

Wrawby DT Curriculum Overview – Long Term Plan 2026-27

Autumn Term - Food and Nutrition				
	EYFS/Year 1	Y2/3	Y4/5	Y5/6
The Big Question	Can I design and make a healthy fruit salad?	Do I know what a balanced diet is? Can I design and make a healthy cookie?	Do I know that food production is seasonal? Can I design and make a food product with seasonal produce? i.e. sustainability link	Do I know that food production is seasonal? Can I design and make a food product celebrating culture? i.e. seasonal broth
DT Focus knowledge focus	Food and Nutrition Pioneer Class 1 and 2 - Nadiya Hussain	Food and Nutrition Pioneer Class 1 and Class 2 – Nadiya Hussain	Food and Nutrition Pioneer Class 3 and Class 4 – Joe Wicks	Food and Nutrition Pioneer Class 3 and Class 4 – Joe Wicks
Enquiry Focus	Preparing Fruit and Vegetables for a salad	Healthy and varied diet in order to make healthy cookies	Celebrating culture and seasonality to make a hot meal/broth	
Substantive Knowledge	Key learning in design and technology Prior learning Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell. Experience of cutting soft fruit and vegetables using appropriate utensils. Designing Design appealing products for a particular user based on simple design criteria. Generate initial ideas and design criteria through investigating a variety of fruit and vegetables. Communicate these ideas through talk and drawings. Making Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. Evaluating Taste and evaluate a range of fruit and vegetables to determine the intended user’s preferences. Evaluate ideas and finished products against design criteria, including intended user and purpose. Technical knowledge and understanding Understand where a range of fruit and vegetables come from e.g. farmed or grown at home. Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The Eatwell Guide. Know and use technical and sensory vocabulary.	Key learning in design and technology Prior learning Know some ways to prepare ingredients safely and hygienically. Have some basic knowledge and understanding about healthy eating and The Eatwell Guide. Have used some equipment and utensils and prepared and combined ingredients to make a product. Designing Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose. Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. Making Plan the main stages of a recipe, listing ingredients, utensils and equipment. Select and use appropriate utensils and equipment to prepare and combine ingredients. Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. Evaluating Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. Technical knowledge and understanding Know how to use appropriate equipment and utensils to prepare and combine food. Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. Know and use relevant technical and sensory vocabulary appropriately.	Key learning in design and technology Prior learning Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet. Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients. Designing Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification. Explore a range of initial ideas and make design decisions to develop a final product linked to user and purpose. Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas. Making Write a step-by-step recipe, including a list of ingredients, equipment and utensils Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients. Make, decorate and present the food product appropriately for the intended user and purpose. Evaluating Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/ charts such as star diagrams. Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. Understand how key chefs have influenced eating habits to promote varied and healthy diets. Technical knowledge and understanding Know how to use utensils and equipment including heat sources to prepare and cook food. Understand about seasonality in relation to food products and the source of different food products. Know and use relevant technical and sensory vocabulary.	
Disciplinary Knowledge	Focused Tasks Discuss basic food hygiene practices when handling food including the importance of following instructions to control risk e.g. What should we do before we work with food? Why is following instructions important? Demonstrate how to use simple utensils and provide opportunities for the children to practise food processing skills such as washing, grating, peeling, slicing, squeezing e.g. Do we eat the whole fruit? Why or why not? Which parts do we eat? What might we have to do before eating this? Why do we cut, grate, peel and slice in this way? Discuss different effects achieved by different processes.	Focused Tasks Learn to select and use a range of utensils and use a range of techniques as appropriate to prepare ingredients hygienically including the bridge and claw technique, grating, peeling, chopping, slicing, mixing, spreading, kneading and baking. Food preparation and cooking techniques could be practised by making a food product using an existing recipe. Discuss basic food hygiene practices when handling food including the importance of following instructions to control risk e.g. What should we do before we work with food? Why is following instructions important? Discuss the purpose of	Focused Tasks Demonstrate how to measure out, cut, shape and combine e.g. knead, beat, rub and mix ingredients. Demonstrate how to use appropriate utensils and equipment that the children may use safely and hygienically. Techniques could be practised following a basic recipe to prepare and cook a savoury food product. Ask questions about which ingredients could be changed or added in a basic recipe such as types of flour, seeds, garlic, vegetables. Consider texture, taste, appearance and smell. When using a basic dough recipe, explore making different shapes to change the appearance of the food product e.g. Which shape is most appealing and why? 14. Design, Make and Evaluate Assignment (DMEA) Develop a design brief and simple design specification with the children within a context that is authentic and meaningful. This can include design criteria relating to nutrition and healthy eating. Discuss the purpose of the products that the children will be designing, making and evaluating and who the products will be for.	

	Discuss healthy eating advice, including eating more fruit and vegetables; using The Eatwell Guide model talk about the importance of fruit and vegetables in our balanced diet e.g. Why is it good to eat fruit and vegetables? How many pieces of fruit/vegetables do you eat per day? Why is it important to wash fruit/vegetables before we eat them? Set a context for designing and making which is authentic and meaningful. Discuss with the children the possible products that they might want to design, make and evaluate and who the products will be for. Agree on design criteria that can be used to guide the development and evaluation of children’s products e.g. Who/what is the product for? What will make our product unique/different? How will we know that we designed and made a successful product? Use talk and drawings when planning for a product; ask the children to develop, model and communicate their ideas e.g. What will you need? What fruit/vegetable will you need? How much will you need? How will you present the product? Evaluate as the children work through the project and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.	the products that the children will be designing, making and evaluating and who the products will be for. Develop and agree on design criteria with the children within a context that is authentic and meaningful. This can include criteria relating to healthy eating and a varied diet e.g. What do you need to consider to make it part of a balanced diet? How do we select the ingredients? How could we make it appealing to eat? Ask children to generate a range of ideas encouraging realistic responses. Using discussion, annotated sketches and information and communication technology if appropriate, ask the children to develop and communicate their ideas. Ask children to consider the main stages in making the food product, before preparing/cooking the product including the ingredients and utensils they will need. Evaluate as the assignment proceeds and the final product against the intended purpose and user, reflecting on the design criteria previously agreed. Consider what others think of the product when considering how the work might be improved.	Ask children to generate a range of ideas encouraging innovative responses. Agree on design criteria that can be used to guide the development and evaluation of the children’s product. Using annotated sketches, discussion and information and communication technology if appropriate, ask children to develop and communicate their ideas. Ask children to record the steps, equipment, utensils and ingredients for making the food product drawing on the knowledge, understanding and skills learnt previously. Evaluate the work as it progresses and the final product against the intended purpose and user reflecting on the design specification.	
Vocabulary	Fruit and vegetable names, names of equipment and utensils, sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard, flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular, design, evaluate, criteria	name of products, names of equipment, utensils, techniques and ingredients, texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet, planning, design criteria, purpose, user, annotated sketch, sensory evaluations	ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality, utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble, design specification, innovative, research, evaluate, design brief	
Why this/why now?	A whole-school term focused on food and nutrition gives pupils essential life skills while building a clear progression of knowledge about healthy eating, cooking techniques, and where food comes from. Food education is immediately relevant to every child’s daily life, helping them make informed choices and develop independence. Prioritising it now supports a consistent approach across the school, strengthens cross-curricular links with science and PSHE, and allows each year group to master age-appropriate skills — from simple preparation to more complex cooking and nutritional understanding — culminating in a shared celebration of learning and healthy living. This knowledge build on from last year where the Food and Nutrition unit was completed in the summer term, so different seasonal fruits and vegetable will be in use for this autumn term.			
Spring Term 2 – Mechanisms				
	EYFS/Year 1	Y2/3	Y4/5	Y5/6
The Big Question	Can I make a moving storyboard to retell a fairy tale to the class?	Can I make a greetings card with moving parts?	Can I design and make a moving ‘creature in a box’ toy?	Can I design and make a moving toy for a specified age group?
DT knowledge focus	Mechanisms – Sliders & Levers	Mechanisms – Levers and Linkages	Mechanisms - Pneumatics	Mechanisms - CAMS
Enquiry Focus	Making a book using sliders and levers	Making an Easter card with levers and linkages	Making a cardboard toy using pneumatics	Making a moving wooden toy using CAMS
Substantive Knowledge	Prior learning Early experiences of working with paper and card to make simple flaps and hinges. Experience of simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape. Designing Generate ideas based on simple design criteria and their own experiences, explaining what they could make. Develop, model and communicate their ideas through drawings and mock-ups with card and paper. Making Plan by suggesting what to do next. Select and use tools, explaining their choices, to cut, shape and join paper and card. Use simple finishing techniques suitable for the product they are creating. Evaluating Explore a range of existing books and everyday products that use simple sliders and levers.	Prior learning Explored and used mechanisms such as flaps, sliders and levers. Gained experience of basic cutting, joining and finishing techniques with paper and card. Designing Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user. Use annotated sketches and prototypes to develop, model and communicate ideas. Making Order the main stages of making. Select from and use appropriate tools with some accuracy to cut, shape and join paper and card. Select from and use finishing techniques suitable for the product they are creating. Evaluating Investigate and analyse books and, where available, other products with lever and linkage mechanisms.	Prior learning Explored simple mechanisms, such as sliders and levers, and simple structures. Learnt how materials can be joined to allow movement. Joined and combined materials using simple tools and techniques. Designing Generate realistic and appropriate ideas and their own design criteria through discussion, focusing on the needs of the user. Use annotated sketches and prototypes to develop, model and communicate ideas. Making Order the main stages of making. Select from and use appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons. Select from and use finishing techniques suitable for the product they are creating.	Prior learning Experience of axles, axle holders and wheels that are fixed or free moving. Experience of cutting and joining techniques with a range of materials including card, plastic and wood. An understanding of how to strengthen and stiffen structures. Designing Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources. Develop a simple design specification to guide their thinking. Develop and communicate ideas through discussion, annotated drawings and drawings from different views. Making Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team.

	Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria. Technical knowledge and understanding Explore and use sliders and levers. Understand that different mechanisms produce different types of movement. Know and use technical vocabulary relevant to the project.	Evaluate their own products and ideas against criteria and user needs, as they design and make. Technical knowledge and understanding Understand and use lever and linkage mechanisms. Distinguish between fixed and loose pivots. Know and use technical vocabulary relevant to the project.	Evaluating Investigate and analyse books, videos and products with pneumatic mechanisms. Evaluate their own products and ideas against criteria and user needs, as they design and make. Technical knowledge and understanding Understand and use pneumatic mechanisms. Know and use technical vocabulary relevant to the project.	Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. Work within the constraints of time, resources and cost. Evaluating Compare the final product to the original design specification. Test products with the intended user, where safe and practical, and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. Consider the views of others to improve their work. Investigate famous manufacturing and engineering companies relevant to the project. Technical knowledge and understanding Understand that mechanical systems have an input, process and an output. Understand how cams can be used to produce different types of movement and change the direction of movement. Know and use technical vocabulary relevant to the project.
Disciplinary Knowledge	Focused Tasks Demonstrate simple levers and sliders to the children using prepared teaching aids. It is helpful if these are also used in context e.g. the slider is used to show a snail appearing from behind a stone, the lever is used to show a butterfly flying to a flower. Use questions to develop children’s understanding e.g. How does the slider move? How does the lever move? Which part of the mechanism is the pivot? What does the movement of the slider and lever remind you of? Following teacher demonstration of the correct use of tools and materials, children should develop their knowledge and skills by replicating the slider and lever teaching aids. Encourage children to add pictures to their mechanisms. Discuss with the children what they will be designing, making and evaluating e.g. Who will your product be for? What will be its purpose? How do you want it to move? Will you use a lever or a slider? Generate simple design criteria with the children e.g. the mechanism should work smoothly, it should make the right type of movement. Encourage the children to develop their ideas through talking, drawing and making mock-ups of their ideas with paper and card. Discuss the finishing techniques the children might use e.g. using digital text and graphics, paint, felt tipped pens or collage. As a whole class, talk about the order in which the mechanisms will be made. Ask children to evaluate their developing ideas and final products against the original design criteria.	Focused Tasks Demonstrate a range of lever and linkage mechanisms to the children using prepared teaching aids. Use questions to develop children’s understanding e.g. Which card strip is the lever? Which card strip is acting as the linkage? Which part of the system is the input and which part the output? What does the type of movement remind you of? Which are the fixed pivots and which are the loose pivots? Demonstrate the correct and accurate use of measuring, marking out, cutting, joining and finishing skills and techniques. Children should develop their knowledge and skills by replicating one or more of the teaching aids. Develop a design brief with the children within a context which is authentic and meaningful. Discuss with children the purpose of the products they will be designing and making and who the products will be for. Ask the children to generate a range of ideas, encouraging creative responses. Agree on design criteria that can be used to guide the development and evaluation of the children’s products. Using annotated sketches and prototypes, ask the children to develop, model and communicate their ideas. Ask the children to consider the main stages in making before assembling high quality products, drawing on the knowledge, understanding and skills learnt previously. Evaluate the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.	Focused Tasks Demonstrate how to assemble the systems using syringes, tubing, balloons and plastic bottles. Introduce ways in which pneumatic systems can be used to operate levers. Demonstrate the correct and accurate use of measuring, marking out, cutting, joining and finishing skills and techniques. Provide the materials and ask the children to try out and draw the three systems they have been shown: - Balloon connected to a washing-up liquid bottle. What happens when you squeeze the bottle? What happens when you let go? - Two syringes of the same size connected together. What happens when you press the plunger of one syringe down? How far does the other syringe move? - Two syringes of different sizes connected together. How far do these syringes move when pressed? Develop a design brief with the children within a context which is authentic and meaningful. Discuss with children the purpose of the products they will be designing and making and who the products will be for. Ask the children to generate a range of ideas, encouraging creative responses. Agree on design criteria that can be used to guide the development and evaluation of the children’s products. Using annotated sketches and prototypes, ask the children to develop, model and communicate their ideas. Ask the children to consider the main stages in making before assembling high quality products, drawing on the knowledge, understanding and skills learnt previously. Evaluate the final products against the intended purpose and with the intended user, where safe and practical, drawing on the design criteria previously agreed.	Focused Tasks Give children pre-cut cams made from MDF or wooden wheels to mount on a piece of board and observe their movement with a follower. Demonstrate how to use a hand drill safely to make an off-centre cam and position it accurately in a housing. Ensure children secure the wheel with a G-clamp and use a piece of scrap wood under the wheel to avoid drilling through the bench hook or table. Stress the importance of measuring accurately and checking before cutting any holes or gluing. It is important to line up the cam and follower otherwise the mechanism may not work smoothly. How high will the cam lift the follower? Develop measuring, marking, cutting, shaping and joining skills using junior hacksaws, G-clamps, bench hooks, square section wood, card triangles and hand drills to make cam mechanisms and construct wooden frames or card housings, as appropriate. Demonstrate the accurate and safe use of tools and equipment. Children generate innovative ideas by carrying out research including surveys, interviews and questionnaires and develop a design specification for their product, carefully considering the purpose and intended user for their product. Communicate ideas through detailed, annotated sketches from different views and/or exploded diagrams. The drawings should indicate the design decisions made, including the location of the components, how they work as a system and the appearance and finishing techniques for the product. Produce detailed step-by-step plans and lists of tools, equipment and materials needed. If appropriate, allocate tasks within a team. Evaluate throughout and the final product in use, comparing it to the original design specification. Critically evaluate the quality of the design, the manufacture, functionality, innovation shown and fitness for the intended user and purpose.
Vocabulary	slider, lever, pivot, slot, bridge/guide, card, masking tape, paper fastener, join, pull, push, up, down, straight, curve, forwards, backwards, design, make, evaluate, user, purpose, ideas, design criteria, product, function	mechanism, lever, linkage, pivot, slot, bridge, guide, system, input, process, output, linear, rotary, oscillating, reciprocating, user, purpose, function, prototype, design criteria, innovative, appealing, design brief	components, fixing, attaching, tubing, syringe, plunger, split pin, paper fastener, pneumatic system, input movement, process, output movement, control, compression, pressure, inflate, deflate, pump, seal, air-tight, linear, rotary, oscillating, reciprocating, prototype, design criteria, innovative, appealing, design brief, research, evaluate, ideas, constraints, investigate	cam, snail cam, off-centre cam, peg cam, pear shaped cam, follower, axle, shaft, crank, handle, housing, framework, rotation, rotary motion, oscillating motion, reciprocating motion, mechanical system, process, output movement, design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief

Why this/why now?	A whole-school term focused on mechanisms gives pupils a coherent, meaningful journey through a key area of the curriculum, with each year group developing a different skill to ensure clear progression. Mechanisms and understanding how they work, will enhance children’s everyday experiences and provide rich opportunities for problem-solving, creativity, and practical engineering. Focusing on them now strengthens consistency across the school, supports teacher confidence through shared planning, and allows every class to contribute to a collective celebration of learning while mastering age-appropriate techniques.			
Summer Term 2 Mechanisms (continued) and Electrical Units				
	EYFS/Year 1	Y2/3	Y4/5	Y5/6
The Big Question	Can I design and make a small, wheeled trolley for a teddy?	Can I design and make a working night light?	Can I design, make and evaluate an alarm to protect a valuable artefact?	Can I design and make a toy vehicle for a specified age group?
DT knowledge focus	Mechanisms – Wheels and Axles	Simple Circuits and Switches	Electrical – More Complex Switches	Mechanisms – Pulleys or Gears
Enquiry Focus	Making a trolley using wheels and axles	Make a night light designed for a sibling	Make an alarm system using electrical circuits	Make a toy vehicle using pulleys or gears
Substantive Knowledge	Prior learning Assembled vehicles with moving wheels using construction kits. Explored moving vehicles through play. Gained some experience of designing, making and evaluating products for a specified user and purpose. Developed some cutting, joining and finishing skills with card. Designing Generate initial ideas and simple design criteria through talking and using own experiences. Develop and communicate ideas through drawings and mock-ups. Making Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing. Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics. Evaluating Explore and evaluate a range of products with wheels and axles. Evaluate their ideas throughout and their products against original criteria. Technical knowledge and understanding Explore and use wheels, axles and axle holders. Distinguish between fixed and freely moving axles. Know and use technical vocabulary relevant to the project.	Prior learning Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers. Cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue. Designing Gather information about needs and wants and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams. Making Order the main stages of making. Select from and use tools and equipment to cut, shape, join and finish with some accuracy. Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities. Evaluating Investigate and analyse a range of existing battery-powered products. Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. Technical knowledge and understanding Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers. Apply their understanding of computing to program and control their products. Know and use technical vocabulary relevant to the project.	Prior learning Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product. Initial experience of using computer control software and an interface box or a standalone box, e.g. writing and modifying a program to make a light flash on and off. Designing Use research to develop a design specification for a functional product that responds automatically to changes in the environment. Take account of constraints including time, resources and cost. Generate and develop innovative ideas and share and clarify these through discussion. Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. Making Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. Create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment. Evaluating Continually evaluate and modify the working features of the product to match the initial design specification. Test the system to demonstrate its effectiveness for the intended user and purpose. Investigate famous inventors who developed ground-breaking electrical systems and components. Technical knowledge and understanding Understand and use electrical systems in their products. Apply their understanding of computing to program, monitor and control their products. Know and use technical vocabulary relevant to the project.	Prior learning Experience of axles, axle holders and wheels that are fixed or free moving. Basic understanding of electrical circuits, simple switches and components. Experience of cutting and joining techniques with a range of materials including card, plastic and wood. An understanding of how to strengthen and stiffen structures. Designing Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources. Develop a simple design specification to guide their thinking. Develop and communicate ideas through discussion, annotated drawings and drawings from different views. Making Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team. Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. Work within the constraints of time, resources and cost. Evaluating Compare the final product to the original design specification. Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. Consider the views of others to improve their work. Investigate famous manufacturing and engineering companies relevant to the project. Technical knowledge and understanding Understand that mechanical and electrical systems have an input, process and an output. Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement. Know and use technical vocabulary relevant to the project.
Disciplinary Knowledge	Focused Tasks Using construction kits with wheels and axles, ask children to make a product that moves. Demonstrate to children how wheels and axles may be assembled as either fixed axles or free axles. Show different ways of making axle holders and stress the importance of making sure the axles run freely within the holders. Ensure that children are taught how to mark out, hold, cut and join materials and components correctly.	Focused Tasks Recap with the children how to make manually controlled, simple series circuits with batteries and different types of switches, bulbs and buzzers. Discuss which of the components in the circuit are input devices e.g. switches, and which are output devices e.g. bulbs and buzzers. Demonstrate how to find a fault in a simple circuit and correct it, giving pupils opportunities to practise. Use a simple microcontroller program with an interface box or standalone control box to physically control output devices e.g. bulbs and buzzers.	Focused Tasks Through teacher demonstration and explanation, recap measuring, marking out, cutting and joining skills with construction materials that children will need to create their electrical products. Demonstrate and enable children to practise methods for making secure electrical connections e.g. using automatic wire strippers, twist and tape electrical connections, screw connections and connecting blocks. Drawing on science understanding, ask the children to explore a range of electrical systems that could be used	Focused Tasks Using a construction kit, investigate combinations of two different sized pulleys to learn about direction and speed of rotation e.g. How many times does the smaller pulley turn each time the larger pulley turns once? Do the pulleys move in the same direction? How can you reverse the direction of rotation? AND/OR Using a construction kit, explore combinations of two different size gears meshed together. Investigate the direction and speed of rotation focusing on how the size of

	Using samples of materials and components they will use when designing and making, ask the children to assemble some examples of wheel, axle, axle holder combinations. Discuss with the children what they will be designing, making and evaluating within an authentic context. With the children identify a user and purpose for the product and generate simple criteria. Ask children to generate, develop and communicate their ideas as appropriate e.g. through talk and drawing. Talk about, evaluate and share ideas with other children/adults. Make their wheel and axle product using their design ideas and criteria as an ongoing guide. Discuss how the children might add finishing techniques to their product with reference to their design ideas and criteria. Direct the children to information and communication technology opportunities such as clip art, word processing, paint or simple drawing programs. Ask children to evaluate their finished product, communicating how it works and how it matches their design criteria, including any changes they made.	Ask the children to make a variety of switches by using simple classroom materials e.g. card, corrugated plastic, aluminium foil, paper fasteners and paper clips. Encourage children to make switches that operate in different ways e.g. when you press them, when you turn them, when you push them from side to side. Ask the children to test their switches in a simple series circuit. Teach children how to avoid making short circuits. Develop a design brief with the children within a context which is authentic and meaningful. Discuss with children the purpose of the battery-powered products that they will be designing and making and who they will be for. Ask the children to generate a range of ideas, encouraging realistic responses. Agree on design criteria that can be used to guide the development and evaluation of the children's products, including safety features. Using annotated sketches and cross-sectional diagrams, ask the children to develop, model and communicate their ideas. Ask the children to consider the main stages in making and testing before assembling high quality products, drawing on the knowledge, understanding and skills learnt previously. Evaluate throughout and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.	to control their products, including a simple series circuit where a single output device is controlled, a series circuit where two output devices are controlled by one switch and, where appropriate, parallel circuits where two output devices are controlled independently by two separate switches. Drawing on related computing activities, ensure that children can write computer control programs that include inputs, outputs and decision making. Test out the programs using electrical components connected to Crumble or Micro:bit. Teach children how to avoid making short circuits. Develop an authentic and meaningful design brief with the children. Ask the children generate innovative ideas by drawing on research and develop a design specification for their product, carefully considering the purpose and needs of the intended user. Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. Drawings should indicate the design decisions made, including the location of the electrical components and how they work as a system with an input, process and output. Produce detailed step-by-step plans and lists of tools, equipment and materials needed. If appropriate, allocate tasks within a team. Create and modify a computer control program to enable the product to work automatically in response to changes in the environment. Critically evaluate throughout and the final product, comparing it to the original design specification. Test the system to demonstrate its effectiveness for the intended user and purpose.	the driver gear affects the speed of the follower gear. Ask the children to use the number of teeth on each gear to decide upon the gear ratios e.20-toothoth driver gear meshed with a 20-tooth follower gear produces a ratio of 2:1 Build a working circuit that incorporates a battery, a motor and a handmade switch, such as a reversing switch. Demonstrate the accurate use of tools and equipment including cutting and stripping wire and making secure electrical connections. Remind children about the dangers of mains electricity. Draw a pictorial representation of the circuit or draw a circuit diagram using correct symbols. Develop measuring, marking, cutting, shaping and joining skills using junior hacksaws, G-clamps, bench hooks, square section wood, card triangles and hand drills to construct wooden frames, as appropriate. Demonstrate the accurate use of tools and equipment. Develop an authentic and meaningful design brief with the children. Children generate innovative ideas by carrying out research including surveys, interviews and questionnaires and develop a design specification for their product, carefully considering the purpose and intended user for their product. Communicate ideas through detailed, annotated drawings from different views and/or exploded diagrams. The drawings should indicate the design decisions made, including the location of the mechanical and electrical components, how they work as a system with an input, process and output, and the appearance and finishing techniques for the product. Produce detailed step-by-step plans and lists of tools, equipment and materials needed. If appropriate allocate tasks within a team. Make high quality products, applying knowledge, understanding and skills from prior learning. Children should use a range of decorative finishing techniques to ensure a well finished final product that matches the intended user and purpose. Evaluate throughout and the final product in use, comparing it to the original design specification. Critically evaluate the quality of the design, the manufacture, functionality, innovation shown and fitness for the intended user and purpose.
Vocabulary	vehicle, wheel, axle, axle holder, chassis, body, cab, assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism, names of tools, equipment and materials used, design, make, evaluate, purpose, user, criteria, functional	series circuit, fault, connection, toggle, switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, control, program, system, input device, output device, user, purpose, function, prototype, design criteria, innovative, appealing, design brief	series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart, function, innovative, design specification, design brief, user, purpose	pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor, circuit, switch, circuit diagram, annotated drawings, mechanical system, electrical system, input, process, output, design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief
Why this/why now?	A whole-school term focused on building on from the mechanism skills will further enhance their learning and understanding. Other areas of the school will have the opportunity to further enhance their science knowledge after looking at Electricity and Circuits units, linked with wider Computing units. Teaching these skills at the end of the year will allow an opportunity for interleaving and for children to use their prior knowledge for a new project.			