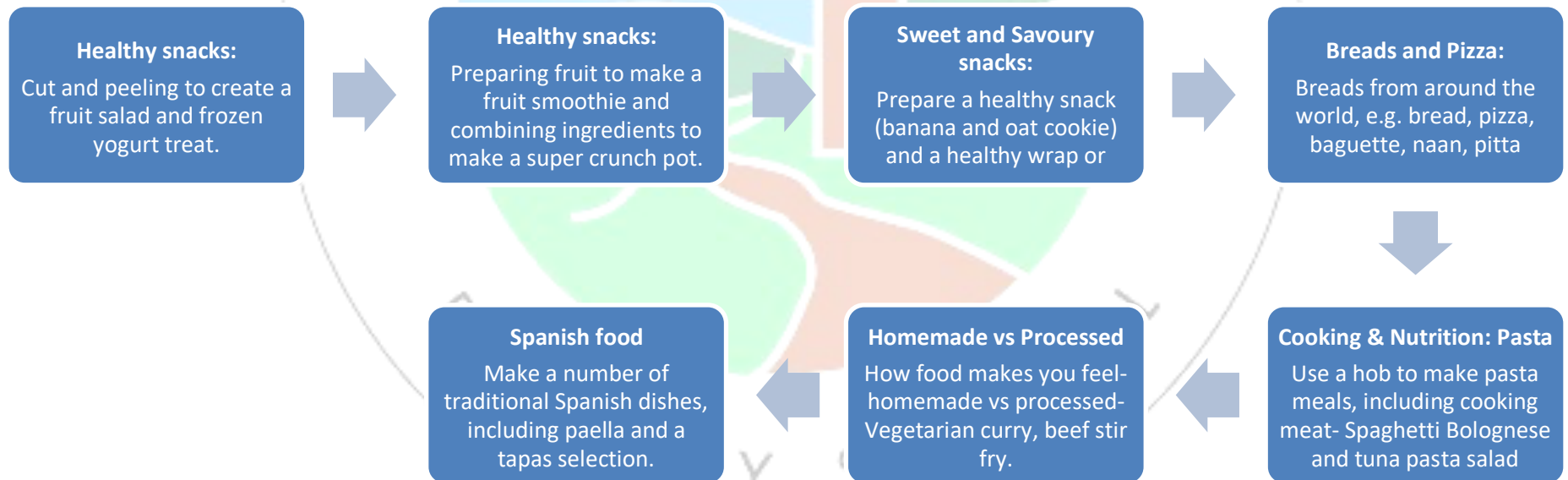
Textiles: This strand runs from early years to the end of key stage 2.



Structures: This strand runs from early years to the end of key stage 2.



Cooking and Nutrition: This strand runs from early years to the end of key stage 2.



Design Technology vocabulary progression									
		Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Textiles	Tier 2	shoe lace push pull cloth	string knott sheet	product purpose	joining techniques attach decorate needle stocking thread wool identical		user target audience components button aesthetically		fastening repurpose
	Tier 3	threading beads cotton reel material	lacing card pipe-cleaner plait fabric	weaving plain weave textiles template	running stitch sew template fashion designer		whipstitch puppeteers mark out fastener		backstitch blanket stitch embroidery seam allowance
Mechanisms, mechanical systems and electrical systems		Mechanisms				Electrical systems	Mechanical systems		Electrical systems
	Tier 2	wheel make build	move push pull	design assemble evaluate push pull glide slot	centre middle mechanic position rotate wheeled toys	battery bulb electricity energy switch battery powered energy source	pivot mechanisms length force effort	gear attachment point input process output	exploded diagram debug programming
	Tier 3	puppet move turn Stickle bricks Duplo Mobilo track connect	instructions step wind up split pin Lego	mechanism lever pivot slider design criteria mock up	axle axle holder chassis rolling motion	electrical circuit electrical system current conductor appliances component	CAMs linkage mechanical systems	pulley linear motion oscillating motion reciprocating motion driver gear gear train	concurrently LED light sensor motor sensor

		Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Structures	Tier 2	join build tower story up across	plan make	furniture stronger weaker stable unstable wide test man-made natural		beam reinforced stabilise strengthen toughen functional properties		design specification fortify constraints wing tail	
	Tier 3	glue glue stick spreader Duplo Mobilo blocks Stickle bricks play doh construct bridge castle city building farm	connect improve problem solve persevere change Sellotape dispenser construction vehicle	engineer structure stable stiffen flange join tab join design brief		cantilever computer aided design (cad) cross sectional truss civil engineer suspension		aeronautic engineer frame gussets	

Food and Nutrition	Tier 2	fork knife tray fruit spoon wash	chop stir peel pour		carbohydrates cooked uncooked cut dairy healthy varied diet mash protein spread mix	rub seasoning refrigerated dehydrated snip roll divide shape	hob protein reared caught drain boil peel	appearance taste texture diet	grill fragrant coat rinse mash seafood
	Tier 3	mix sprinkle cut frozen freeze fruit salad frozen yoghurt treats healthy	blend ingredients recipe smoothie crunch pot unhealthy		bridge technique claw technique grate wholemeal slice	grease knead processed reared prove gluten free range sieve dice beat garnish	simmer fry translucent brown	spice marinade aroma coat vegetarian vegan	tapas paella culture spices sauté

Nursery	Expressive art and design: Creating with materials
The development of children's artistic and cultural awareness supports their imagination and creativity . It is important that children have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. The quality and variety of what children see, hear and participate in is crucial for developing their understanding, self-expression, vocabulary and ability to communicate through the arts. The frequency, repetition and depth of their experiences are fundamental to their progress in interpreting and appreciating what they hear, respond to and observe .	
Creating with Materials and Being Imaginative	Development Matters - Creating with Materials and Being Imaginative: • Take part in simple pretend play, using an object to represent something else even though they are not similar. • Begin to develop complex stories using small world equipment like animal sets, dolls and dolls houses, etc. • Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. • Explore different materials freely, to develop their ideas about how to use them and what to make. • Develop their own ideas and then decide which materials to use to express them. • Join different materials and explore different textures. Development Matters - PSED: • Make healthy choices about food, drink, activity and toothbrushing. Development Matters - Physical Development: • Use one-handed tools and equipment, for example, making snips in paper with scissors. Knowledge and Skills- pupils will: Basic Skills: • Learn to use scissors safely in order to make snips in paper and cut across a straight line with support. • Learn how to use rolling pins, cookie cutters, and dough knives when working with playdough. • Learn how to use a glue stick and glue spreader. Structures: • Learn how to use large and small construction sets to make imaginative and complex 'small worlds'. • Use boxes and other junk modelling items within their imaginative play. • Use natural materials imaginatively within their play. • Learn how to build horizontally and vertically. • Know how to stack large and small blocks, join different types of Duplo and Mobilo, and connect train track pieces together. Textiles: • Explore different types and sizes of fabric within their play. • Thread different items onto shoe laces. Cooking and Nutrition: • Develop an understanding of basic food hygiene. • Learn how to carry a tray with food on it, and how to use a knife and fork.

	• Taste a range of fruits and talk about their likes and dislikes - at snack time and as part of making a fruit salad. • Know what it means to chop, stir, sprinkle and freeze incl. using these skills whilst making a frozen yogurt treat and a fruit salad. Mechanisms: • Learn how to join different construction kits together in different ways incl. wheels. • Learn how to use a range of toys with moving parts. • Make simple lollipop stick puppets by joining and combining 2 components.
Language: Pupils will encounter language associated with:	Basic Skills: Scissors, cut, snip, tool, cutter, knife, rolling pin, roll, mould, squeeze, press, twist, glue stick, spreader. Structures: During play around structures pupils will be exposed to the following language: join, build, tower, story, glue, glue stick, spreader, construction kits names (Duplo, Mobilo, stickle bricks, play doh, wooden blocks), construct, up, across, bridge, castle, city, building, farm. Textiles: During play around textiles pupils will be exposed to the following language: Threading, shoe lace, beads, cotton reel, cloth, material, push, pull. Cooking and Nutrition: During cooking and nutrition sessions pupils will be exposed to the following language: Fruit, fork, knife, tray, fruit, mix, sprinkle, spoon, cut, wash, frozen, freeze, fruit salad, frozen yoghurt treats, healthy Mechanisms: During play around mechanism pupils will be exposed to the following language: Puppet, wheels, move, turn, make, build, stickle bricks, Duplo, connect.
Provision: Pupils will be provided opportunities to...	• Make a fruit salad and frozen yoghurt treat. • Explore toys with moving parts within various areas of provision. • Construct structures and build constructs within large construction, small construction, and arts and craft areas. • Construct large scale structures outside with large building blocks, den making material etc. • Use natural materials within their constructions. • Make small worlds and tell stories with different toys. • Thread different objects onto shoe laces within fine motor sessions and within provision. • Explore different types of fabrics and material within domestic role play and large scale construction/den building. • Independently use eating utensils at lunch time. • Discuss healthy eating and food hygiene. • Have high quality interactions with adults and peers. • Use taught skills independently.
Links to future learning	In Reception pupils will have the opportunity to build upon these skills - creating more complex structures and telling more in depth stories. Pupils in Reception will also be able to access nursery tasks depending on their stage of development.

Reception	Expressive art and design: Creating with materials
The development of children's artistic and cultural awareness supports their imagination and creativity. It is important that children have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. The quality and variety of what children see, hear and participate in is crucial for developing their understanding, self-expression, vocabulary and ability to communicate through the arts. The frequency, repetition and depth of their experiences are fundamental to their progress in interpreting and appreciating what they hear, respond to and observe.	
Creating with Materials and Being Imaginative	Development Matters - Creating with Materials and Being Imaginative: • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Create collaboratively, sharing ideas, resources and skills. • Develop storylines in their pretend play. Development Matters - PSED • Know and talk about the different factors that support their overall health and wellbeing. Development Matters - Physical Development • Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Knowledge and Skills- pupils will: Basic Skills: • Use scissors independently and safely, with more accuracy in order to cut out simple shapes and pictures. • Learn how to use a wider range of tools independently, safely and accurately incl. a hole punch, stapler, Sellotape dispenser, glue stick and spreader. • Use split pins and paper clips to join different materials. Structures: • Construct more complex structures using a range of construction materials, e.g. wooden blocks, natural material, Duplo, Lego, junk modelling. • Construct structures for a purpose, and as part of their storytelling e.g. make a cave for an animal, make a rocket ship to go to the moon in. • Learn how to reflect on the structures they have made, and listen to other people's ideas, in order to improve them. Textiles: • Complete a lacing card activity. • Thread a wider range of materials e.g pipe cleaner through a colander, smaller beads on string, pasta on string; and begin to develop skills to plait. • Use a wide range of material types and sizes within their play. Cooking and Nutrition: • Know where some foods come from, and that it is sold not grown/made in shops. • Talk about the importance of healthy eating and basic food hygiene. • Be able to collect, cut, eat, and clear up food independently during snack and lunch times. • Know what it means to peel, chop, pour, stir and sprinkle; and practice these skills when making fruit smoothies and super crunch fruit pots.

	Mechanisms: - Follow instructions in order to make more complex Duplo and Lego models. - Know how to make a wind-up puppet, and split pin characters; and have the opportunity to do these independently within provision. - Use their imagination to make more complex models with moving parts from a range of construction kits. - Learn how to reflect on their own creations and listen to other people's ideas, in order to improve them.
Language: Pupils will encounter language associated with:	Basic Skills: Scissors, cut, safely, hole punch, Sellotape, Sellotape dispensers, glue stick, glue, spreader, split pins, paper clips. Structures: During play around structures pupils will be exposed to the following language: Plan, make, join, build, connect, improve, change, glue, glue stick, spreader, Sellotape, dispenser, construction kits names (blocks, mobile, Duplo), construct, problem solve, persevere. Textiles: During play around textiles pupils will be exposed to the following language: Thread, string, lacing card, knot, pipe-cleaner, beads, fabric, sheet. Cooking and Nutrition: During cooking and nutrition sessions pupils will be exposed to the following language: Fruit, healthy, peel, pour, chop, stir, blend, ingredients, recipe, smoothie, crunch pot, unhealthy. Mechanisms: During play around mechanisms pupils will be exposed to the following language: Puppet, wind up, split pin, move, push, pull, instructions, step
Provision: Pupils will be provided opportunities to...	- Make fruit smoothies and super crunch fruit pots. - Construct structures and build constructs within large construction, small construction, and arts and craft areas. - Construct large scale structures outside with large building blocks, den making material etc. - Use natural materials within their constructions. - Make small worlds and tell stories with different toys. - Use threading skills in different areas of provision within their play. - Explore different types of fabrics and material within domestic role play and large scale construction/den building. - Independently cut fruit at snack time and their food at lunch time. - Discuss healthy eating and food hygiene. - Have high quality interactions with adults and peers. - Use taught skills independently.
Links to future learning	Pupils will build on these skills in key stage 1 through various topics linked to textiles, mechanisms, structures and cooking and nutrition.

Design Technology	Year 1
Mechanisms- Moving pictures	Explore and use sliders and levers to make moving pictures.
National curriculum essential coverage	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. Evaluate: Evaluate their ideas and products against design criteria. Technical knowledge: explore and use mechanisms (levers and sliders) in their products.
Knowledge	Technical knowledge: know how levers and sliders work in a range of everyday objects.
	Technical knowledge: know how levers and sliders work in a moving pictures and books.
	Designing: understand the purpose of a design criteria.
	Significant individuals: Know Robert Hinchcliff used a lever to design and make modern scissors.
Skills to ensure progression	Designing: design a moving picture based on design criteria.
	Designing: model ideas by making a mock-up of a lever and slider mechanism.
	Making: assemble, join and combine materials and components to create moving parts using a lever.
	Making: assemble, join and combine materials and components to create moving parts using a slider.
	Making: use finishing techniques, including those from art and design.
	Evaluating: evaluate against design criteria and suggest how their moving picture could be improved.
Tier 2 vocabulary	design, assemble, push, pull, glide, slot, evaluate
Tier 3 vocabulary	mechanism, lever, pivot, slider, design criteria, mock up
Links to prior learning	This builds on pupil knowledge of mechanisms from when they created wind up puppets in Reception.
Links to future learning	Pupils will apply and develop their skills further in year 2 when they use wheels and axles to create a moving vehicle.

Design Technology	Year 1
Textiles- Weaving: Develop skills in weaving to create a textile decoration.	
National curriculum essential coverage	Design - 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 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.
Knowledge	Technical knowledge: understand the technique and purpose of weaved products.
	Technical knowledge: know what a plain weave is.
	Technical knowledge: know that textiles products use fabric and material.
	Significant Individuals: Know significant weavers (Phil Bradley, Diedrick Brackens, Sally Black)
Skills to ensure progression	Evaluating: evaluate a range of weaved textile products.
	Designing: design a mock-up of a plain weave using paper and a card template.
	Making: weave using wool to make a decoration.
Tier 2 vocabulary	product, purpose
Tier 3 vocabulary	weaving, plain weave, textiles, template
Links to prior learning	This study builds on pupils' use of lacing cards in early years.
Links to future learning	Pupils will apply and develop the up and down motion of the plain weave and apply these skills further in year 2 when they use a running stitch to make a stocking.

Design Technology	Year 1
Structures- Chairs:	Make a free-standing structure in the context of Goldilocks and the 3 bears' chairs
National curriculum essential coverage	Design - 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 wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics Technical knowledge- build structures, exploring how they can be made stronger, stiffer and more stable. Evaluate - explore and evaluate a range of existing products
Knowledge	Designing: understand the purpose of a design brief. Technical knowledge: know some ways to make a cardboard chair stiffer, stronger and more stable. Significant individuals: know some significant individuals in chair designs (Charles and Ray Eames, Jay Wellington Couch).
Skills to ensure progression	Evaluating: explore how existing chairs are used and what they like and dislike about them. Designing: use simple design criteria to help to develop ideas in a story- based context to solve a specific problem. Designing: develop and communicate ideas by talking about and drawing upon their own experiences. Making: select from a range of tools and equipment, explaining their choices. Technical Knowledge: know that different materials have different properties and purposes within structures.
Tier 2 vocabulary	furniture, stronger, weaker, stable, unstable, wide, test, man-made, natural
Tier 3 vocabulary	engineer, structure, stable, stiffen, flange join, tab join, design brief
Links to prior learning	Builds on skills from junk modelling in Reception where pupils used a range of resources and joining techniques to create structures.
Links to future learning	Pupils will apply and develop skills in making structures stronger, stiffer and more stable to join more complex structures by stiffening and reinforcing in year 3 in the context of designing and building bridges.

Design Technology	Year 2
Textiles - Use a running stitch to make a Christmas stocking.	
National curriculum essential coverage	Design - 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] Evaluate - evaluate their ideas and products against design criteria
Knowledge	Designing: explain the purpose of a design criteria.
	Technical Knowledge: know what a running stitch is.
	Technical knowledge: know that textile products can be assembled from two identical fabric shapes.
	Technical knowledge: understand different joining techniques and how they are used.
	Significant individuals: to know that Coco Chanel and Orla Kiely are fashion designers.
Skills to ensure progression	Designing: use information and communication technology to develop and communicate their ideas.
	Making: use finishing techniques, including those from art and design.
	Making: thread wool through a needle.
	Making: use a running stitch in material using thread in pre-punched holes.
	Evaluating: make simple judgements about their stocking against the original design criteria.
Tier 2 vocabulary	joining techniques, attach, decorate, needle, stocking, thread, wool, identical
Tier 3 vocabulary	running stitch, sew, template, fashion designer
Links to prior learning	This study builds on skills pupils learnt in year 1 when they used the up and down motion of a plain weave.
Links to future learning	Children will develop these skills of sewing further in year 4 when they make a hand puppet using a whipstitch.

Design Technology	Year 2
Mechanisms - Explore using wheels and axels to make a moving vehicle. (National Engineering Week – 21 st February)	
National curriculum essential coverage	Design - design purposeful, functional, appealing products for themselves and other users based on design criteria Evaluate - evaluate their ideas and products against design criteria Make - select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] Technical knowledge - explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.
Knowledge	Designing: know how they will make their products suitable for their intended users.
	Designing: know who they are designing their product for.
	Making: know a range of ways to join different materials, e.g. scissors, glue, string, tape, blue-tac.
	Technical knowledge: know how a wheel and axle mechanism works.
	Evaluating: evaluate a range of wheeled toys to explore how they move.
Skills to ensure progression	Designing: use a design criteria to help develop ideas.
	Designing: develop and communicate ideas by drawing and talking.
	Designing: model ideas by creating mock-ups.
	Making: assemble, join and combine materials and components of wheels and axles.
	Technical knowledge: explore the effects of different wheel and axle positioning on the rolling motion.
	Evaluate: evaluate whether their product met the design criteria.
Tier 2 vocabulary	centre, middle, mechanic, position, rotate, wheeled toys
Tier 3 vocabulary	axle, axle holder, chassis, rolling motion
Links to prior learning	This builds on skills pupils developed during year 1 when they created levers and slider mechanisms.
Links to future learning	These skills are further developed during year 4, when pupils will continue to build their knowledge of mechanisms with cams and linkages.

Design Technology	Year 2
Sweet and Savoury snacks	Prepare a healthy snack (banana and oat cookie) and a healthy wrap or sandwich.
National curriculum essential coverage	• Use the basic principles of a healthy and varied diet to prepare dishes. • Understand where food comes from.
Knowledge	Where food comes from: know that food comes from plants and animals. Where food comes from: know that food has to be farmed, grown or caught. Nutrition: know the difference between a healthy and unhealthy wrap/sandwich. Nutrition: understand the basic principles of a healthy and varied diet. Making: understand why it is important to use a recipe. Food preparation & cooking: explain some safety and hygiene precautions, e.g. how to use a knife, wash our hands, hair tied back, cooked and uncooked foods. Technical knowledge: know (according to sensory properties) which food products are suitable to mash, grate, spread, cut and slice.
Skills to ensure progression	Evaluating: evaluate a range of sandwich fillings and bread types to explore what they like and dislike about them. Designing: generate ideas from drawing on their own experiences. Making: mix and prepare simple cooked and uncooked foods involving a range of choices. Making: work safely and hygienically to mix, mash with a fork, grate, spread, cut, slice. Making: follow a simple recipe. Evaluating: make suggestions as to how their products could be made healthier to include more fruits or vegetables.
Tier 2 vocabulary	carbohydrates, cooked, uncooked, cut, dairy, healthy, varied, diet, mash, protein, spread, spread, mix
Tier 3 vocabulary	bridge technique, claw technique, grate, wholemeal, slice
Links to prior learning	Builds on making fruit smoothies in Early Years.
Links to future learning	Preparation for year 3 when cooking is introduced to recipes.

Design Technology	Year 3
Electrical Systems:	Using a simple electrical circuit to make a battery powered night light.
National curriculum essential coverage	Design - 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. Evaluate - evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Technical knowledge - understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors].
Knowledge	Technical knowledge: know how simple electrical circuits and components can be used to create functional properties in everyday products. Evaluating: evaluate a range of products which use electrical systems, including who and when they were made. Significant Individuals: know the impact that significant individuals have had on electrical systems, these include: Thomas Edison- light bulb (main), Augustus Russel Pope- electronic burglar alarm, Nikola Tesla, Elon Musk- Tesla and Marie Van Brittan Brown- home security.
Skills to ensure progression	Designing: make design decisions that take account of the availability of resources. Designing: use annotated sketches to develop and communicate ideas. Technical knowledge: create a series circuit using a range of components. Making: to be able to measure, mark out, cut and shape materials to make the outline of a night light. Making: apply a range of finishing techniques to their product; including aspects from art and design. Evaluating: refer to their design criteria as they design and make.
Tier 2 vocabulary	battery, bulb, electricity, energy, switch, battery powered, energy source.
Tier 3 vocabulary	electrical circuit, electrical system, current, conductor, appliances, component
Links to prior learning	This builds on pupils' exploration of mechanisms in key stage 1, adding the element of electrical systems to make something work. They will have a basic understanding of things being powered by electricity from everyday use.
Links to future learning	Pupils build on these skills further in year 6, when they apply their knowledge of electrical systems to use LEGO Spike essentials to program and control electrical components.

Design Technology	Year 3
Structures: use reinforcing and strengthening techniques to make a complex free-standing structure. (National Engineering Week – 21 st February)	
National curriculum essential coverage	Design - 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 materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. Evaluate - 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.
Knowledge	Evaluating: investigate who, when and where some local and famous bridges were designed and built.
	Designing: know the difference between design brief and design criteria.
	Technical knowledge: explain some ideas of how to strengthen, stiffen and reinforce more complex bridges.
	Evaluating: know some civil engineers who have helped shape the world in terms of bridges- these include: Emily Warren Roebling- Brooklyn Bridge (Main), Sir Robert Smirk - Eden Bridge, Sarah Guppy, Emily Warren Roebling- Brooklyn Bridge.
Skills to ensure progression	Evaluating: evaluate existing bridges to investigate and analyse what materials have been chosen, why they were chosen and what methods of construction have been used.
	Evaluating: evaluate a range of different model bridges (pre-made) to investigate how structures can fail when loaded.
	Designing: use a cross-sectional drawing to communicate a bridge design idea.
	Designing: communicate design ideas for a simple bridge using computer-aided design (Tinkercad).
	Technical knowledge: explore truss shapes and structures to understand how to make strong, stiff structures. Compare this to other explored structures and understand why truss shapes are advantageous.
	Making: assemble, join and combine materials and components with some accuracy.
	Making: explain their choice of how to combine the given components according to functional properties.
Tier 2 vocabulary	Evaluating: identify the strengths and areas for development in their ideas and products.
	beam, reinforced, stabilise, strengthen, toughen, functional, properties
Tier 3 vocabulary	cantilever, computer aided design, cross sectional, truss, civil engineer, suspension
Links to prior learning	This builds on pupils prior learning when they designed and made free standing structures in the form of chairs in Year 1. Skills to stiffen, strengthen and reinforce more complex structures, builds on the skills they developed in year 1 to create stronger, stiffer and more stable structures.
Links to future learning	Pupils will further develop these skills in year 5 when they make a moving structure in the form of gliders.

Design Technology	Year 3
Cooking & Nutrition- Breads and Pizza: Breads from around the world, e.g. bread, pizza, baguette, naan, pitta. (National Allergy Awareness Week 22 nd April)	
National curriculum essential coverage	• 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.
Knowledge	Where food comes from: know that food is grown (oregano, onions, herbs, mushrooms, peppers, courgettes, sweetcorn, tomatoes, wheat, vegetables), reared (pigs- ham, chickens- eggs, cows- milk) and processed (yogurt, cheese, butter).
	Where food comes from: understand local produce and give some examples
	Where food comes from: know the importance of weighing ingredients accurately.
	Technical knowledge: know that food can be fresh, pre-cooked and processed.
	Technical knowledge: know the effect proving has on bread dough.
	Nutrition: know that to be active and healthy, food and drink are needed to provide energy for the body.
Skills to ensure progression	Designing: gather basic information about the wants and needs of individuals and groups.
	Food preparation & cooking: Measure and weigh ingredients with some support.
	Food preparation & cooking: follow multi-step recipes.
	Food preparation & cooking: use a range of techniques, e.g. sieve, grate, dice, rub, knead, snip, cut, roll, cut, divide, garnish and grease.
	Food preparation & cooking: use a range of techniques, e.g. knead, blend, mix, shape, cut (bridge or claw technique) using a sharp knife, slice and spread.
	Food preparation & cooking: use heat sources in cooking (oven).
	Evaluating: make suggestions on how to improve their products.
Tier 2 vocabulary	rub, seasoning, refrigerated, dehydrated, snip, roll, divide, shape
Tier 3 vocabulary	grease, knead, processed, reared, prove, gluten, sieve, dice, beat, garnish
Links to prior learning	This builds on pupil skills from year 2 when they made healthy sandwiches, wraps and biscuits to them using more cooking procedures.
Links to future learning	These skills are further developed during year 4 when pupils use a hob and cook meat.

Design Technology	Year 4
Textiles- hand puppet	use a whipstitch to create a hand puppet, including sewing on buttons.
National curriculum essential coverage	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. Make - 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
Knowledge	Evaluating: know how sustainable the materials in puppets are. Designing: know the context that hand puppets can be used- leisure and entertainment. Making: to know what a whipstitch is and define it. Technical Knowledge: know that different materials can be combined to create more useful characteristics. Significant Individuals: to learn about famous puppets and puppeteers in Harry Corbett (Sooty & Sweep) and Don Sahlin (Muppets)
Skills to ensure progression	Evaluating: evaluate a range of existing puppets and be able to state what makes them aesthetically pleasing. Designing: find out what a target audience wants and needs from a puppet to be designed for them. Designing: use an exploded diagram to develop and communicate ideas. Making: assemble, join and combine materials with some accuracy to make a hand puppet. Making: measure, mark out and cut material shapes with accuracy. Making: use a whipstitch to join two pieces of material. Making: sew a button onto a piece of fabric.
Tier 2 vocabulary	user, target audience, components, button, aesthetically
Tier 3 vocabulary	whipstitch, puppeteers, mark out, fastener
Links to prior learning	This builds on pupils' sewing skills from year 2, when they used a running stitch in pre-punched holes to make a stocking.
Links to future learning	Pupils will expand these skills further in year 6 when pupils use a sewing machine and embroidery to design and make a pencil case.

Design Technology	Year 4
Mechanical Systems:	to use CAMs and Linkages to make a moving animal. (National Engineering Week – 21 st February)
National curriculum essential coverage	Design - 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 Evaluate - investigate and analyse a range of existing products Technical knowledge - understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
Knowledge	Technical knowledge: know how mechanical systems such as cams and linkages create movement. Technical knowledge: know that mechanical systems have an input, process and output. Designing: design a mechanical system that will function based on understanding of existing examples. Evaluating: know when prior mechanical systems were designed and made. Evaluating: know who designed and made existing mechanical products.
Skills to ensure progression	Design: develop own design criteria (from context given) and use this to inform their ideas. Design: use annotated sketches to develop and communicate their ideas. Making: order the main stages of making. Making: apply a range of finishing techniques with some accuracy. Making: measure, mark out, cut and shape materials and components. Technical knowledge: use cams in a moving animal. Technical knowledge: use linkages in a moving animal. Evaluating: evaluate their finished moving animal against their design criteria.
Tier 2 vocabulary	pivot, mechanisms, length, force, effort
Tier 3 vocabulary	CAMs, linkage, mechanical systems
Links to prior learning	This builds on pupils' skills from year 1 when pupils used levers and sliders and year 2 when pupils used wheels and axels to make things move.
Links to future learning	These skills are developed further during year 5, when pupils extend their knowledge and use Knex with gears, pulleys and linkages.

Design Technology	Year 4
Cooking & Nutrition:	Use a hob to make pasta meals, including cooking meat- Spaghetti Bolognese and tuna pasta salad.
National curriculum essential coverage	• 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.
Knowledge	Where food comes from: know foods that are generally produced in the United Kingdom and which are produced elsewhere in the world. Where food comes from: know some foods which are grown including wheat, onion, carrot, tomatoes, coriander and lentils. Nutrition: know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in the eat well plate. Technical knowledge: use the correct technical vocabulary for the processes they are undertaking.
Skills to ensure progression	Food preparation & cooking: use a range of techniques, e.g. measure, drain, boil, fry, simmer, brown Food preparation & cooking: discuss health and safety regarding the preparation of raw and cooked foods, e.g. different coloured chopping boards. Food preparation & cooking: measure and weigh ingredients with minimal support. Food preparation & cooking: use a range of heat sources in cooking (hob and oven) to make Spaghetti Bolognese. Food preparation & cooking: use a range of skills to make tuna pasta salad- more specific? e.g. weighing, boiling, draining, chopping, measuring, mixing Evaluating & nutrition: evaluate meals linked to nutritional aspects of the meal and how healthy it is.
Tier 2 vocabulary	hob, protein, reared, caught, drain, boil
Tier 3 vocabulary	simmer, fry, translucent, brown,
Links to prior learning	These skills build on those developed in year 3 when pupils explored baking bread. Pupils also developed skills in cutting vegetables using a range of techniques in year 2 which will be applied in preparing the ingredients.
Links to future learning	Pupils build further develop these skills when they compare processed and home cooked meals and develop their range of cooking skills and techniques further when they make a vegetarian curry and beef stir fry.

Design Technology	Year 5
Mechanical systems:	K'nex with gears, pulleys, linkages
National curriculum essential coverage	Design - 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 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 Technical knowledge - understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
Knowledge	Technical knowledge: know how mechanical systems such as levers, pulleys and gears create movement.
	Technical Knowledge: know that mechanical systems have an input, process and output.
	Evaluating: to be able to understand how innovative existing mechanical systems are.
	Designing: explain how particular parts of their product work.
	Significant Individuals: know a number of engineers and the mechanical systems that they created, these include: Joel Glickman (Knex)(Main), James Starley- geared bike, Richard Spikes (gears)
Skills to ensure progression	Evaluating: critically evaluate the quality of their design and manufacture process.
	Evaluating: how well existing mechanical systems have met their users' intended needs.
	Making: use techniques to make a mechanical system that involve a number of steps.
	Making: use a range of mechanical systems kits (Knex) to gain desired results.
	Designing: use exploded diagrams to develop and communicate their ideas.
	Designing: use computer aided design to communicate their ideas.
	Evaluating: investigate and analyse how well products work.
Tier 2 vocabulary	gear, attachment point, input, process, output
Tier 3 vocabulary	pulley, linear motion, oscillating motion, reciprocating motion, driver gear, gear train
Links to prior learning	This study builds on skills pupil developed using cams and linkages in year 4 when they created moving animals.
Links to future learning	These skills are further developed during key stage 3 when pupils explore how more advanced mechanical systems used in their products enable changes in movement and force.

Design Technology	Year 5
Structures- Gliders & catapults: Reinforce and strengthen a moveable structure. (National Engineering Week – 21 st February)	
National curriculum essential coverage	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 Make - 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 - evaluate their ideas and products against their own design criteria and consider the views of others to improve their work Technical knowledge - apply their understanding of how to strengthen, stiffen and reinforce more complex structures
Knowledge	Technical knowledge: have an understanding of how engineers solve problems.
	Technical knowledge: know what an aeronautic engineer is.
	Technical knowledge: know how to reinforce and strengthen a 3d framework.
	Significant Individuals: know why famous aeronautic engineers in Beatrice Schilling and George Cayley are remembered.
Skills to ensure progression	Evaluating: evaluate how products work and make comparisons between different products.
	Evaluating: critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make them.
	Designing: Follow a design specification.
	Making: explain their choice of materials and components according to functional properties and aesthetic properties.
	Making: produce an appropriate list of tools, equipment and materials that they need.
	Making: accurately measure, mark out, cut and shape materials and components.
	Making: accurately assemble, join and combine materials and components.
Tier 2 vocabulary	Making: demonstrate resourcefulness when tackling practical problems.
	design specification, fortify, constraints, wing, tail
Tier 3 vocabulary	Aeronautic engineer, frame, gussets
Links to prior learning	This study builds on skills developed in year 3 when pupils explored methods to reinforce, strengthen and stiffen more complex structures when they made bridges.
Links to future learning	These skills are further developed during key stage 3 when pupils understand and use the properties of materials and the performance of structural elements to achieve functioning solutions.

Design Technology	Year 5
Cooking & Nutrition- Homemade vs Processed: How food makes you feel- homemade vs processed- Vegetarian curry and stir fry. (National Vegetarian Week – 15 th May)	
National curriculum essential coverage	• 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.
Knowledge	Where food comes from: know that food is grown (garlic, mushrooms, cucumber, basil, courgette) reared, caught or processed (pasta, passata, mince, mayonnaise, tomato ketchup, olive oil).
	Where food comes from: know that seasons may affect the food available.
	Nutrition: know that different foods and drinks contain different substances- nutrients, water and fibre- that are needed for health.
	Technical knowledge: use the correct technical vocabulary for the processes they are undertaking.
	Food preparation & cooking: understand food hygiene in relation to the storing of perishable foods.
	Food preparation & cooking: know how to use a hob and oven safely.
Skills to ensure progression	Food preparation & cooking: use a range of techniques, e.g. boil, drain, cool, opening tins, mix, pour, chop, dice, slice, simmer, chop, fry, heat, brown, blend.
	Food preparation & cooking: begin to select appropriate tools from a range of equipment.
	Food preparation & cooking: use a hob and oven safely.
	Nutrition: evaluate a meal and consider if it contributes towards a balanced diet.
	Evaluating: suggest ways to adapt the recipe to change the appearance, taste, texture and aroma of the meal.
Tier 2 vocabulary	appearance, taste texture, diet,
Tier 3 vocabulary	spice, marinade, aroma, coat, vegetarian, vegan
Links to prior learning	This builds on pupils previous cooking skills but expands their knowledge of different dietary choices (vegetarian) and understanding of homemade vs processed foods by comparing the nutritional content of both.
Links to future learning	Children develop these skills further in year 6 when they cook more complex dishes.

Design Technology	Year 6
Textiles: use embroidery and a sewing machine to make pencil cases.	
National curriculum essential coverage	Design - 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 materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities Evaluate - evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
Knowledge	Evaluating: know how much existing textiles products cost to make.
	Designing: know the context that pencil cases are made- school.
	Technical Knowledge: know what a blanket stitch is.
	Technical Knowledge: know what embroidery is.
	Technical Knowledge: know that materials have both functional and aesthetic qualities.
	Significant Individuals: know about a range of textiles workers including: Orly Cogan - Embroidery Artist (Main) Whitcomb Judson-zip, Lothar Von Faber- pencil case, Orly Cogan - Embroidery Artist
Skills to ensure progression	Evaluating: investigate and analyse how much products cost to make and how sustainable they are.
	Designing: make design decisions, taking account of constraints such as time, resources and cost.
	Designing: model their ideas using pattern pieces.
	Designing: use detailed, annotated sketches to communicate design ideas.
	Making: formulate a step-by-step plan as a guide for making.
	Making: use techniques that include a number of steps.
	Making: adding a zip fastening using a sewing machine.
	Making: accurately apply a range of finishing techniques- embroidery.
	Making: use a range of stitches to join and decorate materials, including running, blanket and embroidery.
	Evaluating: investigate and analyse how well products meet user needs and wants.
Tier 2 vocabulary	fastening, repurpose
Tier 3 vocabulary	backstitch, blanket stitch, embroidery, seam allowance
Links to prior learning	This builds on skills from year 4 when pupils developed skills to sew on buttons and join 2 pieces of fabric using a whipstitch.
Links to future learning	These skills are developed further in key stage 3 when pupils select from and use a wider of more complex range of materials.

Design and Technology	Year 6
Electrical Systems:	to use SPIKE Lego essentials to program and control electrical systems.
National curriculum essential coverage	Design - generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Evaluate - understand how key events and individuals in design and technology have helped shape the world Technical knowledge - apply their understanding of computing to program, monitor and control their products
Knowledge	Evaluating: understand how existing electrical systems have been designed and made. Technical knowledge: know how digital technology can be used to make products move and work Technical knowledge: know how to program a computer to control their products. Making: Explain their choice of tools and equipment in relation to the skills and techniques they will be using. Significant individuals: know about a range of different engineers, these include: Ada Lovelace- computing programming (Main), Garrett Morgan- traffic lights, Ole Kirk Christiansen - Lego Creator, Nick Holonyak - LED Creator
Skills to ensure progression	Evaluating: identify strengths and weaknesses in their final product. Designing: indicate which features of their design will appeal to their intended users. Designing: use exploded diagrams to develop and communicate their ideas. Making: demonstrate resourcefulness when tackling practical problems. Making: be able to program the Lego Spike Essentials to complete the appropriate actions. Making: Select tools and equipment suitable for the task. Making: create a step-by-step guide to show how their electrical system will work. Evaluating: investigate and analyse how well products achieve their purpose.
Tier 2 vocabulary	exploded diagram, debug, programming
Tier 3 vocabulary	concurrently, LED light, sensor, motor, sensor
Links to prior learning	This builds on pupil skills from year 4 when they learnt to create a simple series circuit when they made a battery powered night light.
Links to future learning	These skills are developed further during key stage 3 understand how more advanced electrical and electronic systems can be powered and used in their products.

Design and Technology	Year 6
Cooking and Nutrition-	Spanish food: Make a number of traditional Spanish dishes, including paella and a tapas selection.
National curriculum essential coverage	- 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
Knowledge	Where food comes from: know that food is grown (cauliflower, peas, chick peas, potatoes, onion, thyme), reared (cow- beef) and processed (Worcestershire sauce, beef stock, vegetable oil). Where food comes from: know how food is processed into ingredients that can be eaten or used in cooking. Where food comes from: explain what times of year particular foods are eaten I linked to seasonality. Nutrition: to know that recipes can be adapted to change the appearance, taste, texture and aroma. Food preparation & cooking: know how to store food safely and hygienically. Evaluating: investigate and analyse how much products cost to make.
Skills to ensure progression	Food preparation & cooking: weigh and measure accurately and independently. Food preparation & cooking: select most appropriate tools and equipment to make each dish. Food preparation & cooking: apply health and safety knowledge regarding the preparation of raw and cooked foods to safely prepare and cook their meal including chicken and seafood. Food preparation & cooking: use a range of techniques, e.g. chop, peel, crush, measure, drain, rinse, simmer, season, fry, coat and use a tin opener. Food preparation & cooking: use a range of techniques, e.g. peel, boil, mash, fry, cut, boil, drain, brown, pour, simmer, season, spoon, spread and grill. Food preparation & cooking: independently use a hob and adjust the heat for specific purposes. Nutrition: evaluate a meal and consider if it contributes towards a balanced diet.
Tier 2 vocabulary	grill, seasoning, fragrant, coat, seafood
Tier 3 vocabulary	tapas, paella, culture spices, sauté
Links to prior learning	This combines all of the skills that pupils have already developed throughout key stages 1 and 2 but builds on their knowledge to cook chicken and seafood.
Links to future learning	These skills are further developed during key stage 3 when pupils cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet.