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DT Intent
Design and Technology prepares children to deal with tomorrow's rapidly changing world. It can be found in many of the objects children use each day and is a part of our children's immediate experiences. At Sandal Magna creativity is one of our Key Habits and we encourage children to use their imagination, to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. The subject encourages children to become autonomous and creative problem-solvers, both as individuals and as part of a team. Through talk, they are able to negotiate plans and explain their thinking. Our Design and Technology curriculum combines the teaching of subject specific vocabulary, skills, knowledge, and concepts to enable children to tackle real problems. As pupils progress through school they are encouraged to reflect on and evaluate present and past design and technology, its uses and its impacts. We aim to, wherever possible, link work to other disciplines such as mathematics, science, computing and art, to ensure children experience a rich curriculum. Our cross-curricular links enable unique talents to be embraced whilst promoting diversity and equality.

		Year 1			Year 2		
		Mechanisms – wheels and axles Autumn 1	**Food – fruit and vegetables Spring 1**	**Textiles – puppets Spring 2**	**Mechanisms and structure – fairground wheel Autumn 2**	**Food – balanced diet Spring 2**	**Textiles – making pouches Summer 2**
Enquiry question		**How do vehicles move?**	**What makes a snack healthy?**	**How do I get material to stay together to make a puppet?**	**How can I get an object to move?**	**Why is it important to eat healthy foods?**	**How can I make a pouch to hold objects?**
Skills	**Design**	Designing a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move. • Creating clearly labelled drawings that illustrate movement.	• Designing smoothie carton packaging by-hand or on computing software.	• Using a template to create a design for a puppet.	• Selecting a suitable linkage system to produce the desired motion. • Designing a wheel.	• Designing a healthy wrap based on a food combination which work well together.	• Designing a pouch.
	Make	• Adapting mechanisms they do not work as they should. • To fit their vehicle design. • To improve how they work after testing their vehicle.	• Chopping fruit and vegetables safely to make a smoothie.	• Cutting fabric neatly with scissors. • Using joining methods to decorate a puppet. • Sequencing steps for construction.	• Selecting materials according to the characteristics. • Following a design brief.	• Slicing food safely using the bridge or claw grip. • Constructing a wrap that meets a design brief.	• Selecting and cutting fabrics for sewing. • Decorating a pouch using fabric glue or a running stitch. • Threading a needle. • Sewing running stitch, with evenly spaced, neat, even stitches to join fabric.

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							• Neatly pinning and cutting fabric using a template.
	Evaluate	• Testing wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move.	• Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging.	• Reflecting on a finished product, explaining likes and dislikes.	• Evaluating different designs. • Testing and adapting a design.	• Describing the taste, texture and smell of fruit and vegetables. • Taste testing food combinations and final products. • Describing the information that should be included on a label. • Evaluating which grip was most effective.	• Troubleshooting scenarios posed by teacher. • Evaluating the quality of the stitching on others' work. • Discussing as a class, the success of their stitching against the success criteria. • Identifying aspects of their peers' work that they particularly like and why.
Knowledge	**Technical**	• To know that wheels need to be round to rotate and move. • To understand that for a wheel to move it must be attached to a rotating axle. • To know that an axle moves within an axle holder which is fixed to the vehicle or toy. • To know that the frame of a vehicle (chassis) needs to be balanced.	N/A	N/A	• To know that different materials have different properties and are therefore suitable for different uses.	N/A	N/A
	Additional	• To know some real-life items that use wheels such as wheelbarrows,	N/A	• To know that 'joining technique' means connecting two pieces of material together. • To know that there are various temporary methods	• To know the features of a Ferris wheel include the wheel, frame, pods, a base an axle and an axle holder.	N/A	• To know that sewing is a method of joining fabric. • To know that different stitches can

		hamster wheels and vehicles.		of joining fabric by using staple, glue or pins. • To understand that different techniques for joining materials can be used for different purposes. • To understand that a template (or fabric pattern) is used to cut out the same shape multiple times. • To know that drawing a design idea is useful to see how an idea will look.	• To know that it is important to test my design as I go along so that I can solve any problems that may occur.		be used when sewing. • To understand the importance of tying a knot after sewing the final stitch. • To know that a thimble can be used to protect my fingers when sewing.
	Cooking/ nutrition	N/A	• Understanding the difference between fruits and vegetables. • To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber). • To know that a blender is a machine which mixes ingredients together into a smooth liquid. • To know that a fruit has seeds and a vegetable does not. • To know that fruits grow on trees or vines. • To know that vegetables can grow either above or below ground. • To know that vegetables can come from different parts of the plant (e.g. roots: potatoes,	N/A	N/A	• To know that 'diet' means the food and drink that a person or animal usually eats. • To understand what makes a balanced diet. • To know where to find the nutritional information on packaging. • To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar. • To understand that I should eat a range of different foods from each food group, and roughly how much of each food group.	N/A

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			leaves: lettuce, fruit: cucumber).			• To know that nutrients are substances in food that all living things need to make energy, grow and develop. • To know that 'ingredients' means the items in a mixture or recipe. • To know that I should only have a maximum of five teaspoons of sugar a day to stay healthy. • To know that many foods and drinks we do not expect to contain sugar do; we call these 'hidden sugars'.	
Cross- curricular links		Geography – houses Maths – measure and begin to record, lengths and heights	Science – identifying and classifying. Observing RSE – what is a healthy diet Geography – fruit and vegetables from our country.	History – toy topic English – become familiar with key stories	Geography – our fairgrounds Maths – identify 2D shapes Science – identify materials including wood, metal, plastic, glass, brick, rock, paper, cardboard.	Mathematics – compare and order lengths, mass, volume/capacity and record their results.	Geography – going on safari

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		Year 3			**Year 4**		
		Food – eating seasonally Autumn 1	**Electrical systems – Roman poster Spring 2**	**Structure – constructing a settlement Summer 2**	**Electrical systems – torches Autumn 2**	**Cooking – Adapting a recipe Spring 1**	**Mechanisms - Slingshot car Summer 1**
Enquiry question		**What grows where?**	**How do I turn a blub on?**	**How can I make my structure sturdy?**	**How can I light up a room at night?**	**How can I adapt a recipe?**	**How can I make my car move?**
Skills	**Design**	• Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish.	• Carry out research based on a given topic (e.g. The Romans) to develop a range of initial ideas. • Generate a final design for the electric poster with consideration to the client's needs and design criteria. • Design an electric poster that fits the requirements of a given brief. • Plan the positioning of the bulb (circuit component) and its purpose.	• Designing a settlement with key features to appeal to a specific person/purpose. • Drawing and labelling the settlement, design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours. • Designing and/or decorating a settlement on CAD software.	• Designing a torch, considering the target audience and creating both design and success criteria focusing on features of individual design ideas.	• Designing a biscuit with a given budget. • Identifying a target audience. • Conduct market research. • Adapting a recipe.	• Designing a shape that reduces air resistance. • Drawing a net to create a structure from. • Choosing shapes that increase or decrease speed as a result of air resistance. • Personalising a design.
	Make	• Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination.	• Create a final design for the electric poster. • Mount the poster onto corrugated card to improve its strength and allow it to withstand the	• Constructing a range of 3D geometric shapes using nets. • Creating special features for individual designs. • Making facades from a range of recycled materials.	• Making a torch with a working electrical circuit and switch. • Using appropriate equipment to cut and attach materials. • Assembling a torch according to the design and success criteria.	• Following a baking recipe. • Understanding safety and hygiene rules.	• Measuring, marking, cutting and assembling with increasing accuracy. • Making a model based on a chosen design.

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		• Following the instructions within a recipe.	weight of the circuit on the rear. • Measure and mark materials out using a template or ruler. • Fit an electrical component (bulb). • Learn ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge).				
	Evaluate	• Establishing and using design criteria to help test and review dishes. • Describing the benefits of seasonal fruits and vegetables and the impact on the environment. • Suggesting points for improvement when making a seasonal tart.	• Learning to give and accept constructive criticism on own work and the work of others. • Testing the success of initial ideas against the design criteria and justifying opinions. • Revisiting the requirements of the client to review developing design ideas and check that they fulfil their needs.	• Evaluating own work and the work of others based on the aesthetic of the finished product • Suggesting points for modification of the individual designs.	• Evaluating electrical products. • Testing and evaluating the success of a final product.	• Evaluating and comparing a range of products. • Evaluating an adapted recipe. • Suggesting modifications.	• Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.
Knowledge	**Technical**	N/A	• To understand that an electrical system is a group of parts (components) that work together to transport electricity around a circuit. • To understand common features of an electric product (switch, battery or	• To understand that wide and flat based objects are more stable. • To understand the importance of strength and stiffness in structures.	• To understand that electrical conductors are materials which electricity can pass through. • To understand that electrical insulators are materials which electricity cannot pass through. • To know that a battery contains stored electricity that can be used to power products.	N/A	• To understand that all moving things have kinetic energy. • To understand that kinetic energy is the energy that something (object/person) has by being in motion. • To know that air resistance is the level

			plug, dials, buttons etc.). • To list examples of common electric products (kettle, remote control etc.). • To understand that an electric product uses an electrical system to work (function). • To know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits.		• To know that an electrical circuit must be complete for electricity to flow. • To know that a switch can be used to complete and break an electrical circuit.		of drag on an object as it is forced through the air. • To understand that the shape of a moving object will affect how it moves due to air resistance.
	Additional	N/A	• To understand the importance and purpose of information design. • To understand how material choices (such as mounting paper to corrugated card) can improve a product to serve its purpose (remain rigid without bending when the electrical circuit is attached).	• To know the following features of a settlement and their purpose. • To know that a façade is the front of a structure. • To understand that a settlement needed to be strong and stable to withstand enemy attack. • To know that a paper net is a flat 2D shape that can become a 3D shape once assembled. • To know that a design specification is a list of success criteria for a product.	• To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens. • To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison.	N/A	• To understand that products change and evolve over time. • To know that aesthetics means how an object or product looks in design and technology. • To know that a template is a stencil you can use to help you draw the same shape accurately. • To know that a birds-eye view means a view from a high angle (as if a bird in flight). • To know that graphics are images which are designed to explain or advertise something.

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							•To know that it is important to assess and evaluate design ideas and models against a list of design criteria.
	Cooking/ nutrition	• To know that not all fruits and vegetables can be grown in the UK. • To know that climate affects food growth. • To know that vegetables and fruit grow in certain seasons. • To know that cooking instructions are known as a 'recipe'. • To know that imported food is food which has been brought into the country. • To know that exported food is food which has been sent to another country.. • To understand that imported foods travel from far away and this can negatively impact the environment. • To know that each fruit and vegetable gives us	N/A	N/A	N/A	• That the amount of an ingredient in a recipe is known as the 'quantity'. • That safety and hygiene are important when cooking. • The following cooking techniques: sieving, measuring, mixing/stirring, cutting out and shaping. • The importance of budgeting while planning ingredients for a recipe. • That products often have a target audience.	N/A

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		nutritional benefits because they contain vitamins, minerals and fibre. • To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health. • To know safety rules for using, storing and cleaning a knife safely. • To know that similar coloured fruits and vegetables often have similar nutritional benefits.					
Cross-curricular links		Geography – climate zones Human geography, settlements etc	PSHE – keeping safe History – Roman Empire	History – British History Mathematics – Draw 2D and make 3D shapes	Science – electrical circuits, lights, conductors and insulators	Mathematics – Number, geometry and measurement.	N/A
		Year 5			**Year 6**		
		Food – what could be healthier? Autumn 1	**Mechanical systems – making a pop-up book Spring 1**	**Electrical systems - Doodlers Spring 2**	**Structure – playground Autumn 2**	**Textiles – making a waist coat Spring 1**	**Cooking – Come dine with me**
Enquiry question		**How can you apply knowledge of healthy eating to design your own recipe?**	**How can I make a picture move?**	**How can I get my axle to spin?**	**What materials would be suitable for a playground?**	**How could you adapt your waistcoat?**	**What will you use to make a 3-course meal?**
Skills	**Design**	• Adapting a traditional recipe, understanding that the nutritional value of a recipe	• Designing a pop-up book which uses a mixture of structures and mechanisms.	• Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product.	• Designing a playground featuring a variety of different structures, giving careful	• Designing a waistcoat in accordance to a specification linked to set of design	• Writing a recipe, explaining the key steps, method and ingredients.

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		alters if you remove, substitute or add additional ingredients. • Writing an amended method for a recipe to incorporate the relevant changes to ingredients. • Designing appealing packaging to reflect a recipe.	• Naming each mechanism, input and output accurately. • Storyboarding ideas for a book.	• Developing design criteria based on findings from investigating existing products. • Developing design criteria that clarifies the target user.	consideration to how the structures will be used, considering effective and ineffective designs	criteria. • Annotating designs, to explain their decisions.	• Including facts and drawings from research undertaken. • Taste testing and scoring final products.
	Make	• Cutting and preparing vegetables safely. • Using equipment safely, including knives, hot pans and hobs. • Knowing how to avoid cross-contamination. • Following a step by step method carefully to make a recipe.	• Following a design brief to make a pop-up book, neatly and with focus on accuracy. • Making mechanisms and/or structures using sliders, pivots and folds to produce movement. • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result.	• Altering a product's form and function by tinkering with its configuration. • Making a functional series circuit, incorporating a motor. • Constructing a product with consideration for the design criteria. • Breaking down the construction process into steps so that others can make the product.	• Building a range of play apparatus structures drawing upon new and prior knowledge of structures. • Measuring, marking and cutting wood to create a range of structures. • Using a range of materials to reinforce and add decoration to structures.	• Using a template when cutting fabric to ensure they achieve the correct shape. • Using pins effectively to secure a template to fabric without creases or bulges. • Marking and cutting fabric accurately, in accordance with their design. • Sewing a strong running stitch, making small, neat stitches and following the edge. • Tying strong knots. • Decorating a waistcoat, attaching features (such as appliqué) using thread.	• Following a recipe, including using the correct quantities of each ingredient. • Adapting a recipe based on research. • Working to a given timescale. • Working safely and hygienically with independence.

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						• Finishing the waistcoat with a secure fastening (such as buttons). • Learning different decorative stitches. • Sewing accurately with evenly spaced, neat stitches.	
	Evaluate	• Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups.	• Evaluating the work of others and receiving feedback on own work. • Suggesting points for improvement.	• Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. • Determining which parts of a product affect its function and which parts affect its form. • Analysing whether changes in configuration positively or negatively affect an existing product. • Peer evaluating a set of instructions to build a product.	• Improving a design plan based on peer evaluation. • Testing and adapting a design to improve it as it is developed. • Identifying what makes a successful structure.	• Reflecting on their work continually throughout the design, make and evaluate process.	• Evaluating a recipe, considering: taste, smell, texture and origin of the food group. • Evaluating health and safety in production to minimise cross contamination. • Suggesting and writing up points of improvements in productions.
Knowledge	**Technical**	N/A	• To know that mechanisms control movement. • To understand that mechanisms can be used to change one kind of motion into another.	• To know that series circuits only have one direction for the electricity to flow. • To know when there is a break in a series circuit, all components turn off.	• To know that structures can be strengthened by manipulating materials and shapes.		N/A

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			• To understand how to use sliders, pivots and folds to create paper-based mechanisms.	• To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin. • To know a motorised product is one which uses a motor to function.			
	Additional	N/A	• To know that a design brief is a description of what I am going to design and make. • To know that designers often want to hide mechanisms to make a product more aesthetically pleasing.	• To know that product analysis is critiquing the strengths and weaknesses of a product. • To know that 'configuration' means how the parts of a product are arranged.	• To understand what a 'footprint plan' is. • To understand that in the real world, design, can impact users in positive and negative ways. • To know that a prototype is a cheap model to test a design idea.	• To understand that it is important to design clothing with the client/ target customer in mind. • To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric. • To understand the importance of consistently sized stitches.	N/A
	Cooking/ nutrition	• To understand where meat comes from – include key welfare issues. • To know that I can adapt a recipe to make it healthier by substituting ingredients. • To know that I can use a nutritional calculator to see how healthy a food option is. • To understand that 'cross-contamination'	N/A	N/A	N/A	N/A	• That 'flavour' is how a food or drink tastes. • That many countries have 'national dishes' which are recipes associated with that country. • That 'processed food' means food that has been put through multiple changes in a factory.

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		means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects.					• That it is important to wash fruit and vegetables before eating to remove any dirt and insecticides. • What happens to a certain food before it appears on the supermarket shelf (farm to fork).
Cross-curricular links		Geography -around the world food	History – pop up book rainforest	Science and English	Geography – Wakefield playgrounds	History – making waistcoats	RSE/PHSE -preparing healthy meals Science - diet