Design Technology Curriculum: Long Term Planning

Nursery

Expressive Arts

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.

Give children an insight into new musical worlds. Invite musicians in to play music to children and talk about it. Encourage children to listen attentively to music. Discuss changes and patterns as a piece of music develops.

Painting, 3D modelling, messy play, collage, cutting, drama, role play, threading, moving to music, clay sculptures, following music patterns with instruments, singing songs linked to topics, making instruments, percussion.

Work will be displayed in the classroom.
Lots of links to Fine Motor Skills. Children to explain their work to others. Children will have opportunities to learn and perform songs, nursery rhymes and poetry linked to their work / interests and passions.

Autumn 1	
All About Me	I can explore different materials freely, in order to develop my ideas about how to use them and what to make. I can use various construction materials I can manipulate play dough (roll, knead)
Autumn 2	
Stories & Celebrations	I can use a variety of tools to apply paint (brushes of different sizes, sponges, fingers) I can recognise and name colours.

Spring 1	
Animal Fun	I can join different materials and explore different textures. I can draw identifiable pictures I can use a variety of tools to apply paint (brushes of different sizes, sponges, fingers) with increasing control
Spring 2	
Growing Up	I can talk about what I am creating I can begin to use representation to communicate, e.g. drawing a line and saying 'That's me.'
Summer 1	
Adventures Under the Sea	I can draw a person with identifiable features I can develop my own ideas and then decide which materials to use to express them.
Summer 2	
A Taste of the World	I have been exposed to a different range of artists I can show interest and describe the texture of things

Reception

Expressive A Creating with Materials

Being Imaginative and Expressive

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Lots of links to Fine Motor Skills. Children to explain their work to others. Children will have opportunities to learn and perform songs, nursery rhymes and poetry linked to their work / interests and passions.

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Autumn 1	
Who Helps Us?	Join in with songs Beginning to mix colours Build stories around toys (small world) use available props to support role play Build models using construction equipment. Junk modelling, take picture of children's creations and record them explaining what they did. Exploring sounds and how they can be changed, tapping out of simple rhythms. Play pitch matching games, humming or singing To draw a self-portrait (enclosing lines): draw definite features Observational drawings Feelings: taking photos of children acting out emotions Drama conventions through literacy
Autumn 2	
Into the Woods	Use different textures and materials to make firework pictures Listen to music and make their own dances in response. Christmas decorations, Christmas cards, Christmas songs/poems The use of story maps, props, puppets & story bags will encourage children to retell, invent and adapt stories. Shadow Puppets Teach children different techniques for joining materials, such as how to use adhesive tape and different sorts of glue Role Play of The Nativity Music: Christmas Songs Drama conventions through literacy
Spring 1	
Space	Van Gogh Starry Night: I can produce a piece of artwork using an artists style as a stimulus I can explore how colour can be changed I can talk about a famous artist. Making lanterns, Chinese writing, puppet making, Chinese music and composition I can recognise, create and describe pattern: tiger skin Drama conventions through literacy
Spring 2	
Minibeasts and Megabeasts	Make different textures; make patterns using different colours Children will explore ways to protect the growing of plants by designing scarecrows.

	Mother's Day crafts Easter crafts printing, patterns on Easter eggs Rubbings of leaves/plants I can combine media to make a collage Andy Goldsworthy natural art Drama conventions through literacy
Summer 1	
Food Glorious Food	Collage Pastel drawings, Artist focus Junk modelling, houses, bridges boats and transport. Provide children with a range of materials for children to construct with. Create collaboratively: papier mache: working in pairs I can use various construction materials Drama conventions through literacy Exploration of other countries – dressing up in different costumes Learn a traditional song and dance and perform it / Encourage children to create their own music.
Summer 2	
Imagine	Water pictures, collage, shading by adding black or white, colour mixing. Colour mixing Father's Day Crafts Making models from recycled materials Using clay to make a coil pot Drama conventions through literacy

Year 1	Learning Outcomes	Key Knowledge	Key Skills	Key Vocabulary
Autumn				
Mechanisms: Making a moving story book	•Identify whether a mechanism is a side-to-side slider or an up-and-down slider and determine what movement the mechanism will make. •Clearly label drawings to show which parts of their design will move and in which direction. •Make a picture, which meets the design criteria, with parts that move purposefully as planned. •Evaluate the main strengths and weaknesses of their design and suggest alterations.	• To know that a mechanism is the parts of an object that move together. • To know that a slider mechanism moves an object from side to side. • To know that a slider mechanism has a slider, slots, guides and an object. • To know that bridges and guides are bits of card that purposefully restrict the movement of the slider.	• Explaining how to adapt mechanisms, using bridges or guides to control the movement. • Designing a moving story book for a given audience. • Following a design to create moving models that use levers and sliders. • Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed. • Reviewing the success of a product by testing it with its intended audience.	sliders mechanism adapt design criteria design input model template assemble test
Spring				
Structures: Constructing a windmill	• Identify some features that would appeal to the client (a mouse) and create a suitable design. • Explain how their design appeals to the mouse. • Make stable structures, which will eventually support the turbine, out of card, tape and glue. • Make functioning turbines and axles that are	• To understand that the shape of materials can be changed to improve the strength and stiffness of structures. • To understand that cylinders are a strong type of structure (and, therefore, they are the main shape used for windmills and lighthouses).	• Learning the importance of a clear design criteria. • Including individual preferences and requirements in a design. • Making stable structures from card, tape and glue. • Learning how to turn 2D nets into 3D structures. • Following instructions to cut and assemble the	axle bridge design design criteria model net packaging structure template unstable stable strong weak

	assembled into the main supporting structure. • Say what is good about their windmill and what they could do better.	• To understand that axles are used in structures and mechanisms to make parts turn in a circle. • To begin to understand that different structures are used for different purposes. • To know that a structure is something that has been made and put together.	supporting structure of a windmill. • Making functioning turbines and axles which are assembled into a main supporting structure.	
Summer				
Mechanisms: Wheels and axles	• Explain that wheels move because they are attached to an axle. • Recognise that wheels and axles are used in everyday life, not just in cars. • Identify and explain vehicle design flaws using the correct vocabulary. • Design a vehicle that includes functioning wheels, axles and axle holders. • Make a moving vehicle with working wheels and axles. • Explain what must be changed if there are any operational issues.	• 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. • To know some real-life items that use wheels.	• Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move. • Creating clearly labelled drawings that illustrate movement. • Adapting mechanisms. • Testing mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move.	axle axle holder chassis diagram dowel equipment mechanism wheel

Year 2	Learning Outcomes	Key Knowledge	Key Skills	Key Vocabulary
Autumn				
Food: A balanced diet	• Name the main food groups and identify foods that belong to each group. • Describe the taste, texture and smell of a given food. • Think of four different wrap ideas, considering flavour combinations. • Construct a wrap that meets the design brief and their plan.	• 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. • 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.	• Name the main food groups and identify foods that belong to each group. • Describe the taste, texture and smell of a given food. • Think of four different wrap ideas, considering flavour combinations. • Construct a wrap that meets the design brief and their plan.	balanced diet balance carbohydrate dairy fruit ingredients oils sugar protein vegetable design criteria

		• To know that I should only have a maximum of five teaspoons of sugar a day to stay healthy. • To know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars'.		

			Spring		

Textiles: Pouches	• Sew a running stitch with regular-sized stitches and understand that both ends must be knotted. • Prepare and cut fabric to make a pouch from a template. • Use a running stitch to join the two pieces of fabric together. • Decorate their pouch using the materials provided.	• To know that sewing is a method of joining fabric. • To know that different stitches can 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.	• Designing a pouch. Selecting and cutting fabrics for sewing. • Decorating a pouch using fabric glue or running stitch. • Threading a needle. • Sewing running stitch, with evenly spaced, neat, even stitches to join fabric. • Neatly pinning and cutting fabric using a template. • 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.	decorate fabric fabric glue knot needle needle threader running stitch sew template thread

			Summer		

| Structures: Baby Bear's chair | • Identify man-made and natural structures.
• Identify stable and unstable structural shapes.
• Contribute to discussions.
• Identify features that make a chair stable.
• Work independently to make a stable structure, following a demonstration.
• Explain how their ideas would be suitable for Baby Bear.
• Produce a model that supports a teddy, using the appropriate materials and construction techniques.
• Explain how they made their model strong, stiff and stable. | • To know that shapes and structures with wide, flat bases or legs are the most stable.
• To understand that the shape of a structure affects its strength.
• To know that materials can be manipulated to improve strength and stiffness.
• To know that a structure is something which has been formed or made from parts.
• To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move.
• To know that a 'strong' structure is one which does not break easily.
• To know that a 'stiff' structure or material is one which does not bend easily. | • Generating and communicating ideas using sketching and modelling.
• Learning about different types of structures, found in the natural world and in everyday objects.
• Making a structure according to design criteria.
• Creating joints and structures from paper/card and tape.
• Building a strong and stiff structure by folding paper.
• Exploring the features of structures.
• Comparing the stability of different shapes.
• Testing the strength of their own structures.
• Identifying the weakest part of a structure.
• Evaluating the strength, stiffness and stability of their own structure. | design criteria
man-made
natural
properties
structure
stable
shape
model
test |

Year 3	Learning Outcomes	Key Knowledge	Key Skills	Key Vocabulary
Autumn				
Textiles: Cushions	• Use a cross-stitch to join two pieces of fabric together.	• Designing and making a template from an existing	• To know that appliqué is a way of mending or decorating a textile by	appliqué cross-stitch design

	• Design and cut the template for a cushion. • Use cross-stitch and appliqué to decorate a cushion face. • Make a cushion that includes appliqué and cross-stitch.	cushion and applying individual design criteria. • Following design criteria to create a cushion. • Selecting and cutting fabrics with ease using fabric scissors. • Threading needles with greater independence. • Tying knots with greater independence. • Sewing cross stitch to join fabric. • Decorating fabric using appliqué. • Completing design ideas with stuffing and sewing the edges. • Evaluating an end product and thinking of other ways in which to create similar items.	applying smaller pieces of fabric. • To know that when two edges of fabric have been joined together it is called a seam. • To know that it is important to leave space on the fabric for the seam. • To understand that some products are turned inside out after sewing so the stitching is hidden.	equipment fabric patch running stitch thread seam texture knot
Spring				
Electrical systems: Electric poster	• Explain what 'information design' is and understand its impact, considering what could happen if we had no signage, posters, or written communication in public places of interest. • Research and choose a specific Ancient Roman topic on which to base their initial poster ideas. • Complete design criteria based on a client's request.	• 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 plug, dials, buttons etc.) • To list examples of common electric products (kettle, remote control etc.)	• Carrying out research based on a given topic (e.g. The Romans) to develop a range of initial ideas. • Generating a final design for the electric poster with consideration for the client's needs and design criteria. • Planning the positioning of the bulb (circuit component) and its purpose.	information design design public design criteria research initial ideas sketch bulb self-assessment peer assessment feedback develop final design electrical system

	• Roughly sketch four initial poster ideas, indicating where a bulb will be located for each. • Review their initial ideas against the design criteria and peer feedback, developing a final design. • Assemble an electric poster, including a functional simple circuit with a bulb, following a demonstration. • Acknowledge, with a brief explanation, the need to mount the poster using corrugated card. • Test that the simple circuit works by adding a battery. • Evaluate their electric posters in a letter to a client.	• 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.	• Mounting the poster onto corrugated card to improve its strength and withstand the weight of the circuit on the rear. • Measuring and marking materials out using a template or ruler. • Fitting an electrical component (bulb). • Learning ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge). • 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.	electric product circuit circuit component bulb battery crocodile wires
Summer			
Mechanical Systems: Pneumatic toys	• Draw accurate diagrams with correct labels, arrows and explanations. • Correctly identify definitions for key terms. • Identify five appropriate design criteria.	• To understand how pneumatic systems work. • To understand that pneumatic systems can be used as part of a mechanism. • To know that pneumatic systems operate by	• Designing a toy that uses a pneumatic system. • Developing design criteria from a design brief. • Generating ideas using thumbnail sketches and exploded diagrams.	mechanism lever pivot linkage system pneumatic system input output component

	Learning Outcomes	Key Knowledge	Key Skills	Key Vocabulary
	• Communicate two ideas using thumbnail sketches. • Communicate and develop one idea using an exploded diagram. • Select appropriate equipment and materials to build a working pneumatic system. • Assemble their pneumatic system within the housing to create the desired motion. • Create a finished pneumatic toy that fulfils the design brief.	drawing in, releasing and compressing air.	• Learning that different types of drawings are used in design to explain ideas clearly. • Creating a pneumatic system to create a desired motion. • Building secure housing for a pneumatic system. • Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. • Selecting materials due to their functional and aesthetic characteristics. • Manipulating materials to create different effects by cutting, creasing, folding and weaving. • Using the views of others to improve designs. • Testing and modifying the outcome, suggesting improvements. • Understanding the purpose of exploded-diagrams through the eyes of a designer and their client.	thumbnail sketch research adapt properties reinforce motion

Year 4	Learning Outcomes	Key Knowledge	Key Skills	Key Vocabulary
Autumn				

Food: Adapting a recipe	• Follow a recipe, with some support. • Describe some of the features of a biscuit based on taste, smell, texture and appearance. • Adapt a recipe by adding extra ingredients to it. • Plan a biscuit recipe within a budget.	• Designing a biscuit within a given budget, drawing upon previous taste testing. • Following a baking recipe. • Cooking safely, following basic hygiene rules. • Adapting a recipe. • Evaluating a recipe, considering: taste, smell, texture and appearance. • Describing the impact of the budget on the selection of ingredients. • Evaluating and comparing a range of products. • Suggesting modifications.	• To know that the amount of an ingredient in a recipe is known as the 'quantity'. • To know that it is important to use oven gloves when removing hot food from an oven. • To know the following cooking techniques: sieving, creaming, rubbing method, cooling. • To understand the importance of budgeting while planning ingredients for biscuits.	design criteria research texture innovative aesthetic measure cross-contamination diet processed packaging
Spring			
Digital world: Mindful moments timer	• State and/or describe the advantages and disadvantages of existing products (timers). • Understand how Micro:bit features could be used as part of a design idea. • Write a program that displays a timer on the Micro:bit based on their chosen seconds/minutes. • Suggest where the errors are, if testing is unsuccessful, by comparing the correct code to their own. • State key functions in the program editor (e.g. loops).	• Writing design criteria for a programmed timer (Micro:bit). • Exploring different mindfulness strategies and using this research to inform my design criteria. • Developing a prototype case for my mindful moment timer. • Using and manipulating shapes and clipart and using computer-aided design (CAD) to produce a logo. • Following a list of design requirements. Developing a prototype case for my mindful moment timer.	• To understand what variables are in programming. • To know some of the features of a Micro:bit. • To know that an algorithm is a set of instructions to be followed by the computer. • To know that it is important to check my code for errors (bugs). • To know that a simulator can be used as a way of checking that your code works before installing it onto an electronic device.	research advantage disadvantage criteria design ergonomic timer program loop coding block variable pause bug debug instructions net template develop

	• Cut out a box net carefully, assembling it securely into a box using tape or glue and tabs and ensuring it has a slot for the Micro:bit display. • Evaluate the immediate appeal of the Micro:bit timer and how it might function. • Express which stages of the project they enjoyed or found more challenging. • Explain the need for a company to stand out against competition and/or state the importance of logos in business. • Recall and describe the name and use of key tools used in Sketchup (CAD) software. • Fulfil the design requirements of the logo.	• Creating a 3D structure using a net. • Programming a Micro:bit to time a set number of seconds/minutes upon button press. • Analysing a range of timers by comparing their advantages and disadvantages. • Evaluating my Micro:bit program against points on my design criteria and amending them to include any changes I made. • Documenting and evaluating my project. • Understanding what logos are and why they are important in the world of design and business. • Testing my program for bugs (errors in the code). Finding and fixing the bugs (debug) in my code.		join assemble test form function prototype process cheap
	Summer			
Structure: Pavilions	• To understand what variables are in programming. • To know some of the features of a Micro:bit. • To know that an algorithm is a set of instructions to be followed by the computer. • To know that it is important to check my code for errors (bugs).	• To understand what variables are in programming. • To know some of the features of a Micro:bit. • To know that an algorithm is a set of instructions to be followed by the computer. • To know that it is important to check my code for errors (bugs).	• To understand what variables are in programming. • To know some of the features of a Micro:bit. • To know that an algorithm is a set of instructions to be followed by the computer. • To know that it is important to check my code for errors (bugs).	3D shapes design criteria natural cladding innovative structure reinforce

	• To know that a simulator can be used as a way of checking that your code works before installing it onto an electronic device.	• To know that a simulator can be used as a way of checking that your code works before installing it onto an electronic device.	• To know that a simulator can be used as a way of checking that your code works before installing it onto an electronic device.	

Year 5	Learning Outcomes	Key Knowledge	Key Skills	Key Vocabulary
Autumn				
Textiles: Stuffed toys	• Design a stuffed toy, considering the main component shapes of their toy. • Create an appropriate template for their stuffed toy. • Join two pieces of fabric using a blanket stitch. • Neatly cut out their fabric. • Use appliqué or decorative stitching to decorate the front of their stuffed toy. • Use blanket stitch to assemble their stuffed toy, repairing when needed. • Identify what worked well and areas for improvement.	• To understand what variables are in programming. • To know some of the features of a Micro:bit. • To know that an algorithm is a set of instructions to be followed by the computer. • To know that it is important to check my code for errors (bugs). • To know that a simulator can be used as a way of checking that your code works before installing it onto an electronic device.	• To understand what variables are in programming. • To know some of the features of a Micro:bit. • To know that an algorithm is a set of instructions to be followed by the computer. • To know that it is important to check my code for errors (bugs). • To know that a simulator can be used as a way of checking that your code works before installing it onto an electronic device.	accurate annotate appendage blanket-stitch design criteria detail evaluation fabric sew shape stuffed toy stuffing template
Spring				

Electrical systems: Doodlers	- Identify simple circuit components (battery, bulb and switch) with a basic explanation of their function. - Explain that a series circuit is assembled in a loop to allow the electricity to flow along one path. - Describe a motor as a circuit component that changes electrical energy into movement. - Provide examples of motorised products that use movement to rotate or spin different parts. - Remove and replace different parts of a Doodler, as part of a team. - Suggest ways to switch the configuration to amend the form or function of the Doodler. - Explain, in an investigation report, each of the changes they made and the effect this had on the Doodler's ability to draw scribbles (function) and appearance (form). - Develop design criteria with consideration for the target user, the purpose of their Doodler, a key function and the Doodler's form and final appearance (e.g. fun, bright, soft).	- Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product. - Developing design criteria based on findings from investigating existing products. - Developing design criteria that clarifies the target user. - 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. - 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	- To know that, in a series circuit, electricity only flows in one direction. - To know when there is a break in a series circuit, all components turn off. - 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.	circuit component configuration current develop DIY investigate motor motorised problem solve product analysis series circuit stable target user

	• Explain simply why their Doodler has a certain configuration based on the findings of their investigation (e.g. I used four pens because the Doodler would fall over with two). • Create a functional Doodler that creates scribbles on paper with or without a switch. • Identify and list each of the required materials, tools and circuit components required to build a Doodler. • Explain simply the steps to assemble a Doodler as part of a set of instructions (or storyboard). • Write instructions to build a functional circuit, explaining how to identify if it is functional or not. • Provide suggestions to improve a peer's set of instructions after testing how effective they are at guiding someone.	or negatively affect an existing product. • Peer evaluating a set of instructions to build a product.	
Summer			
Structure: Bridges	• Identify stronger and weaker shapes. • Recognise that supporting shapes can help increase the strength of a bridge,	• Designing a stable structure that is able to support weight. • Creating a frame structure with focus on triangulation.	• To understand some different ways to reinforce structures. • To understand how triangles can be used to reinforce bridges.	beam bridge arch bridge truss bridge strength technique corrugation

	allowing it to hold more weight. • Identify beam, arch and truss bridges and describe their differences. • Use triangles to create simple truss bridges that support a load (weight). • Cut beams to the correct size, using a cutting mat. • Smooth down any rough cut edges with sandpaper. • Follow each stage of the truss bridge creation as instructed by their teacher. • Complete a bridge, with varying ranges of accuracy and finish, supported by the teacher. • Identify some areas for improvement, reinforcing their bridges as necessary.	• Making a range of different shaped beam bridges. • Using triangles to create truss bridges that span a given distance and support a load. • Building a wooden bridge structure. • Independently measuring and marking wood accurately. • Selecting appropriate tools and equipment for particular tasks. • Using the correct techniques to saw safely. • Identifying where a structure needs reinforcement and using card corners for support. • Explaining why selecting appropriate materials is an important part of the design process. • Understanding basic wood functional properties. • Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary. • Suggesting points for improvements for own bridges and those designed by others.	• To know that properties are words that describe the form and function of materials. • To understand why material selection is important based on their properties. • To understand the material (functional and aesthetic) properties of wood.	lamination stiffness rigid factors stability visual appeal aesthetics joints mark out hardwood softwood wood file/rasp sandpaper/glasspaper bench hook/vice tenon saw/coping saw assemble material properties reinforce wood sourcing evaluate quality of finish accuracy

Year 6	Learning Outcomes	Key Knowledge	Key Skills	Key Vocabulary
	Autumn			
Food: Come Dine with Me	• Find a suitable recipe for their course. • Record the relevant ingredients and equipment needed. • Follow a recipe, including using the correct quantities of each ingredient. • Write a recipe, explaining the process taken. • Explain where certain key foods come from before they appear on the supermarket shelf.	• To know that 'flavour' is how a food or drink tastes. • To know that many countries have 'national dishes' which are recipes associated with that country. • To know that 'processed food' means food that has been put through multiple changes in a factory. • To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides. • To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork).	• Writing a recipe, explaining the key steps, method and ingredients. Including facts and drawings from research undertaken. • 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. • Evaluating a recipe, considering: taste, smell, texture and origin of the food group. • Taste testing and scoring final products. Suggesting and writing up points of improvements in productions. • Evaluating health and safety in production to minimise cross contamination.	equipment flavours ingredients method research recipe bridge method cookbook cross-contamination farm to fork preparation storyboard
	Spring			

Mechanical systems: Making a pop-up book	• Produce a suitable plan for each page of their book. • Produce the structure of the book. • Assemble the components necessary for all their structures/mechanisms. • Hide the mechanical elements with more layers using spacers where needed. • Use a range of mechanisms and structures to illustrate their story and make it interactive for the users. • Use appropriate materials and captions to illustrate the story.	• Designing a pop-up book which uses a mixture of structures and mechanisms. • Naming each mechanism, input and output accurately. • Storyboarding ideas for a book. • 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. • Evaluating the work of others and receiving feedback on own work. • Suggesting points for improvement.	• To know that mechanisms control movement. • To understand that mechanisms can be used to change one kind of motion into another. • To understand how to use sliders, pivots and folds to create paper-based mechanisms. • 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.	design input motion mechanism criteria research reinforce model
Summer				
Digital world: Navigating the world	• Incorporate key information from a client's design request such as 'multifunctional' and 'compact' in their design brief. • Write a program that displays an arrow to indicate cardinal compass	• Writing a design brief from information submitted by a client. • Developing design criteria to fulfil the client's request. • Developing a product idea through annotated sketches. • Placing and manoeuvring 3D objects, using CAD.	• To know that accelerometers can detect movement. • To understand that sensors can be useful in products as they mean the product can function without human input.	smart smartphone equipment navigation cardinal compass application (apps) pedometer GPS tracker design brief

	directions with an 'On start' loading screen. • Identify errors (bugs) in the code and suggest ways to fix (debug) them. • Self and peer evaluate a product concept against a list of design criteria with basic statements. • Identify key industries that use 3D CAD modelling and why. • Recall and describe the name and use of key tools used in Tinkercad (CAD) software. • Combine more than one object to develop a finished 3D CAD model in Tinkercad. • Complete a product pitch plan that includes key information.	• Changing the properties of, or combine one or more 3D objects, using CAD. • Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo). • Explaining material choices and why they were chosen as part of a product concept. Programming an N,E, S,W cardinal compass. • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool. • Developing an awareness of sustainable design. • Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch. Demonstrating a functional program as part of a product concept.	• To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request. • To know that 'multifunctional' means an object or product has more than one function. • To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing.	design criteria client function program duplicate replica loop variable value if statement boolean corrode moudable lightweight sustainable design environmentally friendly biodegradable recyclable